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(54) Título: MÉTODO PARA A PREDIÇÃO DO DESFECHO DO TRATAMENTO DE DOENÇAS HUMANAS UTILIZANDO FÁRMACOS METABOLIZADOS PELA N-ACETILTRANSFERASE 2 HUMANA (NAT2) COM BASE EM POLIMORFISMOS GENÉTICOS

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(57) Resumo: Método para a predição do desfecho do tratamento dedoenças humanas utilizando fármacos metabolizados pela N-acetiltransferase 2 humana (NAT2) com base em polimorfismos genéticos A presente invenção está relacionada ao campo da Biologia Molecular e Genâmica, especialmente a Farmacogenâmica. A invenção descreve a presença de novos polimorfismos no gene que codifica para a enzima Arilamina N-acetiltransferase 2 humana (NAT2), a qual é responsável pela metabolização de fármacos importantes na terapêutica de várias doenças de etiologias diversas, bem como de inúmeras toxinas e carcinógenos presentes em alimentos, cigarro e no ambiente. A presente invenção inclui metodologia passível de utilização na terapêutica utilizando os polimorfismos descritos.

"Método para a predição do desfecho do tratamento de doenças humanas utilizando fármacos metabolizados pela N-acetiltransferase 2 humana (NAT2) com base em polimorfismos genéticos"

Campo da Invenção

A presente invenção está relacionada ao campo da Biologia Molecular e Genômica, especialmente a Farmacogenômica. Descreve a presença de novos polimorfismos no gene que codifica para a enzima Arilamina N-acetiltransferase 2 humana (NAT2), a qual é responsável pela metabolização de fármacos importantes na terapêutica de várias doenças de etiologias diversas, bem como de inúmeras toxinas e carcinógenos presentes em alimentos, cigarro e no ambiente. A presente invenção inclui metodologia passível de utilização na terapêutica utilizando os polimorfismos descritos.

Fundamentos e Estado da Arte

A análise de variações na seqüência de DNA para a compreensão dos diferentes fenótipos observados no ser humano tem sido o principal foco da pesquisa genética durante décadas. Diferentes testes têm sido extensivamente explorados através da análise de ligações, segundo os quais, mutações em um único gene podem ser suficientes não somente para explicar variações na suscetibilidade de diferentes indivíduos a uma ou mais doenças como também para explicar variações inter-individuais de resposta a um determinado fármaco. O tipo mais comum de variação encontrada no genoma humano é o polimorfismo de base única (*Single Nucleotide Polymorphism* - SNP). Tais variações têm sido identificadas como marcadores genéticos para doenças de etiologias diversas sendo também relacionados com diferentes fenótipos de metabolização de xenobióticos.

Ingelman-Sundberg, J Int Med 250: 186-200 2001; Roses, A.D Life Sciences 70:1471-1480 2002 e Prows & Prows, American Journal of Nursing 104:60-70 2004, através de estudos farmacogenéticos, nos quais foram avaliadas variações genéticas que causam diferentes respostas aos medicamentos, ao incluírem dados acerca das diferenças na eficácia, interações fármaco-fármaco e o risco relativo de reações adversas, identificaram uma associação de vários SNPs com a expressão ou atividade de receptores farmacológicos, proteínas transportadoras, sinalizadoras e enzimas do metabolismo.

Um dos principais objetos de estudo da farmacogenética refere-se à análise de enzimas envolvidas na biotransformação de fármacos. Variações nos genes que codificam para essas enzimas podem resultar em uma diminuição de atividade destes fármacos, e favorecer o aparecimento de reações adversas por toxicidade devido a uma baixa metabolização e conseqüente acúmulo do princípio ativo ou de metabólitos intermediários tóxicos (metabolizadores lentos). Por outro lado, segundo Ingelman-Sundberg, J Int Med 250: 186-200 2001, a presença de variantes alélicas que não afetam a atividade enzimática, isto é, alelos funcionais (que caracterizam um fenótipo de metabolizadores rápidos) ou com múltiplas cópias (metabolizadores ultra-rápidos) pode estar associada a concentrações séricas subterapêuticas do fármaco.

Adicionalmente, de acordo com Kalow, Pharmacological Reviews 49:369-379 1997, nos casos de heterozigose onde os indivíduos sejam portadores de um alelo que caracterize baixa atividade enzimática e um alelo funcional, um fenótipo de metabolização intermediária é originado.

A enzima N-acetiltransferase 2 humana (NAT2), codificada pelo gene *NAT2* está envolvida na metabolização de vários fármacos utilizados correntemente para o tratamento de: tuberculose (isoniazida), hipertensão arterial (hidrazinas anti-hipertensivas), hanseníase (dapsona) e arritmia cardíaca (procainamida anti-arritmica) além de sulfametazina e outras sulfonamidas usadas para a terapia de outras desordens (Weber, The Acetylator Genes and Drug Response, Oxford University Press, N.Y. 1987). Várias mutações pontuais na região codificante do gene *NAT2* são capazes de alterar a atividade de acetilação da enzima podendo resultar em três diferentes fenótipos: acetiladores lentos, intermediários e rápidos (Hein, *et al.*, 2000. Cancer Epidemiology, Biomarkers and Prevention, 9:29-42). O fenótipo de acetilação lenta, caracterizado por determinados perfis genotípicos leva a um acúmulo do fármaco e consequentemente ao desenvolvimento de reações adversas, as quais são principalmente caracterizadas por neuropatias periféricas e hepatite. Já o fenótipo de acetilação rápida leva a uma diminuição dos níveis séricos do fármaco, podendo alcançar níveis sub-terapêuticos com conseqüente falência terapêutica (Ingelman-Sundberg, J Int Med 250: 186-200 2001).

A enzima NAT2 participa também de vias de ativação de poluentes ambientais com potencial carcinogênico, tais como, 2-aminofluoreno, 4-aminobifenil, benzidina, beta-nafitilamina e algumas aminas heterocíclicas presentes em pirolisados protéicos (Kato, CRC Crit Ver.Toxicol. 16:307-348 1986; Weber, The Acetylator Genes and Drug Response, Oxford University Press, N.Y. 1987; Hein Biochim Biophys Acta, 948:37-66, 1988). Adicionalmente, a participação de NAT2 na detoxificação também tem sido associada à suscetibilidade a doenças induzidas por substâncias químicas, tais como neoplasia (Vatsis *et al.*, Pharmacogenetics, 5: 1-17 1995) quando da combinação de ingestão de carne vermelha com o fumo (Potter et al Câncer Epidem. Biomarkers & Prev., 8: 69-75 1999; Liu *et al.*, Canc Letters, 133: 115-123 1988).

Até o presente momento, já foram identificados 36 alelos diferentes para o gene *NAT2* (http//www.louisville.edu/medschool/pharmacology/NAT.html), os quais consistem na combinação de até 4 mutações pontuais na região codificante do gene. Estudos funcionais realizados no início desta década demonstraram a existência de diferentes mecanismos que podem resultar no fenótipo de acetilação lenta dependendo dos polimorfismos presentes no gene *NAT2*. Dentre estes mecanismos estão: (i) diminuição da quantidade de proteína sintetizada, (SNPs C190T, T341C, A434C, G590A); (ii) diminuição da atividade enzimática (SNPs C190T, G191A, T341C, A434C e G59A) e (iii) diminuição da estabilidade da enzima NAT2 (SNPs G191A, A845C e G857A), (Fretland et al,. Pharmacogenetics, 11:207-215 2001; Zhu &

Hein, Biol. Chem., 383: 983-987 2002). Por outro lado, outras mutações descritas na literatura como por exemplo T111C, C282T, C481T, C759T e A803G, não exercem nenhum efeito na atividade biológica da proteína, caracterizando um alelo funcional (Fretland *et al.*, Pharmacogenetics, 11:207-215 2001). Estudos adicionais que avaliaram a relação entre diferentes haplótipos e o desfecho de metabolização, baseados na expressão e atividade enzimática realizados com os alelos mais freqüentes de *NAT2*, possibilitaram a caracterização dos mesmos quanto ao perfil de acetilação. Os alelos dos clusters *NAT2 *5*, **6*, **7*, **14* e **19* conferem um fenótipo de acetilação lenta enquanto os alelos *NAT2 *4* e dos clusters *12 e *13, conferem um fenótipo de acetilação rápida (Hein *et al.*, Cancer Epidemiology, biomarkers and Prevention, 9:29-42 2000; Hein, Mutation Research, 506-507:65-77. 2002).

As Reações Adversas a Drogas (ADRs) são causas comuns de hospitalização em todo o mundo e passíveis de promover o óbito de pacientes acometidos por tais situações. Recentemente, Bagheri *et al.*, J. Clin. Pharmacol. 50: 479-484 2000; Bissell *et al.*, Hepatology 33:1009-1013 2001; Larrey, Seminars in Liver Disease 22:145155 2002, descreveram que, entre as reações adversas, a lesão hepática é o tipo mais freqüente. Segundo os autores, a doença hepática induzida por fármacos é uma das principais complicações durante o uso de antimicrobianos, uma vez que o fígado é o órgão central na biotransformação e excreção da maioria dos fármacos e substâncias xenobióticas.

Variações genéticas em enzimas que participam na geração destes bioprodutos tóxicos podem resultar em diferenças na reatividade metabólica a agentes específicos com variações de indivíduo para indivíduo. Assim, a determinação dos perfis genotípicos individuais e seus fenótipos resultantes podem ser de grande valia para os médicos tanto na escolha do fármaco a ser indicado quanto na determinação da posologia e do esquema terapêutico a ser adotado, o qual deve encontrar um balanço adequado entre a eficácia e a toxicidade. Adicionalmente, estas variações genéticas podem ser utilizadas como marcadores para identificar pré-disposição a cânceres.

Prince & Brookes, Expert Rev. Mol. Diagn. 1(3) 89-95,2001. "Towards high-throughput genotyping of SNPs by dynamic allele-specific hybridization", descreveram a análise de SNPs como uma estratégia simples para a identificação de genes envolvidos em doenças complexas tais como Alzheimer, obesidade e diabetes melito e anteciparam que os SNPs teriam um papel muito importante na farmacogenômica, onde a identificação de variações em genes específicos, relevantes na eficácia de determinada droga, toxicidade e metabolismo ajudariam a estabelecer estratégias terapêuticas ótimas para pacientes individuais. Refletindo estas expectativas, várias novas tecnologias têm aparecido ao longo dos últimos anos, cada uma com vantagens particulares, mas todas com o objetivo único de simplificar a análise dos SNPs. Os autores descrevem uma técnica chamada "Hibridação dinâmica alelo-específica" (DASH), segundo eles, um método conveniente para a genotipagem de

SNPs e mutações do tipo *indel,* (inserção ou deleção), as quais possuem potencial de aplicação tanto na pesquisa básica como no diagnóstico clínico. Informam ainda que o DASH comercial está disponível, tornando a tecnologia acessível para todos os laboratórios.

Garte, Cancer Epidemology Biomarkers & Prevention Vol.10, 1233-1237, December 2001. "Metabolic Susceptibility Genes As Cancer Risk Factors" descrevem que polimorfismos em genes da via metabólica relacionada à ativação de carcinógenos que conferem suscetibilidade ao câncer não mostraram uma associação consistente com o desenvolvimento de câncer quando somente os efeitos principais foram examinados. Isto realmente era esperado tendo em vista o limitado e específico papel bioquímico de tais genes no processo carcinogênico. Contudo, quando grupos particulares de casos são examinados separadamente, a importância destes polimorfismos genéticos torna-se clara. Exemplos da literatura e um modelo hipotético são apresentados como suporte de que alelos de risco pertencentes à via metabólica devem ser estudados em subgrupos de estudos do tipo caso-controle com maior casuística tendo como hipótese questões relacionadas à ação do produto gênico em função de variáveis demográficas, ambientais ou outras variáveis genéticas.

O pedido de patente US 20030096235 "Methods and products related to genotyping and DNA analysis", descreve métodos e produtos relacionados à genotipagem. Este método é baseado no uso de polimorfismos de base única (SNPs) para uma varredura ampla e de alta *performance* do genoma. O método é realizado através da hibridização de oligonucleotídeos alelo específicos em um genoma de complexidade reduzida (RCG). A invenção também se relaciona com métodos de: preparo de oligonucleotídeos SNP-específicos e RCGs, métodos de *fingerprinting*, determinação da freqüência alélica para um determinado SNP, caracterização de tumores, geração de um código de classificação genômico para a identificação de SNPs desconhecidas, composições relacionadas e *kits*.

O pedido de patente US 20030049628 "Complexity Management of Genomic DNA", descreve métodos e *kits* para reduzir a complexidade de uma amostra de DNA através da disponibilização de métodos (não baseados em gel) para a amplificação de um subgrupo de seqüências em uma amostra com sítios de restrição para duas ou mais enzimas, através da ligação de adaptadores aos fragmentos, de forma que somente um subgrupo de fragmentos possa ser amplificado. Esta invenção descreve adicionalmente procede a análise do produto amplificado acima por hibridação com um arranjo que pode ser especificamente desenhado para características particulares dos fragmentos desejados, tais como, a presença ou ausência de um polimorfismo.

O pedido de patente US 20040053232 "Quantitative trait loci and somatostatin", relaciona-se ao uso de características genéticas em gado para a determinação das características da progênie e para otimizar a manipulação do gado visando um aumento na performance de amamentação e qualidade da carne. O alvo especialmente estudado é o *locus* da somatostatina, o qual está associado com certos *loci* de características quantitativas (QTLs). Os SNPs e haplótipos são preditivos do aumento ou decréscimo da quantidade de tecido no animal.

O pedido de patente US 20040081996 "Methods of validating SNPs and compiling libraries of assays", descreve bibliotecas de ensaios e métodos para a compilação de dados em bibliotecas. Os ensaios podem identificar polimorfismos de base única (SNPs). Adicionalmente, métodos de validação de SNPs e construção de mapas de desequilíbrio de ligação usando conjuntos ou sub-conjuntos de SNPs são disponibilizados.

O pedido de patente US 20050042654 "Genotyping Methods" descreve métodos para a amplificação do DNA genômico e genotipagem das amostras amplificadas. Os métodos de genotipagem utilizam arranjos de oligonucleotídeos alelo específicos para polimorfismos de base única (SNPs). Os métodos também relacionam técnicas para a amplificação de múltiplas amostras de DNA de vários indivíduos de maneira a minimizar a possibilidade de contaminação das amostras por produtos amplificados previamente (amplicons).

O pedido de patente US 20050153328 "Method and markers for determining the genotype of horned/polled cattle", descreve métodos para a descoberta e utilização de polimorfismos de base única (SNPs) na determinação do genótipo de ruminantes. Adicionalmente, a presente invenção fornece seqüências específicas de ácidos nucléicos, SNPs e perfis de SNPs que podem ser usados com esta finalidade.

Chang-Claude *et al.*, Cancer Epidemiology, Biomarkers & Prevention,11 698-704, 2002. "Differencial Effect of *NAT2* on the Association between Active and Passive Smoke Exposure and Breast Cancer Risk", em estudo caso-controle realizado para avaliar o possível efeito diferencial do genótipo de *NAT2* na relação entre fumantes ativos e passivos e o câncer de mama, descreveram que polimorfismos presentes no gene que codifica para a enzima N-acetyltransferase 2 (NAT2) influenciam na taxa de metabolização de aminas aromáticas heterocíclicas presentes no tabaco.

Anitha & Banerjee, Int J Mol Med Vol.11 125-131, 2003. " Arylamine *N*-acetyltransferase 2 polymorphism in the ethnic populations of South India ", mostraram que o polimorfismo da *N*-acetilação é um trato genético refletido fenotipicamente pelas diferenças na atividade da N-acetyltransferase 2 (NAT2) em agentes terapêuticos (acetiladores rápidos e lentos). Os autores relatam os resultados da genotipagem de *NAT2* de comunidades etnicamente diferentes do sul da Índia. Após a genotipagem de 8 diferentes comunidades étnicas, o fenótipo de acetilação lenta teve predominância de 74% nestas populações corroborando resultados encontrados em outras populações asiáticas onde esta predominância é de cerca de 60%. Os autores não encontraram associação entre o sexo e o fenótipo de acetilação.

Musbah *et al.*, Squ Journal For Scientific Research: Medical Sciences 2003 Vol 5, No. 1-2, 9-14. "Distribution of arylamine N-acetyltransferase 2 (NAT2) genotypes among

Omanis".descreve sistemas para a identificação da maioria dos polimorfismos conhecidos de *NAT2*, tais como: G191A, C282T, C341T, C481T, G590A, A803G e G857A usando a técnica de PCR-RFLP (Polymerase Chain Reaction-Restriction Fragment Length.Polymorphism).

Cavaco et al., Clin Chemical Lab Med ol.41(4) 606-609 2003 "CYP3A4*1B and *NAT2* *14 Allelle in a Native African Population", relatam polimorfismos de base única nos genes que codificam para o citocromo P450 3A4 (*CYP3A4*) e para a *N*-acetiltransferase 2 (NAT2), principais mediadores do metabolismo de uma grande variedade de drogas de uso terapêutico, bem como de xenobióticos.

Lash *et al.*, Breast Cancer Research Vol: 7 N°3 R.385-393 2005. "A case-only analysis of the interaction between *N*-acetyltransferase haplotypes and tobacco smoke in breast cancer etiology", descreve haplótipos de *N*-acetyltransferase 2 envolvidos com câncer de mama. Mulheres que possuem alelos mutantes com um genótipo homozigoto possuem uma taxa de ativação metabólica mais baixa das arilaminas aromáticas, um dos constituintes do tabaco, identificado como carcinógeno. Os autores levantam a hipótese de que mulheres com câncer de mama com o fenótipo de acetilação lenta possuem um risco aumentado para o desenvolvimento deste tipo de carcinoma associado com o fumo ativo ou exposição passiva.

O pedido de patente US 20020128215. "Novel sequence variants of the human N-acetyltransferase 2 (NAT2) gene and use thereof", descreve novos polimorfismos no gene *NAT2*, os quais podem estar envolvidos no metabolismo de drogas utilizadas para o tratamento de várias desordens bem como podem ser utilizados para a determinação de pré-disposição ao desenvolvimento de vários cânceres.

Em resumo, nenhum dos estudos já realizados e documentos de patentes encontrados revelaram métodos similares, baseados nos SNPs aqui descritos, para predizer os efeitos hepatotóxicos provenientes da metabolização de drogas no organismo de um ser humano, através de variações na seqüência do gene codificador para a enzima Arilamina N-acetiltransferase 2 (NAT2). Estes e outros aspectos vantajosos formam coletivamente os objetos da presente invenção, que serão descritos em mais detalhes a seguir.

Sumário da Invenção

A presente invenção inclui seqüências de ácidos nucléicos mostradas nas FIGS. 1A-1B e Tabela 2, com destaque aos sítios polimórficos no gene que codifica para NAT2. A presente invenção relaciona-se ainda com oligonucleotídeos, mostrados na tabela 1, que hibridam especificamente com diferentes regiões da seqüência mostrada nas FIGS. 1A-1B. Adicionalmente, a presente invenção descreve como os polimorfismos estão representados na população de duas regiões geográficas distintas do Brasil.

Métodos diagnósticos que utilizem toda ou parte das seqüências contendo os SNPs identificados nesta invenção. Por exemplo, tais ácidos nucléicos ou especificamente os SNPs, podem ser utilizados como métodos para a identificação de polimorfismos no gene de *NAT2* que estejam associados à predisposição a várias doenças incluindo, mas não limitadas, a câncer de bexiga, câncer de colo e câncer de próstata.

Uma outra aplicação desta invenção inclui a possibilidade de criação de um protocolo de prognóstico para pacientes recebendo composições terapêuticas metabolizadas por NAT2, tais como: isoniazida, fenilzina, hidrazina, dapsona, procainamida, sulfametazina e outras sulfonamidas. O método inclui: a) identificação de pacientes recebendo uma destas drogas; b) determinação do fenótipo de acetilação (rápidos ou lentos) com base no genótipo; e c) conversão dos dados obtidos no passo (b) em um protocolo de prognóstico. O protocolo de prognóstico pode incluir a predição da eficácia da droga, a predição do prognóstico do paciente, a predição de interações entre drogas, e a predição de efeitos adversos.

A invenção também está relacionada com a identificação de diferenças entre indivíduos na metabolização de compostos exógenos, incluindo, mas não limitados a carcinógenos ou agentes mutagenicos, incluindo 2-aminofluoreno, 4-aminobifenil, benzidina, beta-nafitilamina, e certas arilaminas heterocíclicas presentes em pirolisados de proteínas.

Em outro contexto, a invenção descreve ainda a freqüência dos polimorfismos de *NAT2* em duas populações de regiões geográficas distintas do Brasil, permitindo, com base nestas informações, tanto a identificação de grupos étnicos mais suscetíveis a doenças ou desordens diversas, como também subsidiar os profissionais de saúde na elaboração e/ou redefinição de condutas terapêuticas em especial na escolha do fármaco e sua dosagem a serem utilizados por um determinado grupo étnico.

Uma outra aplicabilidade desta invenção é a criação de um método para assistir no desenvolvimento de novos compostos terapêuticos através de ensaios clínicos. O método inclui: a) administração de um composto terapêutico a um indivíduo e avaliação de sua eficácia; b) determinação, através do genótipo incluindo os SNPs aqui descritos, se o indivíduo é um acetilador rápido ou lento; e c) determinar a partir dos passos (a) e (b), qual composição terapêutica será a mais efetiva para aquele genótipo em particular e qual estará mais associada aos efeitos adversos.

Descrição das Figuras

As Figuras 1A-1B mostram a seqüência do gene *NAT2* (alelo selvagem), (SEQ ID NO:1). Estas figuras contêm a seqüência nucleotídica do tipo selvagem e a seqüência de aminoácidos (SEQ ID NO:2). O nucleotídeo de número 1 refere-se a adenosina do códon de iniciação "ATG", o qual encontra-se sublinhado. A posição das bases referente aos seis novos SNPs descobertos na região codificante do gene encontram-se sublinhadas e em negrito e correspondem as substituições de bases listadas na Tabela 2. O códon de terminação está indicado por um asterisco (*). Adicionalmente, as trocas de aminoácidos encontram-se sublinhadas e em negrito.

A seguir são apresentadas definições importantes para a perfeita compreensão do escopo da presente invenção.

"Amplificação de ácidos nucléicos" refere-se a métodos tais como a reação da polimerase em cadeia (PCR) e reação em cadeia da ligase (LCR). Estes métodos são bem conhecidos, amplamente disseminados e tanto os equipamentos como os reagentes para a execução da técnica de PCR estão comercialmente disponíveis. Os oligonucleotídeos utilizados para a amplificação de uma região específica do cromossomo são preferencialmente complementares e hibridam especificamente a seqüências na região cromossômica ou em regiões que flanqueiam a região alvo. As seqüências geradas por amplificação podem ser seqüenciadas diretamente ou ainda serem clonadas.

"Sequenciamento de DNA" refere-se a uma técnica utilizada para determinação exata da seqüência nucleotídica de um fragmento particular de DNA ou de um genoma inteiro. A ordem dos pares de bases na molécula de DNA fornece uma informação específica da seqüência de aminoácidos de uma proteína a ser produzida por um determinado gene.

"Condições de estringência" para hibridações referem-se às condições de temperatura e concentração de tampão que permite a hibridação de um ácido nucléico particular a outro ácido nucléico sendo que o primeiro ácido nucléico pode ser perfeitamente complementar ao segundo, ou pode somente compartilhar algum grau de complementariedade, menor que o perfeito. Por exemplo, algumas condições de alta estringência podem ser utilizadas, as quais distinguem perfeitamente ácidos nucléicos complementares daqueles com complementariedade menor.

"Clonagem" refere-se ao uso de técnicas de recombinação *in vitro* a fim de inserir um gene particular ou outra seqüência de DNA numa molécula que servirá como vetor. Para se obter sucesso na clonagem de um determinado gene, é necessário o uso de métodos para a geração de fragmentos de DNA, que sejam capazes de se ligar a moléculas vetores, com conseqüente introdução da molécula híbrida em uma célula hospedeira na qual poderá se replicar, para então proceder-se a seleção dos clones contendo o gene alvo.

"Veículo de clonagem" refere-se a um DNA de plasmídeo ou bacteriófago, ou outra seqüência de DNA, a qual seja capaz de se replicar numa célula hospedeira. O veículo (ou vetor de clonagem) é caracterizado pela presença de um ou mais sítios de restrição no qual cada seqüência de DNA pode ser cortada sem a perda da função biológica do DNA o qual pode conter um marcador útil para a identificação e seleção das células transformadas.

"Gene" refere-se a uma seqüência de DNA portando informação genética. Esta pode ser expressa através do RNA mensageiro, formando uma seqüência de aminoácidos característica de um peptídeo específico. O termo "gene" inclui regiões não codificantes (regulatórias), as quais não são transcritas, bem como regiões codificantes para RNAs que não serão posteriormente traduzidas na forma de proteínas.

A seqüência da presente invenção foi obtida a partir do DNA extraído de células humanas.

"Oligonucleotídeo" refere-se a um ácido nucléico de fita simples com tamanho variando entre 2 e 60 bases. Os oligonucleotídeos freqüentemente são sintéticos, mas podem também ser produzidos a partir de polinucleotídeos que ocorrem naturalmente. Uma sonda é um oligonucleotídeo utilizado, em experimentos laboratoriais, para detectar uma seqüência complementar em meio a uma mistura de moléculas de ácidos nucléicos. A sonda é capaz de se ligar ao ácido nucléico alvo com seqüência complementar através de um ou mais tipos de ligações químicas, usualmente através do pareamento complementar de bases via pontes de hidrogênio. As sondas oligonucleotídicas possuem freqüentemente de 5 a 60 nucleotídeos, variando mais freqüentemente entre 15 e 30 bases de tamanho. Um oligonucleotídeo pode incluir bases naturais (A, T, G, C) ou modificadas (7-deazaguanosina, iosina, etc). Além disto, as bases podem ser unidas por ligações outras que não a ligação fosfodiester, tais como uma ligação fosfodiéster ou uma ligação fosforotioato.

"Farmacogenômica e Farmacogenética", Farmacogenômica é a aplicação de abordagens e tecnologias empregadas na Genômica e identificação de alvos para drogas. Em outras palavras, a farmacogenômica utiliza informação genética para predizer se uma droga irá contribuir positivamente ou negativamente no tratamento de um paciente. Farmacogenética é o estudo da variação da ação e reação às drogas e sua relação com o conteúdo genético do paciente. Os indivíduos respondem diferentemente aos tratamentos com drogas; alguns positivamente, outros sem modificações óbvias em sua condição e ainda outros com efeitos colaterais e/ou reações alérgicas. A Farmacogenética é um subconjunto da farmacogenômica, empregando métodos e técnicas da Genômica e da Bioinformática para a identificação de correlações entre características genômicas, como por exemplo, SNPs, e perfis de resposta característicos.

"Polimorfismos", em termos gerais, a habilidade de algo aparecer em várias formas. Especificamente, a existência de duas ou mais formas alternativas (alelos) de um loco cromossomal diferindo na seqüência nucleotídica.

"Seqüência referência" é a seqüência nucleotídica do gene que codifica para a enzima NAT2 (SEQ ID NO:1) e a seqüência do aminoácido correspondente da proteína NAT2 (SEQ ID NO:2), como descrito por Rieder *et al.*, 2003 (submissão direta) número de acesso no geneBank (AY331807).

"Polimorfismo de base única ou SNP" refere-se à substituição de um único nucleotídeo por outro com os dois ou mais estados sendo encontrados na população numa freqüência a partir de 1%.

"Hospedeiro" inclui procariotos e eucariotos, tais como, bactérias, leveduras e fungos filamentosos, bem como células vegetais e animais. O termo inclui um organismo ou célula que recebe um veículo de expressão ou de clonagem replicável.

"Promotor" refere-se a seqüência de DNA reconhecida por uma RNA polimerase. A presença de tal seqüência permite que a RNA polimerase se ligue ao DNA e inicie a transcrição de seqüências gênicas operacionalmente ligadas.

"Região promotora" é a região que inclui a seqüência promotora ou regulatória, bem como outras seqüências, as quais, podem ser necessárias para a iniciação da transcrição. A presença da região promotora é necessária para levar a expressão de outras seqüências gênicas operacionalmente ligadas.

"Fenótipo de acetilação rápida" refere-se a características de metabolização de compostos por transferência de um grupamento acetil a partir da acetil-CoA, que em alguns indivíduos é rápida em comparação com outros indivíduos.

"Fenótipo de acetilação lenta" é a característica de um indivíduo, no qual, a acetilação de compostos por transferência de um grupamento acetil a partir da acetil-CoA, é lenta em comparação com outros indivíduos.

"Reações adversas" referem-se a efeitos não esperados ou negativos induzidos por uma droga durante um tratamento quimioterápico. As reações adversas podem ser locais, sistêmicas ou alergênicas.

Descrição Detalhada da Invenção

Esta invenção relata a identificação de seis novos SNPs na região codificante do gene que codifica para a proteína N-acetiltransferase 2 (NAT2) humana em indivíduos residentes em duas diferentes regiões geográficas do Brasil. Os SNPs aqui descritos foram identificados através das técnicas de Reação em Cadeia da Polimerase (PCR) e seqüenciamento dos produtos amplificados. A detecção de polimorfismos em seqüências específicas de DNA pode ser obtida por uma variedade de métodos incluindo, mas não limitada a i) polimorfismo de tamanho de fragmentos de restrição (PCR-RFLP) baseado na clivagem específica por uma enzima de restrição de um sítio alelo específico, (kan e Dozy, Lancet ii:910-912, 1978); ii) hibridação com sondas oligonucleotídicas alelo específicas (Wallace *et al.*, Nucl Acids Res. 6:3543-3557 1978), incluindo oligonucleotídeos imobilizados (Saiki *et al.*, Proc. Natl. Acad. Sd. USA 86:6230-6234 1969) ou arranjos de oligonucleotídeos (Maskos na Southern Nucl. Acids Res. 17:2503-2516 1993); iii) PCR alelo específico (Newton *et al.*, Nucl Acids Res 17:2503-2516 1989); iv) detecção e reparo de pareamento errôneo "mismatch-repair detection" (MRD) (Faham & Cox, Genome Res. 5:474-482, 1995); v) gel de eletroforese desnaturante de gradiente "Denaturing-gradient gel electrophoresis" (DGGE) (Fisher *et al.*, Proc. Natl. Acad. Sci. USA 80:1579-1583 1983); vi) detecção de polimorfismo por conformação de fita simples "Single strand conformation polimorphism" (SSCP) (Orita *et al.*, Genomics 5:874-879 1983); vii) clivagem de pareamento errôneo por RNAse (Meyers *et al.*, Science 230:1242 1985); viii) método químico (Cotton *et al.*, Proc. Natl. Acad. Sci. USA 8Z4397-440 1988) ou enzimático (Youil *et al.*, Proc. Natl. Acad. Sci. USA 92:87-91 1995); ix) clivagem de DNA heteroduplex; x) métodos baseados na extensão de *primers* alelo específicos (Syvanen *et al.*, Genomics 8:684-692 1990); xi) ensaio de ligação de oligonucleotídeo "Oligonucleotide ligation Assay" (OLA) (Landegren *et al.*, Science 241:1077 1988); xii) reação em cadeia de ligação alelo específica 'allele-specific ligation chain reaction (LCR) (Barrany, Proc. Natl. Acad. Sci. USA. 88:189-193 1991); xiii) seqüenciamento radioativo ou fluorescente (Sambrook, J. & Russell, D. W. 2001;

Molecular cloning: a laboratory manual. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York).

Os 6 polimorfismos descritos nas FIGs. 1A-1B e Tabela 2 estão localizados na região codificante do gene *NAT2* e incluem as seguintes substituições (T → C na base 29, G → T na base 152, G → A na base 203, C → T na base 228, C → T na base 458, e A → G na base 600). Com exceção dos SNPs C228T e A600G que são silenciosos, todos os outros 4 SNPs modificam o aminoácido transcrito nas seguintes posições (SNP T 29 C troca de I → T no aminoácido 10, SNP G 152 T, troca de G → V no aminoácido 51, SNP G 203 A, troca de C → Y no aminoácido 68, SNP C 458 T, troca de T → I no aminoácido153).

Como descrito acima, a presente invenção está relacionada a uma seqüência de DNA compreendida na região codificante do gene *NAT2*, na qual foram identificados 6 novos SNPs. Variantes muito próximas também estão incluídas como parte desta invenção, bem como ácidos nucléicos recombinantes que contenham qualquer dos SNPs aqui descritos ou as regiões acima ou abaixo dos mesmos na seqüência descrita nas FIGs. 1A-1B e reivindicações.

Esta invenção também está relacionada à utilização de métodos que utilizem ácidos nucléicos (DNA ou RNA) isolados e/ou recombinantes que sejam caracterizados pela sua capacidade de hibridarem a um ácido nucléico que codifique uma proteína ou polipeptídeo, tal como um ácido nucléico que contenha a seqüência descrita nas FIGs. 1A-1B ou parte de um DNA estranho que contenha o mínimo de nucleotídeos suficientes para codificar um polipeptídeo que contenha parte da seqüência de aminoácidos descrita nas FIGs. 1A-1B e Tabela 2 ou que codifiquem para equivalentes funcionais, ou seja, um polipeptídeo que quando incorporado a uma célula hospedeira tenha toda ou parte da atividade da proteína NAT2. Um equivalente funcional da proteína NAT2 deve ter uma seqüência de aminoácido similar (no mínimo 65% de identidade) e características similares a proteína NAT2. Um ácido nucléico que hibrida com outro ácido nucléico que codifica para a proteína NAT2 ou polipeptídeo, tais como descrito nas FIGs. 1A-1B e Tabela 2 podem ser de fita dupla ou de fita simples. Hibridação com um DNA contendo toda ou parte da seqüência descrita nas FIGs. 1A-1B inclui hibridação tanto com a fita mostrada como com a sua fita complementar.

Ácidos nucléicos, incluindo DNA ou RNA, podem ser detectados e isolados por hibridação sob condições de estringência alta ou moderada, as quais são escolhidas de forma a não permitir a hibridação de seqüências nucleotídicas não complementares. "Condições de alta estringência" e "condições de estringência moderada" para a hibridação de ácidos nucléicos são exemplificadas em Sambrook, J. & Russell, D. W. 2001; *Molecular cloning: a laboratory manual*. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York. As condições exatas que determinam a estringência da hibridação dependem não somente da força iônica, temperatura e concentração de agentes desestabilizadores, tais como formamida, mais também de fatores tais como o tamanho da seqüência de ácido nucléico, a composição das bases, percentual de pareamento errôneo entre as duas seqüências e a freqüência de ocorrência. Assim, as condições de alta ou moderada estringência podem ser calculadas empiricamente.

A presente invenção também diz respeito ao uso da seqüência nucleotídica aqui descrita, ou parte da mesma, para a identificação de sondas de DNA específicas para o gene *NAT2* ou oligonucleotídeos para a amplificação (através de PCR) do gene *NAT2*.

A presente invenção também descreve, na Tabela 1, oligonucleotídeos para a amplificação de dois fragmentos, do gene de *NAT2*, que, juntos, compreendem toda a região codificante do respectivo gene contendo os polimorfismos descritos. Os seis novos SNPs presentes na região codificante do gene *NAT2* foram identificados a partir do seqüenciamento automático dos fragmentos gerados após a amplificação do DNA por PCR com os dois pares de oligonucleotídeos descritos na Tabela 1. Assim, estes oligonucleotídeos podem ser utilizados para detecção dos mesmos SNPs em quaisquer amostras de DNA provenientes de material biológico humano através do PCR e seqüenciamento.

Os seis novos SNPs descritos nas FIGs. 1A-1B e tabela 2 da presente invenção podem ser utilizados para a determinação de haplótipos, os quais, quando estendidos e associados aos SNPs já descritos, podem ser utilizados para a predição do fenótipo de acetilação (acetilador lento ou rápido) de um determinado indivíduo. Como descrito no exemplo 1, o DNA pode ser isolado de diferentes indivíduos e, através de técnicas de seqüenciamento de DNA, a seqüência do gene de *NAT2* de um indivíduo pode ser obtida.

Após a identificação dos polimorfismos, o genótipo é determinado permitindo assim a predição do fenótipo.

A invenção também está relacionada a um método de criação de um protocolo prognóstico para um paciente recebendo algum agente terapêutico metabolizado por NAT2 tais como, amonafida, isoniazida, fenilzina, hidrazina, dapsona, procainamida, sulfametazina e outras sulfonamidas. O método inclui: a) identificação de pacientes recebendo uma destas drogas; b) determinação do fenótipo de acetilação (rápidos ou lentos) com base no genótipo; e c) conversão dos dados obtidos no passo (b) em um protocolo prognóstico. O protocolo prognóstico pode incluir a prevenção da eficácia da droga, predição do prognóstico do paciente, predição de interações entre drogas, e predição de efeitos adversos. A combinação das seqüências de DNA geradas com o fenótipo de acetilação fornece um protocolo prognóstico específico para àquele indivíduo. Por exemplo, estudos têm mostrado que a isoniazida é mais tóxica em pacientes com fenótipo de acetiladores lentos que em pacientes com fenótipo de acetiladores rápidos. Portanto, a identificação destes pacientes usando as seqüências nucleotídicas fornecidas aqui pode auxiliar no desenho de esquemas terapêuticos balanceando eficácia e toxicidade.

Em outro exemplo, relacionado a protocolo prognóstico, pacientes identificados como acetiladores lentos estão sob risco de hipersensibilidade cutânea quando tratados com trimetoprin-sulfametoxazole (TMP-SMZ). Desta forma, antes de prescrever uma droga particular, tal como trimetoprin-sulfametoxazole (TMP-SMZ), o médico pode solicitar um teste para a identificação do fenótipo de acetilação do paciente baseado no perfil genotípico e, uma vez o paciente sendo um acetilador lento o médico então pode prescrever uma terapêutica alternativa.

Ensaios Clínicos

Esta invenção também relaciona-se a um método para auxiliar na avaliação de novos fármacos através de ensaios clínicos (*Clinical Trials*). O método inclui: a) administração de um agente terapêutico (metabolizado por NAT2) a um indivíduo e mensuração de sua eficácia; b) determinação do *status* de acetilação do indivíduo (rápido ou lento) baseado no genótipo ou haplótipo do gene de *NAT2* incluindo os SNPs descritos na presente invenção e c) determinação a partir dos itens (a) e (b) do agente terapêutico seria mais eficaz para aquele genótipo em particular. Os ensaios clínicos geralmente baseiam-se em informações fornecidas pelo paciente, incluindo idade, sexo e histórico familiar. A invenção fornece uma seqüência de DNA do gene de *NAT2* contendo novos SNPs os quais podem ser adicionados ao banco de SNPs e utilizados como fatores genéticos do paciente em um ensaio clínico. Como descrito aqui, um genótipo individual pode ser determinado por métodos de seqüenciamento de DNA descritos no exemplo 1 desde que seus haplótipos sejam de fase conhecida.

Após a administração da droga o genótipo do paciente pode então ser comparado com a eficácia da mesma e ocorrência de quaisquer efeitos adversos. Baseado nesta informação, fármacos podem ser desenvolvidos especificamente para genótipos individuais os quais estejam relacionados com uma maior eficácia e/ou menor toxicidade. Genótipos de pacientes que não respondem ao fármaco podem ser agrupados e fármacos que utilizem vias alternativas de acetilação ser desenvolvidas.

Freqüência dos dados

A presente invenção também relata a freqüência dos novos SNPs em duas diferentes populações do Brasil, como descrito na Tabela 3. Os dados mostram que os SNPs identificados aparecem em diferentes freqüências e são específicos nas duas populações estudadas, o que corrobora a hipótese de se tratarem de duas populações geneticamente distintas e consequentemente com fenótipos de acetilação também distintos. Os SNPs T29C, G152T, G203A, C458T e A600G ocorrem exclusivamente na amostra populacional do Rio de Janeiro e o SNP C228T ocorre exclusivamente na amostra populacional de Goiás.

Como descrito anteriormente, a enzima NAT2 tem sido associada a uma variedade de doenças e desordens incluindo câncer de bexiga, câncer de colo, câncer de próstata, carcinoma celular urotelial e doença de Gilbert's. Mais particularmente, a identificação de indivíduos mais suscetíveis a metabolização de compostos com potencial mutagênico e/ou carcinogênico incluindo 2-aminofluoreno, 4-aminobifenil, benzidina, beta-naftilamina e certas arilaminas heterocliclicas presentes em pirolisados de proteínas, pode ser muito benéfica na prevenção, por parte do indivíduo, da utilização de tais compostos. Os inventores disponibilizam uma seqüência de DNA contendo novos SNPs, os quais podem ser úteis para a identificação de indivíduos, com polimorfismos no gene *NAT2* que estão associados com estas doenças e afetam o metabolismo dos compostos descritos acima.

Ácidos nucléicos associados a doenças e úteis para métodos diagnósticos incluem oligonucleotídeos com um tamanho mínimo de 15 nucleotideos, preferencialmente um tamanho mínimo de 20 nucleotideos e mais preferencialmente um tamanho mínimo de 25 nucleotideos que hibride especificamente com um ácido nucléico associado a doenças.

A amostra a ser analisada deve ser submetida a um processo de extração de DNA. Entende-se que o método de extração de DNA dependerá da natureza da amostra a ser analisada. O DNA resultante deverá ser submetido a PCR para amplificação da região contendo os SNPs e em seguida seqüenciados.

A seqüência polinucleotídica descrita na presente invenção (ou parte da mesma), principalmente aquela relacionada à identificação dos SNPs aqui descritos, representa uma valiosa fonte de informação para a caracterização de indivíduos em termos de haplótipos e outros subgrupos, como por exemplo na investigação de suscetibilidade ao tratamento com alguns fármacos particulares. Esta abordagem é ainda facilitada pelo armazenamento destas informações em uma base de dados informatizada e sua posterior análise por programas de bioinformática. Assim, a seqüência polinucleotídica da presente invenção é particularmente útil como componente de banco de dados utilizado para a identificação de seqüências e outras buscas. O estoque das informações da seqüência em qualquer mídia e sua utilização em bancos de dados de seqüências com relação a "polinucleotídeo ou seqüência de polinucleotídeos da invenção" cobre qualquer característica química ou física do polinucleotídeo da presente invenção que pode ser reduzido a, convertido em, ou estocado em alguma mídia, tais como, um disquete ou um CD, preferencialmente numa forma legível em um computador.

Exemplo 1

Amostras de sangue foram coletadas de 404 indivíduos brasileiros consanguineamente não relacionados para a genotipagem de *NAT2*. As amostras utilizadas compreenderam indivíduos de duas regiões geograficamente distintas do Brasil (Rio de Janeiro e Goiás) e foram coletadas no Hospital Universitário Clementino Fraga Filho da Universidade Federal do Rio de Janeiro (UFRJ) e no Hospital de Referência Anuar Auad do Estado de Goiás. O DNA genômico foi isolado deste material utilizando o kit comercial FlexiGene DNA Kit (Qiagen Inc., USA)

Os fragmentos de DNA cobrindo toda a região codificante do gene *NAT2* para posterior seqüenciamento foram gerados a partir da amplificação pela técnica de "reação de polimerase em cadeia" (PCR), através da utilização de um par de oligonucleotídeos (NAT2ED e NAT2ER, Tabela 1). As condições para a reação de PCR foram as seguintes: 100 ng de DNA genômico, 200 ng de cada oligonucleotídeo, 0,2 mM de dNTPs, 4.0 mM $MgCl_2$, 10% glicerol (Invitrogen Life Technologies, Gaithersburg, MD, USA), 10 mM Tris-HCl pH 9.0, 50 mM KCl, 0.1% Triton X-100, and 1.1 U da mistura de duas DNA polimerases (1 U de *Taq*

DNA polimerase e 0.1 U de *Tli* DNA polimerase - Promega Corporation, USA). Foram usados em um volume final de 50 µl para cada amostra. A amplificação foi realizada nas seguintes condições de ciclagem: uma desnaturação inicial a 94°C for 5 min, seguida de 35 ciclos de 94°C por 1 min. 57.5°C for 1 min e 72°C por 1 minuto. O passo de extensão final foi realizado a 72°C por 5 min. Após a amplificação, aproximadamente 20 % do produto amplificado foi examinado em gel de agarose. Antes da etapa de seqüenciamento do DNA, os produtos de PCR foram purificados com acetato de amônio 2.5 M.

Tabela 1

Seqüência dos oligonucleotídeos utilizados para a amplificação e/ou seqüenciamento da região codificante do gene *NAT2*

NAT2 ED	5` - TTA GTC ACA CGA GGA AAT CAA A - 3`
NAT2 ER	5` - AAA TGC TGA CAT TTT TAT GGA TGA - 3`
NAT2 ID	5` - ACC ATT GAC GGC AGG AAT TA - 3`
NAT2 IR	5` - TGG TCC AGG TAC CAG ATT CC - 3`

^{ED}- Externo direto; ^{ER}- Externo Reverso; ^{ID}- Interno direto; ^{IR}- Interno Reverso

Quatro reações de seqüenciamento foram realizadas para cada amostra utilizando o Kit ABI PRISM Big Dye Terminator v. 3.1 (PE Applied BioSystems), de acordo com as recomendações do fabricante em um seqüenciador de capilar "ABI PRISM 3730 DNA Analyzer" (PE Applied BioSystems). Em cada reação (10 µl de volume final), foram utilizados aproximadamente 20 ng de produto amplificado, 3,2 pmol do iniciador, 0,5 µl de Big Dye e 1,5 µl de tampão 5X (fornecido no kit).

A análise das seqüências e identificação das SNPs presentes na região codificante de *NAT2* foi feita através do software SeqScape v. 2.5 (Applied Biosystems).(http://www.appliedbiosystems.com/catalog/myab/StoreCatalog/products/CategoryDetails.jsp?hierarchyID=101&category3rd=111917&trail=no). A seqüência AY331807 (http://www.ncbi.nlm.nih.gov/GenBank) foi usada como referência. As seqüências obtidas, referentes a cada amostra clínica individual, foram agrupadas sob forma de projeto de acordo com a utilização do SeqScape. As seqüências foram comparadas por alinhamento com a seqüência referência e os sítios polimórficos (SNPs), foram identificados.

As figuras 1A-1B mostram as seqüências nucleotídica e aminoacídica do tipo selvagem do gene *NAT2* descrita por Blum *et al.*, (*DNA and Cell Bio.*, 9:192-203, 1990), incluindo o sítio de iniciação da tradução "ATG". A posição dos seis novos SNPs descobertos estão sublinhadas e em negrito. Adicionalmente, as trocas aminoacídicas também estão sublinhadas e em negrito.

A Tabela 2 contém a lista dos polimorfismos de base única (SNPs) descobertos no gene *NAT2*. A posição do nucleotídeo de acordo com as FIGs. 1A-1B é listada na primeira coluna. A segunda coluna descreve as trocas de bases a partir do gene tipo selvagem. A posição do aminoácido afetado pela troca da base nucleotídica é listada na terceira coluna. As trocas de aminoácidos decorrentes de 4 dos 6 SNPs adicionais (base 29, 152, 203, 228, 458 e 600) são listadas na quarta coluna.

Tabela 2

Posição dos SNPs	Troca de nucleotídeo	posição do aminoácido	Troca de aminoácido
29	T para C	10	I para T
152	G para T	51	G para V
203	G para A	68	C para Y
228	C para T	76	Não ocorre
458	C para T	153	T para I
600	A para G	158	Não ocorre

Significância dos novos SNPs

Nenhuma troca de aminoácido ocorre quando da presença do SNP na base 228 e 600 da seqüência descrita nas FIGs. 1A-1B. Trata-se de SNPs localizados no terceiro nucleotídeo dos códons 76 e 158 respectivamente.

Esta invenção fornece ainda quatro SNPs adicionais, não sinônimos, presentes na região codificante do gene de *NAT2*, os quais alteram a seqüência de aminoácidos da proteína.

A substituição no nucleotídeo 29 (T→C) na região codificante do gene *NAT2*, resulta numa troca de aminoácido No códon 10 (I→T: isoleucina para treonina). Neste caso temos a troca de um aminoácido cadeia lateral apolar, hidrofóbico por um polar. Tendo em vista a diferença entre as cadeias laterais destes aminoácidos, muito provavelmente esta substituição pode afetar a estrutura, flexibilidade, estabilidade e enovelamento da proteína NAT2.

A substituição no nucleotídeo 152 (G→T) na região codificante do gene *NAT2*, resulta numa troca de aminoácido no códon 51 (G→V: glicina para valina). Aparentemente uma troca conservativa (aminoácidos com cadeias laterais similares). Contudo, se localizada em alguma região crítica (sítios de ligação do substrato ou co-fatores), esta troca pode afetar a estrutura ou atividade da proteína.

A substituição no nucleotídeo 203 (G→A) na região codificante do gene *NAT2* resulta numa troca de aminoácido na posição 68 (C→Y: cisteína para tirosina). Neste caso temos a troca de um aminoácido apolar por um polar não carregado. Tendo em vista a diferença entre as cadeias laterais destes aminoácidos, é provável que esta substituição afete a estrutura, flexibilidade, estabilidade e enovelamento da proteína NAT2. Adicionalmente, essa substituição ocorre no sítio catalítico da enzima podendo alterar sua atividade.

A substituição no nucleotídeo 458 (C→T) na região codificante do gene *NAT2*, resulta numa troca de aminoácido na posição 153 (T→I: treonina para isoleucina). Neste caso temos a troca de um aminoácido polar não carregado por um apolar. Tendo em vista a diferença entre as cadeias laterais destes aminoácidos, muito provavelmente esta substituição pode afetar a estrutura, flexibilidade, estabilidade e enovelamento da proteína NAT2.

A combinação de um ou todos os SNPs aqui descobertos com aqueles já descritos na literatura pode ter efeitos adicionais na estrutura, atividade, dobramento e estabilidade da proteína. Evidências sugerem que o fenótipo metabólico seja gerado a partir da combinação de todos os SNPs presentes no indivíduo. Utilizando análises de regressão linear múltipla, pesquisadores foram capazes de formular expressões matemáticas capazes de predizer a capacidade metabólica da enzima NAT2 baseados no genótipo (Maisel *et al.*, Pharmacogenomics, 1997). De acordo com estas análises, todas as substituições de nucleotídeos, mesmo aquelas que não causam a troca de aminoácidos, afetam o fenótipo de alguma forma. Embora eles possam predizer com razoável segurança o fenótipo da maioria dos indivíduos, se todos os SNPs conhecidos forem levados em consideração a precisão do modelo é consideravelmente maior. Uma vez que neste modelo os autores tiveram um indivíduo para o qual o fenótipo não pode ser predito, existe uma alta probabilidade da existência de SNPs adicionais no gene cujas análises realizadas não foram capazes de detectar.

Dados de Freqüência

A Tabela 3 mostra a freqüência alélica dos seis novos SNPs descritos na presente invenção em duas regiões distintas do Brasil. A primeira coluna lista os diferentes SNPs novos identificados nessa amostragem. A segunda, quinta e oitava colunas indicam as freqüências dos SNPs na amostra total, no Rio de Janeiro e em Goiás, respectivamente. As colunas 3, 4, 6, 7, 9 e 10 detalham se e quantos indivíduos foram homozigotos ou heterozigotos para o polimorfismo listado A freqüência na segunda coluna refere-se ao número de alelos com polimorfismo dividido pelo número total de alelos na amostragem a troca de bases e posição referem-se às coordenadas das FIGS. 1A-1B.

A Tabela 4 lista a freqüência dos SNPs descritos na invenção com os sítios polimórficos adicionais, suas respectivas freqüências nas diferentes regiões estudadas e, para cada SNP, se a variante mutante foi encontrada em homozigose ou heterozigose. A freqüência é o número de alelos contendo o polimorfismo dividido pelo número total de alelos na amostragem. A troca de bases e a posição das bases, referem-se às coordenadas das FIGS. 1A-1B.

Tabela 3

Freqüência alélica dos SNPs da presente invenção no gene *NAT2* em duas diferentes regiões do Brasil

SNPs	TOTAL			RIO DE JANEIRO			GOIÁS		
	%	Heterozigotos	Homozigotos	%	Heterozigotos	Homozigotos	%	Heterozigotos	Homozigotos
29C	0.1	01/404	0	0.1	01/298	0	0	0	0
152T	0.1	01/404	0	0.2	01/298	0	0	0	0
203 A	0.1	01/404	0	0.2	01/298	0	0	0	0
228 T	0.1	01/404	0	0.	0	0	0.5	01/106	0
458 T	0.1	01/404	0	0.2	01/298	0	0	0	0
600G	0.1	01/404	0	0.1	01/298	0	0	0	0

Tabela 4

Freqüência dos SNPs identificados no gene *NAT2* em duas diferentes regiões do Brasil

SNPs	TOTAL			RIO DE JANEIRO			GOIÁS		
	%	Heterozigotos	Homozigotos	%	Heterozigotos	Homozigotos	%	Heterozigotos	Homozigotos
29C	0.1	01/404	0	0.1	01/298	0	0	0	0
70A	0.1	01/404	0	0.2	01/298	0	0	0	0
152T	0.1	01/404	0	0.2	01/298	0	0	0	0
191A*	4.1	31/404	01/404	5	26/298	01/298	2	05/106	0
203A	0.1	01/404	0	0.2	01/298	0	0	0	0
228T	0.1	01/404	0	0	0	0	0.5	01/106	0
282T*	37	184/404	57/404	38	144/298	41/298	34	40/106	16/106
341C*	38	176/404	65/404	40	136/298	50/298	33	40/106	15/106
345T	0.3	02/404	0	0	0	0	1	02/106	0
403G	0.6	04/404	0	1	04/298	0	0.5	0	0
458T	0.1	01/404	0	0.2	01/298	0	0	0	0
472C	0.6	05/404	0	0.5	03/298	0	1	02/106	0
481T*	35	176/404	54/404	36	137/298	40/298	32	39/106	14/106
590A*	27	157/404	29/404	26	119/298	18/298	28	38/106	11/106
600G	0.1	01/404	0	0.1	01/298	0	0	0	0
609T	0.4	03/404	0	0.3	02/298	0	0.5	01/106	0
683T	0.2	02/404	0	0.3	02/298	0	0	0	0
766G	0.7	06/404	0	0.7	04/298	0	1	02/106	0
803G*	40	184/404	69/404	41	143/298	51/298	36	41/106	18/106
838A	0.5	04/404	0	0.5	03/298	0	0.5	01/106	0
G857A*	4.4	36/404	0	4.5	27/298	0	4.2	09/106	0

Apesar de ilustrada e descrita aqui com referência a determinadas representações específicas, a presente invenção não tem, no entanto, a intenção de estar limitada aos detalhes mostrados. Várias modificações podem ser feitas nos detalhes dentro do âmbito e alcance de equivalentes sem se afastar do espírito da invenção.

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TACTGGGCTC TGACC 15

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CTTCTGTACT GGGCTC 16

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TCTGTACTGG GCTCTG 16

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CTGTACTGGG CTCTGA 16

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<400> SEQUENCE: 27

TGTACTGGGC TCTGAC 16

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GTACTGGGCT CTGACC 16

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ATCAACTTCT GTACTGG                                                          17



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TCAACTTCTG TACTGGG                                                          17



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CAACTTCTGT ACTGGGC                                                          17



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AACTTCTGTA CTGGGCT                                                          17



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ACTTCTGTAC TGGGCTC 17

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CTTCTGTACT GGGCTCT 17

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<400> SEQUENCE: 41

TTCTGTACTG GGCTCTG 17

<210> SEQ ID NO 42
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TCTGTACTGG GCTCTGA 17

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CTGTACTGGG CTCTGAC 17

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TGTACTGGGC TCTGACC 17

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<400> SEQUENCE: 45

GTACTGGGCT CTGACCA 17

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TACTGGGCTC TGACCAC 17

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ACTGGGCTCT GACCACA 17

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CTGGGCTCTG ACCACAA 17

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<211> LENGTH: 18
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<400> SEQUENCE: 50

TCAATCAACT TCTGTACT 18

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<400> SEQUENCE: 51

CAATCAACTT CTGTACTG 18

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AATCAACTTC TGTACTGG 18

<210> SEQ ID NO 53
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<212> TYPE: DNA
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<400> SEQUENCE: 53

ATCAACTTCT GTACTGGG 18

<210> SEQ ID NO 54
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 54

TCAACTTCTG TACTGGGC 18

<210> SEQ ID NO 55
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CAACTTCTGT ACTGGGCT 18

<210> SEQ ID NO 56
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<210> SEQ ID NO 57
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<220> FEATURES:
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<400> SEQUENCE: 57

ACTTCTGTAC TGGGCTCT 18

<210> SEQ ID NO 58
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CTTCTGTACT GGGCTCTG 18

<210> SEQ ID NO 59
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TTCTGTACTG GGCTCTGA 18

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TCTGTACTGG GCTCTGAC 18

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CTGTACTGGG CTCTGACC 18

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TGTACTGGGC TCTGACCA 18

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GTACTGGGCT CTGACCAC 18

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TACTGGGCTC TGACCACA 18

<210> SEQ ID NO 65
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 65

ACTGGGCTCT GACCACAA 18

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<400> SEQUENCE: 66

CTGGGCTCTG ACCACAAT 18

<210> SEQ ID NO 67
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GGTCAATCAA CTTCTGTAC 19

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GTCAATCAAC TTCTGTACT 19

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TCAATCAACT TCTGTACTG 19

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CAATCAACTT CTGTACTGG 19

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AATCAACTTC TGTACTGGG 19

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ATCAACTTCT GTACTGGGC 19

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TCAACTTCTG TACTGGGCT 19

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CAACTTCTGT ACTGGGCTC 19

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AACTTCTGTA CTGGGCTCT 19

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ACTTCTGTAC TGGGCTCTG 19

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CTTCTGTACT GGGCTCTGA 19

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TTCTGTACTG GGCTCTGAC 19

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TCTGTACTGG GCTCTGACC 19

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CTGTACTGGG CTCTGACCA 19

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TGTACTGGGC TCTGACCAC 19

<210> SEQ ID NO 82
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GTACTGGGCT CTGACCACA 19

<210> SEQ ID NO 83

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TACTGGGCTC TGACCACAA 19

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ACTGGGCTCT GACCACAAT 19

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CTGGGCTCTG ACCACAATC 19

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AGGTCAATCA ACTTCTGTAC 20

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GGTCAATCAA CTTCTGTACT 20

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GTCAATCAAC TTCTGTACTG 20

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CAATCAACTT CTGTACTGGG 20

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AATCAACTTC TGTACTGGGC 20

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ATCAACTTCT GTACTGGGCT 20

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TCAACTTCTG TACTGGGCTC 20

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CAACTTCTGT ACTGGGCTCT 20

<210> SEQ ID NO 95
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AACTTCTGTA CTGGGCTCTG 20

<210> SEQ ID NO 96
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ACTTCTGTAC TGGGCTCTGA 20

<210> SEQ ID NO 97
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<400> SEQUENCE: 97

CTTCTGTACT GGGCTCTGAC 20

<210> SEQ ID NO 98
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<212> TYPE: DNA
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<400> SEQUENCE: 98

TTCTGTACTG GGCTCTGACC 20

<210> SEQ ID NO 99
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<400> SEQUENCE: 99

TCTGTACTGG GCTCTGACCA 20

<210> SEQ ID NO 100
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CTGTACTGGG CTCTGACCAC 20

<210> SEQ ID NO 101
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TGTACTGGGC TCTGACCACA 20

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GTACTGGGCT CTGACCACAA 20

<210> SEQ ID NO 103
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<400> SEQUENCE: 103

TACTGGGCTC TGACCACAAT 20

<210> SEQ ID NO 104
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<400> SEQUENCE: 104

ACTGGGCTCT GACCACAATC 20

<210> SEQ ID NO 105
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CTGGGCTCTG ACCACAATCG 20

<210> SEQ ID NO 106
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<212> TYPE: DNA
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<400> SEQUENCE: 106

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AGGTCAATCA ACTTCTGTAC T 21

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<210> SEQ ID NO 109
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GTCAATCAAC TTCTGTACTG G 21

<210> SEQ ID NO 110
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<210> SEQ ID NO 111
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<210> SEQ ID NO 112
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ATCAACTTCT GTACTGGGCT C                                                21


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TCAACTTCTG TACTGGGCTC T                                                21


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CAACTTCTGT ACTGGGCTCT G                                                21


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AACTTCTGTA CTGGGCTCTG A                                                21


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<211> LENGTH: 21
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ACTTCTGTAC TGGGCTCTGA C 21

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CTTCTGTACT GGGCTCTGAC C 21

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TTCTGTACTG GGCTCTGACC A 21

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TCTGTACTGG GCTCTGACCA C 21

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CTGTACTGGG CTCTGACCAC A 21

<210> SEQ ID NO 122
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<400> SEQUENCE: 122

TGTACTGGGC TCTGACCACA A 21

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GTACTGGGCT CTGACCACAA T 21

<210> SEQ ID NO 124
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<400> SEQUENCE: 124

TACTGGGCTC TGACCACAAT C 21

<210> SEQ ID NO 125
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<400> SEQUENCE: 125

ACTGGGCTCT GACCACAATC G 21

<210> SEQ ID NO 126
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<400> SEQUENCE: 126

CTGGGCTCTG ACCACAATCG G 21

<210> SEQ ID NO 127
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<400> SEQUENCE: 127

CCAGGTCAAT CAACTTCTGT AC 22

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CAGGTCAATC AACTTCTGTA CT 22

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AGGTCAATCA ACTTCTGTAC TG 22

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GGTCAATCAA CTTCTGTACT GG 22

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GTCAATCAAC TTCTGTACTG GG 22

<210> SEQ ID NO 132
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TCAATCAACT TCTGTACTGG GC 22

<210> SEQ ID NO 133
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<400> SEQUENCE: 133

CAATCAACTT CTGTACTGGG CT 22

<210> SEQ ID NO 134
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AATCAACTTC TGTACTGGGC TC 22

<210> SEQ ID NO 135
<211> LENGTH: 22
<212> TYPE: DNA
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ATCAACTTCT GTACTGGGCT CT 22

<210> SEQ ID NO 136
<211> LENGTH: 22
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TCAACTTCTG TACTGGGCTC TG 22

<210> SEQ ID NO 137
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 137

CAACTTCTGT ACTGGGCTCT GA 22

<210> SEQ ID NO 138
<211> LENGTH: 22
<212> TYPE: DNA
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AACTTCTGTA CTGGGCTCTG AC 22

<210> SEQ ID NO 139
<211> LENGTH: 22
<212> TYPE: DNA
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ACTTCTGTAC TGGGCTCTGA CC 22

<210> SEQ ID NO 140
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CTTCTGTACT GGGCTCTGAC CA 22

<210> SEQ ID NO 141
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TTCTGTACTG GGCTCTGACC AC 22

<210> SEQ ID NO 142
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TCTGTACTGG GCTCTGACCA CA 22

<210> SEQ ID NO 143
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<400> SEQUENCE: 143

CTGTACTGGG CTCTGACCAC AA 22

<210> SEQ ID NO 144
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 144

TGTACTGGGC TCTGACCACA AT 22

<210> SEQ ID NO 145
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 145

GTACTGGGCT CTGACCACAA TC 22

<210> SEQ ID NO 146
<211> LENGTH: 22
<212> TYPE: DNA

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<400> SEQUENCE: 146

TACTGGGCTC TGACCACAAT CG 22

<210> SEQ ID NO 147
<211> LENGTH: 22
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ACTGGGCTCT GACCACAATC GG 22

<210> SEQ ID NO 148
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 148

CTGGGCTCTG ACCACAATCG GT 22

<210> SEQ ID NO 149
<211> LENGTH: 23
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TCCAGGTCAA TCAACTTCTG TAC 23

<210> SEQ ID NO 150
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<212> TYPE: DNA
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<400> SEQUENCE: 150

CCAGGTCAAT CAACTTCTGT ACT 23

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<211> LENGTH: 23
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<220> FEATURES:
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<400> SEQUENCE: 151

CAGGTCAATC AACTTCTGTA CTG 23

<210> SEQ ID NO 152
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 152

AGGTCAATCA ACTTCTGTAC TGG 23

<210> SEQ ID NO 153
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 153

GGTCAATCAA CTTCTGTACT GGG 23

<210> SEQ ID NO 154
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<212> TYPE: DNA
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<400> SEQUENCE: 154

GTCAATCAAC TTCTGTACTG GGC 23

<210> SEQ ID NO 155
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<212> TYPE: DNA
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<400> SEQUENCE: 155

TCAATCAACT TCTGTACTGG GCT 23

<210> SEQ ID NO 156
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<212> TYPE: DNA
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<400> SEQUENCE: 156

CAATCAACTT CTGTACTGGG CTC 23

<210> SEQ ID NO 157
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<212> TYPE: DNA
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AATCAACTTC TGTACTGGGC TCT 23

<210> SEQ ID NO 158
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ATCAACTTCT GTACTGGGCT CTG 23

<210> SEQ ID NO 159
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TCAACTTCTG TACTGGGCTC TGA 23

<210> SEQ ID NO 160
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 160

CAACTTCTGT ACTGGGCTCT GAC 23

<210> SEQ ID NO 161
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<400> SEQUENCE: 161

AACTTCTGTA CTGGGCTCTG ACC 23

<210> SEQ ID NO 162
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ACTTCTGTAC TGGGCTCTGA CCA 23

<210> SEQ ID NO 163
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CTTCTGTACT GGGCTCTGAC CAC 23

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TTCTGTACTG GGCTCTGACC ACA 23

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TCTGTACTGG GCTCTGACCA CAA 23

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CTGTACTGGG CTCTGACCAC AAT 23

<210> SEQ ID NO 167
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TGTACTGGGC TCTGACCACA ATC 23

<210> SEQ ID NO 168
<211> LENGTH: 23
<212> TYPE: DNA
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GTACTGGGCT CTGACCACAA TCG 23

<210> SEQ ID NO 169
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 169

TACTGGGCTC TGACCACAAT CGG 23

<210> SEQ ID NO 170
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ACTGGGCTCT GACCACAATC GGT                                              23



<210> SEQ ID NO 171
<211> LENGTH: 23
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CTGGGCTCTG ACCACAATCG GTT                                              23



<210> SEQ ID NO 172
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<400> SEQUENCE: 172

CTCCAGGTCA ATCAACTTCT GTAC                                             24



<210> SEQ ID NO 173
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TCCAGGTCAA TCAACTTCTG TACT                                             24



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<400> SEQUENCE: 174

CCAGGTCAAT CAACTTCTGT ACTG                                             24



<210> SEQ ID NO 175
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<223> OTHER INFORMATION: cDNA for use as primers

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CAGGTCAATC AACTTCTGTA CTGG 24

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AGGTCAATCA ACTTCTGTAC TGGG 24

<210> SEQ ID NO 177
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GGTCAATCAA CTTCTGTACT GGGC 24

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GTCAATCAAC TTCTGTACTG GGCT 24

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TCAATCAACT TCTGTACTGG GCTC 24

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<213> ORGANISM: Artificial Sequence
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CAATCAACTT CTGTACTGGG CTCT 24

<210> SEQ ID NO 181
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<212> TYPE: DNA
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AATCAACTTC TGTACTGGGC TCTG 24

<210> SEQ ID NO 182
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ATCAACTTCT GTACTGGGCT CTGA 24

<210> SEQ ID NO 183
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<400> SEQUENCE: 183

TCAACTTCTG TACTGGGCTC TGAC 24

<210> SEQ ID NO 184
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 184

CAACTTCTGT ACTGGGCTCT GACC 24

<210> SEQ ID NO 185

<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 185

AACTTCTGTA CTGGGCTCTG ACCA 24

<210> SEQ ID NO 186
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<212> TYPE: DNA
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<400> SEQUENCE: 186

ACTTCTGTAC TGGGCTCTGA CCAC 24

<210> SEQ ID NO 187
<211> LENGTH: 24
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<400> SEQUENCE: 187

CTTCTGTACT GGGCTCTGAC CACA 24

<210> SEQ ID NO 188
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TTCTGTACTG GGCTCTGACC ACAA 24

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<400> SEQUENCE: 189

TCTGTACTGG GCTCTGACCA CAAT 24

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CTGTACTGGG CTCTGACCAC AATC 24

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TGTACTGGGC TCTGACCACA ATCG 24

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GTACTGGGCT CTGACCACAA TCGG 24

<210> SEQ ID NO 193
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 193

TACTGGGCTC TGACCACAAT CGGT 24

<210> SEQ ID NO 194
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 194

ACTGGGCTCT GACCACAATC GGTT 24

<210> SEQ ID NO 195
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<212> TYPE: DNA
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CTGGGCTCTG ACCACAATCG GTTT 24

<210> SEQ ID NO 196
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 196

TCTCCAGGTC AATCAACTTC TGTAC 25

<210> SEQ ID NO 197
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<212> TYPE: DNA
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CTCCAGGTCA ATCAACTTCT GTACT 25

<210> SEQ ID NO 198
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TCCAGGTCAA TCAACTTCTG TACTG 25

<210> SEQ ID NO 199
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CAGGTCAATC AACTTCTGTA CTGGG 25

<210> SEQ ID NO 201
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AGGTCAATCA ACTTCTGTAC TGGGC 25

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GGTCAATCAA CTTCTGTACT GGGCT 25

<210> SEQ ID NO 203
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<400> SEQUENCE: 203

GTCAATCAAC TTCTGTACTG GGCTC 25

<210> SEQ ID NO 204
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<400> SEQUENCE: 204

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<210> SEQ ID NO 205
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<210> SEQ ID NO 206
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<400> SEQUENCE: 206

AATCAACTTC TGTACTGGGC TCTGA 25

<210> SEQ ID NO 207
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 207

ATCAACTTCT GTACTGGGCT CTGAC 25

<210> SEQ ID NO 208
<211> LENGTH: 25
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 208

TCAACTTCTG TACTGGGCTC TGACC 25

<210> SEQ ID NO 209
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<400> SEQUENCE: 209

CAACTTCTGT ACTGGGCTCT GACCA 25

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AACTTCTGTA CTGGGCTCTG ACCAC 25

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ACTTCTGTAC TGGGCTCTGA CCACA 25

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CTTCTGTACT GGGCTCTGAC CACAA 25

<210> SEQ ID NO 213
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TTCTGTACTG GGCTCTGACC ACAAT 25

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TCTGTACTGG GCTCTGACCA CAATC 25

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CTGTACTGGG CTCTGACCAC AATCG 25

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TGTACTGGGC TCTGACCACA ATCGG 25

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GTACTGGGCT CTGACCACAA TCGGT 25

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TACTGGGCTC TGACCACAAT CGGTT 25

<210> SEQ ID NO 219

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ACTGGGCTCT GACCACAATC GGTTT 25

<210> SEQ ID NO 220
<211> LENGTH: 25
<212> TYPE: DNA
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CTGGGCTCTG ACCACAATCG GTTTT 25

<210> SEQ ID NO 221
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 221

GTACAGAAGT TGATT 15

<210> SEQ ID NO 222
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<212> TYPE: DNA
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<400> SEQUENCE: 222

AGTACAGAAG TTGAT 15

<210> SEQ ID NO 223
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<212> TYPE: DNA
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<400> SEQUENCE: 223

CAGTACAGAA GTTGA 15

<210> SEQ ID NO 224
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<400> SEQUENCE: 224

CCAGTACAGA AGTTG 15

<210> SEQ ID NO 225
<211> LENGTH: 15
<212> TYPE: DNA
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<400> SEQUENCE: 225

CCCAGTACAG AAGTT 15

<210> SEQ ID NO 226
<211> LENGTH: 15
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<400> SEQUENCE: 226

GCCCAGTACA GAAGT 15

<210> SEQ ID NO 227
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<400> SEQUENCE: 227

AGCCCAGTAC AGAAG 15

<210> SEQ ID NO 228
<211> LENGTH: 15
<212> TYPE: DNA
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GAGCCCAGTA CAGAA 15

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AGAGCCCAGT ACAGA 15

<210> SEQ ID NO 230
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CAGAGCCCAG TACAG 15

<210> SEQ ID NO 231
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<400> SEQUENCE: 231

TCAGAGCCCA GTACA 15

<210> SEQ ID NO 232
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 232

GTCAGAGCCC AGTAC 15

<210> SEQ ID NO 233
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<400> SEQUENCE: 233

GGTCAGAGCC CAGTA 15

<210> SEQ ID NO 234
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<212> TYPE: DNA
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<400> SEQUENCE: 234

TGGTCAGAGC CCAGT 15

<210> SEQ ID NO 235
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<212> TYPE: DNA
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<400> SEQUENCE: 235

GTGGTCAGAG CCCAG 15

<210> SEQ ID NO 236
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<400> SEQUENCE: 236

GTACAGAAGT TGATTG 16

<210> SEQ ID NO 237
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 237

AGTACAGAAG TTGATT 16

<210> SEQ ID NO 238
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<400> SEQUENCE: 238

CAGTACAGAA GTTGAT 16

<210> SEQ ID NO 239
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<400> SEQUENCE: 239

CCAGTACAGA AGTTGA 16

<210> SEQ ID NO 240
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<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 240

CCCAGTACAG AAGTTG 16

<210> SEQ ID NO 241
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<400> SEQUENCE: 241

GCCCAGTACA GAAGTT 16

<210> SEQ ID NO 242
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<212> TYPE: DNA
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<400> SEQUENCE: 242

AGCCCAGTAC AGAAGT 16

<210> SEQ ID NO 243
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<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 243

GAGCCCAGTA CAGAAG 16

<210> SEQ ID NO 244
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<212> TYPE: DNA
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<400> SEQUENCE: 244

AGAGCCCAGT ACAGAA 16

<210> SEQ ID NO 245
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<212> TYPE: DNA
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<400> SEQUENCE: 245

CAGAGCCCAG TACAGA 16

<210> SEQ ID NO 246
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<400> SEQUENCE: 246

TCAGAGCCCA GTACAG 16

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<400> SEQUENCE: 247

GTCAGAGCCC AGTACA 16

<210> SEQ ID NO 248
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<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 248

GGTCAGAGCC CAGTAC 16

<210> SEQ ID NO 249
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<400> SEQUENCE: 249

TGGTCAGAGC CCAGTA 16

<210> SEQ ID NO 250
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 250

GTGGTCAGAG CCCAGT 16

<210> SEQ ID NO 251
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<212> TYPE: DNA
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<400> SEQUENCE: 251

TGTGGTCAGA GCCCAG 16

<210> SEQ ID NO 252
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<212> TYPE: DNA
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<400> SEQUENCE: 252

GTACAGAAGT TGATTGA 17

<210> SEQ ID NO 253

<211> LENGTH: 17
<212> TYPE: DNA
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<400> SEQUENCE: 253

AGTACAGAAG TTGATTG 17

<210> SEQ ID NO 254
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<212> TYPE: DNA
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<400> SEQUENCE: 254

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CCCAGTACAG AAGTTGA 17

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GTCAGAGCCC AGTACAG 17

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GTCAGAGCCC AGTACAGA 18

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ATTGTGGTCA GAGCCCAG 18

<210> SEQ ID NO 287

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<400> SEQUENCE: 287


GTACAGAAGT TGATTGACC                                         19



<210> SEQ ID NO 288
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<400> SEQUENCE: 288


AGTACAGAAG TTGATTGAC                                         19



<210> SEQ ID NO 289
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CAGTACAGAA GTTGATTGA                                         19



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<400> SEQUENCE: 290


CCAGTACAGA AGTTGATTG                                         19



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<400> SEQUENCE: 291


CCCAGTACAG AAGTTGATT                                         19
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<210> SEQ ID NO 296
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<210> SEQ ID NO 303
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<400> SEQUENCE: 304

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GATTGTGGTC AGAGCCCAG 19

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<400> SEQUENCE: 307

AGTACAGAAG TTGATTGACC                                                20



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<210> SEQ ID NO 311
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<223> OTHER INFORMATION: cDNA for use as primers

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<210> SEQ ID NO 312
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AGCCCAGTAC AGAAGTTGAT 20

<210> SEQ ID NO 313
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GAGCCCAGTA CAGAAGTTGA 20

<210> SEQ ID NO 314
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AGAGCCCAGT ACAGAAGTTG 20

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<210> SEQ ID NO 317
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GTCAGAGCCC AGTACAGAAG 20

<210> SEQ ID NO 318
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<400> SEQUENCE: 318

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<210> SEQ ID NO 319
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<400> SEQUENCE: 319

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<210> SEQ ID NO 320
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<212> TYPE: DNA
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<400> SEQUENCE: 320

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<210> SEQ ID NO 321

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TGTGGTCAGA GCCCAGTACA 20

<210> SEQ ID NO 322
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<210> SEQ ID NO 323
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<400> SEQUENCE: 323

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<210> SEQ ID NO 324
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GATTGTGGTC AGAGCCCAGT 20

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<210> SEQ ID NO 326
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<400> SEQUENCE: 326

GTACAGAAGT TGATTGACCT G 21

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<210> SEQ ID NO 328
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<400> SEQUENCE: 330

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<210> SEQ ID NO 331
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<223> OTHER INFORMATION: cDNA for use as primers

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GCCCAGTACA GAAGTTGATT G 21

<210> SEQ ID NO 332
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<210> SEQ ID NO 333
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GAGCCCAGTA CAGAAGTTGA T 21

<210> SEQ ID NO 334
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<400> SEQUENCE: 334

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<210> SEQ ID NO 335
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<210> SEQ ID NO 337
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<210> SEQ ID NO 338
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<210> SEQ ID NO 339
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<210> SEQ ID NO 340
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<210> SEQ ID NO 342
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<210> SEQ ID NO 343
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<210> SEQ ID NO 345
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<223> OTHER INFORMATION: cDNA for use as primers

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CGATTGTGGT CAGAGCCCAG T 21

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<220> FEATURES:
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<400> SEQUENCE: 346

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<210> SEQ ID NO 347
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<212> TYPE: DNA
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<400> SEQUENCE: 347

GTACAGAAGT TGATTGACCT GG 22

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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 349

CAGTACAGAA GTTGATTGAC CT 22

<210> SEQ ID NO 350
<211> LENGTH: 22
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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 350

CCAGTACAGA AGTTGATTGA CC 22

<210> SEQ ID NO 351
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 351

CCCAGTACAG AAGTTGATTG AC 22

<210> SEQ ID NO 352
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 352

GCCCAGTACA GAAGTTGATT GA 22

<210> SEQ ID NO 353
<211> LENGTH: 22
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 353

AGCCCAGTAC AGAAGTTGAT TG 22

<210> SEQ ID NO 354
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 354

GAGCCCAGTA CAGAAGTTGA TT 22

<210> SEQ ID NO 355

<211> LENGTH: 22
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<400> SEQUENCE: 355

AGAGCCCAGT ACAGAAGTTG AT 22

<210> SEQ ID NO 356
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 356

CAGAGCCCAG TACAGAAGTT GA 22

<210> SEQ ID NO 357
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 357

TCAGAGCCCA GTACAGAAGT TG 22

<210> SEQ ID NO 358
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 358

GTCAGAGCCC AGTACAGAAG TT 22

<210> SEQ ID NO 359
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<400> SEQUENCE: 359

GGTCAGAGCC CAGTACAGAA GT 22

<210> SEQ ID NO 360
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<220> FEATURES:
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TGGTCAGAGC CCAGTACAGA AG 22

<210> SEQ ID NO 361
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<400> SEQUENCE: 361

GTGGTCAGAG CCCAGTACAG AA 22

<210> SEQ ID NO 362
<211> LENGTH: 22
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 362

TGTGGTCAGA GCCCAGTACA GA 22

<210> SEQ ID NO 363
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 363

TTGTGGTCAG AGCCCAGTAC AG 22

<210> SEQ ID NO 364
<211> LENGTH: 22
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 364

ATTGTGGTCA GAGCCCAGTA CA 22

<210> SEQ ID NO 365
<211> LENGTH: 22
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 365

GATTGTGGTC AGAGCCCAGT AC 22

<210> SEQ ID NO 366
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 366

CGATTGTGGT CAGAGCCCAG TA 22

<210> SEQ ID NO 367
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<400> SEQUENCE: 367

CCGATTGTGG TCAGAGCCCA GT 22

<210> SEQ ID NO 368
<211> LENGTH: 22
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 368

ACCGATTGTG GTCAGAGCCC AG 22

<210> SEQ ID NO 369
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 369

GTACAGAAGT TGATTGACCT GGA 23

<210> SEQ ID NO 370
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 370

AGTACAGAAG TTGATTGACC TGG 23

<210> SEQ ID NO 371
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 371

CAGTACAGAA GTTGATTGAC CTG 23

<210> SEQ ID NO 372
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 372

CCAGTACAGA AGTTGATTGA CCT 23

<210> SEQ ID NO 373
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 373

CCCAGTACAG AAGTTGATTG ACC 23

<210> SEQ ID NO 374
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 374

GCCCAGTACA GAAGTTGATT GAC 23

<210> SEQ ID NO 375
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 375

AGCCCAGTAC AGAAGTTGAT TGA 23

<210> SEQ ID NO 376
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 376

GAGCCCAGTA CAGAAGTTGA TTG 23

<210> SEQ ID NO 377
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 377

AGAGCCCAGT ACAGAAGTTG ATT 23

<210> SEQ ID NO 378
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 378

CAGAGCCCAG TACAGAAGTT GAT 23

<210> SEQ ID NO 379
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 379

TCAGAGCCCA GTACAGAAGT TGA 23

<210> SEQ ID NO 380
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 380

GTCAGAGCCC AGTACAGAAG TTG 23

<210> SEQ ID NO 381
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 381

GGTCAGAGCC CAGTACAGAA GTT 23

<210> SEQ ID NO 382
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 382

TGGTCAGAGC CCAGTACAGA AGT 23

<210> SEQ ID NO 383
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 383

GTGGTCAGAG CCCAGTACAG AAG 23

<210> SEQ ID NO 384
<211> LENGTH: 23
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 384

TGTGGTCAGA GCCCAGTACA GAA 23

<210> SEQ ID NO 385
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 385

TTGTGGTCAG AGCCCAGTAC AGA 23

<210> SEQ ID NO 386
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 386

ATTGTGGTCA GAGCCCAGTA CAG 23

<210> SEQ ID NO 387
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 387

GATTGTGGTC AGAGCCCAGT ACA 23

<210> SEQ ID NO 388
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 388

CGATTGTGGT CAGAGCCCAG TAC 23

<210> SEQ ID NO 389

<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 389

CCGATTGTGG TCAGAGCCCA GTA 23

<210> SEQ ID NO 390
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 390

ACCGATTGTG GTCAGAGCCC AGT 23

<210> SEQ ID NO 391
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 391

AACCGATTGT GGTCAGAGCC CAG 23

<210> SEQ ID NO 392
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 392

GTACAGAAGT TGATTGACCT GGAG 24

<210> SEQ ID NO 393
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 393

AGTACAGAAG TTGATTGACC TGGA 24

<210> SEQ ID NO 394
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 394

CAGTACAGAA GTTGATTGAC CTGG 24

<210> SEQ ID NO 395
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 395

CCAGTACAGA AGTTGATTGA CCTG 24

<210> SEQ ID NO 396
<211> LENGTH: 24
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 396

CCCAGTACAG AAGTTGATTG ACCT 24

<210> SEQ ID NO 397
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 397

GCCCAGTACA GAAGTTGATT GACC 24

<210> SEQ ID NO 398
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 398

AGCCCAGTAC AGAAGTTGAT TGAC 24

<210> SEQ ID NO 399
<211> LENGTH: 24
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 399

GAGCCCAGTA CAGAAGTTGA TTGA 24

<210> SEQ ID NO 400
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 400

AGAGCCCAGT ACAGAAGTTG ATTG 24

<210> SEQ ID NO 401
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 401

CAGAGCCCAG TACAGAAGTT GATT 24

<210> SEQ ID NO 402
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 402

TCAGAGCCCA GTACAGAAGT TGAT 24

<210> SEQ ID NO 403
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 403

GTCAGAGCCC AGTACAGAAG TTGA 24

<210> SEQ ID NO 404
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 404

GGTCAGAGCC CAGTACAGAA GTTG 24

<210> SEQ ID NO 405
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 405

TGGTCAGAGC CCAGTACAGA AGTT 24

<210> SEQ ID NO 406
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 406

GTGGTCAGAG CCCAGTACAG AAGT 24

<210> SEQ ID NO 407
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 407

TGTGGTCAGA GCCCAGTACA GAAG 24

<210> SEQ ID NO 408
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 408

TTGTGGTCAG AGCCCAGTAC AGAA 24

<210> SEQ ID NO 409
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 409

ATTGTGGTCA GAGCCCAGTA CAGA 24

<210> SEQ ID NO 410
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 410

GATTGTGGTC AGAGCCCAGT ACAG 24

<210> SEQ ID NO 411
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 411

CGATTGTGGT CAGAGCCCAG TACA 24

<210> SEQ ID NO 412
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 412

CCGATTGTGG TCAGAGCCCA GTAC 24

<210> SEQ ID NO 413
<211> LENGTH: 24
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 413

ACCGATTGTG GTCAGAGCCC AGTA 24

<210> SEQ ID NO 414
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 414

AACCGATTGT GGTCAGAGCC CAGT 24

<210> SEQ ID NO 415
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 415

AAACCGATTG TGGTCAGAGC CCAG 24

<210> SEQ ID NO 416
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 416

GTACAGAAGT TGATTGACCT GGAGA 25

<210> SEQ ID NO 417
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 417

AGTACAGAAG TTGATTGACC TGGAG 25

<210> SEQ ID NO 418
<211> LENGTH: 25
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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 418

CAGTACAGAA GTTGATTGAC CTGGA 25

<210> SEQ ID NO 419
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 419

CCAGTACAGA AGTTGATTGA CCTGG 25

<210> SEQ ID NO 420
<211> LENGTH: 25
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 420

CCCAGTACAG AAGTTGATTG ACCTG 25

<210> SEQ ID NO 421
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 421

GCCCAGTACA GAAGTTGATT GACCT 25

<210> SEQ ID NO 422
<211> LENGTH: 25
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 422

AGCCCAGTAC AGAAGTTGAT TGACC 25

<210> SEQ ID NO 423

<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 423

GAGCCCAGTA CAGAAGTTGA TTGAC 25

<210> SEQ ID NO 424
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 424

AGAGCCCAGT ACAGAAGTTG ATTGA 25

<210> SEQ ID NO 425
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 425

CAGAGCCCAG TACAGAAGTT GATTG 25

<210> SEQ ID NO 426
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 426

TCAGAGCCCA GTACAGAAGT TGATT 25

<210> SEQ ID NO 427
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 427

GTCAGAGCCC AGTACAGAAG TTGAT 25

<210> SEQ ID NO 428
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 428

GGTCAGAGCC CAGTACAGAA GTTGA 25

<210> SEQ ID NO 429
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 429

TGGTCAGAGC CCAGTACAGA AGTTG 25

<210> SEQ ID NO 430
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 430

GTGGTCAGAG CCCAGTACAG AAGTT 25

<210> SEQ ID NO 431
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 431

TGTGGTCAGA GCCCAGTACA GAAGT 25

<210> SEQ ID NO 432
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 432

TTGTGGTCAG AGCCCAGTAC AGAAG 25

<210> SEQ ID NO 433
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 433

ATTGTGGTCA GAGCCCAGTA CAGAA 25

<210> SEQ ID NO 434
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 434

GATTGTGGTC AGAGCCCAGT ACAGA 25

<210> SEQ ID NO 435
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 435

CGATTGTGGT CAGAGCCCAG TACAG 25

<210> SEQ ID NO 436
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 436

CCGATTGTGG TCAGAGCCCA GTACA 25

<210> SEQ ID NO 437
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 437

ACCGATTGTG GTCAGAGCCC AGTAC 25

<210> SEQ ID NO 438
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 438

AACCGATTGT GGTCAGAGCC CAGTA 25

<210> SEQ ID NO 439
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 439

AAACCGATTG TGGTCAGAGC CCAGT 25

<210> SEQ ID NO 440
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 440

AAAACCGATT GTGGTCAGAG CCCAG 25

<210> SEQ ID NO 441
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 441

ATATTTTGAA AGAAT 15

<210> SEQ ID NO 442
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 442

TATTTTGAAA GAATT 15

<210> SEQ ID NO 443
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ATTTTGAAAG AATTG 15

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TTTTGAAAGA ATTGG 15

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TTTGAAAGAA TTGGC 15

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TTGAAAGAAT TGGCT 15

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TGAAAGAATT GGCTA 15

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GAAAGAATTG GCTAT 15

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AGAATTGGCT ATAAG 15

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GAATTGGCTA TAAGA 15

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AATTGGCTAT AAGAA 15

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ATTGGCTATA AGAAC 15

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TTGGCTATAA GAACT 15

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CATATTTTGA AAGAAT 16

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TTTGAAAGAA TTGGCT 16

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TTGAAAGAAT TGGCTA 16

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TGAAAGAATT GGCTAT 16

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GAAAGAATTG GCTATA 16

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AAAGAATTGG CTATAA 16

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AGAATTGGCT ATAAGA 16

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GAATTGGCTA TAAGAA 16

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AATTGGCTAT AAGAAC 16

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ATTGGCTATA AGAACT 16

<210> SEQ ID NO 471
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<400> SEQUENCE: 471

TTGGCTATAA GAACTC 16

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<400> SEQUENCE: 472

GCATATTTTG AAAGAAT 17

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CATATTTTGA AAGAATT 17

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ATATTTTGAA AGAATTG 17

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TATTTTGAAA GAATTGG 17

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ATTTTGAAAG AATTGGC                                                      17



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TTTTGAAAGA ATTGGCT                                                      17



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TTTGAAAGAA TTGGCTA                                                      17



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TTGAAAGAAT TGGCTAT                                                      17



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TGAAAGAATT GGCTATA                                                      17



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<223> OTHER INFORMATION: cDNA for use as primers

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GAAAGAATTG GCTATAA 17

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<400> SEQUENCE: 482

AAAGAATTGG CTATAAG 17

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<400> SEQUENCE: 483

AAGAATTGGC TATAAGA 17

<210> SEQ ID NO 484
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<400> SEQUENCE: 484

AGAATTGGCT ATAAGAA 17

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GAATTGGCTA TAAGAAC 17

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ATTGGCTATA AGAACTC                                                    17


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<400> SEQUENCE: 488

TTGGCTATAA GAACTCT                                                    17


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<400> SEQUENCE: 489

AGCATATTTT GAAAGAAT                                                   18


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GCATATTTTG AAAGAATT                                                   18


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<400> SEQUENCE: 491

CATATTTTGA AAGAATTG 18

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<400> SEQUENCE: 492

ATATTTTGAA AGAATTGG 18

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<400> SEQUENCE: 493

TATTTTGAAA GAATTGGC 18

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ATTTTGAAAG AATTGGCT 18

<210> SEQ ID NO 495
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TTTTGAAAGA ATTGGCTA 18

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<400> SEQUENCE: 496

TTTGAAAGAA TTGGCTAT 18

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TTGAAAGAAT TGGCTATA 18

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TGAAAGAATT GGCTATAA 18

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<400> SEQUENCE: 499

GAAAGAATTG GCTATAAG 18

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<400> SEQUENCE: 500

AAAGAATTGG CTATAAGA 18

<210> SEQ ID NO 501
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<400> SEQUENCE: 501

AAGAATTGGC TATAAGAA 18

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<212> TYPE: DNA
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<400> SEQUENCE: 502

AGAATTGGCT ATAAGAAC 18

<210> SEQ ID NO 503
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<400> SEQUENCE: 503

GAATTGGCTA TAAGAACT 18

<210> SEQ ID NO 504
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<400> SEQUENCE: 504

AATTGGCTAT AAGAACTC 18

<210> SEQ ID NO 505
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<212> TYPE: DNA
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<400> SEQUENCE: 505

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ATTGGCTATA AGAACTCT                                                      18



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<212> TYPE: DNA
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<400> SEQUENCE: 506

TTGGCTATAA GAACTCTA                                                      18



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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 507

AAGCATATTT TGAAAGAAT                                                     19



<210> SEQ ID NO 508
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<400> SEQUENCE: 508

AGCATATTTT GAAAGAATT                                                     19



<210> SEQ ID NO 509
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<212> TYPE: DNA
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<400> SEQUENCE: 509

GCATATTTTG AAAGAATTG                                                     19



<210> SEQ ID NO 510
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<223> OTHER INFORMATION: cDNA for use as primers
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<400> SEQUENCE: 510

CATATTTTGA AAGAATTGG 19

<210> SEQ ID NO 511
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 511

ATATTTTGAA AGAATTGGC 19

<210> SEQ ID NO 512
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<212> TYPE: DNA
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<400> SEQUENCE: 512

TATTTTGAAA GAATTGGCT 19

<210> SEQ ID NO 513
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<212> TYPE: DNA
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<400> SEQUENCE: 513

ATTTTGAAAG AATTGGCTA 19

<210> SEQ ID NO 514
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<212> TYPE: DNA
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<400> SEQUENCE: 514

TTTTGAAAGA ATTGGCTAT 19

<210> SEQ ID NO 515
<211> LENGTH: 19
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 515

TTTGAAAGAA TTGGCTATA 19

<210> SEQ ID NO 516
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<212> TYPE: DNA
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<400> SEQUENCE: 516

TTGAAAGAAT TGGCTATAA 19

<210> SEQ ID NO 517
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<400> SEQUENCE: 517

TGAAAGAATT GGCTATAAG 19

<210> SEQ ID NO 518
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GAAAGAATTG GCTATAAGA 19

<210> SEQ ID NO 519
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<212> TYPE: DNA
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<400> SEQUENCE: 519

AAAGAATTGG CTATAAGAA 19

<210> SEQ ID NO 520
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AAGAATTGGC TATAAGAAC 19

<210> SEQ ID NO 521
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<400> SEQUENCE: 521

AGAATTGGCT ATAAGAACT 19

<210> SEQ ID NO 522
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<212> TYPE: DNA
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<400> SEQUENCE: 522

GAATTGGCTA TAAGAACTC 19

<210> SEQ ID NO 523
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 523

AATTGGCTAT AAGAACTCT 19

<210> SEQ ID NO 524
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<212> TYPE: DNA
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<400> SEQUENCE: 524

ATTGGCTATA AGAACTCTA 19

<210> SEQ ID NO 525

<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 525

TTGGCTATAA GAACTCTAG 19

<210> SEQ ID NO 526
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 526

GAAGCATATT TTGAAAGAAT 20

<210> SEQ ID NO 527
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<212> TYPE: DNA
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<400> SEQUENCE: 527

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<210> SEQ ID NO 528
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 528

AGCATATTTT GAAAGAATTG 20

<210> SEQ ID NO 529
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<400> SEQUENCE: 529

GCATATTTTG AAAGAATTGG 20

<210> SEQ ID NO 530
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<400> SEQUENCE: 530

CATATTTTGA AAGAATTGGC 20

<210> SEQ ID NO 531
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ATATTTTGAA AGAATTGGCT 20

<210> SEQ ID NO 532
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<400> SEQUENCE: 532

TATTTTGAAA GAATTGGCTA 20

<210> SEQ ID NO 533
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<400> SEQUENCE: 533

ATTTTGAAAG AATTGGCTAT 20

<210> SEQ ID NO 534
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<212> TYPE: DNA
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<400> SEQUENCE: 534

TTTTGAAAGA ATTGGCTATA 20

<210> SEQ ID NO 535
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<400> SEQUENCE: 535

TTTGAAAGAA TTGGCTATAA 20

<210> SEQ ID NO 536
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<400> SEQUENCE: 536

TTGAAAGAAT TGGCTATAAG 20

<210> SEQ ID NO 537
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<400> SEQUENCE: 537

TGAAAGAATT GGCTATAAGA 20

<210> SEQ ID NO 538
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<400> SEQUENCE: 538

GAAAGAATTG GCTATAAGAA 20

<210> SEQ ID NO 539
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AAGAATTGGC TATAAGAACT 20

<210> SEQ ID NO 541
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<210> SEQ ID NO 543
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TTGGCTATAA GAACTCTAGG 20

<210> SEQ ID NO 546
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<212> TYPE: DNA
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<400> SEQUENCE: 546

TGAAGCATAT TTTGAAAGAA T 21

<210> SEQ ID NO 547
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<212> TYPE: DNA
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<400> SEQUENCE: 547

GAAGCATATT TTGAAAGAAT T 21

<210> SEQ ID NO 548
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<212> TYPE: DNA
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AAGCATATTT TGAAAGAATT G 21

<210> SEQ ID NO 549
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<223> OTHER INFORMATION: cDNA for use as primers

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AGCATATTTT GAAAGAATTG G 21

<210> SEQ ID NO 550
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GCATATTTTG AAAGAATTGG C 21

<210> SEQ ID NO 551
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CATATTTTGA AAGAATTGGC T 21

<210> SEQ ID NO 552
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ATATTTTGAA AGAATTGGCT A 21

<210> SEQ ID NO 553
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<400> SEQUENCE: 553

TATTTTGAAA GAATTGGCTA T 21

<210> SEQ ID NO 554
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TTTTGAAAGA ATTGGCTATA A 21

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TTTGAAAGAA TTGGCTATAA G 21

<210> SEQ ID NO 557
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<212> TYPE: DNA
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TTGAAAGAAT TGGCTATAAG A 21

<210> SEQ ID NO 558
<211> LENGTH: 21
<212> TYPE: DNA
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TGAAAGAATT GGCTATAAGA A 21

<210> SEQ ID NO 559

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<400> SEQUENCE: 559


GAAAGAATTG GCTATAAGAA C                                        21



<210> SEQ ID NO 560
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<400> SEQUENCE: 560


AAAGAATTGG CTATAAGAAC T                                        21



<210> SEQ ID NO 561
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AAGAATTGGC TATAAGAACT C                                        21



<210> SEQ ID NO 562
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<400> SEQUENCE: 562


AGAATTGGCT ATAAGAACTC T                                        21



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<400> SEQUENCE: 563


GAATTGGCTA TAAGAACTCT A                                        21
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<400> SEQUENCE: 564

AATTGGCTAT AAGAACTCTA G 21

<210> SEQ ID NO 565
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<400> SEQUENCE: 565

ATTGGCTATA AGAACTCTAG G 21

<210> SEQ ID NO 566
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<212> TYPE: DNA
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<400> SEQUENCE: 566

TTGGCTATAA GAACTCTAGG A 21

<210> SEQ ID NO 567
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 567

TTGAAGCATA TTTTGAAAGA AT 22

<210> SEQ ID NO 568
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 568

TGAAGCATAT TTTGAAAGAA TT 22

<210> SEQ ID NO 569
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 569

GAAGCATATT TTGAAAGAAT TG 22

<210> SEQ ID NO 570
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 570

AAGCATATTT TGAAAGAATT GG 22

<210> SEQ ID NO 571
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 571

AGCATATTTT GAAAGAATTG GC 22

<210> SEQ ID NO 572
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 572

GCATATTTTG AAAGAATTGG CT 22

<210> SEQ ID NO 573
<211> LENGTH: 22
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 573

CATATTTTGA AAGAATTGGC TA 22

<210> SEQ ID NO 574
<211> LENGTH: 22
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 574

ATATTTTGAA AGAATTGGCT AT 22

<210> SEQ ID NO 575
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<212> TYPE: DNA
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<400> SEQUENCE: 575

TATTTTGAAA GAATTGGCTA TA 22

<210> SEQ ID NO 576
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<212> TYPE: DNA
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<400> SEQUENCE: 576

ATTTTGAAAG AATTGGCTAT AA 22

<210> SEQ ID NO 577
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 577

TTTTGAAAGA ATTGGCTATA AG 22

<210> SEQ ID NO 578
<211> LENGTH: 22
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 578

TTTGAAAGAA TTGGCTATAA GA 22

<210> SEQ ID NO 579
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 579

TTGAAAGAAT TGGCTATAAG AA 22

<210> SEQ ID NO 580
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<212> TYPE: DNA
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<400> SEQUENCE: 580

TGAAAGAATT GGCTATAAGA AC 22

<210> SEQ ID NO 581
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 581

GAAAGAATTG GCTATAAGAA CT 22

<210> SEQ ID NO 582
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 582

AAAGAATTGG CTATAAGAAC TC 22

<210> SEQ ID NO 583
<211> LENGTH: 22
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 583

AAGAATTGGC TATAAGAACT CT 22

<210> SEQ ID NO 584
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 584

AGAATTGGCT ATAAGAACTC TA 22

<210> SEQ ID NO 585
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 585

GAATTGGCTA TAAGAACTCT AG 22

<210> SEQ ID NO 586
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<212> TYPE: DNA
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<400> SEQUENCE: 586

AATTGGCTAT AAGAACTCTA GG 22

<210> SEQ ID NO 587
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 587

ATTGGCTATA AGAACTCTAG GA 22

<210> SEQ ID NO 588
<211> LENGTH: 22
<212> TYPE: DNA

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<400> SEQUENCE: 588

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<210> SEQ ID NO 589
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 589

ATTGAAGCAT ATTTTGAAAG AAT                                  23


<210> SEQ ID NO 590
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 590

TTGAAGCATA TTTTGAAAGA ATT                                  23


<210> SEQ ID NO 591
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 591

TGAAGCATAT TTTGAAAGAA TTG                                  23


<210> SEQ ID NO 592
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 592

GAAGCATATT TTGAAAGAAT TGG                                  23


<210> SEQ ID NO 593
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<211> LENGTH: 23
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<220> FEATURES:
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<400> SEQUENCE: 593

AAGCATATTT TGAAAGAATT GGC 23

<210> SEQ ID NO 594
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 594

AGCATATTTT GAAAGAATTG GCT 23

<210> SEQ ID NO 595
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 595

GCATATTTTG AAAGAATTGG CTA 23

<210> SEQ ID NO 596
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 596

CATATTTTGA AAGAATTGGC TAT 23

<210> SEQ ID NO 597
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 597

ATATTTTGAA AGAATTGGCT ATA 23

<210> SEQ ID NO 598
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<212> TYPE: DNA
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<400> SEQUENCE: 598

TATTTTGAAA GAATTGGCTA TAA 23

<210> SEQ ID NO 599
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<212> TYPE: DNA
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<400> SEQUENCE: 599

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<210> SEQ ID NO 600
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 600

TTTTGAAAGA ATTGGCTATA AGA 23

<210> SEQ ID NO 601
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 601

TTTGAAAGAA TTGGCTATAA GAA 23

<210> SEQ ID NO 602
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 602

TTGAAAGAAT TGGCTATAAG AAC 23

<210> SEQ ID NO 603
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 603

TGAAAGAATT GGCTATAAGA ACT 23

<210> SEQ ID NO 604
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 604

GAAAGAATTG GCTATAAGAA CTC 23

<210> SEQ ID NO 605
<211> LENGTH: 23
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 605

AAAGAATTGG CTATAAGAAC TCT 23

<210> SEQ ID NO 606
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 606

AAGAATTGGC TATAAGAACT CTA 23

<210> SEQ ID NO 607
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 607

AGAATTGGCT ATAAGAACTC TAG 23

<210> SEQ ID NO 608
<211> LENGTH: 23
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<220> FEATURES:
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<400> SEQUENCE: 608

GAATTGGCTA TAAGAACTCT AGG 23

<210> SEQ ID NO 609
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<400> SEQUENCE: 609

AATTGGCTAT AAGAACTCTA GGA 23

<210> SEQ ID NO 610
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 610

ATTGGCTATA AGAACTCTAG GAA 23

<210> SEQ ID NO 611
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 611

TTGGCTATAA GAACTCTAGG AAC 23

<210> SEQ ID NO 612
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 612

CATTGAAGCA TATTTTGAAA GAAT 24

<210> SEQ ID NO 613
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 613

ATTGAAGCAT ATTTTGAAAG AATT 24

<210> SEQ ID NO 614
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 614

TTGAAGCATA TTTTGAAAGA ATTG 24

<210> SEQ ID NO 615
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 615

TGAAGCATAT TTTGAAAGAA TTGG 24

<210> SEQ ID NO 616
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 616

GAAGCATATT TTGAAAGAAT TGGC 24

<210> SEQ ID NO 617
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 617

AAGCATATTT TGAAAGAATT GGCT 24

<210> SEQ ID NO 618
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 618

AGCATATTTT GAAAGAATTG GCTA 24

<210> SEQ ID NO 619
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 619

GCATATTTTG AAAGAATTGG CTAT 24

<210> SEQ ID NO 620
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 620

CATATTTTGA AAGAATTGGC TATA 24

<210> SEQ ID NO 621
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 621

ATATTTTGAA AGAATTGGCT ATAA 24

<210> SEQ ID NO 622
<211> LENGTH: 24
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 622

TATTTTGAAA GAATTGGCTA TAAG 24

<210> SEQ ID NO 623
<211> LENGTH: 24
<212> TYPE: DNA
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ATTTTGAAAG AATTGGCTAT AAGA 24

<210> SEQ ID NO 624
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 624

TTTTGAAAGA ATTGGCTATA AGAA 24

<210> SEQ ID NO 625
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 625

TTTGAAAGAA TTGGCTATAA GAAC 24

<210> SEQ ID NO 626
<211> LENGTH: 24
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<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 626

TTGAAAGAAT TGGCTATAAG AACT 24

<210> SEQ ID NO 627

<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 627

TGAAAGAATT GGCTATAAGA ACTC 24

<210> SEQ ID NO 628
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 628

GAAAGAATTG GCTATAAGAA CTCT 24

<210> SEQ ID NO 629
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 629

AAAGAATTGG CTATAAGAAC TCTA 24

<210> SEQ ID NO 630
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 630

AAGAATTGGC TATAAGAACT CTAG 24

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<400> SEQUENCE: 631

AGAATTGGCT ATAAGAACTC TAGG 24

<210> SEQ ID NO 632
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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GAATTGGCTA TAAGAACTCT AGGA 24

<210> SEQ ID NO 633
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<212> TYPE: DNA
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AATTGGCTAT AAGAACTCTA GGAA 24

<210> SEQ ID NO 634
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 634

ATTGGCTATA AGAACTCTAG GAAC 24

<210> SEQ ID NO 635
<211> LENGTH: 24
<212> TYPE: DNA
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TTGGCTATAA GAACTCTAGG AACA 24

<210> SEQ ID NO 636
<211> LENGTH: 25
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<400> SEQUENCE: 636

ACATTGAAGC ATATTTTGAA AGAAT 25

<210> SEQ ID NO 637
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CATTGAAGCA TATTTTGAAA GAATT 25

<210> SEQ ID NO 638
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 638

ATTGAAGCAT ATTTTGAAAG AATTG 25

<210> SEQ ID NO 639
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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TTGAAGCATA TTTTGAAAGA ATTGG 25

<210> SEQ ID NO 640
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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TGAAGCATAT TTTGAAAGAA TTGGC 25

<210> SEQ ID NO 641
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<212> TYPE: DNA
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GAAGCATATT TTGAAAGAAT TGGCT 25

<210> SEQ ID NO 642
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AAGCATATTT TGAAAGAATT GGCTA 25

<210> SEQ ID NO 643
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AGCATATTTT GAAAGAATTG GCTAT 25

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GCATATTTTG AAAGAATTGG CTATA 25

<210> SEQ ID NO 645
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CATATTTTGA AAGAATTGGC TATAA 25

<210> SEQ ID NO 646
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ATATTTTGAA AGAATTGGCT ATAAG 25

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TATTTTGAAA GAATTGGCTA TAAGA 25

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ATTTTGAAAG AATTGGCTAT AAGAA 25

<210> SEQ ID NO 649
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TTTTGAAAGA ATTGGCTATA AGAAC 25

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TTTGAAAGAA TTGGCTATAA GAACT 25

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<400> SEQUENCE: 651

TTGAAAGAAT TGGCTATAAG AACTC 25

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TGAAAGAATT GGCTATAAGA ACTCT 25

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GAAAGAATTG GCTATAAGAA CTCTA 25

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<400> SEQUENCE: 654

AAAGAATTGG CTATAAGAAC TCTAG 25

<210> SEQ ID NO 655
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AAGAATTGGC TATAAGAACT CTAGG 25

<210> SEQ ID NO 656
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<400> SEQUENCE: 656

AGAATTGGCT ATAAGAACTC TAGGA 25

<210> SEQ ID NO 657
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<400> SEQUENCE: 657

GAATTGGCTA TAAGAACTCT AGGAA 25

<210> SEQ ID NO 658
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AATTGGCTAT AAGAACTCTA GGAAC 25

<210> SEQ ID NO 659
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<400> SEQUENCE: 659

ATTGGCTATA AGAACTCTAG GAACA 25

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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 660

TTGGCTATAA GAACTCTAGG AACAA 25

<210> SEQ ID NO 661

<211> LENGTH: 15
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<220> FEATURES:
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<400> SEQUENCE: 661

ATTCTTTCAA AATAT 15

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AATTCTTTCA AAATA 15

<210> SEQ ID NO 663
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<212> TYPE: DNA
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<400> SEQUENCE: 663

CAATTCTTTC AAAAT 15

<210> SEQ ID NO 664
<211> LENGTH: 15
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 664

CCAATTCTTT CAAAA 15

<210> SEQ ID NO 665
<211> LENGTH: 15
<212> TYPE: DNA
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<400> SEQUENCE: 665

GCCAATTCTT TCAAA 15

<210> SEQ ID NO 666
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<400> SEQUENCE: 666

AGCCAATTCT TTCAA 15

<210> SEQ ID NO 667
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TAGCCAATTC TTTCA 15

<210> SEQ ID NO 668
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<400> SEQUENCE: 668

ATAGCCAATT CTTTC 15

<210> SEQ ID NO 669
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TATAGCCAAT TCTTT 15

<210> SEQ ID NO 670
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<400> SEQUENCE: 670

TTATAGCCAA TTCTT 15

<210> SEQ ID NO 671
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CTTATAGCCA ATTCT 15

<210> SEQ ID NO 672
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TCTTATAGCC AATTC 15

<210> SEQ ID NO 673
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<212> TYPE: DNA
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<400> SEQUENCE: 673

TTCTTATAGC CAATT 15

<210> SEQ ID NO 674
<211> LENGTH: 15
<212> TYPE: DNA
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<400> SEQUENCE: 674

GTTCTTATAG CCAAT 15

<210> SEQ ID NO 675
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<400> SEQUENCE: 675

AGTTCTTATA GCCAA 15

<210> SEQ ID NO 676
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<400> SEQUENCE: 676

ATTCTTTCAA AATATG 16

<210> SEQ ID NO 677
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 677

AATTCTTTCA AAATAT 16

<210> SEQ ID NO 678
<211> LENGTH: 16
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<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 678

CAATTCTTTC AAAATA 16

<210> SEQ ID NO 679
<211> LENGTH: 16
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<400> SEQUENCE: 679

CCAATTCTTT CAAAAT 16

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<400> SEQUENCE: 680

GCCAATTCTT TCAAAA 16

<210> SEQ ID NO 681
<211> LENGTH: 16
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<400> SEQUENCE: 681

AGCCAATTCT TTCAAA 16

<210> SEQ ID NO 682
<211> LENGTH: 16
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<400> SEQUENCE: 682

TAGCCAATTC TTTCAA 16

<210> SEQ ID NO 683
<211> LENGTH: 16
<212> TYPE: DNA
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<400> SEQUENCE: 683

ATAGCCAATT CTTTCA 16

<210> SEQ ID NO 684
<211> LENGTH: 16
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<400> SEQUENCE: 684

TATAGCCAAT TCTTTC 16

<210> SEQ ID NO 685
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 685

TTATAGCCAA TTCTTT 16

<210> SEQ ID NO 686
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<220> FEATURES:
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<400> SEQUENCE: 686

CTTATAGCCA ATTCTT 16

<210> SEQ ID NO 687
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 687

TCTTATAGCC AATTCT 16

<210> SEQ ID NO 688
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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TTCTTATAGC CAATTC 16

<210> SEQ ID NO 689
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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GTTCTTATAG CCAATT 16

<210> SEQ ID NO 690
<211> LENGTH: 16
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<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 690

AGTTCTTATA GCCAAT 16

<210> SEQ ID NO 691
<211> LENGTH: 16
<212> TYPE: DNA
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<400> SEQUENCE: 691

GAGTTCTTAT AGCCAA 16

<210> SEQ ID NO 692
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 692

ATTCTTTCAA AATATGC 17

<210> SEQ ID NO 693
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 693

AATTCTTTCA AAATATG 17

<210> SEQ ID NO 694
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 694

CAATTCTTTC AAAATAT 17

<210> SEQ ID NO 695

<211> LENGTH: 17
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 695

CCAATTCTTT CAAAATA 17

<210> SEQ ID NO 696
<211> LENGTH: 17
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 696

GCCAATTCTT TCAAAAT 17

<210> SEQ ID NO 697
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 697

AGCCAATTCT TTCAAAA 17

<210> SEQ ID NO 698
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 698

TAGCCAATTC TTTCAAA 17

<210> SEQ ID NO 699
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 699

ATAGCCAATT CTTTCAA 17

<210> SEQ ID NO 700
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 700

TATAGCCAAT TCTTTCA 17

<210> SEQ ID NO 701
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 701

TTATAGCCAA TTCTTTC 17

<210> SEQ ID NO 702
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 702

CTTATAGCCA ATTCTTT 17

<210> SEQ ID NO 703
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 703

TCTTATAGCC AATTCTT 17

<210> SEQ ID NO 704
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 704

TTCTTATAGC CAATTCT 17

<210> SEQ ID NO 705
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 705

GTTCTTATAG CCAATTC 17

<210> SEQ ID NO 706
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 706

AGTTCTTATA GCCAATT 17

<210> SEQ ID NO 707
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 707

GAGTTCTTAT AGCCAAT 17

<210> SEQ ID NO 708
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 708

AGAGTTCTTA TAGCCAA 17

<210> SEQ ID NO 709
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 709

ATTCTTTCAA AATATGCT 18

<210> SEQ ID NO 710
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 710

AATTCTTTCA AAATATGC 18

<210> SEQ ID NO 711
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 711

CAATTCTTTC AAAATATG 18

<210> SEQ ID NO 712
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 712

CCAATTCTTT CAAAATAT 18

<210> SEQ ID NO 713
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 713

GCCAATTCTT TCAAAATA 18

<210> SEQ ID NO 714
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 714

AGCCAATTCT TTCAAAAT 18

<210> SEQ ID NO 715
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 715

TAGCCAATTC TTTCAAAA 18

<210> SEQ ID NO 716
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 716

ATAGCCAATT CTTTCAAA 18

<210> SEQ ID NO 717
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 717

TATAGCCAAT TCTTTCAA 18

<210> SEQ ID NO 718
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 718

TTATAGCCAA TTCTTTCA 18

<210> SEQ ID NO 719
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 719

CTTATAGCCA ATTCTTTC 18

<210> SEQ ID NO 720
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 720

TCTTATAGCC AATTCTTT 18

<210> SEQ ID NO 721
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 721

TTCTTATAGC CAATTCTT 18

<210> SEQ ID NO 722
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 722

GTTCTTATAG CCAATTCT 18

<210> SEQ ID NO 723
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 723

AGTTCTTATA GCCAATTC 18

<210> SEQ ID NO 724
<211> LENGTH: 18
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 724

GAGTTCTTAT AGCCAATT 18

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AGAGTTCTTA TAGCCAAT 18

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TAGAGTTCTT ATAGCCAA 18

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ATTCTTTCAA AATATGCTT 19

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AATTCTTTCA AAATATGCT 19

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CAATTCTTTC AAAATATGC 19

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GCCAATTCTT TCAAAATAT 19

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TATAGCCAAT TCTTTCAAA 19

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TTATAGCCAA TTCTTTCAA 19

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CTTATAGCCA ATTCTTTCA 19

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TCTTATAGCC AATTCTTTC 19

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GTTCTTATAG CCAATTCTT 19

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GAGTTCTTAT AGCCAATTC 19

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ATTCTTTCAA AATATGCTTC 20

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<400> SEQUENCE: 747

AATTCTTTCA AAATATGCTT 20

<210> SEQ ID NO 748
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CAATTCTTTC AAAATATGCT                                                 20



<210> SEQ ID NO 749
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CCAATTCTTT CAAAATATGC                                                 20



<210> SEQ ID NO 750
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GCCAATTCTT TCAAAATATG                                                 20



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AGCCAATTCT TTCAAAATAT                                                 20



<210> SEQ ID NO 752
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TAGCCAATTC TTTCAAAATA                                                 20



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<223> OTHER INFORMATION: cDNA for use as primers

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TCTTATAGCC AATTCTTTCA 20

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<400> SEQUENCE: 758

TTCTTATAGC CAATTCTTTC 20

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<400> SEQUENCE: 759

GTTCTTATAG CCAATTCTTT 20

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AGTTCTTATA GCCAATTCTT 20

<210> SEQ ID NO 761
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GAGTTCTTAT AGCCAATTCT 20

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AGAGTTCTTA TAGCCAATTC 20

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<400> SEQUENCE: 763

TAGAGTTCTT ATAGCCAATT 20

<210> SEQ ID NO 764
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<400> SEQUENCE: 764

CTAGAGTTCT TATAGCCAAT 20

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<400> SEQUENCE: 765

CCTAGAGTTC TTATAGCCAA 20

<210> SEQ ID NO 766
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<400> SEQUENCE: 766

ATTCTTTCAA AATATGCTTC A 21

<210> SEQ ID NO 767
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<400> SEQUENCE: 767

AATTCTTTCA AAATATGCTT C 21

<210> SEQ ID NO 768
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<212> TYPE: DNA
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<400> SEQUENCE: 768

CAATTCTTTC AAAATATGCT T 21

<210> SEQ ID NO 769
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<400> SEQUENCE: 769

CCAATTCTTT CAAAATATGC T 21

<210> SEQ ID NO 770
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<400> SEQUENCE: 770

GCCAATTCTT TCAAAATATG C 21

<210> SEQ ID NO 771
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AGCCAATTCT TTCAAAATAT G 21

<210> SEQ ID NO 772
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<400> SEQUENCE: 772

TAGCCAATTC TTTCAAAATA T 21

<210> SEQ ID NO 773
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<400> SEQUENCE: 773

ATAGCCAATT CTTTCAAAAT A 21

<210> SEQ ID NO 774
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TATAGCCAAT TCTTTCAAAA T 21

<210> SEQ ID NO 775
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TTATAGCCAA TTCTTTCAAA A 21

<210> SEQ ID NO 776
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<400> SEQUENCE: 776

CTTATAGCCA ATTCTTTCAA A 21

<210> SEQ ID NO 777
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TCTTATAGCC AATTCTTTCA A 21

<210> SEQ ID NO 778
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TTCTTATAGC CAATTCTTTC A 21

<210> SEQ ID NO 779
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GTTCTTATAG CCAATTCTTT C 21

<210> SEQ ID NO 780
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<400> SEQUENCE: 780

AGTTCTTATA GCCAATTCTT T 21

<210> SEQ ID NO 781
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<400> SEQUENCE: 781

GAGTTCTTAT AGCCAATTCT T 21

<210> SEQ ID NO 782
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 782

AGAGTTCTTA TAGCCAATTC T 21

<210> SEQ ID NO 783
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 783

TAGAGTTCTT ATAGCCAATT C 21

<210> SEQ ID NO 784
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<223> OTHER INFORMATION: cDNA for use as primers

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CTAGAGTTCT TATAGCCAAT T 21

<210> SEQ ID NO 785
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 785

CCTAGAGTTC TTATAGCCAA T 21

<210> SEQ ID NO 786
<211> LENGTH: 21
<212> TYPE: DNA
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<400> SEQUENCE: 786

TCCTAGAGTT CTTATAGCCA A 21

<210> SEQ ID NO 787
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 787

ATTCTTTCAA AATATGCTTC AA 22

<210> SEQ ID NO 788
<211> LENGTH: 22
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<400> SEQUENCE: 788

AATTCTTTCA AAATATGCTT CA 22

<210> SEQ ID NO 789
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<212> TYPE: DNA
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<400> SEQUENCE: 789

CAATTCTTTC AAAATATGCT TC 22

<210> SEQ ID NO 790
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 790

CCAATTCTTT CAAAATATGC TT 22

<210> SEQ ID NO 791
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<212> TYPE: DNA
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GCCAATTCTT TCAAAATATG CT 22

<210> SEQ ID NO 792
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AGCCAATTCT TTCAAAATAT GC 22

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<212> TYPE: DNA
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TAGCCAATTC TTTCAAAATA TG 22

<210> SEQ ID NO 794
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<212> TYPE: DNA
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<400> SEQUENCE: 794

ATAGCCAATT CTTTCAAAAT AT 22

<210> SEQ ID NO 795
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<212> TYPE: DNA
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<400> SEQUENCE: 795

TATAGCCAAT TCTTTCAAAA TA 22

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<212> TYPE: DNA
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TTATAGCCAA TTCTTTCAAA AT 22

<210> SEQ ID NO 797

<211> LENGTH: 22
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CTTATAGCCA ATTCTTTCAA AA 22

<210> SEQ ID NO 798
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TCTTATAGCC AATTCTTTCA AA 22

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<212> TYPE: DNA
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<400> SEQUENCE: 799

TTCTTATAGC CAATTCTTTC AA 22

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GTTCTTATAG CCAATTCTTT CA 22

<210> SEQ ID NO 801
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AGTTCTTATA GCCAATTCTT TC 22

<210> SEQ ID NO 802
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<212> TYPE: DNA
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<400> SEQUENCE: 802

GAGTTCTTAT AGCCAATTCT TT 22

<210> SEQ ID NO 803
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<212> TYPE: DNA
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<400> SEQUENCE: 803

AGAGTTCTTA TAGCCAATTC TT 22

<210> SEQ ID NO 804
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 804

TAGAGTTCTT ATAGCCAATT CT 22

<210> SEQ ID NO 805
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 805

CTAGAGTTCT TATAGCCAAT TC 22

<210> SEQ ID NO 806
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 806

CCTAGAGTTC TTATAGCCAA TT 22

<210> SEQ ID NO 807
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<212> TYPE: DNA
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<400> SEQUENCE: 807

TCCTAGAGTT CTTATAGCCA AT 22

<210> SEQ ID NO 808
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<212> TYPE: DNA
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TTCCTAGAGT TCTTATAGCC AA 22

<210> SEQ ID NO 809
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ATTCTTTCAA AATATGCTTC AAT 23

<210> SEQ ID NO 810
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AATTCTTTCA AAATATGCTT CAA 23

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CAATTCTTTC AAAATATGCT TCA 23

<210> SEQ ID NO 812
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CCAATTCTTT CAAAATATGC TTC 23

<210> SEQ ID NO 813
<211> LENGTH: 23
<212> TYPE: DNA
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GCCAATTCTT TCAAAATATG CTT 23

<210> SEQ ID NO 814
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<212> TYPE: DNA
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AGCCAATTCT TTCAAAATAT GCT 23

<210> SEQ ID NO 815
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<212> TYPE: DNA
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<400> SEQUENCE: 815

TAGCCAATTC TTTCAAAATA TGC 23

<210> SEQ ID NO 816
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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ATAGCCAATT CTTTCAAAAT ATG 23

<210> SEQ ID NO 817
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 817

TATAGCCAAT TCTTTCAAAA TAT 23

<210> SEQ ID NO 818
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TTATAGCCAA TTCTTTCAAA ATA 23

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CTTATAGCCA ATTCTTTCAA AAT 23

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TCTTATAGCC AATTCTTTCA AAA 23

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TTCTTATAGC CAATTCTTTC AAA 23

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GTTCTTATAG CCAATTCTTT CAA 23

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GAGTTCTTAT AGCCAATTCT TTC 23

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TAGAGTTCTT ATAGCCAATT CTT 23

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CTAGAGTTCT TATAGCCAAT TCT 23

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CCTAGAGTTC TTATAGCCAA TTC 23

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TCCTAGAGTT CTTATAGCCA ATT 23

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TTCCTAGAGT TCTTATAGCC AAT 23

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GTTCCTAGAG TTCTTATAGC CAA 23

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ATTCTTTCAA AATATGCTTC AATG 24

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AATTCTTTCA AAATATGCTT CAAT 24

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CAATTCTTTC AAAATATGCT TCAA 24

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AGCCAATTCT TTCAAAATAT GCTT 24

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TAGCCAATTC TTTCAAAATA TGCT 24

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ATAGCCAATT CTTTCAAAAT ATGC 24

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TATAGCCAAT TCTTTCAAAA TATG 24

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TTATAGCCAA TTCTTTCAAA ATAT 24

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CTTATAGCCA ATTCTTTCAA AATA 24

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TCTTATAGCC AATTCTTTCA AAAT 24

<210> SEQ ID NO 844
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TTCTTATAGC CAATTCTTTC AAAA 24

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GTTCTTATAG CCAATTCTTT CAAA 24

<210> SEQ ID NO 846
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<400> SEQUENCE: 846

AGTTCTTATA GCCAATTCTT TCAA 24

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GAGTTCTTAT AGCCAATTCT TTCA 24

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<400> SEQUENCE: 848

AGAGTTCTTA TAGCCAATTC TTTC 24

<210> SEQ ID NO 849
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TAGAGTTCTT ATAGCCAATT CTTT 24

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CTAGAGTTCT TATAGCCAAT TCTT 24

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CCTAGAGTTC TTATAGCCAA TTCT 24

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TCCTAGAGTT CTTATAGCCA ATTC 24

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TTCCTAGAGT TCTTATAGCC AATT 24

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GTTCCTAGAG TTCTTATAGC CAAT 24

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<223> OTHER INFORMATION: cDNA for use as primers

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TGTTCCTAGA GTTCTTATAG CCAA 24

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<400> SEQUENCE: 856

ATTCTTTCAA AATATGCTTC AATGT 25

<210> SEQ ID NO 857
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<400> SEQUENCE: 857

AATTCTTTCA AAATATGCTT CAATG 25

<210> SEQ ID NO 858
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<400> SEQUENCE: 858

CAATTCTTTC AAAATATGCT TCAAT 25

<210> SEQ ID NO 859
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<400> SEQUENCE: 859

CCAATTCTTT CAAAATATGC TTCAA 25

<210> SEQ ID NO 860
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<400> SEQUENCE: 860

GCCAATTCTT TCAAAATATG CTTCA 25

<210> SEQ ID NO 861
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<400> SEQUENCE: 861

AGCCAATTCT TTCAAAATAT GCTTC 25

<210> SEQ ID NO 862
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<400> SEQUENCE: 862

TAGCCAATTC TTTCAAAATA TGCTT 25

<210> SEQ ID NO 863
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<400> SEQUENCE: 863

ATAGCCAATT CTTTCAAAAT ATGCT 25

<210> SEQ ID NO 864
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TATAGCCAAT TCTTTCAAAA TATGC 25

<210> SEQ ID NO 865

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<400> SEQUENCE: 865

TTATAGCCAA TTCTTTCAAA ATATG 25

<210> SEQ ID NO 866
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<400> SEQUENCE: 866

CTTATAGCCA ATTCTTTCAA AATAT 25

<210> SEQ ID NO 867
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<212> TYPE: DNA
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<400> SEQUENCE: 867

TCTTATAGCC AATTCTTTCA AAATA 25

<210> SEQ ID NO 868
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<400> SEQUENCE: 868

TTCTTATAGC CAATTCTTTC AAAAT 25

<210> SEQ ID NO 869
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<400> SEQUENCE: 869

GTTCTTATAG CCAATTCTTT CAAAA 25

<210> SEQ ID NO 870
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 870

AGTTCTTATA GCCAATTCTT TCAAA 25

<210> SEQ ID NO 871
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GAGTTCTTAT AGCCAATTCT TTCAA 25

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AGAGTTCTTA TAGCCAATTC TTTCA 25

<210> SEQ ID NO 873
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 873

TAGAGTTCTT ATAGCCAATT CTTTC 25

<210> SEQ ID NO 874
<211> LENGTH: 25
<212> TYPE: DNA
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<400> SEQUENCE: 874

CTAGAGTTCT TATAGCCAAT TCTTT 25

<210> SEQ ID NO 875
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<400> SEQUENCE: 875

CCTAGAGTTC TTATAGCCAA TTCTT 25

<210> SEQ ID NO 876
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TCCTAGAGTT CTTATAGCCA ATTCT 25

<210> SEQ ID NO 877
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<212> TYPE: DNA
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<400> SEQUENCE: 877

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<210> SEQ ID NO 878
<211> LENGTH: 25
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 878

GTTCCTAGAG TTCTTATAGC CAATT 25

<210> SEQ ID NO 879
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 879

TGTTCCTAGA GTTCTTATAG CCAAT 25

<210> SEQ ID NO 880
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 880

TTGTTCCTAG AGTTCTTATA GCCAA 25

<210> SEQ ID NO 881
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 881

CCGGGGTGGG TGGTG 15

<210> SEQ ID NO 882
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 882

CGGGGTGGGT GGTGT 15

<210> SEQ ID NO 883
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 883

GGGGTGGGTG GTGTC 15

<210> SEQ ID NO 884
<211> LENGTH: 15
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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<211> LENGTH: 15
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 885

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<211> LENGTH: 15
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 886

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<212> TYPE: DNA
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 889

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<212> TYPE: DNA
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GTGGTGTCTC CAGGT 15

<210> SEQ ID NO 891
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<400> SEQUENCE: 891

TGGTGTCTCC AGGTC 15

<210> SEQ ID NO 892
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<210> SEQ ID NO 893
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<400> SEQUENCE: 893

GTGTCTCCAG GTCAA 15

<210> SEQ ID NO 894
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<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 894

TGTCTCCAGG TCAAT 15

<210> SEQ ID NO 895
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 895

GTCTCCAGGT CAATC 15

<210> SEQ ID NO 896
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<220> FEATURES:
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<400> SEQUENCE: 896

ACCGGGGTGG GTGGTG 16

<210> SEQ ID NO 897
<211> LENGTH: 16
<212> TYPE: DNA
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<400> SEQUENCE: 897

CCGGGGTGGG TGGTGT 16

<210> SEQ ID NO 898
<211> LENGTH: 16
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 898

CGGGGTGGGT GGTGTC 16

<210> SEQ ID NO 899

<211> LENGTH: 16
<212> TYPE: DNA
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<400> SEQUENCE: 899

GGGGTGGGTG GTGTCT 16

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<400> SEQUENCE: 900

GGGTGGGTGG TGTCTC 16

<210> SEQ ID NO 901
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GGTGGGTGGT GTCTCC 16

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<400> SEQUENCE: 902

GTGGGTGGTG TCTCCA 16

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<400> SEQUENCE: 904

GGGTGGTGTC TCCAGG 16

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<400> SEQUENCE: 905

GGTGGTGTCT CCAGGT 16

<210> SEQ ID NO 906
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 906

GTGGTGTCTC CAGGTC 16

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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 907

TGGTGTCTCC AGGTCA 16

<210> SEQ ID NO 908
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<400> SEQUENCE: 908

GGTGTCTCCA GGTCAA 16

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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 909

GTGTCTCCAG GTCAAT                                              16


<210> SEQ ID NO 910
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<211> LENGTH: 19
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TGGGTGGTGT CTCCAGGTCA 20

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GGGTGGTGTC TCCAGGTCAA 20

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GGTGGTGTCT CCAGGTCAAT 20

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GTGGTGTCTC CAGGTCAATC 20

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TGGTGTCTCC AGGTCAATCA 20

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GTGTCTCCAG GTCAATCAAC 20

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TGTCTCCAGG TCAATCAACT 20

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CGGGGTGGGT GGTGTCTCCA G 21

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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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GGTGTCTCCA GGTCAATCAA C 21

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GTGTCTCCAG GTCAATCAAC T 21

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TGTCTCCAGG TCAATCAACT T 21

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GTCTCCAGGT CAATCAACTT C 21

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GAAGAAACCG GGGTGGGTGG TG 22

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AAGAAACCGG GGTGGGTGGT GT 22

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AGAAACCGGG GTGGGTGGTG TC 22

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GAAACCGGGG TGGGTGGTGT CT 22

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AAACCGGGGT GGGTGGTGTC TC 22

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ACCGGGGTGG GTGGTGTCTC CA 22

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CCGGGGTGGG TGGTGTCTCC AG 22

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GGGTGGGTGG TGTCTCCAGG TC 22

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GGTGGGTGGT GTCTCCAGGT CA 22

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GTGGGTGGTG TCTCCAGGTC AA 22

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GGTGGTGTCT CCAGGTCAAT CA 22

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GGTGTCTCCA GGTCAATCAA CT 22

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AGAAGAAACC GGGGTGGGTG GTG 23

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GAAGAAACCG GGGTGGGTGG TGT 23

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ACCGGGGTGG GTGGTGTCTC CAG 23

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CCGGGGTGGG TGGTGTCTCC AGG 23

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<400> SEQUENCE: 1038

CGGGGTGGGT GGTGTCTCCA GGT 23

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GGGGTGGGTG GTGTCTCCAG GTC 23

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GGTGGGTGGT GTCTCCAGGT CAA                                        23


<210> SEQ ID NO 1042
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<400> SEQUENCE: 1042

GTGGGTGGTG TCTCCAGGTC AAT                                        23


<210> SEQ ID NO 1043
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<400> SEQUENCE: 1043

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<210> SEQ ID NO 1044
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GGGTGGTGTC TCCAGGTCAA TCA                                        23
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GGTGGTGTCT CCAGGTCAAT CAA                                             23



<210> SEQ ID NO 1046
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<400> SEQUENCE: 1046


GTGGTGTCTC CAGGTCAATC AAC                                             23



<210> SEQ ID NO 1047
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<400> SEQUENCE: 1047


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<210> SEQ ID NO 1048
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1048


GGTGTCTCCA GGTCAATCAA CTT                                             23



<210> SEQ ID NO 1049
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<400> SEQUENCE: 1049
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GTGTCTCCAG GTCAATCAAC TTC 23

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<400> SEQUENCE: 1050

TGTCTCCAGG TCAATCAACT TCT 23

<210> SEQ ID NO 1051
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<400> SEQUENCE: 1051

GTCTCCAGGT CAATCAACTT CTG 23

<210> SEQ ID NO 1052
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<212> TYPE: DNA
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<400> SEQUENCE: 1052

AAGAAGAAAC CGGGGTGGGT GGTG 24

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<400> SEQUENCE: 1053

AGAAGAAACC GGGGTGGGTG GTGT 24

<210> SEQ ID NO 1054
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GAAGAAACCG GGGTGGGTGG TGTC                                              24



<210> SEQ ID NO 1055
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<400> SEQUENCE: 1055

AAGAAACCGG GGTGGGTGGT GTCT                                              24



<210> SEQ ID NO 1056
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<400> SEQUENCE: 1056

AGAAACCGGG GTGGGTGGTG TCTC                                              24



<210> SEQ ID NO 1057
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<400> SEQUENCE: 1057

GAAACCGGGG TGGGTGGTGT CTCC                                              24



<210> SEQ ID NO 1058
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1058

AAACCGGGGT GGGTGGTGTC TCCA                                              24



<210> SEQ ID NO 1059
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<223> OTHER INFORMATION: cDNA for use as primers

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<210> SEQ ID NO 1060
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<212> TYPE: DNA
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<400> SEQUENCE: 1060

ACCGGGGTGG GTGGTGTCTC CAGG 24

<210> SEQ ID NO 1061
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CCGGGGTGGG TGGTGTCTCC AGGT 24

<210> SEQ ID NO 1062
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CGGGGTGGGT GGTGTCTCCA GGTC 24

<210> SEQ ID NO 1063
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GGGGTGGGTG GTGTCTCCAG GTCA 24

<210> SEQ ID NO 1064
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<400> SEQUENCE: 1064

GGGTGGGTGG TGTCTCCAGG TCAA 24

<210> SEQ ID NO 1065
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<400> SEQUENCE: 1065

GGTGGGTGGT GTCTCCAGGT CAAT 24

<210> SEQ ID NO 1066
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<400> SEQUENCE: 1066

GTGGGTGGTG TCTCCAGGTC AATC 24

<210> SEQ ID NO 1067
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<400> SEQUENCE: 1067

TGGGTGGTGT CTCCAGGTCA ATCA 24

<210> SEQ ID NO 1068
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<400> SEQUENCE: 1068

GGGTGGTGTC TCCAGGTCAA TCAA 24

<210> SEQ ID NO 1069

<211> LENGTH: 24
<212> TYPE: DNA
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GTGGTGTCTC CAGGTCAATC AACT 24

<210> SEQ ID NO 1071
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TGGTGTCTCC AGGTCAATCA ACTT 24

<210> SEQ ID NO 1072
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GGTGTCTCCA GGTCAATCAA CTTC 24

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GTGTCTCCAG GTCAATCAAC TTCT 24

<210> SEQ ID NO 1074
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<400> SEQUENCE: 1074

TGTCTCCAGG TCAATCAACT TCTG 24

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GTCTCCAGGT CAATCAACTT CTGT 24

<210> SEQ ID NO 1076
<211> LENGTH: 25
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<400> SEQUENCE: 1076

TAAGAAGAAA CCGGGGTGGG TGGTG 25

<210> SEQ ID NO 1077
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<212> TYPE: DNA
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<400> SEQUENCE: 1077

AAGAAGAAAC CGGGGTGGGT GGTGT 25

<210> SEQ ID NO 1078
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<400> SEQUENCE: 1078

AGAAGAAACC GGGGTGGGTG GTGTC 25

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GAAGAAACCG GGGTGGGTGG TGTCT                                           25


<210> SEQ ID NO 1080
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<400> SEQUENCE: 1080

AAGAAACCGG GGTGGGTGGT GTCTC                                           25


<210> SEQ ID NO 1081
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<400> SEQUENCE: 1082

GAAACCGGGG TGGGTGGTGT CTCCA                                           25


<210> SEQ ID NO 1083
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<400> SEQUENCE: 1083
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AAACCGGGGT GGGTGGTGTC TCCAG 25

<210> SEQ ID NO 1084
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<212> TYPE: DNA
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<400> SEQUENCE: 1084

AACCGGGGTG GGTGGTGTCT CCAGG 25

<210> SEQ ID NO 1085
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<400> SEQUENCE: 1085

ACCGGGGTGG GTGGTGTCTC CAGGT 25

<210> SEQ ID NO 1086
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<212> TYPE: DNA
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<400> SEQUENCE: 1086

CCGGGGTGGG TGGTGTCTCC AGGTC 25

<210> SEQ ID NO 1087
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<212> TYPE: DNA
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CGGGGTGGGT GGTGTCTCCA GGTCA 25

<210> SEQ ID NO 1088
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GGGGTGGGTG GTGTCTCCAG GTCAA 25

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<400> SEQUENCE: 1089

GGGTGGGTGG TGTCTCCAGG TCAAT 25

<210> SEQ ID NO 1090
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GGTGGGTGGT GTCTCCAGGT CAATC 25

<210> SEQ ID NO 1091
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GTGGGTGGTG TCTCCAGGTC AATCA 25

<210> SEQ ID NO 1092
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TGGGTGGTGT CTCCAGGTCA ATCAA 25

<210> SEQ ID NO 1093
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1093

GGGTGGTGTC TCCAGGTCAA TCAAC 25

<210> SEQ ID NO 1094
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GTGGTGTCTC CAGGTCAATC AACTT 25

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TGGTGTCTCC AGGTCAATCA ACTTC 25

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GGTGTCTCCA GGTCAATCAA CTTCT 25

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<212> TYPE: DNA

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GTGTCTCCAG GTCAATCAAC TTCTG 25

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<212> TYPE: DNA
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TGTCTCCAGG TCAATCAACT TCTGT 25

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<211> LENGTH: 25
<212> TYPE: DNA
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GTCTCCAGGT CAATCAACTT CTGTA 25

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<212> TYPE: DNA
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CACCACCCAC CCCGG 15

<210> SEQ ID NO 1102
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<400> SEQUENCE: 1102

ACACCACCCA CCCCG 15

<210> SEQ ID NO 1103

<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1103

GACACCACCC ACCCC 15

<210> SEQ ID NO 1104
<211> LENGTH: 15
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<400> SEQUENCE: 1104

AGACACCACC CACCC 15

<210> SEQ ID NO 1105
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<400> SEQUENCE: 1105

GAGACACCAC CCACC 15

<210> SEQ ID NO 1106
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<400> SEQUENCE: 1106

GGAGACACCA CCCAC 15

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TGGAGACACC ACCCA 15

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CTGGAGACAC CACCC 15

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CCTGGAGACA CCACC 15

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ACCTGGAGAC ACCAC 15

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GACCTGGAGA CACCA 15

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TGACCTGGAG ACACC 15

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TTGACCTGGA GACAC 15

<210> SEQ ID NO 1114
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ATTGACCTGG AGACA 15

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GATTGACCTG GAGAC 15

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CACCACCCAC CCCGGT 16

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<400> SEQUENCE: 1117

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<400> SEQUENCE: 1120


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<400> SEQUENCE: 1121


GGAGACACCA CCCACC                                                         16



<210> SEQ ID NO 1122
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<400> SEQUENCE: 1122

TGGAGACACC ACCCAC 16

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<400> SEQUENCE: 1124

CCTGGAGACA CCACCC 16

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ACCTGGAGAC ACCACC 16

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GACCTGGAGA CACCAC 16

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<223> OTHER INFORMATION: cDNA for use as primers

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TGACCTGGAG ACACCA 16

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<400> SEQUENCE: 1128

TTGACCTGGA GACACC 16

<210> SEQ ID NO 1129
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<212> TYPE: DNA
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<400> SEQUENCE: 1129

ATTGACCTGG AGACAC 16

<210> SEQ ID NO 1130
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<212> TYPE: DNA
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<400> SEQUENCE: 1130

GATTGACCTG GAGACA 16

<210> SEQ ID NO 1131
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<400> SEQUENCE: 1131

TGATTGACCT GGAGAC 16

<210> SEQ ID NO 1132
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<212> TYPE: DNA

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ACACCACCCA CCCCGGT                                                17



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GACACCACCC ACCCCGG                                                17



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AGACACCACC CACCCCG                                                17



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GAGACACCAC CCACCCC                                                17



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<400> SEQUENCE: 1137

GGAGACACCA CCCACCC 17

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TGGAGACACC ACCCACC 17

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<212> TYPE: DNA
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CTGGAGACAC CACCCAC 17

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CCTGGAGACA CCACCCA 17

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ACCTGGAGAC ACCACCC 17

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GACCTGGAGA CACCACC 17

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TGACCTGGAG ACACCAC 17

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TTGACCTGGA GACACCA 17

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ATTGACCTGG AGACACC 17

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GATTGACCTG GAGACAC 17

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TGATTGACCT GGAGACA 17

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TTGATTGACC TGGAGAC 17

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CACCACCCAC CCCGGTTT 18

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ACACCACCCA CCCCGGTT 18

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GACACCACCC ACCCCGGT 18

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AGACACCACC CACCCCGG 18

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GAGACACCAC CCACCCCG 18

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GGAGACACCA CCCACCCC 18

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TGGAGACACC ACCCACCC 18

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CTGGAGACAC CACCCACC 18

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CCTGGAGACA CCACCCAC 18

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ACCTGGAGAC ACCACCCA 18

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GACCTGGAGA CACCACCC 18

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TGACCTGGAG ACACCACC 18

<210> SEQ ID NO 1161
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TTGACCTGGA GACACCAC 18

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ATTGACCTGG AGACACCA 18

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GATTGACCTG GAGACACC 18

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<400> SEQUENCE: 1164

TGATTGACCT GGAGACAC 18

<210> SEQ ID NO 1165
<211> LENGTH: 18
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TTGATTGACC TGGAGACA 18

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GTTGATTGAC CTGGAGAC 18

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<400> SEQUENCE: 1167

CACCACCCAC CCCGGTTTC 19

<210> SEQ ID NO 1168
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<212> TYPE: DNA
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ACACCACCCA CCCCGGTTT 19

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GACACCACCC ACCCCGGTT 19

<210> SEQ ID NO 1170
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1170

AGACACCACC CACCCCGGT 19

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GAGACACCAC CCACCCCGG 19

<210> SEQ ID NO 1172
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GGAGACACCA CCCACCCCG 19

<210> SEQ ID NO 1173
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TGGAGACACC ACCCACCCC 19

<210> SEQ ID NO 1174
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<212> TYPE: DNA
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CTGGAGACAC CACCCACCC 19

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CCTGGAGACA CCACCCACC 19

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ACCTGGAGAC ACCACCCAC 19

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GACCTGGAGA CACCACCCA 19

<210> SEQ ID NO 1178
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<212> TYPE: DNA
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<400> SEQUENCE: 1178

TGACCTGGAG ACACCACCC 19

<210> SEQ ID NO 1179
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TTGACCTGGA GACACCACC 19

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ATTGACCTGG AGACACCAC 19

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GATTGACCTG GAGACACCA 19

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<400> SEQUENCE: 1182

TGATTGACCT GGAGACACC 19

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TTGATTGACC TGGAGACAC 19

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<400> SEQUENCE: 1184

GTTGATTGAC CTGGAGACA 19

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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1185

AGTTGATTGA CCTGGAGAC 19

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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1186

CACCACCCAC CCCGGTTTCT 20

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<400> SEQUENCE: 1187

ACACCACCCA CCCCGGTTTC 20

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<400> SEQUENCE: 1188

GACACCACCC ACCCCGGTTT 20

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<212> TYPE: DNA
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<400> SEQUENCE: 1189

AGACACCACC CACCCCGGTT 20

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GAGACACCAC CCACCCCGGT 20

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GGAGACACCA CCCACCCCGG 20

<210> SEQ ID NO 1192
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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TGGAGACACC ACCCACCCCG 20

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CTGGAGACAC CACCCACCCC 20

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CCTGGAGACA CCACCCACCC 20

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ACCTGGAGAC ACCACCCACC 20

<210> SEQ ID NO 1196
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<400> SEQUENCE: 1196

GACCTGGAGA CACCACCCAC 20

<210> SEQ ID NO 1197
<211> LENGTH: 20
<212> TYPE: DNA
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<400> SEQUENCE: 1197

TGACCTGGAG ACACCACCCA 20

<210> SEQ ID NO 1198
<211> LENGTH: 20
<212> TYPE: DNA
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<400> SEQUENCE: 1198

TTGACCTGGA GACACCACCC 20

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<212> TYPE: DNA
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ATTGACCTGG AGACACCACC 20

<210> SEQ ID NO 1200
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<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1200

GATTGACCTG GAGACACCAC 20

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<212> TYPE: DNA
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<400> SEQUENCE: 1201

TGATTGACCT GGAGACACCA 20

<210> SEQ ID NO 1202
<211> LENGTH: 20
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TTGATTGACC TGGAGACACC 20

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GTTGATTGAC CTGGAGACAC 20

<210> SEQ ID NO 1204
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AGTTGATTGA CCTGGAGACA 20

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AAGTTGATTG ACCTGGAGAC 20

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CACCACCCAC CCCGGTTTCT T 21

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ACACCACCCA CCCCGGTTTC T 21

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<400> SEQUENCE: 1208

GACACCACCC ACCCCGGTTT C 21

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AGACACCACC CACCCCGGTT T 21

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GAGACACCAC CCACCCCGGT T                                               21


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GGAGACACCA CCCACCCCGG T                                               21


<210> SEQ ID NO 1212
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TGGAGACACC ACCCACCCCG G                                               21


<210> SEQ ID NO 1213
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CTGGAGACAC CACCCACCCC G                                               21


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CCTGGAGACA CCACCCACCC C                                               21
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ACCTGGAGAC ACCACCCACC C                                            21



<210> SEQ ID NO 1216
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GACCTGGAGA CACCACCCAC C                                            21



<210> SEQ ID NO 1217
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TGACCTGGAG ACACCACCCA C                                            21



<210> SEQ ID NO 1218
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<212> TYPE: DNA
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TTGACCTGGA GACACCACCC A                                            21



<210> SEQ ID NO 1219
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ATTGACCTGG AGACACCACC C 21

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GATTGACCTG GAGACACCAC C 21

<210> SEQ ID NO 1221
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TGATTGACCT GGAGACACCA C 21

<210> SEQ ID NO 1222
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<400> SEQUENCE: 1222

TTGATTGACC TGGAGACACC A 21

<210> SEQ ID NO 1223
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1223

GTTGATTGAC CTGGAGACAC C 21

<210> SEQ ID NO 1224
<211> LENGTH: 21
<212> TYPE: DNA
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AGTTGATTGA CCTGGAGACA C 21

<210> SEQ ID NO 1225
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<400> SEQUENCE: 1225

AAGTTGATTG ACCTGGAGAC A 21

<210> SEQ ID NO 1226
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<212> TYPE: DNA
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<400> SEQUENCE: 1226

GAAGTTGATT GACCTGGAGA C 21

<210> SEQ ID NO 1227
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 1227

CACCACCCAC CCCGGTTTCT TC 22

<210> SEQ ID NO 1228
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1228

ACACCACCCA CCCCGGTTTC TT 22

<210> SEQ ID NO 1229
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

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GACACCACCC ACCCCGGTTT CT                                            22



<210> SEQ ID NO 1230
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<400> SEQUENCE: 1230


AGACACCACC CACCCCGGTT TC                                            22



<210> SEQ ID NO 1231
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<212> TYPE: DNA
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<400> SEQUENCE: 1231


GAGACACCAC CCACCCCGGT TT                                            22



<210> SEQ ID NO 1232
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<400> SEQUENCE: 1232


GGAGACACCA CCCACCCCGG TT                                            22



<210> SEQ ID NO 1233
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<212> TYPE: DNA
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<400> SEQUENCE: 1233


TGGAGACACC ACCCACCCCG GT                                            22



<210> SEQ ID NO 1234
<211> LENGTH: 22
<212> TYPE: DNA
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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1234

CTGGAGACAC CACCCACCCC GG 22

<210> SEQ ID NO 1235
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1235

CCTGGAGACA CCACCCACCC CG 22

<210> SEQ ID NO 1236
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1236

ACCTGGAGAC ACCACCCACC CC 22

<210> SEQ ID NO 1237
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1237

GACCTGGAGA CACCACCCAC CC 22

<210> SEQ ID NO 1238
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1238

TGACCTGGAG ACACCACCCA CC 22

<210> SEQ ID NO 1239

<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 1239

TTGACCTGGA GACACCACCC AC 22

<210> SEQ ID NO 1240
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1240

ATTGACCTGG AGACACCACC CA 22

<210> SEQ ID NO 1241
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 1241

GATTGACCTG GAGACACCAC CC 22

<210> SEQ ID NO 1242
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<212> TYPE: DNA
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<400> SEQUENCE: 1242

TGATTGACCT GGAGACACCA CC 22

<210> SEQ ID NO 1243
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<220> FEATURES:
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<400> SEQUENCE: 1243

TTGATTGACC TGGAGACACC AC 22

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<400> SEQUENCE: 1244

GTTGATTGAC CTGGAGACAC CA                                        22


<210> SEQ ID NO 1245
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<212> TYPE: DNA
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<400> SEQUENCE: 1245

AGTTGATTGA CCTGGAGACA CC                                        22


<210> SEQ ID NO 1246
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1246

AAGTTGATTG ACCTGGAGAC AC                                        22


<210> SEQ ID NO 1247
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<400> SEQUENCE: 1247

GAAGTTGATT GACCTGGAGA CA                                        22


<210> SEQ ID NO 1248
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1248

AGAAGTTGAT TGACCTGGAG AC                                        22
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1249

CACCACCCAC CCCGGTTTCT TCT                                               23


<210> SEQ ID NO 1250
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1250

ACACCACCCA CCCCGGTTTC TTC                                               23


<210> SEQ ID NO 1251
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1251

GACACCACCC ACCCCGGTTT CTT                                               23


<210> SEQ ID NO 1252
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1252

AGACACCACC CACCCCGGTT TCT                                               23


<210> SEQ ID NO 1253
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1253
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GAGACACCAC CCACCCCGGT TTC                                              23



<210> SEQ ID NO 1254
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1254

GGAGACACCA CCCACCCCGG TTT                                              23



<210> SEQ ID NO 1255
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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TGGAGACACC ACCCACCCCG GTT                                              23



<210> SEQ ID NO 1256
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1256

CTGGAGACAC CACCCACCCC GGT                                              23



<210> SEQ ID NO 1257
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1257

CCTGGAGACA CCACCCACCC CGG                                              23



<210> SEQ ID NO 1258
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers
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<400> SEQUENCE: 1258

ACCTGGAGAC ACCACCCACC CCG 23

<210> SEQ ID NO 1259
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1259

GACCTGGAGA CACCACCCAC CCC 23

<210> SEQ ID NO 1260
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1260

TGACCTGGAG ACACCACCCA CCC 23

<210> SEQ ID NO 1261
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1261

TTGACCTGGA GACACCACCC ACC 23

<210> SEQ ID NO 1262
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1262

ATTGACCTGG AGACACCACC CAC 23

<210> SEQ ID NO 1263
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:

<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1263

GATTGACCTG GAGACACCAC CCA 23

<210> SEQ ID NO 1264
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1264

TGATTGACCT GGAGACACCA CCC 23

<210> SEQ ID NO 1265
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1265

TTGATTGACC TGGAGACACC ACC 23

<210> SEQ ID NO 1266
<211> LENGTH: 23
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1266

GTTGATTGAC CTGGAGACAC CAC 23

<210> SEQ ID NO 1267
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1267

AGTTGATTGA CCTGGAGACA CCA 23

<210> SEQ ID NO 1268
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<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1268

AAGTTGATTG ACCTGGAGAC ACC 23

<210> SEQ ID NO 1269
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1269

GAAGTTGATT GACCTGGAGA CAC 23

<210> SEQ ID NO 1270
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1270

AGAAGTTGAT TGACCTGGAG ACA 23

<210> SEQ ID NO 1271
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1271

CAGAAGTTGA TTGACCTGGA GAC 23

<210> SEQ ID NO 1272
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1272

CACCACCCAC CCCGGTTTCT TCTT 24

<210> SEQ ID NO 1273

<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1273

ACACCACCCA CCCCGGTTTC TTCT 24

<210> SEQ ID NO 1274
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1274

GACACCACCC ACCCCGGTTT CTTC 24

<210> SEQ ID NO 1275
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1275

AGACACCACC CACCCCGGTT TCTT 24

<210> SEQ ID NO 1276
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1276

GAGACACCAC CCACCCCGGT TTCT 24

<210> SEQ ID NO 1277
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1277

GGAGACACCA CCCACCCCGG TTTC 24

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<210> SEQ ID NO 1278
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1278

TGGAGACACC ACCCACCCCG GTTT                                          24


<210> SEQ ID NO 1279
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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CTGGAGACAC CACCCACCCC GGTT                                          24


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GACCTGGAGA CACCACCCAC CCCG                                          24
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TGACCTGGAG ACACCACCCA CCCC 24

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TTGACCTGGA GACACCACCC ACCC 24

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ATTGACCTGG AGACACCACC CACC 24

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GATTGACCTG GAGACACCAC CCAC 24

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TGATTGACCT GGAGACACCA CCCA 24

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TTGATTGACC TGGAGACACC ACCC 24

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<212> TYPE: DNA
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GTTGATTGAC CTGGAGACAC CACC 24

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AGTTGATTGA CCTGGAGACA CCAC 24

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AAGTTGATTG ACCTGGAGAC ACCA 24

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GAAGTTGATT GACCTGGAGA CACC 24

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AGAAGTTGAT TGACCTGGAG ACAC 24

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CAGAAGTTGA TTGACCTGGA GACA 24

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CACCACCCAC CCCGGTTTCT TCTTA 25

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GAGACACCAC CCACCCCGGT TTCTT 25

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GGAGACACCA CCCACCCCGG TTTCT 25

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TGGAGACACC ACCCACCCCG GTTTC 25

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CTGGAGACAC CACCCACCCC GGTTT 25

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CCTGGAGACA CCACCCACCC CGGTT 25

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ACCTGGAGAC ACCACCCACC CCGGT 25

<210> SEQ ID NO 1306
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GACCTGGAGA CACCACCCAC CCCGG 25

<210> SEQ ID NO 1307

<211> LENGTH: 25
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TGACCTGGAG ACACCACCCA CCCCG 25

<210> SEQ ID NO 1308
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TTGACCTGGA GACACCACCC ACCCC 25

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ATTGACCTGG AGACACCACC CACCC 25

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GATTGACCTG GAGACACCAC CCACC 25

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TTGATTGACC TGGAGACACC ACCCA 25

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GTTGATTGAC CTGGAGACAC CACCC 25

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AAGTTGATTG ACCTGGAGAC ACCAC 25

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GAAGTTGATT GACCTGGAGA CACCA 25

<210> SEQ ID NO 1317
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AGAAGTTGAT TGACCTGGAG ACACC 25

<210> SEQ ID NO 1318
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CAGAAGTTGA TTGACCTGGA GACAC 25

<210> SEQ ID NO 1319
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ACAGAAGTTG ATTGACCTGG AGACA 25

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TACAGAAGTT GATTGACCTG GAGAC 25

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<400> SEQUENCE: 1321

CCTCGAACAA TTGAA 15

<210> SEQ ID NO 1322
<211> LENGTH: 15
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<220> FEATURES:
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<400> SEQUENCE: 1322

CTCGAACAAT TGAAG 15

<210> SEQ ID NO 1323
<211> LENGTH: 15
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<220> FEATURES:
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<400> SEQUENCE: 1323

TCGAACAATT GAAGA 15

<210> SEQ ID NO 1324
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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CGAACAATTG AAGAT 15

<210> SEQ ID NO 1325
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GAACAATTGA AGATT 15

<210> SEQ ID NO 1326
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<400> SEQUENCE: 1326

AACAATTGAA GATTT 15

<210> SEQ ID NO 1327
<211> LENGTH: 15
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<400> SEQUENCE: 1327

ACAATTGAAG ATTTT 15

<210> SEQ ID NO 1328
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1328

CAATTGAAGA TTTTG 15

<210> SEQ ID NO 1329
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<400> SEQUENCE: 1329

AATTGAAGAT TTTGA 15

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<400> SEQUENCE: 1330

ATTGAAGATT TTGAG 15

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<223> OTHER INFORMATION: cDNA for use as primers

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TTGAAGATTT TGAGT 15

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<400> SEQUENCE: 1332

TGAAGATTTT GAGTC 15

<210> SEQ ID NO 1333
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1333

GAAGATTTTG AGTCT 15

<210> SEQ ID NO 1334
<211> LENGTH: 15
<212> TYPE: DNA
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<400> SEQUENCE: 1334

AAGATTTTGA GTCTA 15

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<400> SEQUENCE: 1335

AGATTTTGAG TCTAT 15

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<400> SEQUENCE: 1336

ACCTCGAACA ATTGAA 16

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<211> LENGTH: 16
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1337

CCTCGAACAA TTGAAG 16

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<211> LENGTH: 16
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<400> SEQUENCE: 1338

CTCGAACAAT TGAAGA 16

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TCGAACAATT GAAGAT 16

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CGAACAATTG AAGATT 16

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GAACAATTGA AGATTT 16

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AACAATTGAA GATTTT 16

<210> SEQ ID NO 1343
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<400> SEQUENCE: 1343

ACAATTGAAG ATTTTG 16

<210> SEQ ID NO 1344
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CAATTGAAGA TTTTGA 16

<210> SEQ ID NO 1345
<211> LENGTH: 16
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<400> SEQUENCE: 1345

AATTGAAGAT TTTGAG 16

<210> SEQ ID NO 1346
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ATTGAAGATT TTGAGT 16

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<400> SEQUENCE: 1347

TTGAAGATTT TGAGTC 16

<210> SEQ ID NO 1348
<211> LENGTH: 16
<212> TYPE: DNA
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<400> SEQUENCE: 1348

TGAAGATTTT GAGTCT 16

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GAAGATTTTG AGTCTA 16

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<400> SEQUENCE: 1350

AAGATTTTGA GTCTAT 16

<210> SEQ ID NO 1351
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AGATTTTGAG TCTATG 16

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<400> SEQUENCE: 1352

AACCTCGAAC AATTGAA 17

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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1353

ACCTCGAACA ATTGAAG 17

<210> SEQ ID NO 1354
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<400> SEQUENCE: 1354

CCTCGAACAA TTGAAGA 17

<210> SEQ ID NO 1355
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<212> TYPE: DNA
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CTCGAACAAT TGAAGAT 17

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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1356

TCGAACAATT GAAGATT 17

<210> SEQ ID NO 1357
<211> LENGTH: 17
<212> TYPE: DNA
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<400> SEQUENCE: 1357

CGAACAATTG AAGATTT 17

<210> SEQ ID NO 1358
<211> LENGTH: 17
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1358

GAACAATTGA AGATTTT 17

<210> SEQ ID NO 1359
<211> LENGTH: 17
<212> TYPE: DNA
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AACAATTGAA GATTTTG 17

<210> SEQ ID NO 1360
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1360

ACAATTGAAG ATTTTGA 17

<210> SEQ ID NO 1361
<211> LENGTH: 17
<212> TYPE: DNA
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<400> SEQUENCE: 1361

CAATTGAAGA TTTTGAG 17

<210> SEQ ID NO 1362
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<212> TYPE: DNA
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<400> SEQUENCE: 1362

AATTGAAGAT TTTGAGT 17

<210> SEQ ID NO 1363
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1363

ATTGAAGATT TTGAGTC 17

<210> SEQ ID NO 1364
<211> LENGTH: 17
<212> TYPE: DNA
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<400> SEQUENCE: 1364

TTGAAGATTT TGAGTCT 17

<210> SEQ ID NO 1365
<211> LENGTH: 17
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

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TGAAGATTTT GAGTCTA 17

<210> SEQ ID NO 1366
<211> LENGTH: 17
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GAAGATTTTG AGTCTAT 17

<210> SEQ ID NO 1367
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AAGATTTTGA GTCTATG 17

<210> SEQ ID NO 1368
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AGATTTTGAG TCTATGA 17

<210> SEQ ID NO 1369
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1369

GAACCTCGAA CAATTGAA 18

<210> SEQ ID NO 1370
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<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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AACCTCGAAC AATTGAAG 18

<210> SEQ ID NO 1371
<211> LENGTH: 18
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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ACCTCGAACA ATTGAAGA 18

<210> SEQ ID NO 1372
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1372

CCTCGAACAA TTGAAGAT 18

<210> SEQ ID NO 1373
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<400> SEQUENCE: 1373

CTCGAACAAT TGAAGATT 18

<210> SEQ ID NO 1374
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1374

TCGAACAATT GAAGATTT 18

<210> SEQ ID NO 1375

<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1375

CGAACAATTG AAGATTTT 18

<210> SEQ ID NO 1376
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1376

GAACAATTGA AGATTTTG 18

<210> SEQ ID NO 1377
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1377

AACAATTGAA GATTTTGA 18

<210> SEQ ID NO 1378
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1378

ACAATTGAAG ATTTTGAG 18

<210> SEQ ID NO 1379
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1379

CAATTGAAGA TTTTGAGT 18

<210> SEQ ID NO 1380
<211> LENGTH: 18
<212> TYPE: DNA
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<400> SEQUENCE: 1380

AATTGAAGAT TTTGAGTC 18

<210> SEQ ID NO 1381
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1381

ATTGAAGATT TTGAGTCT 18

<210> SEQ ID NO 1382
<211> LENGTH: 18
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1382

TTGAAGATTT TGAGTCTA 18

<210> SEQ ID NO 1383
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1383

TGAAGATTTT GAGTCTAT 18

<210> SEQ ID NO 1384
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<400> SEQUENCE: 1384

GAAGATTTTG AGTCTATG 18

<210> SEQ ID NO 1385
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<400> SEQUENCE: 1385

AAGATTTTGA GTCTATGA 18

<210> SEQ ID NO 1386
<211> LENGTH: 18
<212> TYPE: DNA
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<400> SEQUENCE: 1386

AGATTTTGAG TCTATGAA 18

<210> SEQ ID NO 1387
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<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1387

TGAACCTCGA ACAATTGAA 19

<210> SEQ ID NO 1388
<211> LENGTH: 19
<212> TYPE: DNA
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<400> SEQUENCE: 1388

GAACCTCGAA CAATTGAAG 19

<210> SEQ ID NO 1389
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1389

AACCTCGAAC AATTGAAGA 19

<210> SEQ ID NO 1390
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<400> SEQUENCE: 1390

ACCTCGAACA ATTGAAGAT 19

<210> SEQ ID NO 1391
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<400> SEQUENCE: 1391

CCTCGAACAA TTGAAGATT 19

<210> SEQ ID NO 1392
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CTCGAACAAT TGAAGATTT 19

<210> SEQ ID NO 1393
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TCGAACAATT GAAGATTTT 19

<210> SEQ ID NO 1394
<211> LENGTH: 19
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CGAACAATTG AAGATTTTG 19

<210> SEQ ID NO 1395
<211> LENGTH: 19
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1395

GAACAATTGA AGATTTTGA 19

<210> SEQ ID NO 1396
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1396

AACAATTGAA GATTTTGAG 19

<210> SEQ ID NO 1397
<211> LENGTH: 19
<212> TYPE: DNA
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<400> SEQUENCE: 1397

ACAATTGAAG ATTTTGAGT 19

<210> SEQ ID NO 1398
<211> LENGTH: 19
<212> TYPE: DNA
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<400> SEQUENCE: 1398

CAATTGAAGA TTTTGAGTC 19

<210> SEQ ID NO 1399
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1399

AATTGAAGAT TTTGAGTCT 19

<210> SEQ ID NO 1400
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1400

ATTGAAGATT TTGAGTCTA 19

<210> SEQ ID NO 1401
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1401

TTGAAGATTT TGAGTCTAT 19

<210> SEQ ID NO 1402
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1402

TGAAGATTTT GAGTCTATG 19

<210> SEQ ID NO 1403
<211> LENGTH: 19
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1403

GAAGATTTTG AGTCTATGA 19

<210> SEQ ID NO 1404
<211> LENGTH: 19
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1404

AAGATTTTGA GTCTATGAA 19

<210> SEQ ID NO 1405
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

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AGATTTTGAG TCTATGAAT 19

<210> SEQ ID NO 1406
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1406

TTGAACCTCG AACAATTGAA 20

<210> SEQ ID NO 1407
<211> LENGTH: 20
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1407

TGAACCTCGA ACAATTGAAG 20

<210> SEQ ID NO 1408
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1408

GAACCTCGAA CAATTGAAGA 20

<210> SEQ ID NO 1409

<211> LENGTH: 20
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1409

AACCTCGAAC AATTGAAGAT 20

<210> SEQ ID NO 1410
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1410

ACCTCGAACA ATTGAAGATT 20

<210> SEQ ID NO 1411
<211> LENGTH: 20
<212> TYPE: DNA
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<400> SEQUENCE: 1411

CCTCGAACAA TTGAAGATTT 20

<210> SEQ ID NO 1412
<211> LENGTH: 20
<212> TYPE: DNA
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<400> SEQUENCE: 1412

CTCGAACAAT TGAAGATTTT 20

<210> SEQ ID NO 1413
<211> LENGTH: 20
<212> TYPE: DNA
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<400> SEQUENCE: 1413

TCGAACAATT GAAGATTTTG 20

<210> SEQ ID NO 1414
<211> LENGTH: 20
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1414

CGAACAATTG AAGATTTTGA 20

<210> SEQ ID NO 1415
<211> LENGTH: 20
<212> TYPE: DNA
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<400> SEQUENCE: 1415

GAACAATTGA AGATTTTGAG 20

<210> SEQ ID NO 1416
<211> LENGTH: 20
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1416

AACAATTGAA GATTTTGAGT 20

<210> SEQ ID NO 1417
<211> LENGTH: 20
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1417

ACAATTGAAG ATTTTGAGTC 20

<210> SEQ ID NO 1418
<211> LENGTH: 20
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1418

CAATTGAAGA TTTTGAGTCT 20

<210> SEQ ID NO 1419
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1419

AATTGAAGAT TTTGAGTCTA 20

<210> SEQ ID NO 1420
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1420

ATTGAAGATT TTGAGTCTAT 20

<210> SEQ ID NO 1421
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1421

TTGAAGATTT TGAGTCTATG 20

<210> SEQ ID NO 1422
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1422

TGAAGATTTT GAGTCTATGA 20

<210> SEQ ID NO 1423
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1423

GAAGATTTTG AGTCTATGAA 20

<210> SEQ ID NO 1424
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1424

AAGATTTTGA GTCTATGAAT 20

<210> SEQ ID NO 1425
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1425

AGATTTTGAG TCTATGAATA 20

<210> SEQ ID NO 1426
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1426

CTTGAACCTC GAACAATTGA A 21

<210> SEQ ID NO 1427
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1427

TTGAACCTCG AACAATTGAA G 21

<210> SEQ ID NO 1428
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1428

TGAACCTCGA ACAATTGAAG A 21

<210> SEQ ID NO 1429
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1429

GAACCTCGAA CAATTGAAGA T 21

<210> SEQ ID NO 1430
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1430

AACCTCGAAC AATTGAAGAT T 21

<210> SEQ ID NO 1431
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1431

ACCTCGAACA ATTGAAGATT T 21

<210> SEQ ID NO 1432
<211> LENGTH: 21
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1432

CCTCGAACAA TTGAAGATTT T 21

<210> SEQ ID NO 1433
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1433

CTCGAACAAT TGAAGATTTT G 21

<210> SEQ ID NO 1434
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1434

TCGAACAATT GAAGATTTTG A 21

<210> SEQ ID NO 1435
<211> LENGTH: 21
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1435

CGAACAATTG AAGATTTTGA G 21

<210> SEQ ID NO 1436
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1436

GAACAATTGA AGATTTTGAG T 21

<210> SEQ ID NO 1437
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1437

AACAATTGAA GATTTTGAGT C 21

<210> SEQ ID NO 1438
<211> LENGTH: 21
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1438

ACAATTGAAG ATTTTGAGTC T 21

<210> SEQ ID NO 1439
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1439

CAATTGAAGA TTTTGAGTCT A 21

<210> SEQ ID NO 1440
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1440

AATTGAAGAT TTTGAGTCTA T 21

<210> SEQ ID NO 1441
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1441

ATTGAAGATT TTGAGTCTAT G 21

<210> SEQ ID NO 1442
<211> LENGTH: 21
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1442

TTGAAGATTT TGAGTCTATG A 21

<210> SEQ ID NO 1443

<211> LENGTH: 21
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1443

TGAAGATTTT GAGTCTATGA A 21

<210> SEQ ID NO 1444
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1444

GAAGATTTTG AGTCTATGAA T 21

<210> SEQ ID NO 1445
<211> LENGTH: 21
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1445

AAGATTTTGA GTCTATGAAT A 21

<210> SEQ ID NO 1446
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1446

AGATTTTGAG TCTATGAATA C 21

<210> SEQ ID NO 1447
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1447

GCTTGAACCT CGAACAATTG AA 22

<210> SEQ ID NO 1448
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1448

CTTGAACCTC GAACAATTGA AG 22

<210> SEQ ID NO 1449
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1449

TTGAACCTCG AACAATTGAA GA 22

<210> SEQ ID NO 1450
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1450

TGAACCTCGA ACAATTGAAG AT 22

<210> SEQ ID NO 1451
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1451

GAACCTCGAA CAATTGAAGA TT 22

<210> SEQ ID NO 1452
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1452

AACCTCGAAC AATTGAAGAT TT 22

<210> SEQ ID NO 1453
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1453

ACCTCGAACA ATTGAAGATT TT 22

<210> SEQ ID NO 1454
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1454

CCTCGAACAA TTGAAGATTT TG 22

<210> SEQ ID NO 1455
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1455

CTCGAACAAT TGAAGATTTT GA 22

<210> SEQ ID NO 1456
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1456

TCGAACAATT GAAGATTTTG AG 22

<210> SEQ ID NO 1457
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1457

CGAACAATTG AAGATTTTGA GT 22

<210> SEQ ID NO 1458
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1458

GAACAATTGA AGATTTTGAG TC 22

<210> SEQ ID NO 1459
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1459

AACAATTGAA GATTTTGAGT CT 22

<210> SEQ ID NO 1460
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1460

ACAATTGAAG ATTTTGAGTC TA 22

<210> SEQ ID NO 1461
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1461

CAATTGAAGA TTTTGAGTCT AT 22

<210> SEQ ID NO 1462
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1462

AATTGAAGAT TTTGAGTCTA TG 22

<210> SEQ ID NO 1463
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1463

ATTGAAGATT TTGAGTCTAT GA 22

<210> SEQ ID NO 1464
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1464

TTGAAGATTT TGAGTCTATG AA 22

<210> SEQ ID NO 1465
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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TGAAGATTTT GAGTCTATGA AT 22

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AGATTTTGAG TCTATGAATA CA 22

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CGCTTGAACC TCGAACAATT GAA 23

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GCTTGAACCT CGAACAATTG AAG 23

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CTTGAACCTC GAACAATTGA AGA 23

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TTGAACCTCG AACAATTGAA GAT 23

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TGAACCTCGA ACAATTGAAG ATT 23

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GAACCTCGAA CAATTGAAGA TTT 23

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AACCTCGAAC AATTGAAGAT TTT 23

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ACCTCGAACA ATTGAAGATT TTG 23

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CCTCGAACAA TTGAAGATTT TGA 23

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CTCGAACAAT TGAAGATTTT GAG 23

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TCGAACAATT GAAGATTTTG AGT 23

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CGAACAATTG AAGATTTTGA GTC 23

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GAACAATTGA AGATTTTGAG TCT 23

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AACAATTGAA GATTTTGAGT CTA 23

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ACAATTGAAG ATTTTGAGTC TAT 23

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CAATTGAAGA TTTTGAGTCT ATG 23

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AATTGAAGAT TTTGAGTCTA TGA 23

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ATTGAAGATT TTGAGTCTAT GAA 23

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TTGAAGATTT TGAGTCTATG AAT 23

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TGAAGATTTT GAGTCTATGA ATA 23

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GAAGATTTTG AGTCTATGAA TAC 23

<210> SEQ ID NO 1490
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<212> TYPE: DNA
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<400> SEQUENCE: 1490

AAGATTTTGA GTCTATGAAT ACA 23

<210> SEQ ID NO 1491
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 1491

AGATTTTGAG TCTATGAATA CAT 23

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<212> TYPE: DNA
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<400> SEQUENCE: 1492

ACGCTTGAAC CTCGAACAAT TGAA 24

<210> SEQ ID NO 1493
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CGCTTGAACC TCGAACAATT GAAG 24

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GCTTGAACCT CGAACAATTG AAGA 24

<210> SEQ ID NO 1495
<211> LENGTH: 24
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CTTGAACCTC GAACAATTGA AGAT 24

<210> SEQ ID NO 1496
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TTGAACCTCG AACAATTGAA GATT 24

<210> SEQ ID NO 1497
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TGAACCTCGA ACAATTGAAG ATTT 24

<210> SEQ ID NO 1498
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<400> SEQUENCE: 1498

GAACCTCGAA CAATTGAAGA TTTT 24

<210> SEQ ID NO 1499
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 1499

AACCTCGAAC AATTGAAGAT TTTG 24

<210> SEQ ID NO 1500
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<400> SEQUENCE: 1500

ACCTCGAACA ATTGAAGATT TTGA 24

<210> SEQ ID NO 1501
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1501

CCTCGAACAA TTGAAGATTT TGAG 24

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<400> SEQUENCE: 1502

CTCGAACAAT TGAAGATTTT GAGT 24

<210> SEQ ID NO 1503
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1503

TCGAACAATT GAAGATTTTG AGTC 24

<210> SEQ ID NO 1504
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1504

CGAACAATTG AAGATTTTGA GTCT 24

<210> SEQ ID NO 1505
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<212> TYPE: DNA
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GAACAATTGA AGATTTTGAG TCTA 24

<210> SEQ ID NO 1506
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AACAATTGAA GATTTTGAGT CTAT 24

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ACAATTGAAG ATTTTGAGTC TATG 24

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<400> SEQUENCE: 1508

CAATTGAAGA TTTTGAGTCT ATGA 24

<210> SEQ ID NO 1509
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<212> TYPE: DNA
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<400> SEQUENCE: 1509

AATTGAAGAT TTTGAGTCTA TGAA 24

<210> SEQ ID NO 1510
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<212> TYPE: DNA
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ATTGAAGATT TTGAGTCTAT GAAT 24

<210> SEQ ID NO 1511

<211> LENGTH: 24
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<400> SEQUENCE: 1511

TTGAAGATTT TGAGTCTATG AATA 24

<210> SEQ ID NO 1512
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TGAAGATTTT GAGTCTATGA ATAC 24

<210> SEQ ID NO 1513
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<212> TYPE: DNA
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GAAGATTTTG AGTCTATGAA TACA 24

<210> SEQ ID NO 1514
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AAGATTTTGA GTCTATGAAT ACAT 24

<210> SEQ ID NO 1515
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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AGATTTTGAG TCTATGAATA CATA 24

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<400> SEQUENCE: 1516

TACGCTTGAA CCTCGAACAA TTGAA 25

<210> SEQ ID NO 1517
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<212> TYPE: DNA
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<400> SEQUENCE: 1517

ACGCTTGAAC CTCGAACAAT TGAAG 25

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<400> SEQUENCE: 1518

CGCTTGAACC TCGAACAATT GAAGA 25

<210> SEQ ID NO 1519
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GCTTGAACCT CGAACAATTG AAGAT 25

<210> SEQ ID NO 1520
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CTTGAACCTC GAACAATTGA AGATT 25

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<210> SEQ ID NO 1524
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<400> SEQUENCE: 1524

AACCTCGAAC AATTGAAGAT TTTGA                                   25


<210> SEQ ID NO 1525
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<210> SEQ ID NO 1528
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TCGAACAATT GAAGATTTTG AGTCT                                                25


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CGAACAATTG AAGATTTTGA GTCTA                                                25


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<210> SEQ ID NO 1531
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AACAATTGAA GATTTTGAGT CTATG                                      25



<210> SEQ ID NO 1532
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ACAATTGAAG ATTTTGAGTC TATGA                                      25



<210> SEQ ID NO 1533
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CAATTGAAGA TTTTGAGTCT ATGAA                                      25



<210> SEQ ID NO 1534
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<400> SEQUENCE: 1534

AATTGAAGAT TTTGAGTCTA TGAAT                                      25



<210> SEQ ID NO 1535
<211> LENGTH: 25
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1535

ATTGAAGATT TTGAGTCTAT GAATA 25

<210> SEQ ID NO 1536
<211> LENGTH: 25
<212> TYPE: DNA
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<400> SEQUENCE: 1536

TTGAAGATTT TGAGTCTATG AATAC 25

<210> SEQ ID NO 1537
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<212> TYPE: DNA
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TGAAGATTTT GAGTCTATGA ATACA 25

<210> SEQ ID NO 1538
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<212> TYPE: DNA
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GAAGATTTTG AGTCTATGAA TACAT 25

<210> SEQ ID NO 1539
<211> LENGTH: 25
<212> TYPE: DNA
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AAGATTTTGA GTCTATGAAT ACATA 25

<210> SEQ ID NO 1540
<211> LENGTH: 25
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AGATTTTGAG TCTATGAATA CATAC 25

<210> SEQ ID NO 1541
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<400> SEQUENCE: 1541

TTCAATTGTT CGAGG 15

<210> SEQ ID NO 1542
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CTTCAATTGT TCGAG 15

<210> SEQ ID NO 1543
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<400> SEQUENCE: 1543

TCTTCAATTG TTCGA 15

<210> SEQ ID NO 1544
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<210> SEQ ID NO 1545

<211> LENGTH: 15
<212> TYPE: DNA
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<400> SEQUENCE: 1545

AATCTTCAAT TGTTC 15

<210> SEQ ID NO 1546
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<212> TYPE: DNA
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<400> SEQUENCE: 1546

AAATCTTCAA TTGTT 15

<210> SEQ ID NO 1547
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CAAAATCTTC AATTG 15

<210> SEQ ID NO 1549
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CTCAAAATCT TCAAT 15

<210> SEQ ID NO 1551
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<400> SEQUENCE: 1551

ACTCAAAATC TTCAA 15

<210> SEQ ID NO 1552
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<400> SEQUENCE: 1552

GACTCAAAAT CTTCA 15

<210> SEQ ID NO 1553
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<400> SEQUENCE: 1553

AGACTCAAAA TCTTC 15

<210> SEQ ID NO 1554
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<212> TYPE: DNA
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<400> SEQUENCE: 1554

TAGACTCAAA ATCTT 15

<210> SEQ ID NO 1555
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<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1555

ATAGACTCAA AATCT 15

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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1556

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CTTCAATTGT TCGAGG 16

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TCTTCAATTG TTCGAG 16

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TCAAAATCTT CAATTG 16

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CTCAAAATCT TCAATT 16

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<400> SEQUENCE: 1566

ACTCAAAATC TTCAAT 16

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GACTCAAAAT CTTCAA 16

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AGACTCAAAA TCTTCA 16

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TAGACTCAAA ATCTTC 16

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ATAGACTCAA AATCTT 16

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CATAGACTCA AAATCT 16

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TTCAATTGTT CGAGGTT 17

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CTTCAATTGT TCGAGGT 17

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TCTTCAATTG TTCGAGG 17

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ATCTTCAATT GTTCGAG 17

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AATCTTCAAT TGTTCGA 17

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AAAATCTTCA ATTGTTC 17

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CAAAATCTTC AATTGTT 17

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TCAAAATCTT CAATTGT 17

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CTCAAAATCT TCAATTG 17

<210> SEQ ID NO 1582
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ACTCAAAATC TTCAATT 17

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GACTCAAAAT CTTCAAT 17

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AGACTCAAAA TCTTCAA 17

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TAGACTCAAA ATCTTCA 17

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ATAGACTCAA AATCTTC 17

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CATAGACTCA AAATCTT 17

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TCATAGACTC AAAATCT 17

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<400> SEQUENCE: 1589

TTCAATTGTT CGAGGTTC 18

<210> SEQ ID NO 1590
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<400> SEQUENCE: 1590

CTTCAATTGT TCGAGGTT 18

<210> SEQ ID NO 1591
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<400> SEQUENCE: 1591

TCTTCAATTG TTCGAGGT 18

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<400> SEQUENCE: 1592

ATCTTCAATT GTTCGAGG 18

<210> SEQ ID NO 1593
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AATCTTCAAT TGTTCGAG 18

<210> SEQ ID NO 1594
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AAATCTTCAA TTGTTCGA 18

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<400> SEQUENCE: 1595

AAAATCTTCA ATTGTTCG 18

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CAAAATCTTC AATTGTTC 18

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<400> SEQUENCE: 1597

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<210> SEQ ID NO 1598
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<400> SEQUENCE: 1598

CTCAAAATCT TCAATTGT 18

<210> SEQ ID NO 1599
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<400> SEQUENCE: 1599

ACTCAAAATC TTCAATTG 18

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<400> SEQUENCE: 1600

GACTCAAAAT CTTCAATT 18

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<400> SEQUENCE: 1601

AGACTCAAAA TCTTCAAT 18

<210> SEQ ID NO 1602
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TAGACTCAAA ATCTTCAA 18

<210> SEQ ID NO 1603
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ATAGACTCAA AATCTTCA 18

<210> SEQ ID NO 1604
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<400> SEQUENCE: 1604

CATAGACTCA AAATCTTC 18

<210> SEQ ID NO 1605
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<400> SEQUENCE: 1605

TCATAGACTC AAAATCTT 18

<210> SEQ ID NO 1606
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<400> SEQUENCE: 1606

TTCATAGACT CAAAATCT 18

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<400> SEQUENCE: 1607

TTCAATTGTT CGAGGTTCA 19

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CTTCAATTGT TCGAGGTTC 19

<210> SEQ ID NO 1609
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TCTTCAATTG TTCGAGGTT 19

<210> SEQ ID NO 1610
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ATCTTCAATT GTTCGAGGT 19

<210> SEQ ID NO 1611
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AATCTTCAAT TGTTCGAGG 19

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AAATCTTCAA TTGTTCGAG 19

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<212> TYPE: DNA
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<400> SEQUENCE: 1613

AAAATCTTCA ATTGTTCGA 19

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<212> TYPE: DNA
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CAAAATCTTC AATTGTTCG 19

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TCAAAATCTT CAATTGTTC 19

<210> SEQ ID NO 1616
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<212> TYPE: DNA
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CTCAAAATCT TCAATTGTT 19

<210> SEQ ID NO 1617
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ACTCAAAATC TTCAATTGT 19

<210> SEQ ID NO 1618
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<400> SEQUENCE: 1618

GACTCAAAAT CTTCAATTG 19

<210> SEQ ID NO 1619
<211> LENGTH: 19
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<400> SEQUENCE: 1619

AGACTCAAAA TCTTCAATT 19

<210> SEQ ID NO 1620
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TAGACTCAAA ATCTTCAAT 19

<210> SEQ ID NO 1621
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ATAGACTCAA AATCTTCAA 19

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CATAGACTCA AAATCTTCA 19

<210> SEQ ID NO 1623
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<400> SEQUENCE: 1623

TCATAGACTC AAAATCTTC 19

<210> SEQ ID NO 1624
<211> LENGTH: 19
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1624

TTCATAGACT CAAAATCTT 19

<210> SEQ ID NO 1625
<211> LENGTH: 19
<212> TYPE: DNA
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<400> SEQUENCE: 1625

ATTCATAGAC TCAAAATCT 19

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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1626

TTCAATTGTT CGAGGTTCAA 20

<210> SEQ ID NO 1627
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CTTCAATTGT TCGAGGTTCA 20

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<400> SEQUENCE: 1628

TCTTCAATTG TTCGAGGTTC 20

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<400> SEQUENCE: 1629

ATCTTCAATT GTTCGAGGTT 20

<210> SEQ ID NO 1630
<211> LENGTH: 20
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1630

AATCTTCAAT TGTTCGAGGT 20

<210> SEQ ID NO 1631
<211> LENGTH: 20
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1631

AAATCTTCAA TTGTTCGAGG 20

<210> SEQ ID NO 1632
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1632

AAAATCTTCA ATTGTTCGAG 20

<210> SEQ ID NO 1633
<211> LENGTH: 20
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1633

CAAAATCTTC AATTGTTCGA 20

<210> SEQ ID NO 1634
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1634

TCAAAATCTT CAATTGTTCG 20

<210> SEQ ID NO 1635
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1635

CTCAAAATCT TCAATTGTTC 20

<210> SEQ ID NO 1636
<211> LENGTH: 20
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1636

ACTCAAAATC TTCAATTGTT 20

<210> SEQ ID NO 1637
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:

<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1637

GACTCAAAAT CTTCAATTGT 20

<210> SEQ ID NO 1638
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1638

AGACTCAAAA TCTTCAATTG 20

<210> SEQ ID NO 1639
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1639

TAGACTCAAA ATCTTCAATT 20

<210> SEQ ID NO 1640
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<212> TYPE: DNA
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<400> SEQUENCE: 1640

ATAGACTCAA AATCTTCAAT 20

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<400> SEQUENCE: 1641

CATAGACTCA AAATCTTCAA 20

<210> SEQ ID NO 1642
<211> LENGTH: 20
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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1642

TCATAGACTC AAAATCTTCA 20

<210> SEQ ID NO 1643
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1643

TTCATAGACT CAAAATCTTC 20

<210> SEQ ID NO 1644
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1644

ATTCATAGAC TCAAAATCTT 20

<210> SEQ ID NO 1645
<211> LENGTH: 20
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1645

TATTCATAGA CTCAAAATCT 20

<210> SEQ ID NO 1646
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1646

TTCAATTGTT CGAGGTTCAA G 21

<210> SEQ ID NO 1647

<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1647

CTTCAATTGT TCGAGGTTCA A 21

<210> SEQ ID NO 1648
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1648

TCTTCAATTG TTCGAGGTTC A 21

<210> SEQ ID NO 1649
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1649

ATCTTCAATT GTTCGAGGTT C 21

<210> SEQ ID NO 1650
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1650

AATCTTCAAT TGTTCGAGGT T 21

<210> SEQ ID NO 1651
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AAATCTTCAA TTGTTCGAGG T 21

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AAAATCTTCA ATTGTTCGAG G 21

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CAAAATCTTC AATTGTTCGA G 21

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CTCAAAATCT TCAATTGTTC G 21

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ACTCAAAATC TTCAATTGTT C 21

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GACTCAAAAT CTTCAATTGT T 21

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AGACTCAAAA TCTTCAATTG T 21

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TAGACTCAAA ATCTTCAATT G 21

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ATAGACTCAA AATCTTCAAT T 21

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CATAGACTCA AAATCTTCAA T 21

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TCATAGACTC AAAATCTTCA A 21

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TTCATAGACT CAAAATCTTC A 21

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ATTCATAGAC TCAAAATCTT C 21

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TATTCATAGA CTCAAAATCT T 21

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GTATTCATAG ACTCAAAATC T 21

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<400> SEQUENCE: 1667

TTCAATTGTT CGAGGTTCAA GC 22

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CTTCAATTGT TCGAGGTTCA AG 22

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TCTTCAATTG TTCGAGGTTC AA 22

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ATCTTCAATT GTTCGAGGTT CA 22

<210> SEQ ID NO 1671
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AATCTTCAAT TGTTCGAGGT TC 22

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AAATCTTCAA TTGTTCGAGG TT 22

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AAAATCTTCA ATTGTTCGAG GT 22

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CAAAATCTTC AATTGTTCGA GG 22

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TCAAAATCTT CAATTGTTCG AG 22

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CTCAAAATCT TCAATTGTTC GA 22

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ACTCAAAATC TTCAATTGTT CG 22

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GACTCAAAAT CTTCAATTGT TC 22

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AGACTCAAAA TCTTCAATTG TT 22

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TAGACTCAAA ATCTTCAATT GT 22

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ATAGACTCAA AATCTTCAAT TG 22

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CATAGACTCA AAATCTTCAA TT 22

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TCATAGACTC AAAATCTTCA AT 22

<210> SEQ ID NO 1684
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TTCATAGACT CAAAATCTTC AA 22

<210> SEQ ID NO 1685
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<400> SEQUENCE: 1685

ATTCATAGAC TCAAAATCTT CA 22

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<400> SEQUENCE: 1686

TATTCATAGA CTCAAAATCT TC 22

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GTATTCATAG ACTCAAAATC TT 22

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TGTATTCATA GACTCAAAAT CT 22

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TTCAATTGTT CGAGGTTCAA GCG 23

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CTTCAATTGT TCGAGGTTCA AGC 23

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TCTTCAATTG TTCGAGGTTC AAG 23

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ATCTTCAATT GTTCGAGGTT CAA 23

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AATCTTCAAT TGTTCGAGGT TCA 23

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AAATCTTCAA TTGTTCGAGG TTC 23

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AAAATCTTCA ATTGTTCGAG GTT 23

<210> SEQ ID NO 1696
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CAAAATCTTC AATTGTTCGA GGT 23

<210> SEQ ID NO 1697
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<400> SEQUENCE: 1697

TCAAAATCTT CAATTGTTCG AGG 23

<210> SEQ ID NO 1698
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<212> TYPE: DNA
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<400> SEQUENCE: 1698

CTCAAAATCT TCAATTGTTC GAG 23

<210> SEQ ID NO 1699
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<400> SEQUENCE: 1699

ACTCAAAATC TTCAATTGTT CGA 23

<210> SEQ ID NO 1700
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GACTCAAAAT CTTCAATTGT TCG                                          23



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<400> SEQUENCE: 1701

AGACTCAAAA TCTTCAATTG TTC                                          23



<210> SEQ ID NO 1702
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TAGACTCAAA ATCTTCAATT GTT                                          23



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ATAGACTCAA AATCTTCAAT TGT                                          23



<210> SEQ ID NO 1704
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<400> SEQUENCE: 1704

CATAGACTCA AAATCTTCAA TTG                                          23



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TCATAGACTC AAAATCTTCA ATT                                              23


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TTCATAGACT CAAAATCTTC AAT                                              23


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ATTCATAGAC TCAAAATCTT CAA                                              23


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TATTCATAGA CTCAAAATCT TCA                                              23


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GTATTCATAG ACTCAAAATC TTC                                              23


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TGTATTCATA GACTCAAAAT CTT 23

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ATGTATTCAT AGACTCAAAA TCT 23

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<212> TYPE: DNA
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TTCAATTGTT CGAGGTTCAA GCGT 24

<210> SEQ ID NO 1713
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CTTCAATTGT TCGAGGTTCA AGCG 24

<210> SEQ ID NO 1714
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TCTTCAATTG TTCGAGGTTC AAGC 24

<210> SEQ ID NO 1715

<211> LENGTH: 24
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ATCTTCAATT GTTCGAGGTT CAAG 24

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AATCTTCAAT TGTTCGAGGT TCAA 24

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AAATCTTCAA TTGTTCGAGG TTCA 24

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AAAATCTTCA ATTGTTCGAG GTTC 24

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CAAAATCTTC AATTGTTCGA GGTT 24

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TCAAAATCTT CAATTGTTCG AGGT 24

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CTCAAAATCT TCAATTGTTC GAGG 24

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ACTCAAAATC TTCAATTGTT CGAG 24

<210> SEQ ID NO 1723
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GACTCAAAAT CTTCAATTGT TCGA 24

<210> SEQ ID NO 1724
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AGACTCAAAA TCTTCAATTG TTCG 24

<210> SEQ ID NO 1725
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TAGACTCAAA ATCTTCAATT GTTC 24

<210> SEQ ID NO 1726
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ATAGACTCAA AATCTTCAAT TGTT 24

<210> SEQ ID NO 1727
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CATAGACTCA AAATCTTCAA TTGT 24

<210> SEQ ID NO 1728
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TCATAGACTC AAAATCTTCA ATTG 24

<210> SEQ ID NO 1729
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TTCATAGACT CAAAATCTTC AATT 24

<210> SEQ ID NO 1730
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ATTCATAGAC TCAAAATCTT CAAT 24

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<212> TYPE: DNA
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TATTCATAGA CTCAAAATCT TCAA 24

<210> SEQ ID NO 1732
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GTATTCATAG ACTCAAAATC TTCA 24

<210> SEQ ID NO 1733
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TGTATTCATA GACTCAAAAT CTTC 24

<210> SEQ ID NO 1734
<211> LENGTH: 24
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<400> SEQUENCE: 1734

ATGTATTCAT AGACTCAAAA TCTT 24

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TATGTATTCA TAGACTCAAA ATCT 24

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TTCAATTGTT CGAGGTTCAA GCGTA 25

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CTTCAATTGT TCGAGGTTCA AGCGT 25

<210> SEQ ID NO 1738
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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TCTTCAATTG TTCGAGGTTC AAGCG 25

<210> SEQ ID NO 1739
<211> LENGTH: 25
<212> TYPE: DNA
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<220> FEATURES:

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<223> OTHER INFORMATION: cDNA for use as primers

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ATCTTCAATT GTTCGAGGTT CAAGC                                         25



<210> SEQ ID NO 1740
<211> LENGTH: 25
<212> TYPE: DNA
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AATCTTCAAT TGTTCGAGGT TCAAG                                         25



<210> SEQ ID NO 1741
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TCAAAATCTT CAATTGTTCG AGGTT 25

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CTCAAAATCT TCAATTGTTC GAGGT 25

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ACTCAAAATC TTCAATTGTT CGAGG 25

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GACTCAAAAT CTTCAATTGT TCGAG 25

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CATAGACTCA AAATCTTCAA TTGTT 25

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TCATAGACTC AAAATCTTCA ATTGT 25

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TATGTATTCA TAGACTCAAA ATCTT 25

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GCCATGGAGT TGGGC 15

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CCATGGAGTT GGGCT 15

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CATGGAGTTG GGCTT 15

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ATGGAGTTGG GCTTA 15

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TGGAGTTGGG CTTAG 15

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GGAGTTGGGC TTAGA 15

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GCTTAGAGGC TATTT 15

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CCATGGAGTT GGGCTT 16

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CATGGAGTTG GGCTTA 16

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TGGAGTTGGG CTTAGA 16

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GAGTTGGGCT TAGAGG 16

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AGTTGGGCTT AGAGGC 16

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<400> SEQUENCE: 1786

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TTGGGCTTAG AGGCTA 16

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GGCTTAGAGG CTATTT 16

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GCTTAGAGGC TATTTT 16

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<400> SEQUENCE: 1792

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AAGCCATGGA GTTGGGC 17

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GCCATGGAGT TGGGCTT 17

<210> SEQ ID NO 1796
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CCATGGAGTT GGGCTTA 17

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TTGGGCTTAG AGGCTAT 17

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TGGGCTTAGA GGCTATT 17

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GGGCTTAGAG GCTATTT 17

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GCTTAGAGGC TATTTTT 17

<210> SEQ ID NO 1809
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<400> SEQUENCE: 1809

GCAAGCCATG GAGTTGGG 18

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CAAGCCATGG AGTTGGGC 18

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<400> SEQUENCE: 1811

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<210> SEQ ID NO 1812
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AGCCATGGAG TTGGGCTT 18

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GCCATGGAGT TGGGCTTA 18

<210> SEQ ID NO 1814
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CCATGGAGTT GGGCTTAG 18

<210> SEQ ID NO 1815
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CATGGAGTTG GGCTTAGA 18

<210> SEQ ID NO 1816
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<210> SEQ ID NO 1817

<211> LENGTH: 18
<212> TYPE: DNA
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TGGAGTTGGG CTTAGAGG 18

<210> SEQ ID NO 1818
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<212> TYPE: DNA
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GGAGTTGGGC TTAGAGGC 18

<210> SEQ ID NO 1819
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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GAGTTGGGCT TAGAGGCT 18

<210> SEQ ID NO 1820
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AGTTGGGCTT AGAGGCTA 18

<210> SEQ ID NO 1821
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GTTGGGCTTA GAGGCTAT 18

<210> SEQ ID NO 1822
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TTGGGCTTAG AGGCTATT 18

<210> SEQ ID NO 1823
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TGGGCTTAGA GGCTATTT 18

<210> SEQ ID NO 1824
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GGGCTTAGAG GCTATTTT 18

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GCTTAGAGGC TATTTTTG 18

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GGCAAGCCAT GGAGTTGGG 19

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GCAAGCCATG GAGTTGGGC 19

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CAAGCCATGG AGTTGGGCT 19

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<400> SEQUENCE: 1830

AAGCCATGGA GTTGGGCTT 19

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AGCCATGGAG TTGGGCTTA 19

<210> SEQ ID NO 1832
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GCCATGGAGT TGGGCTTAG 19

<210> SEQ ID NO 1833
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<400> SEQUENCE: 1833

CCATGGAGTT GGGCTTAGA 19

<210> SEQ ID NO 1834
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<212> TYPE: DNA
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<400> SEQUENCE: 1834

CATGGAGTTG GGCTTAGAG 19

<210> SEQ ID NO 1835
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<400> SEQUENCE: 1835

ATGGAGTTGG GCTTAGAGG 19

<210> SEQ ID NO 1836
<211> LENGTH: 19
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<400> SEQUENCE: 1836

TGGAGTTGGG CTTAGAGGC 19

<210> SEQ ID NO 1837
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<400> SEQUENCE: 1837

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<210> SEQ ID NO 1838
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<212> TYPE: DNA
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<400> SEQUENCE: 1838

GAGTTGGGCT TAGAGGCTA 19

<210> SEQ ID NO 1839
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1839

AGTTGGGCTT AGAGGCTAT 19

<210> SEQ ID NO 1840
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1840

GTTGGGCTTA GAGGCTATT 19

<210> SEQ ID NO 1841
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1841

TTGGGCTTAG AGGCTATTT 19

<210> SEQ ID NO 1842
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<212> TYPE: DNA
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<400> SEQUENCE: 1842

TGGGCTTAGA GGCTATTTT 19

<210> SEQ ID NO 1843
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<400> SEQUENCE: 1843

GGGCTTAGAG GCTATTTTT 19

<210> SEQ ID NO 1844
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GGCTTAGAGG CTATTTTTG 19

<210> SEQ ID NO 1845
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<400> SEQUENCE: 1845

GCTTAGAGGC TATTTTTGA 19

<210> SEQ ID NO 1846
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<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1846

GGGCAAGCCA TGGAGTTGGG 20

<210> SEQ ID NO 1847
<211> LENGTH: 20
<212> TYPE: DNA
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<400> SEQUENCE: 1847

GGCAAGCCAT GGAGTTGGGC 20

<210> SEQ ID NO 1848
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<400> SEQUENCE: 1848

GCAAGCCATG GAGTTGGGCT 20

<210> SEQ ID NO 1849
<211> LENGTH: 20
<212> TYPE: DNA
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<400> SEQUENCE: 1849

CAAGCCATGG AGTTGGGCTT 20

<210> SEQ ID NO 1850
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<400> SEQUENCE: 1850

AAGCCATGGA GTTGGGCTTA 20

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<211> LENGTH: 20
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<400> SEQUENCE: 1851

AGCCATGGAG TTGGGCTTAG 20

<210> SEQ ID NO 1852
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<400> SEQUENCE: 1852

GCCATGGAGT TGGGCTTAGA 20

<210> SEQ ID NO 1853
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<400> SEQUENCE: 1853

CCATGGAGTT GGGCTTAGAG 20

<210> SEQ ID NO 1854
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<400> SEQUENCE: 1854

CATGGAGTTG GGCTTAGAGG 20

<210> SEQ ID NO 1855
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<400> SEQUENCE: 1855

ATGGAGTTGG GCTTAGAGGC 20

<210> SEQ ID NO 1856
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<212> TYPE: DNA
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TGGAGTTGGG CTTAGAGGCT 20

<210> SEQ ID NO 1857
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<400> SEQUENCE: 1857

GGAGTTGGGC TTAGAGGCTA 20

<210> SEQ ID NO 1858
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<212> TYPE: DNA
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<400> SEQUENCE: 1858

GAGTTGGGCT TAGAGGCTAT 20

<210> SEQ ID NO 1859
<211> LENGTH: 20
<212> TYPE: DNA
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<400> SEQUENCE: 1859

AGTTGGGCTT AGAGGCTATT 20

<210> SEQ ID NO 1860
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<212> TYPE: DNA
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<400> SEQUENCE: 1860

GTTGGGCTTA GAGGCTATTT 20

<210> SEQ ID NO 1861
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1861

TTGGGCTTAG AGGCTATTTT 20

<210> SEQ ID NO 1862
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<212> TYPE: DNA
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<400> SEQUENCE: 1862

TGGGCTTAGA GGCTATTTTT 20

<210> SEQ ID NO 1863
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1863

GGGCTTAGAG GCTATTTTTG 20

<210> SEQ ID NO 1864
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1864

GGCTTAGAGG CTATTTTTGA 20

<210> SEQ ID NO 1865
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1865

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<210> SEQ ID NO 1866
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1866

TGGGCAAGCC ATGGAGTTGG G                                                21


<210> SEQ ID NO 1867
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<212> TYPE: DNA
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<400> SEQUENCE: 1867

GGGCAAGCCA TGGAGTTGGG C                                                21


<210> SEQ ID NO 1868
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<400> SEQUENCE: 1868

GGCAAGCCAT GGAGTTGGGC T                                                21


<210> SEQ ID NO 1869
<211> LENGTH: 21
<212> TYPE: DNA
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<400> SEQUENCE: 1869

GCAAGCCATG GAGTTGGGCT T                                                21


<210> SEQ ID NO 1870
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<220> FEATURES:
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<400> SEQUENCE: 1870

CAAGCCATGG AGTTGGGCTT A 21

<210> SEQ ID NO 1871
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1871

AAGCCATGGA GTTGGGCTTA G 21

<210> SEQ ID NO 1872
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1872

AGCCATGGAG TTGGGCTTAG A 21

<210> SEQ ID NO 1873
<211> LENGTH: 21
<212> TYPE: DNA
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<400> SEQUENCE: 1873

GCCATGGAGT TGGGCTTAGA G 21

<210> SEQ ID NO 1874
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1874

CCATGGAGTT GGGCTTAGAG G 21

<210> SEQ ID NO 1875
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1875

CATGGAGTTG GGCTTAGAGG C 21

<210> SEQ ID NO 1876
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1876

ATGGAGTTGG GCTTAGAGGC T 21

<210> SEQ ID NO 1877
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1877

TGGAGTTGGG CTTAGAGGCT A 21

<210> SEQ ID NO 1878
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1878

GGAGTTGGGC TTAGAGGCTA T 21

<210> SEQ ID NO 1879
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1879

GAGTTGGGCT TAGAGGCTAT T 21

<210> SEQ ID NO 1880
<211> LENGTH: 21
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1880

AGTTGGGCTT AGAGGCTATT T 21

<210> SEQ ID NO 1881
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1881

GTTGGGCTTA GAGGCTATTT T 21

<210> SEQ ID NO 1882
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1882

TTGGGCTTAG AGGCTATTTT T 21

<210> SEQ ID NO 1883
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1883

TGGGCTTAGA GGCTATTTTT G 21

<210> SEQ ID NO 1884
<211> LENGTH: 21
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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1884

GGGCTTAGAG GCTATTTTTG A 21

<210> SEQ ID NO 1885

<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1885

GGCTTAGAGG CTATTTTTGA T 21

<210> SEQ ID NO 1886
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<212> TYPE: DNA
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<400> SEQUENCE: 1886

GCTTAGAGGC TATTTTTGAT C 21

<210> SEQ ID NO 1887
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1887

GTGGGCAAGC CATGGAGTTG GG 22

<210> SEQ ID NO 1888
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1888

TGGGCAAGCC ATGGAGTTGG GC 22

<210> SEQ ID NO 1889
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
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GGGCAAGCCA TGGAGTTGGG CT 22

<210> SEQ ID NO 1890
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<400> SEQUENCE: 1890

GGCAAGCCAT GGAGTTGGGC TT 22

<210> SEQ ID NO 1891
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1891

GCAAGCCATG GAGTTGGGCT TA 22

<210> SEQ ID NO 1892
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1892

CAAGCCATGG AGTTGGGCTT AG 22

<210> SEQ ID NO 1893
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1893

AAGCCATGGA GTTGGGCTTA GA 22

<210> SEQ ID NO 1894
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1894

AGCCATGGAG TTGGGCTTAG AG 22

<210> SEQ ID NO 1895
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1895

GCCATGGAGT TGGGCTTAGA GG 22

<210> SEQ ID NO 1896
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1896

CCATGGAGTT GGGCTTAGAG GC 22

<210> SEQ ID NO 1897
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1897

CATGGAGTTG GGCTTAGAGG CT 22

<210> SEQ ID NO 1898
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1898

ATGGAGTTGG GCTTAGAGGC TA 22

<210> SEQ ID NO 1899
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<212> TYPE: DNA
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<220> FEATURES:
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TGGAGTTGGG CTTAGAGGCT AT 22

<210> SEQ ID NO 1900
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1900

GGAGTTGGGC TTAGAGGCTA TT 22

<210> SEQ ID NO 1901
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1901

GAGTTGGGCT TAGAGGCTAT TT 22

<210> SEQ ID NO 1902
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<400> SEQUENCE: 1902

AGTTGGGCTT AGAGGCTATT TT 22

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<212> TYPE: DNA
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<400> SEQUENCE: 1903

GTTGGGCTTA GAGGCTATTT TT 22

<210> SEQ ID NO 1904
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

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<210> SEQ ID NO 1905
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1905

TGGGCTTAGA GGCTATTTTT GA                                              22



<210> SEQ ID NO 1906
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1906

GGGCTTAGAG GCTATTTTTG AT                                              22



<210> SEQ ID NO 1907
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1907

GGCTTAGAGG CTATTTTTGA TC                                              22



<210> SEQ ID NO 1908
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<212> TYPE: DNA
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<400> SEQUENCE: 1908

GCTTAGAGGC TATTTTTGAT CA                                              22



<210> SEQ ID NO 1909
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1909

TGTGGGCAAG CCATGGAGTT GGG 23

<210> SEQ ID NO 1910
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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GTGGGCAAGC CATGGAGTTG GGC 23

<210> SEQ ID NO 1911
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TGGGCAAGCC ATGGAGTTGG GCT 23

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GGGCAAGCCA TGGAGTTGGG CTT 23

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GGCAAGCCAT GGAGTTGGGC TTA 23

<210> SEQ ID NO 1914
<211> LENGTH: 23
<212> TYPE: DNA

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<400> SEQUENCE: 1914

GCAAGCCATG GAGTTGGGCT TAG 23

<210> SEQ ID NO 1915
<211> LENGTH: 23
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<400> SEQUENCE: 1915

CAAGCCATGG AGTTGGGCTT AGA 23

<210> SEQ ID NO 1916
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 1916

AAGCCATGGA GTTGGGCTTA GAG 23

<210> SEQ ID NO 1917
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 1917

AGCCATGGAG TTGGGCTTAG AGG 23

<210> SEQ ID NO 1918
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1918

GCCATGGAGT TGGGCTTAGA GGC 23

<210> SEQ ID NO 1919

<211> LENGTH: 23
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<400> SEQUENCE: 1919

CCATGGAGTT GGGCTTAGAG GCT 23

<210> SEQ ID NO 1920
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<212> TYPE: DNA
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<400> SEQUENCE: 1920

CATGGAGTTG GGCTTAGAGG CTA 23

<210> SEQ ID NO 1921
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<212> TYPE: DNA
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<400> SEQUENCE: 1921

ATGGAGTTGG GCTTAGAGGC TAT 23

<210> SEQ ID NO 1922
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1922

TGGAGTTGGG CTTAGAGGCT ATT 23

<210> SEQ ID NO 1923
<211> LENGTH: 23
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1923

GGAGTTGGGC TTAGAGGCTA TTT 23

<210> SEQ ID NO 1924
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<400> SEQUENCE: 1924

GAGTTGGGCT TAGAGGCTAT TTT 23

<210> SEQ ID NO 1925
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1925

AGTTGGGCTT AGAGGCTATT TTT 23

<210> SEQ ID NO 1926
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<400> SEQUENCE: 1926

GTTGGGCTTA GAGGCTATTT TTG 23

<210> SEQ ID NO 1927
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<212> TYPE: DNA
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<400> SEQUENCE: 1927

TTGGGCTTAG AGGCTATTTT TGA 23

<210> SEQ ID NO 1928
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<400> SEQUENCE: 1928

TGGGCTTAGA GGCTATTTTT GAT 23

<210> SEQ ID NO 1929
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1929

GGGCTTAGAG GCTATTTTTG ATC 23

<210> SEQ ID NO 1930
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1930

GGCTTAGAGG CTATTTTTGA TCA 23

<210> SEQ ID NO 1931
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1931

GCTTAGAGGC TATTTTTGAT CAC 23

<210> SEQ ID NO 1932
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1932

TTGTGGGCAA GCCATGGAGT TGGG 24

<210> SEQ ID NO 1933
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1933

TGTGGGCAAG CCATGGAGTT GGGC 24

<210> SEQ ID NO 1934
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1934

GTGGGCAAGC CATGGAGTTG GGCT 24

<210> SEQ ID NO 1935
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1935

TGGGCAAGCC ATGGAGTTGG GCTT 24

<210> SEQ ID NO 1936
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1936

GGGCAAGCCA TGGAGTTGGG CTTA 24

<210> SEQ ID NO 1937
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1937

GGCAAGCCAT GGAGTTGGGC TTAG 24

<210> SEQ ID NO 1938
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<212> TYPE: DNA
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<400> SEQUENCE: 1938

GCAAGCCATG GAGTTGGGCT TAGA 24

<210> SEQ ID NO 1939
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1939

CAAGCCATGG AGTTGGGCTT AGAG 24

<210> SEQ ID NO 1940
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1940

AAGCCATGGA GTTGGGCTTA GAGG 24

<210> SEQ ID NO 1941
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<212> TYPE: DNA
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<400> SEQUENCE: 1941

AGCCATGGAG TTGGGCTTAG AGGC 24

<210> SEQ ID NO 1942
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<212> TYPE: DNA
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<400> SEQUENCE: 1942

GCCATGGAGT TGGGCTTAGA GGCT 24

<210> SEQ ID NO 1943
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1943

CCATGGAGTT GGGCTTAGAG GCTA 24

<210> SEQ ID NO 1944
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<400> SEQUENCE: 1944

CATGGAGTTG GGCTTAGAGG CTAT 24

<210> SEQ ID NO 1945
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<212> TYPE: DNA
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<400> SEQUENCE: 1945

ATGGAGTTGG GCTTAGAGGC TATT 24

<210> SEQ ID NO 1946
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1946

TGGAGTTGGG CTTAGAGGCT ATTT 24

<210> SEQ ID NO 1947
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1947

GGAGTTGGGC TTAGAGGCTA TTTT 24

<210> SEQ ID NO 1948
<211> LENGTH: 24
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1948

GAGTTGGGCT TAGAGGCTAT TTTT 24

<210> SEQ ID NO 1949
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1949

AGTTGGGCTT AGAGGCTATT TTTG 24

<210> SEQ ID NO 1950
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1950

GTTGGGCTTA GAGGCTATTT TTGA 24

<210> SEQ ID NO 1951
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1951

TTGGGCTTAG AGGCTATTTT TGAT 24

<210> SEQ ID NO 1952
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 1952

TGGGCTTAGA GGCTATTTTT GATC 24

<210> SEQ ID NO 1953

<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 1953

GGGCTTAGAG GCTATTTTTG ATCA 24

<210> SEQ ID NO 1954
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1954

GGCTTAGAGG CTATTTTTGA TCAC 24

<210> SEQ ID NO 1955
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1955

GCTTAGAGGC TATTTTTGAT CACA 24

<210> SEQ ID NO 1956
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1956

ATTGTGGGCA AGCCATGGAG TTGGG 25

<210> SEQ ID NO 1957
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1957

TTGTGGGCAA GCCATGGAGT TGGGC 25

<210> SEQ ID NO 1958
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1958

TGTGGGCAAG CCATGGAGTT GGGCT 25

<210> SEQ ID NO 1959
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1959

GTGGGCAAGC CATGGAGTTG GGCTT 25

<210> SEQ ID NO 1960
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1960

TGGGCAAGCC ATGGAGTTGG GCTTA 25

<210> SEQ ID NO 1961
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 1961

GGGCAAGCCA TGGAGTTGGG CTTAG 25

<210> SEQ ID NO 1962
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1962

GGCAAGCCAT GGAGTTGGGC TTAGA 25

<210> SEQ ID NO 1963
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1963

GCAAGCCATG GAGTTGGGCT TAGAG 25

<210> SEQ ID NO 1964
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1964

CAAGCCATGG AGTTGGGCTT AGAGG 25

<210> SEQ ID NO 1965
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1965

AAGCCATGGA GTTGGGCTTA GAGGC 25

<210> SEQ ID NO 1966
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1966

AGCCATGGAG TTGGGCTTAG AGGCT 25

<210> SEQ ID NO 1967
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1967

GCCATGGAGT TGGGCTTAGA GGCTA 25

<210> SEQ ID NO 1968
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1968

CCATGGAGTT GGGCTTAGAG GCTAT 25

<210> SEQ ID NO 1969
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1969

CATGGAGTTG GGCTTAGAGG CTATT 25

<210> SEQ ID NO 1970
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1970

ATGGAGTTGG GCTTAGAGGC TATTT 25

<210> SEQ ID NO 1971
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1971

TGGAGTTGGG CTTAGAGGCT ATTTT 25

<210> SEQ ID NO 1972
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1972

GGAGTTGGGC TTAGAGGCTA TTTTT 25

<210> SEQ ID NO 1973
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1973

GAGTTGGGCT TAGAGGCTAT TTTTG 25

<210> SEQ ID NO 1974
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1974

AGTTGGGCTT AGAGGCTATT TTTGA 25

<210> SEQ ID NO 1975
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1975

GTTGGGCTTA GAGGCTATTT TTGAT 25

<210> SEQ ID NO 1976
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1976

TTGGGCTTAG AGGCTATTTT TGATC 25

<210> SEQ ID NO 1977
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:

<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1977

TGGGCTTAGA GGCTATTTTT GATCA 25

<210> SEQ ID NO 1978
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1978

GGGCTTAGAG GCTATTTTTG ATCAC 25

<210> SEQ ID NO 1979
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1979

GGCTTAGAGG CTATTTTTGA TCACA 25

<210> SEQ ID NO 1980
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1980

GCTTAGAGGC TATTTTTGAT CACAT 25

<210> SEQ ID NO 1981
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1981

CCCAACTCCA TGGCT 15

<210> SEQ ID NO 1982
<211> LENGTH: 15
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1982

GCCCAACTCC ATGGC 15

<210> SEQ ID NO 1983
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1983

AGCCCAACTC CATGG 15

<210> SEQ ID NO 1984
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1984

AAGCCCAACT CCATG 15

<210> SEQ ID NO 1985
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1985

TAAGCCCAAC TCCAT 15

<210> SEQ ID NO 1986
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1986

CTAAGCCCAA CTCCA 15

<210> SEQ ID NO 1987

<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1987

TCTAAGCCCA ACTCC 15

<210> SEQ ID NO 1988
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1988

CTCTAAGCCC AACTC 15

<210> SEQ ID NO 1989
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1989

CCTCTAAGCC CAACT 15

<210> SEQ ID NO 1990
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1990

GCCTCTAAGC CCAAC 15

<210> SEQ ID NO 1991
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1991

AGCCTCTAAG CCCAA 15

<210> SEQ ID NO 1992
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1992

TAGCCTCTAA GCCCA 15

<210> SEQ ID NO 1993
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1993

ATAGCCTCTA AGCCC 15

<210> SEQ ID NO 1994
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1994

AATAGCCTCT AAGCC 15

<210> SEQ ID NO 1995
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1995

AAATAGCCTC TAAGC 15

<210> SEQ ID NO 1996
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1996

CCCAACTCCA TGGCTT 16

<210> SEQ ID NO 1997
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1997

GCCCAACTCC ATGGCT 16

<210> SEQ ID NO 1998
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1998

AGCCCAACTC CATGGC 16

<210> SEQ ID NO 1999
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 1999

AAGCCCAACT CCATGG 16

<210> SEQ ID NO 2000
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2000

TAAGCCCAAC TCCATG 16

<210> SEQ ID NO 2001
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2001

CTAAGCCCAA CTCCAT 16

<210> SEQ ID NO 2002
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2002

TCTAAGCCCA ACTCCA 16

<210> SEQ ID NO 2003
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2003

CTCTAAGCCC AACTCC 16

<210> SEQ ID NO 2004
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2004

CCTCTAAGCC CAACTC 16

<210> SEQ ID NO 2005
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2005

GCCTCTAAGC CCAACT 16

<210> SEQ ID NO 2006
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2006

AGCCTCTAAG CCCAAC 16

<210> SEQ ID NO 2007
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2007

TAGCCTCTAA GCCCAA 16

<210> SEQ ID NO 2008
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2008

ATAGCCTCTA AGCCCA 16

<210> SEQ ID NO 2009
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2009

AATAGCCTCT AAGCCC 16

<210> SEQ ID NO 2010
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2010

AAATAGCCTC TAAGCC 16

<210> SEQ ID NO 2011
<211> LENGTH: 16
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:

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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2011

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<210> SEQ ID NO 2012
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2012

CCCAACTCCA TGGCTTG                                                 17



<210> SEQ ID NO 2013
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2013

GCCCAACTCC ATGGCTT                                                 17



<210> SEQ ID NO 2014
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2014

AGCCCAACTC CATGGCT                                                 17



<210> SEQ ID NO 2015
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2015

AAGCCCAACT CCATGGC                                                 17



<210> SEQ ID NO 2016
<211> LENGTH: 17
<212> TYPE: DNA
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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2016

TAAGCCCAAC TCCATGG 17

<210> SEQ ID NO 2017
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2017

CTAAGCCCAA CTCCATG 17

<210> SEQ ID NO 2018
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2018

TCTAAGCCCA ACTCCAT 17

<210> SEQ ID NO 2019
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2019

CTCTAAGCCC AACTCCA 17

<210> SEQ ID NO 2020
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2020

CCTCTAAGCC CAACTCC 17

<210> SEQ ID NO 2021

<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2021

GCCTCTAAGC CCAACTC 17

<210> SEQ ID NO 2022
<211> LENGTH: 17
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2022

AGCCTCTAAG CCCAACT 17

<210> SEQ ID NO 2023
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<400> SEQUENCE: 2023

TAGCCTCTAA GCCCAAC 17

<210> SEQ ID NO 2024
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<400> SEQUENCE: 2024

ATAGCCTCTA AGCCCAA 17

<210> SEQ ID NO 2025
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<400> SEQUENCE: 2025

AATAGCCTCT AAGCCCA 17

<210> SEQ ID NO 2026
<211> LENGTH: 17
<212> TYPE: DNA
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<400> SEQUENCE: 2026

AAATAGCCTC TAAGCCC 17

<210> SEQ ID NO 2027
<211> LENGTH: 17
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AAAATAGCCT CTAAGCC 17

<210> SEQ ID NO 2028
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<212> TYPE: DNA
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<400> SEQUENCE: 2028

AAAAATAGCC TCTAAGC 17

<210> SEQ ID NO 2029
<211> LENGTH: 18
<212> TYPE: DNA
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<400> SEQUENCE: 2029

CCCAACTCCA TGGCTTGC 18

<210> SEQ ID NO 2030
<211> LENGTH: 18
<212> TYPE: DNA
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<400> SEQUENCE: 2030

GCCCAACTCC ATGGCTTG 18

<210> SEQ ID NO 2031
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<400> SEQUENCE: 2031

AGCCCAACTC CATGGCTT 18

<210> SEQ ID NO 2032
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<400> SEQUENCE: 2032

AAGCCCAACT CCATGGCT 18

<210> SEQ ID NO 2033
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TAAGCCCAAC TCCATGGC 18

<210> SEQ ID NO 2034
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CTAAGCCCAA CTCCATGG 18

<210> SEQ ID NO 2035
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TCTAAGCCCA ACTCCATG 18

<210> SEQ ID NO 2036
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CTCTAAGCCC AACTCCAT 18

<210> SEQ ID NO 2037
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CCTCTAAGCC CAACTCCA 18

<210> SEQ ID NO 2038
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GCCTCTAAGC CCAACTCC 18

<210> SEQ ID NO 2039
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AGCCTCTAAG CCCAACTC 18

<210> SEQ ID NO 2040
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TAGCCTCTAA GCCCAACT 18

<210> SEQ ID NO 2041
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ATAGCCTCTA AGCCCAAC 18

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AATAGCCTCT AAGCCCAA 18

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AAATAGCCTC TAAGCCCA 18

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AAAATAGCCT CTAAGCCC 18

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<400> SEQUENCE: 2045

AAAAATAGCC TCTAAGCC 18

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CAAAAATAGC CTCTAAGC 18

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<400> SEQUENCE: 2047

CCCAACTCCA TGGCTTGCC 19

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<400> SEQUENCE: 2048

GCCCAACTCC ATGGCTTGC 19

<210> SEQ ID NO 2049
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<400> SEQUENCE: 2049

AGCCCAACTC CATGGCTTG 19

<210> SEQ ID NO 2050
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<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 2050

AAGCCCAACT CCATGGCTT 19

<210> SEQ ID NO 2051
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<212> TYPE: DNA
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<400> SEQUENCE: 2051

TAAGCCCAAC TCCATGGCT 19

<210> SEQ ID NO 2052
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<400> SEQUENCE: 2052

CTAAGCCCAA CTCCATGGC 19

<210> SEQ ID NO 2053
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TCTAAGCCCA ACTCCATGG 19

<210> SEQ ID NO 2054
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<400> SEQUENCE: 2054

CTCTAAGCCC AACTCCATG 19

<210> SEQ ID NO 2055

<211> LENGTH: 19
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2055

CCTCTAAGCC CAACTCCAT 19

<210> SEQ ID NO 2056
<211> LENGTH: 19
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2056

GCCTCTAAGC CCAACTCCA 19

<210> SEQ ID NO 2057
<211> LENGTH: 19
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2057

AGCCTCTAAG CCCAACTCC 19

<210> SEQ ID NO 2058
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2058

TAGCCTCTAA GCCCAACTC 19

<210> SEQ ID NO 2059
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2059

ATAGCCTCTA AGCCCAACT 19

<210> SEQ ID NO 2060
<211> LENGTH: 19
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2060

AATAGCCTCT AAGCCCAAC 19

<210> SEQ ID NO 2061
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2061

AAATAGCCTC TAAGCCCAA 19

<210> SEQ ID NO 2062
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2062

AAAATAGCCT CTAAGCCCA 19

<210> SEQ ID NO 2063
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2063

AAAAATAGCC TCTAAGCCC 19

<210> SEQ ID NO 2064
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2064

CAAAAATAGC CTCTAAGCC 19

<210> SEQ ID NO 2065
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2065

TCAAAAATAG CCTCTAAGC 19

<210> SEQ ID NO 2066
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2066

CCCAACTCCA TGGCTTGCCC 20

<210> SEQ ID NO 2067
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2067

GCCCAACTCC ATGGCTTGCC 20

<210> SEQ ID NO 2068
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2068

AGCCCAACTC CATGGCTTGC 20

<210> SEQ ID NO 2069
<211> LENGTH: 20
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2069

AAGCCCAACT CCATGGCTTG 20

<210> SEQ ID NO 2070
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2070

TAAGCCCAAC TCCATGGCTT 20

<210> SEQ ID NO 2071
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2071

CTAAGCCCAA CTCCATGGCT 20

<210> SEQ ID NO 2072
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2072

TCTAAGCCCA ACTCCATGGC 20

<210> SEQ ID NO 2073
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2073

CTCTAAGCCC AACTCCATGG 20

<210> SEQ ID NO 2074
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2074

CCTCTAAGCC CAACTCCATG 20

<210> SEQ ID NO 2075
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2075

GCCTCTAAGC CCAACTCCAT 20

<210> SEQ ID NO 2076
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2076

AGCCTCTAAG CCCAACTCCA 20

<210> SEQ ID NO 2077
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2077

TAGCCTCTAA GCCCAACTCC 20

<210> SEQ ID NO 2078
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2078

ATAGCCTCTA AGCCCAACTC 20

<210> SEQ ID NO 2079
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2079

AATAGCCTCT AAGCCCAACT 20

<210> SEQ ID NO 2080
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2080

AAATAGCCTC TAAGCCCAAC 20

<210> SEQ ID NO 2081
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2081

AAAATAGCCT CTAAGCCCAA 20

<210> SEQ ID NO 2082
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2082

AAAAATAGCC TCTAAGCCCA 20

<210> SEQ ID NO 2083
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2083

CAAAAATAGC CTCTAAGCCC 20

<210> SEQ ID NO 2084
<211> LENGTH: 20
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2084

TCAAAAATAG CCTCTAAGCC 20

<210> SEQ ID NO 2085
<211> LENGTH: 20
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2085

ATCAAAAATA GCCTCTAAGC 20

<210> SEQ ID NO 2086
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2086

CCCAACTCCA TGGCTTGCCC A 21

<210> SEQ ID NO 2087
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2087

GCCCAACTCC ATGGCTTGCC C 21

<210> SEQ ID NO 2088
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2088

AGCCCAACTC CATGGCTTGC C 21

<210> SEQ ID NO 2089

<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2089

AAGCCCAACT CCATGGCTTG C 21

<210> SEQ ID NO 2090
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2090

TAAGCCCAAC TCCATGGCTT G 21

<210> SEQ ID NO 2091
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2091

CTAAGCCCAA CTCCATGGCT T 21

<210> SEQ ID NO 2092
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2092

TCTAAGCCCA ACTCCATGGC T 21

<210> SEQ ID NO 2093
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2093

CTCTAAGCCC AACTCCATGG C 21

<210> SEQ ID NO 2094
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2094

CCTCTAAGCC CAACTCCATG G 21

<210> SEQ ID NO 2095
<211> LENGTH: 21
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2095

GCCTCTAAGC CCAACTCCAT G 21

<210> SEQ ID NO 2096
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2096

AGCCTCTAAG CCCAACTCCA T 21

<210> SEQ ID NO 2097
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2097

TAGCCTCTAA GCCCAACTCC A 21

<210> SEQ ID NO 2098
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2098

ATAGCCTCTA AGCCCAACTC C 21

<210> SEQ ID NO 2099
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2099

AATAGCCTCT AAGCCCAACT C 21

<210> SEQ ID NO 2100
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2100

AAATAGCCTC TAAGCCCAAC T 21

<210> SEQ ID NO 2101
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2101

AAAATAGCCT CTAAGCCCAA C 21

<210> SEQ ID NO 2102
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2102

AAAAATAGCC TCTAAGCCCA A 21

<210> SEQ ID NO 2103
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2103

CAAAAATAGC CTCTAAGCCC A 21

<210> SEQ ID NO 2104
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2104

TCAAAAATAG CCTCTAAGCC C 21

<210> SEQ ID NO 2105
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2105

ATCAAAAATA GCCTCTAAGC C 21

<210> SEQ ID NO 2106
<211> LENGTH: 21
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2106

GATCAAAAAT AGCCTCTAAG C 21

<210> SEQ ID NO 2107
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2107

CCCAACTCCA TGGCTTGCCC AC 22

<210> SEQ ID NO 2108
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2108

GCCCAACTCC ATGGCTTGCC CA 22

<210> SEQ ID NO 2109
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2109

AGCCCAACTC CATGGCTTGC CC 22

<210> SEQ ID NO 2110
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2110

AAGCCCAACT CCATGGCTTG CC 22

<210> SEQ ID NO 2111
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2111

TAAGCCCAAC TCCATGGCTT GC 22

<210> SEQ ID NO 2112
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2112

CTAAGCCCAA CTCCATGGCT TG 22

<210> SEQ ID NO 2113
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:

<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2113

TCTAAGCCCA ACTCCATGGC TT 22

<210> SEQ ID NO 2114
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2114

CTCTAAGCCC AACTCCATGG CT 22

<210> SEQ ID NO 2115
<211> LENGTH: 22
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2115

CCTCTAAGCC CAACTCCATG GC 22

<210> SEQ ID NO 2116
<211> LENGTH: 22
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<400> SEQUENCE: 2116

GCCTCTAAGC CCAACTCCAT GG 22

<210> SEQ ID NO 2117
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<212> TYPE: DNA
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AGCCTCTAAG CCCAACTCCA TG 22

<210> SEQ ID NO 2118
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<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 2118

TAGCCTCTAA GCCCAACTCC AT 22

<210> SEQ ID NO 2119
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ATAGCCTCTA AGCCCAACTC CA 22

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AATAGCCTCT AAGCCCAACT CC 22

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AAATAGCCTC TAAGCCCAAC TC 22

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AAAATAGCCT CTAAGCCCAA CT 22

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<220> FEATURES:
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CAAAAATAGC CTCTAAGCCC AA                                                22


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TCAAAAATAG CCTCTAAGCC CA                                                22


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GATCAAAAAT AGCCTCTAAG CC                                                22
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TGATCAAAAA TAGCCTCTAA GC 22

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CCCAACTCCA TGGCTTGCCC ACA 23

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TAAGCCCAAC TCCATGGCTT GCC 23

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TCTAAGCCCA ACTCCATGGC TTG 23

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CCTCTAAGCC CAACTCCATG GCT 23

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GCCTCTAAGC CCAACTCCAT GGC 23

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TAGCCTCTAA GCCCAACTCC ATG 23

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ATAGCCTCTA AGCCCAACTC CAT 23

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AATAGCCTCT AAGCCCAACT CCA 23

<210> SEQ ID NO 2143
<211> LENGTH: 23
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AAAATAGCCT CTAAGCCCAA CTC 23

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AAAAATAGCC TCTAAGCCCA ACT 23

<210> SEQ ID NO 2146
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CAAAAATAGC CTCTAAGCCC AAC 23

<210> SEQ ID NO 2147
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TCAAAAATAG CCTCTAAGCC CAA 23

<210> SEQ ID NO 2148
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<212> TYPE: DNA
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<400> SEQUENCE: 2148

ATCAAAAATA GCCTCTAAGC CCA 23

<210> SEQ ID NO 2149
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 2149

GATCAAAAAT AGCCTCTAAG CCC 23

<210> SEQ ID NO 2150
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 2150

TGATCAAAAA TAGCCTCTAA GCC 23

<210> SEQ ID NO 2151
<211> LENGTH: 23
<212> TYPE: DNA
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GTGATCAAAA ATAGCCTCTA AGC 23

<210> SEQ ID NO 2152
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<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2152

CCCAACTCCA TGGCTTGCCC ACAA 24

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<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 2153

GCCCAACTCC ATGGCTTGCC CACA 24

<210> SEQ ID NO 2154
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 2154

AGCCCAACTC CATGGCTTGC CCAC 24

<210> SEQ ID NO 2155
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<210> SEQ ID NO 2156
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 2156

TAAGCCCAAC TCCATGGCTT GCCC 24

<210> SEQ ID NO 2157

<211> LENGTH: 24
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CTAAGCCCAA CTCCATGGCT TGCC 24

<210> SEQ ID NO 2158
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TCTAAGCCCA ACTCCATGGC TTGC 24

<210> SEQ ID NO 2159
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 2159

CTCTAAGCCC AACTCCATGG CTTG 24

<210> SEQ ID NO 2160
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 2160

CCTCTAAGCC CAACTCCATG GCTT 24

<210> SEQ ID NO 2161
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 2161

GCCTCTAAGC CCAACTCCAT GGCT 24

<210> SEQ ID NO 2162
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 2162

AGCCTCTAAG CCCAACTCCA TGGC 24

<210> SEQ ID NO 2163
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 2163

TAGCCTCTAA GCCCAACTCC ATGG 24

<210> SEQ ID NO 2164
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2164

ATAGCCTCTA AGCCCAACTC CATG 24

<210> SEQ ID NO 2165
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2165

AATAGCCTCT AAGCCCAACT CCAT 24

<210> SEQ ID NO 2166
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 2166

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<210> SEQ ID NO 2167
<211> LENGTH: 24
<212> TYPE: DNA
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<400> SEQUENCE: 2167

AAAATAGCCT CTAAGCCCAA CTCC 24

<210> SEQ ID NO 2168
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2168

AAAAATAGCC TCTAAGCCCA ACTC 24

<210> SEQ ID NO 2169
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2169

CAAAAATAGC CTCTAAGCCC AACT 24

<210> SEQ ID NO 2170
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 2170

TCAAAAATAG CCTCTAAGCC CAAC 24

<210> SEQ ID NO 2171
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2171

ATCAAAAATA GCCTCTAAGC CCAA 24

<210> SEQ ID NO 2172
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2172

GATCAAAAAT AGCCTCTAAG CCCA 24

<210> SEQ ID NO 2173
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2173

TGATCAAAAA TAGCCTCTAA GCCC 24

<210> SEQ ID NO 2174
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2174

GTGATCAAAA ATAGCCTCTA AGCC 24

<210> SEQ ID NO 2175
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2175

TGTGATCAAA AATAGCCTCT AAGC 24

<210> SEQ ID NO 2176
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2176

CCCAACTCCA TGGCTTGCCC ACAAT 25

<210> SEQ ID NO 2177
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2177

GCCCAACTCC ATGGCTTGCC CACAA 25

<210> SEQ ID NO 2178
<211> LENGTH: 25
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 2178

AGCCCAACTC CATGGCTTGC CCACA 25

<210> SEQ ID NO 2179
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2179

AAGCCCAACT CCATGGCTTG CCCAC 25

<210> SEQ ID NO 2180
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2180

TAAGCCCAAC TCCATGGCTT GCCCA 25

<210> SEQ ID NO 2181
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:

<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2181

CTAAGCCCAA CTCCATGGCT TGCCC 25

<210> SEQ ID NO 2182
<211> LENGTH: 25
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 2182

TCTAAGCCCA ACTCCATGGC TTGCC 25

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<211> LENGTH: 25
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<400> SEQUENCE: 2183

CTCTAAGCCC AACTCCATGG CTTGC 25

<210> SEQ ID NO 2184
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<212> TYPE: DNA
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<400> SEQUENCE: 2184

CCTCTAAGCC CAACTCCATG GCTTG 25

<210> SEQ ID NO 2185
<211> LENGTH: 25
<212> TYPE: DNA
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<400> SEQUENCE: 2185

GCCTCTAAGC CCAACTCCAT GGCTT 25

<210> SEQ ID NO 2186
<211> LENGTH: 25
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2186

AGCCTCTAAG CCCAACTCCA TGGCT 25

<210> SEQ ID NO 2187
<211> LENGTH: 25
<212> TYPE: DNA
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<400> SEQUENCE: 2187

TAGCCTCTAA GCCCAACTCC ATGGC 25

<210> SEQ ID NO 2188
<211> LENGTH: 25
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 2188

ATAGCCTCTA AGCCCAACTC CATGG 25

<210> SEQ ID NO 2189
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 2189

AATAGCCTCT AAGCCCAACT CCATG 25

<210> SEQ ID NO 2190
<211> LENGTH: 25
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<400> SEQUENCE: 2190

AAATAGCCTC TAAGCCCAAC TCCAT 25

<210> SEQ ID NO 2191

<211> LENGTH: 25
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<400> SEQUENCE: 2191

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<210> SEQ ID NO 2192
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<400> SEQUENCE: 2192

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<210> SEQ ID NO 2193
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<400> SEQUENCE: 2193

CAAAAATAGC CTCTAAGCCC AACTC 25

<210> SEQ ID NO 2194
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<212> TYPE: DNA
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TCAAAAATAG CCTCTAAGCC CAACT 25

<210> SEQ ID NO 2195
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<212> TYPE: DNA
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ATCAAAAATA GCCTCTAAGC CCAAC 25

<210> SEQ ID NO 2196
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<400> SEQUENCE: 2196

GATCAAAAAT AGCCTCTAAG CCCAA 25

<210> SEQ ID NO 2197
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<212> TYPE: DNA
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TGATCAAAAA TAGCCTCTAA GCCCA 25

<210> SEQ ID NO 2198
<211> LENGTH: 25
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GTGATCAAAA ATAGCCTCTA AGCCC 25

<210> SEQ ID NO 2199
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<212> TYPE: DNA
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<400> SEQUENCE: 2199

TGTGATCAAA AATAGCCTCT AAGCC 25

<210> SEQ ID NO 2200
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2200

ATGTGATCAA AAATAGCCTC TAAGC 25

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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2201

CATTTTCTGC TTGAC 15

<210> SEQ ID NO 2202
<211> LENGTH: 15
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2202

ATTTTCTGCT TGACA 15

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<212> TYPE: DNA
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<400> SEQUENCE: 2203

TTTTCTGCTT GACAG 15

<210> SEQ ID NO 2204
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<212> TYPE: DNA
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<400> SEQUENCE: 2204

TTTCTGCTTG ACAGA 15

<210> SEQ ID NO 2205
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<212> TYPE: DNA
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<400> SEQUENCE: 2205

TTCTGCTTGA CAGAA 15

<210> SEQ ID NO 2206
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<212> TYPE: DNA
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<400> SEQUENCE: 2206

TCTGCTTGAC AGAAG 15

<210> SEQ ID NO 2207
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<212> TYPE: DNA
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CTGCTTGACA GAAGA 15

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TGCTTGACAG AAGAG 15

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GCTTGACAGA AGAGA 15

<210> SEQ ID NO 2210
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CTTGACAGAA GAGAG 15

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TTGACAGAAG AGAGA 15

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TGACAGAAGA GAGAG 15

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GACAGAAGAG AGAGG 15

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ACAGAAGAGA GAGGA 15

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CAGAAGAGAG AGGAA 15

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GCATTTTCTG CTTGAC 16

<210> SEQ ID NO 2217
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<212> TYPE: DNA
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CATTTTCTGC TTGACA 16

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ATTTTCTGCT TGACAG 16

<210> SEQ ID NO 2219
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TTTTCTGCTT GACAGA 16

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TTTCTGCTTG ACAGAA 16

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TTCTGCTTGA CAGAAG 16

<210> SEQ ID NO 2222
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TCTGCTTGAC AGAAGA 16

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CTGCTTGACA GAAGAG 16

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TGCTTGACAG AAGAGA 16

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GCTTGACAGA AGAGAG 16

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CTTGACAGAA GAGAGA 16

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TTGACAGAAG AGAGAG 16

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TGACAGAAGA GAGAGG 16

<210> SEQ ID NO 2229
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GACAGAAGAG AGAGGA 16

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ACAGAAGAGA GAGGAA                                                  16



<210> SEQ ID NO 2231
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<400> SEQUENCE: 2231

CAGAAGAGAG AGGAAT                                                  16



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<400> SEQUENCE: 2232

TGCATTTTCT GCTTGAC                                                 17



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GCATTTTCTG CTTGACA                                                 17



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CATTTTCTGC TTGACAG                                                 17
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<400> SEQUENCE: 2235

ATTTTCTGCT TGACAGA 17

<210> SEQ ID NO 2236
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<400> SEQUENCE: 2236

TTTTCTGCTT GACAGAA 17

<210> SEQ ID NO 2237
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<400> SEQUENCE: 2237

TTTCTGCTTG ACAGAAG 17

<210> SEQ ID NO 2238
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<400> SEQUENCE: 2238

TTCTGCTTGA CAGAAGA 17

<210> SEQ ID NO 2239
<211> LENGTH: 17
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<400> SEQUENCE: 2239

TCTGCTTGAC AGAAGAG 17

<210> SEQ ID NO 2240
<211> LENGTH: 17
<212> TYPE: DNA
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<400> SEQUENCE: 2240

CTGCTTGACA GAAGAGA 17

<210> SEQ ID NO 2241
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<400> SEQUENCE: 2241

TGCTTGACAG AAGAGAG 17

<210> SEQ ID NO 2242
<211> LENGTH: 17
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2242

GCTTGACAGA AGAGAGA 17

<210> SEQ ID NO 2243
<211> LENGTH: 17
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2243

CTTGACAGAA GAGAGAG 17

<210> SEQ ID NO 2244
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2244

TTGACAGAAG AGAGAGG 17

<210> SEQ ID NO 2245
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TGACAGAAGA GAGAGGA 17

<210> SEQ ID NO 2246
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<400> SEQUENCE: 2246

GACAGAAGAG AGAGGAA 17

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<400> SEQUENCE: 2247

ACAGAAGAGA GAGGAAT 17

<210> SEQ ID NO 2248
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<400> SEQUENCE: 2248

CAGAAGAGAG AGGAATC 17

<210> SEQ ID NO 2249
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2249

TTGCATTTTC TGCTTGAC 18

<210> SEQ ID NO 2250
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<400> SEQUENCE: 2250

TGCATTTTCT GCTTGACA 18

<210> SEQ ID NO 2251
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2251

GCATTTTCTG CTTGACAG 18

<210> SEQ ID NO 2252
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2252

CATTTTCTGC TTGACAGA 18

<210> SEQ ID NO 2253
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2253

ATTTTCTGCT TGACAGAA 18

<210> SEQ ID NO 2254
<211> LENGTH: 18
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 2254

TTTTCTGCTT GACAGAAG 18

<210> SEQ ID NO 2255
<211> LENGTH: 18
<212> TYPE: DNA
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<400> SEQUENCE: 2255

TTTCTGCTTG ACAGAAGA 18

<210> SEQ ID NO 2256
<211> LENGTH: 18
<212> TYPE: DNA
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TTCTGCTTGA CAGAAGAG 18

<210> SEQ ID NO 2257
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TCTGCTTGAC AGAAGAGA 18

<210> SEQ ID NO 2258
<211> LENGTH: 18
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2258

CTGCTTGACA GAAGAGAG 18

<210> SEQ ID NO 2259

<211> LENGTH: 18
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2259

TGCTTGACAG AAGAGAGA 18

<210> SEQ ID NO 2260
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<400> SEQUENCE: 2260

GCTTGACAGA AGAGAGAG 18

<210> SEQ ID NO 2261
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<212> TYPE: DNA
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<400> SEQUENCE: 2261

CTTGACAGAA GAGAGAGG 18

<210> SEQ ID NO 2262
<211> LENGTH: 18
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2262

TTGACAGAAG AGAGAGGA 18

<210> SEQ ID NO 2263
<211> LENGTH: 18
<212> TYPE: DNA
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<400> SEQUENCE: 2263

TGACAGAAGA GAGAGGAA 18

<210> SEQ ID NO 2264
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2264

GACAGAAGAG AGAGGAAT 18

<210> SEQ ID NO 2265
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 2265

ACAGAAGAGA GAGGAATC 18

<210> SEQ ID NO 2266
<211> LENGTH: 18
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2266

CAGAAGAGAG AGGAATCT 18

<210> SEQ ID NO 2267
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2267

CTTGCATTTT CTGCTTGAC 19

<210> SEQ ID NO 2268
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<212> TYPE: DNA
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<400> SEQUENCE: 2268

TTGCATTTTC TGCTTGACA 19

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<400> SEQUENCE: 2269

TGCATTTTCT GCTTGACAG                                                19


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<212> TYPE: DNA
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<400> SEQUENCE: 2270

GCATTTTCTG CTTGACAGA                                                19


<210> SEQ ID NO 2271
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<400> SEQUENCE: 2271

CATTTTCTGC TTGACAGAA                                                19


<210> SEQ ID NO 2272
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2272

ATTTTCTGCT TGACAGAAG                                                19


<210> SEQ ID NO 2273
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<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 2273
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TTTTCTGCTT GACAGAAGA 19

<210> SEQ ID NO 2274
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2274

TTTCTGCTTG ACAGAAGAG 19

<210> SEQ ID NO 2275
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<400> SEQUENCE: 2275

TTCTGCTTGA CAGAAGAGA 19

<210> SEQ ID NO 2276
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TCTGCTTGAC AGAAGAGAG 19

<210> SEQ ID NO 2277
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CTGCTTGACA GAAGAGAGA 19

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TGCTTGACAG AAGAGAGAG 19

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GCTTGACAGA AGAGAGAGG 19

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<400> SEQUENCE: 2280

CTTGACAGAA GAGAGAGGA 19

<210> SEQ ID NO 2281
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2281

TTGACAGAAG AGAGAGGAA 19

<210> SEQ ID NO 2282
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2282

TGACAGAAGA GAGAGGAAT 19

<210> SEQ ID NO 2283
<211> LENGTH: 19
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:

<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2283

GACAGAAGAG AGAGGAATC 19

<210> SEQ ID NO 2284
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2284

ACAGAAGAGA GAGGAATCT 19

<210> SEQ ID NO 2285
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2285

CAGAAGAGAG AGGAATCTG 19

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<400> SEQUENCE: 2286

CCTTGCATTT TCTGCTTGAC 20

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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2287

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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2288

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<400> SEQUENCE: 2289

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CATTTTCTGC TTGACAGAAG 20

<210> SEQ ID NO 2292
<211> LENGTH: 20
<212> TYPE: DNA
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<400> SEQUENCE: 2292

ATTTTCTGCT TGACAGAAGA 20

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<211> LENGTH: 20
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TTTTCTGCTT GACAGAAGAG 20

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<212> TYPE: DNA
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TTTCTGCTTG ACAGAAGAGA 20

<210> SEQ ID NO 2295
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<400> SEQUENCE: 2295

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<210> SEQ ID NO 2296
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<400> SEQUENCE: 2296

TCTGCTTGAC AGAAGAGAGA 20

<210> SEQ ID NO 2297
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2297

CTGCTTGACA GAAGAGAGAG 20

<210> SEQ ID NO 2298
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2298

TGCTTGACAG AAGAGAGAGG 20

<210> SEQ ID NO 2299
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2299

GCTTGACAGA AGAGAGAGGA 20

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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2300

CTTGACAGAA GAGAGAGGAA 20

<210> SEQ ID NO 2301
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<400> SEQUENCE: 2301

TTGACAGAAG AGAGAGGAAT 20

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ACAGAAGAGA GAGGAATCTG 20

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<213> ORGANISM: Artificial Sequence
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CAGAAGAGAG AGGAATCTGG 20

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<212> TYPE: DNA
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<400> SEQUENCE: 2307

CCTTGCATTT TCTGCTTGAC A 21

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<400> SEQUENCE: 2308

CTTGCATTTT CTGCTTGACA G 21

<210> SEQ ID NO 2309
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TTGCATTTTC TGCTTGACAG A 21

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TGCATTTTCT GCTTGACAGA A 21

<210> SEQ ID NO 2311
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GCATTTTCTG CTTGACAGAA G 21

<210> SEQ ID NO 2312
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TTTCTGCTTG ACAGAAGAGA G                                                 21



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TTCTGCTTGA CAGAAGAGAG A                                                 21



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TCTGCTTGAC AGAAGAGAGA G 21

<210> SEQ ID NO 2318
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CTGCTTGACA GAAGAGAGAG G 21

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TGCTTGACAG AAGAGAGAGG A 21

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GCTTGACAGA AGAGAGAGGA A 21

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<210> SEQ ID NO 2322
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<400> SEQUENCE: 2322

TTGACAGAAG AGAGAGGAAT C 21

<210> SEQ ID NO 2323
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TGACAGAAGA GAGAGGAATC T 21

<210> SEQ ID NO 2324
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GACAGAAGAG AGAGGAATCT G 21

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ACAGAAGAGA GAGGAATCTG G 21

<210> SEQ ID NO 2326
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<400> SEQUENCE: 2326

CAGAAGAGAG AGGAATCTGG T 21

<210> SEQ ID NO 2327

<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 2327

TGCCTTGCAT TTTCTGCTTG AC 22

<210> SEQ ID NO 2328
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 2329

CCTTGCATTT TCTGCTTGAC AG 22

<210> SEQ ID NO 2330
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<400> SEQUENCE: 2330

CTTGCATTTT CTGCTTGACA GA 22

<210> SEQ ID NO 2331
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TTGCATTTTC TGCTTGACAG AA 22

<210> SEQ ID NO 2332
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TGCATTTTCT GCTTGACAGA AG 22

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GCATTTTCTG CTTGACAGAA GA 22

<210> SEQ ID NO 2334
<211> LENGTH: 22
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CATTTTCTGC TTGACAGAAG AG 22

<210> SEQ ID NO 2335
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 2335

ATTTTCTGCT TGACAGAAGA GA 22

<210> SEQ ID NO 2336
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2336

TTTTCTGCTT GACAGAAGAG AG 22

<210> SEQ ID NO 2337
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2337

TTTCTGCTTG ACAGAAGAGA GA 22

<210> SEQ ID NO 2338
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 2338

TTCTGCTTGA CAGAAGAGAG AG 22

<210> SEQ ID NO 2339
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 2339

TCTGCTTGAC AGAAGAGAGA GG 22

<210> SEQ ID NO 2340
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<212> TYPE: DNA
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CTGCTTGACA GAAGAGAGAG GA 22

<210> SEQ ID NO 2341
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<212> TYPE: DNA
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<400> SEQUENCE: 2341

TGCTTGACAG AAGAGAGAGG AA 22

<210> SEQ ID NO 2342
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<212> TYPE: DNA
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<400> SEQUENCE: 2342

GCTTGACAGA AGAGAGAGGA AT 22

<210> SEQ ID NO 2343
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 2343

CTTGACAGAA GAGAGAGGAA TC 22

<210> SEQ ID NO 2344
<211> LENGTH: 22
<212> TYPE: DNA
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<220> FEATURES:
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<400> SEQUENCE: 2344

TTGACAGAAG AGAGAGGAAT CT 22

<210> SEQ ID NO 2345
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<212> TYPE: DNA
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<400> SEQUENCE: 2345

TGACAGAAGA GAGAGGAATC TG 22

<210> SEQ ID NO 2346
<211> LENGTH: 22
<212> TYPE: DNA
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<400> SEQUENCE: 2346

GACAGAAGAG AGAGGAATCT GG 22

<210> SEQ ID NO 2347
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2347

ACAGAAGAGA GAGGAATCTG GT 22

<210> SEQ ID NO 2348
<211> LENGTH: 22
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2348

CAGAAGAGAG AGGAATCTGG TA 22

<210> SEQ ID NO 2349
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2349

GTGCCTTGCA TTTTCTGCTT GAC 23

<210> SEQ ID NO 2350
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 2350

TGCCTTGCAT TTTCTGCTTG ACA 23

<210> SEQ ID NO 2351
<211> LENGTH: 23
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2351

GCCTTGCATT TTCTGCTTGA CAG 23

<210> SEQ ID NO 2352
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2352

CCTTGCATTT TCTGCTTGAC AGA 23

<210> SEQ ID NO 2353
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2353

CTTGCATTTT CTGCTTGACA GAA 23

<210> SEQ ID NO 2354
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2354

TTGCATTTTC TGCTTGACAG AAG 23

<210> SEQ ID NO 2355
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2355

TGCATTTTCT GCTTGACAGA AGA 23

<210> SEQ ID NO 2356
<211> LENGTH: 23
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2356

GCATTTTCTG CTTGACAGAA GAG 23

<210> SEQ ID NO 2357
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2357

CATTTTCTGC TTGACAGAAG AGA 23

<210> SEQ ID NO 2358
<211> LENGTH: 23
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2358

ATTTTCTGCT TGACAGAAGA GAG 23

<210> SEQ ID NO 2359
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2359

TTTTCTGCTT GACAGAAGAG AGA 23

<210> SEQ ID NO 2360
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2360

TTTCTGCTTG ACAGAAGAGA GAG 23

<210> SEQ ID NO 2361

<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2361

TTCTGCTTGA CAGAAGAGAG AGG 23

<210> SEQ ID NO 2362
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2362

TCTGCTTGAC AGAAGAGAGA GGA 23

<210> SEQ ID NO 2363
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2363

CTGCTTGACA GAAGAGAGAG GAA 23

<210> SEQ ID NO 2364
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2364

TGCTTGACAG AAGAGAGAGG AAT 23

<210> SEQ ID NO 2365
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2365

GCTTGACAGA AGAGAGAGGA ATC 23

<210> SEQ ID NO 2366
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2366

CTTGACAGAA GAGAGAGGAA TCT 23

<210> SEQ ID NO 2367
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2367

TTGACAGAAG AGAGAGGAAT CTG 23

<210> SEQ ID NO 2368
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2368

TGACAGAAGA GAGAGGAATC TGG 23

<210> SEQ ID NO 2369
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2369

GACAGAAGAG AGAGGAATCT GGT 23

<210> SEQ ID NO 2370
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2370

ACAGAAGAGA GAGGAATCTG GTA 23

<210> SEQ ID NO 2371
<211> LENGTH: 23
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2371

CAGAAGAGAG AGGAATCTGG TAC 23

<210> SEQ ID NO 2372
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2372

GGTGCCTTGC ATTTTCTGCT TGAC 24

<210> SEQ ID NO 2373
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2373

GTGCCTTGCA TTTTCTGCTT GACA 24

<210> SEQ ID NO 2374
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2374

TGCCTTGCAT TTTCTGCTTG ACAG 24

<210> SEQ ID NO 2375
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2375

GCCTTGCATT TTCTGCTTGA CAGA 24

<210> SEQ ID NO 2376
<211> LENGTH: 24
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2376

CCTTGCATTT TCTGCTTGAC AGAA 24

<210> SEQ ID NO 2377
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2377

CTTGCATTTT CTGCTTGACA GAAG 24

<210> SEQ ID NO 2378
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2378

TTGCATTTTC TGCTTGACAG AAGA 24

<210> SEQ ID NO 2379
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2379

TGCATTTTCT GCTTGACAGA AGAG 24

<210> SEQ ID NO 2380
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2380

GCATTTTCTG CTTGACAGAA GAGA 24

<210> SEQ ID NO 2381
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2381

CATTTTCTGC TTGACAGAAG AGAG 24

<210> SEQ ID NO 2382
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2382

ATTTTCTGCT TGACAGAAGA GAGA 24

<210> SEQ ID NO 2383
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2383

TTTTCTGCTT GACAGAAGAG AGAG 24

<210> SEQ ID NO 2384
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2384

TTTCTGCTTG ACAGAAGAGA GAGG 24

<210> SEQ ID NO 2385
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:

<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2385

TTCTGCTTGA CAGAAGAGAG AGGA 24

<210> SEQ ID NO 2386
<211> LENGTH: 24
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2386

TCTGCTTGAC AGAAGAGAGA GGAA 24

<210> SEQ ID NO 2387
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2387

CTGCTTGACA GAAGAGAGAG GAAT 24

<210> SEQ ID NO 2388
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2388

TGCTTGACAG AAGAGAGAGG AATC 24

<210> SEQ ID NO 2389
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2389

GCTTGACAGA AGAGAGAGGA ATCT 24

<210> SEQ ID NO 2390
<211> LENGTH: 24
<212> TYPE: DNA

<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2390

CTTGACAGAA GAGAGAGGAA TCTG 24

<210> SEQ ID NO 2391
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2391

TTGACAGAAG AGAGAGGAAT CTGG 24

<210> SEQ ID NO 2392
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TGACAGAAGA GAGAGGAATC TGGT 24

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GACAGAAGAG AGAGGAATCT GGTA 24

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ACAGAAGAGA GAGGAATCTG GTAC 24

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CAGAAGAGAG AGGAATCTGG TACC 24

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<213> ORGANISM: Artificial Sequence
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GGTGCCTTGC ATTTTCTGCT TGACA 25

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GTGCCTTGCA TTTTCTGCTT GACAG 25

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CCTTGCATTT TCTGCTTGAC AGAAG 25

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CTTGCATTTT CTGCTTGACA GAAGA 25

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TTGCATTTTC TGCTTGACAG AAGAG 25

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GCATTTTCTG CTTGACAGAA GAGAG 25

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CATTTTCTGC TTGACAGAAG AGAGA 25

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TTTTCTGCTT GACAGAAGAG AGAGG 25

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TTCTGCTTGA CAGAAGAGAG AGGAA 25

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CTGCTTGACA GAAGAGAGAG GAATC 25

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TGCTTGACAG AAGAGAGAGG AATCT 25

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GCTTGACAGA AGAGAGAGGA ATCTG 25

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TTGACAGAAG AGAGAGGAAT CTGGT 25

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TGACAGAAGA GAGAGGAATC TGGTA 25

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GACAGAAGAG AGAGGAATCT GGTAC 25

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ACAGAAGAGA GAGGAATCTG GTACC 25

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CAGAAGAGAG AGGAATCTGG TACCT 25

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GTCAAGCAGA AAATG 15

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TGTCAAGCAG AAAAT 15

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CTGTCAAGCA GAAAA 15

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TCTGTCAAGC AGAAA 15

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TTCTGTCAAG CAGAA 15

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CTTCTGTCAA GCAGA 15

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TCTTCTGTCA AGCAG 15

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CTCTTCTGTC AAGCA 15

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TCTCTTCTGT CAAGC 15

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CTCTCTTCTG TCAAG 15

<210> SEQ ID NO 2431
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TCTCTCTTCT GTCAA 15

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CCTCTCTCTT CTGTC 15

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TTCCTCTCTC TTCTG 15

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GTCAAGCAGA AAATGC 16

<210> SEQ ID NO 2437
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TGTCAAGCAG AAAATG 16

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CTGTCAAGCA GAAAAT 16

<210> SEQ ID NO 2439
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TCTGTCAAGC AGAAAA 16

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TTCTGTCAAG CAGAAA 16

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CTTCTGTCAA GCAGAA 16

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TCTTCTGTCA AGCAGA 16

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CTCTTCTGTC AAGCAG 16

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TCTCTTCTGT CAAGCA 16

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TCTCTCTTCT GTCAAG 16

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CTCTCTCTTC TGTCAA 16

<210> SEQ ID NO 2448
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CCTCTCTCTT CTGTCA 16

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TCCTCTCTCT TCTGTC 16

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TTCCTCTCTC TTCTGT 16

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ATTCCTCTCT CTTCTG 16

<210> SEQ ID NO 2452
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GTCAAGCAGA AAATGCA 17

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TGTCAAGCAG AAAATGC 17

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CTGTCAAGCA GAAAATG 17

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TCTGTCAAGC AGAAAAT 17

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TTCTGTCAAG CAGAAAA 17

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CTTCTGTCAA GCAGAAA 17

<210> SEQ ID NO 2458
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<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 2458

TCTTCTGTCA AGCAGAA 17

<210> SEQ ID NO 2459
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<212> TYPE: DNA
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CTCTTCTGTC AAGCAGA 17

<210> SEQ ID NO 2460
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TCTCTTCTGT CAAGCAG 17

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CTCTCTTCTG TCAAGCA 17

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TCTCTCTTCT GTCAAGC 17

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CTCTCTCTTC TGTCAAG 17

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CCTCTCTCTT CTGTCAA 17

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TCCTCTCTCT TCTGTCA 17

<210> SEQ ID NO 2466
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<220> FEATURES:
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<400> SEQUENCE: 2466

TTCCTCTCTC TTCTGTC 17

<210> SEQ ID NO 2467
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<220> FEATURES:
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<400> SEQUENCE: 2467

ATTCCTCTCT CTTCTGT 17

<210> SEQ ID NO 2468
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<400> SEQUENCE: 2468

GATTCCTCTC TCTTCTG 17

<210> SEQ ID NO 2469
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<400> SEQUENCE: 2469

GTCAAGCAGA AAATGCAA 18

<210> SEQ ID NO 2470
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<400> SEQUENCE: 2470

TGTCAAGCAG AAAATGCA 18

<210> SEQ ID NO 2471
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<212> TYPE: DNA
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CTGTCAAGCA GAAAATGC 18

<210> SEQ ID NO 2472
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<212> TYPE: DNA
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<400> SEQUENCE: 2472

TCTGTCAAGC AGAAAATG 18

<210> SEQ ID NO 2473
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<400> SEQUENCE: 2473

TTCTGTCAAG CAGAAAAT 18

<210> SEQ ID NO 2474
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CTTCTGTCAA GCAGAAAA 18

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TCTTCTGTCA AGCAGAAA 18

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<220> FEATURES:
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CTCTTCTGTC AAGCAGAA 18

<210> SEQ ID NO 2477
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TCTCTTCTGT CAAGCAGA 18

<210> SEQ ID NO 2478
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<400> SEQUENCE: 2478

CTCTCTTCTG TCAAGCAG 18

<210> SEQ ID NO 2479
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TCTCTCTTCT GTCAAGCA 18

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<400> SEQUENCE: 2480

CTCTCTCTTC TGTCAAGC 18

<210> SEQ ID NO 2481
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<212> TYPE: DNA
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<400> SEQUENCE: 2481

CCTCTCTCTT CTGTCAAG 18

<210> SEQ ID NO 2482
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TTCCTCTCTC TTCTGTCA                                                     18



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CTTCTGTCAA GCAGAAAAT 19

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TCTTCTGTCA AGCAGAAAA 19

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CTCTTCTGTC AAGCAGAAA 19

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TCTCTTCTGT CAAGCAGAA 19

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AGATTCCTCT CTCTTCTGT 19

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CTTCTGTCAA GCAGAAAATG 20

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TCTCTTCTGT CAAGCAGAAA 20

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CTCTCTTCTG TCAAGCAGAA 20

<210> SEQ ID NO 2516
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TCTCTCTTCT GTCAAGCAGA 20

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CCTCTCTCTT CTGTCAAGCA 20

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<210> SEQ ID NO 2520
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TTCCTCTCTC TTCTGTCAAG 20

<210> SEQ ID NO 2521
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GATTCCTCTC TCTTCTGTCA 20

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AGATTCCTCT CTCTTCTGTC 20

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<210> SEQ ID NO 2525
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TGTCAAGCAG AAAATGCAAG G 21

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CTGTCAAGCA GAAAATGCAA G 21

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CTCTTCTGTC AAGCAGAAAA T                                          21


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TCTCTCTTCT GTCAAGCAGA A 21

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<400> SEQUENCE: 2538

CCTCTCTCTT CTGTCAAGCA G 21

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<210> SEQ ID NO 2540
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CCAGATTCCT CTCTCTTCTG T 21

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<400> SEQUENCE: 2546

ACCAGATTCC TCTCTCTTCT G 21

<210> SEQ ID NO 2547
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<400> SEQUENCE: 2547

GTCAAGCAGA AAATGCAAGG CA 22

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<400> SEQUENCE: 2548

TGTCAAGCAG AAAATGCAAG GC 22

<210> SEQ ID NO 2549
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<400> SEQUENCE: 2549

CTGTCAAGCA GAAAATGCAA GG 22

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TCTGTCAAGC AGAAAATGCA AG 22

<210> SEQ ID NO 2551
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TTCTGTCAAG CAGAAAATGC AA 22

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CTTCTGTCAA GCAGAAAATG CA 22

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TCTTCTGTCA AGCAGAAAAT GC 22

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CTCTTCTGTC AAGCAGAAAA TG 22

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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2555

TCTCTTCTGT CAAGCAGAAA AT 22

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<400> SEQUENCE: 2556

CTCTCTTCTG TCAAGCAGAA AA 22

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TCTCTCTTCT GTCAAGCAGA AA 22

<210> SEQ ID NO 2558
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<400> SEQUENCE: 2558

CTCTCTCTTC TGTCAAGCAG AA 22

<210> SEQ ID NO 2559
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<400> SEQUENCE: 2559

CCTCTCTCTT CTGTCAAGCA GA 22

<210> SEQ ID NO 2560
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<212> TYPE: DNA

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<400> SEQUENCE: 2560

TCCTCTCTCT TCTGTCAAGC AG 22

<210> SEQ ID NO 2561
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2561

TTCCTCTCTC TTCTGTCAAG CA 22

<210> SEQ ID NO 2562
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2562

ATTCCTCTCT CTTCTGTCAA GC 22

<210> SEQ ID NO 2563
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<400> SEQUENCE: 2563

GATTCCTCTC TCTTCTGTCA AG 22

<210> SEQ ID NO 2564
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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2564

AGATTCCTCT CTCTTCTGTC AA 22

<210> SEQ ID NO 2565

<211> LENGTH: 22
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<400> SEQUENCE: 2565

CAGATTCCTC TCTCTTCTGT CA 22

<210> SEQ ID NO 2566
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<212> TYPE: DNA
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<400> SEQUENCE: 2566

CCAGATTCCT CTCTCTTCTG TC 22

<210> SEQ ID NO 2567
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ACCAGATTCC TCTCTCTTCT GT 22

<210> SEQ ID NO 2568
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<212> TYPE: DNA
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<400> SEQUENCE: 2568

TACCAGATTC CTCTCTCTTC TG 22

<210> SEQ ID NO 2569
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<400> SEQUENCE: 2569

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TGTCAAGCAG AAAATGCAAG GCA 23

<210> SEQ ID NO 2571
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CTGTCAAGCA GAAAATGCAA GGC 23

<210> SEQ ID NO 2572
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TCTGTCAAGC AGAAAATGCA AGG 23

<210> SEQ ID NO 2573
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<212> TYPE: DNA
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<400> SEQUENCE: 2573

TTCTGTCAAG CAGAAAATGC AAG 23

<210> SEQ ID NO 2574
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<400> SEQUENCE: 2574

CTTCTGTCAA GCAGAAAATG CAA 23

<210> SEQ ID NO 2575
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TCTTCTGTCA AGCAGAAAAT GCA 23

<210> SEQ ID NO 2576
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 2576

CTCTTCTGTC AAGCAGAAAA TGC 23

<210> SEQ ID NO 2577
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<400> SEQUENCE: 2578

CTCTCTTCTG TCAAGCAGAA AAT 23

<210> SEQ ID NO 2579
<211> LENGTH: 23
<212> TYPE: DNA
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<400> SEQUENCE: 2579

TCTCTCTTCT GTCAAGCAGA AAA 23

<210> SEQ ID NO 2580
<211> LENGTH: 23
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<220> FEATURES:
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CTCTCTCTTC TGTCAAGCAG AAA 23

<210> SEQ ID NO 2581
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<220> FEATURES:
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<400> SEQUENCE: 2581

CCTCTCTCTT CTGTCAAGCA GAA 23

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TCCTCTCTCT TCTGTCAAGC AGA 23

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TTCCTCTCTC TTCTGTCAAG CAG 23

<210> SEQ ID NO 2584
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<220> FEATURES:
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ATTCCTCTCT CTTCTGTCAA GCA                                         23



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<220> FEATURES:
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<400> SEQUENCE: 2585

GATTCCTCTC TCTTCTGTCA AGC                                         23



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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2586

AGATTCCTCT CTCTTCTGTC AAG                                         23



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<220> FEATURES:
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<400> SEQUENCE: 2587

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GTCAAGCAGA AAATGCAAGG CACC 24

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TGTCAAGCAG AAAATGCAAG GCAC 24

<210> SEQ ID NO 2594
<211> LENGTH: 24
<212> TYPE: DNA

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<220> FEATURES:
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<400> SEQUENCE: 2594

CTGTCAAGCA GAAAATGCAA GGCA 24

<210> SEQ ID NO 2595
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TCTGTCAAGC AGAAAATGCA AGGC 24

<210> SEQ ID NO 2596
<211> LENGTH: 24
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2596

TTCTGTCAAG CAGAAAATGC AAGG 24

<210> SEQ ID NO 2597
<211> LENGTH: 24
<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2597

CTTCTGTCAA GCAGAAAATG CAAG 24

<210> SEQ ID NO 2598
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TCTTCTGTCA AGCAGAAAAT GCAA 24

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<400> SEQUENCE: 2599

CTCTTCTGTC AAGCAGAAAA TGCA 24

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TCTCTCTTCT GTCAAGCAGA AAAT 24

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CTCTCTCTTC TGTCAAGCAG AAAA 24

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TCCTCTCTCT TCTGTCAAGC AGAA 24

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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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TTCCTCTCTC TTCTGTCAAG CAGA 24

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ATTCCTCTCT CTTCTGTCAA GCAG 24

<210> SEQ ID NO 2608
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<400> SEQUENCE: 2608

GATTCCTCTC TCTTCTGTCA AGCA 24

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AGATTCCTCT CTCTTCTGTC AAGC 24

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CAGATTCCTC TCTCTTCTGT CAAG 24

<210> SEQ ID NO 2611
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CCAGATTCCT CTCTCTTCTG TCAA 24

<210> SEQ ID NO 2612
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ACCAGATTCC TCTCTCTTCT GTCA 24

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TACCAGATTC CTCTCTCTTC TGTC 24

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<212> TYPE: DNA
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<400> SEQUENCE: 2614

GTACCAGATT CCTCTCTCTT CTGT 24

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<211> LENGTH: 24
<212> TYPE: DNA
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GGTACCAGAT TCCTCTCTCT TCTG 24

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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2616

GTCAAGCAGA AAATGCAAGG CACCT 25

<210> SEQ ID NO 2617
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<213> ORGANISM: Artificial Sequence
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<400> SEQUENCE: 2617

TGTCAAGCAG AAAATGCAAG GCACC 25

<210> SEQ ID NO 2618
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<212> TYPE: DNA
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<223> OTHER INFORMATION: cDNA for use as primers

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<223> OTHER INFORMATION: cDNA for use as primers

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TCTGTCAAGC AGAAAATGCA AGGCA                                         25



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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2620

TTCTGTCAAG CAGAAAATGC AAGGC                                         25



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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2621

CTTCTGTCAA GCAGAAAATG CAAGG                                         25



<210> SEQ ID NO 2622
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<400> SEQUENCE: 2622

TCTTCTGTCA AGCAGAAAAT GCAAG                                         25



<210> SEQ ID NO 2623
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
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<223> OTHER INFORMATION: cDNA for use as primers

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CTCTTCTGTC AAGCAGAAAA TGCAA 25

<210> SEQ ID NO 2624
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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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TCTCTTCTGT CAAGCAGAAA ATGCA 25

<210> SEQ ID NO 2625
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2625

CTCTCTTCTG TCAAGCAGAA AATGC 25

<210> SEQ ID NO 2626
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<213> ORGANISM: Artificial Sequence
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TCTCTCTTCT GTCAAGCAGA AAATG 25

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<223> OTHER INFORMATION: cDNA for use as primers

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CTCTCTCTTC TGTCAAGCAG AAAAT 25

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<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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CCTCTCTCTT CTGTCAAGCA GAAAA 25

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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2629

TCCTCTCTCT TCTGTCAAGC AGAAA 25

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TTCCTCTCTC TTCTGTCAAG CAGAA 25

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<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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ATTCCTCTCT CTTCTGTCAA GCAGA 25

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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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GATTCCTCTC TCTTCTGTCA AGCAG 25

<210> SEQ ID NO 2633

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AGATTCCTCT CTCTTCTGTC AAGCA 25

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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2634

CAGATTCCTC TCTCTTCTGT CAAGC 25

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<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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CCAGATTCCT CTCTCTTCTG TCAAG 25

<210> SEQ ID NO 2636
<211> LENGTH: 25
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<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2636

ACCAGATTCC TCTCTCTTCT GTCAA 25

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<211> LENGTH: 25
<212> TYPE: DNA
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<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2637

TACCAGATTC CTCTCTCTTC TGTCA 25

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<210> SEQ ID NO 2638
<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2638


GTACCAGATT CCTCTCTCTT CTGTC                                    25



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<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

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GGTACCAGAT TCCTCTCTCT TCTGT                                    25



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<211> LENGTH: 25
<212> TYPE: DNA
<213> ORGANISM: Artificial Sequence
<220> FEATURES:
<223> OTHER INFORMATION: cDNA for use as primers

<400> SEQUENCE: 2640


AGGTACCAGA TTCCTCTCTC TTCTG                                    25
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REIVINDICAÇÕES

1. Ácido nucléico isolado compreendendo pelo menos 15 bases nucleotídicas incluindo o sítio polimórfico caracterizado por ser selecionado de um grupo consistindo de:

(a) uma substituição T → C no nucleotídeo 29 da SEQ ID NO:1

(b) uma substituição G → T no nucleotídeo 152 da SEQ ID NO:1

(c) uma substituição G → A no nucleotídeo 203 da SEQ ID NO:1

(d) uma substituição C → T no nucleotídeo 228 da SEQ ID NO:1

(e) uma substituição C → T no nucleotídeo 458 da SEQ ID NO:1

(f) uma substituição A → G no nucleotídeo 600 da SEQ ID NO:1.

2. Ácido nucléico isolado de acordo com a reivindicação 1 caracterizado por compreender um DNA.

3. Sonda específica para um alelo isolado caracterizado por ser capaz de detectar um sítio polimórfico da SEQ ID NO:1 da reivindicação 1.

4. Oligonucleotídeo específico para um alelo isolado caracterizado por ser capaz de detectar um sítio polimórfico da SEQ ID NO:1 da reivindicação 1.

5. Kit diagnóstico caracterizado por utilizar a sonda alelo específica conforme reivindicação 3 ou um oligonucleotídeo alelo específico conforme a reivindicação 4.

6. Método de identificação de qualquer polimorfismo da SEQ ID NO:1 em mamíferos <u>caracterizado</u> por compreender as seguintes etapas:

(a) preparo de amostras de células ou tecidos de mamíferos;

(b) identificação de tecidos ou células contendo todos ou parte dos polimorfismos da SEQ ID NO:1 da reivindicação 1, em condições onde o DNA hibridado possa ser produzido;

(c) identificação do DNA hibridado;

(d) clonagem e seqüenciamento do DNA hibridado para a identificação do gene *NAT2* em mamíferos.

7. Método de identificação individual em um ensaio clínico <u>caracterizado</u> por compreender:

(a) produção de uma biblioteca de SNPs incluindo os sítios polimórficos da SEQ ID NO:1 conforme a reivindicação 1 e seu respectivo fenótipo;

(b) seqüenciamento individual do gene *NAT2;*

(c) conjugação do genótipo obtido no Ítem (b) com o fenótipo obtido em (a).

8. Método de identificação de composições terapêuticas as quais são eficazes em indivíduos <u>caracterizado</u> por compreender:

(a) administração de composição terapêutica para um indivíduo e mensuração de sua eficácia;

(b) determinação de genótipos individuais e de sítios polimórficos da SEQ ID NO:1 da reivindicação 1 que indiquem se o indivíduo é um acetilador rápido ou lento;

(c) determinação a partir das etapas (a) e (b) de quais composições terapêuticas serão as mais efetivas para um genótipo particular e quais terão efeitos adversos.

-50
TGCTAAAGTATGATATGTTTTTATGTTTTGTTTTTCTTGCTTAGGGGATCATGGACATTG
M D I

11 **T29C**
AAGCATATTTTGAAAGAA**T**TGGCTATAAGAACTCTAGGAACAAATTGGACTTGGAAACAT
E A Y F E R **I** G Y K N S R N K L D L E T

71
TAACTGACATTCTTGAGCACCAGATCCGGGCTGTTCCCTTTGAGAACCTTAACATGCATT
L T D I L E H Q I R A V P F E N L N M H

131 **G152T**
GTGGGCAAGCCATGGAGTTGG**G**CTTAGAGGCTATTTTTGATCACATTGTAAGAAGAAACC
C G Q A M E L **G** L E A I F D H I V R R N

191 **G203A** **C228T**
GGGGTGGGTGGT**G**TCTCCAGGTCAATCAACTTCTGTA**C**TGGGCTCTGACCACAATCGGTT
R G G W **C** L Q V N Q L L Y W A L T T I G

251
TTCAGACCACAATGTTAGGAGGGTATTTTTACATCCCTCCAGTTAACAAATACAGCACTG
F Q T T M L G G Y F Y I P P V N K Y S T

311
GCATGGTTCACCTTCTCCTGCAGGTGACCATTGACGGCAGGAATTACATTGTCGATGCTG
G M V H L L L Q V T I D G R N Y I V D A

371
GGTCTGGAAGCTCCTCCCAGATGTGGCAGCCTCTAGAATTAATTTCTGGGAAGGATCAGC
G S G S S S Q M W Q P L E L I S G K D Q

431 **C458T**
CTCAGGTGCCTTGCATTTTCTGCTTGA**C**AGAAGAGAGAGGAATCTGGTACCTGGACCAAA
P Q V P C I F C L **T** E E R G **I** W Y L D Q

491
TCAGGAGAGAGCAGTATATTACAAACAAAGAATTTCTTAATTCTCATCTCCTGCCAAAGA
I R R E Q Y I T N K E F L N S H L L P K

551 **A600G**
AGAAACACCAAAAAATATACTTATTTACGCTTGAACCTCGAACAATTGAAGATTTTGAGT
K K H Q K I Y L F T L E P R T I E D F E

FIGURA 1A

```
611
CTATGAATACATACCTGCAGACGTCTCCAACATCTTCATTTATAACCACATCATTTTGTT
 S  M  N  T  Y  L  Q  T  S  P  T  S  S  F  I  T  T  S  F  C

671
CCTTGCAGACCCCAGAAGGGGTTTACTGTTTGGTGGGCTTCATCCTCACCTATAGAAAAT
 S  L  Q  T  P  E  G  V  Y  C  L  V  G  F  I  L  T  Y  R  K

731
TCAATTATAAAGACAATACAGATCTGGTCGAGTTTAAAACTCTCACTGAGGAAGAGGTTG
 F  N  Y  K  D  N  T  D  L  V  E  F  K  T  L  T  E  E  E  V

791
AAGAAGTGCTGAAAAATATATTTAAGATTTCCTTGGGGAGAAATCTCGTGCCCAAACCTG
 E  E  V  L  K  N  I  F  K  I  S  L  G  R  N  L  V  P  K  P

851
GTGATGGATCCCTTACTATTTAG
 G  D  G  S  L  T  I  *
```

FIGURA 1B

PI0704093-8

RESUMO

"Método para a predição do desfecho do tratamento de doenças humanas utilizando fármacos metabolizados pela N-acetiltransferase 2 humana (NAT2) com base em polimorfismos genéticos"

A presente invenção está relacionada ao campo da Biologia Molecular e Genômica, especialmente a Farmacogenômica. A invenção descreve a presença de novos polimorfismos no gene que codifica para a enzima Arilamina N-acetiltransferase 2 humana (NAT2), a qual é responsável pela metabolização de fármacos importantes na terapêutica de várias doenças de etiologias diversas, bem como de inúmeras toxinas e carcinógenos presentes em alimentos, cigarro e no ambiente. A presente invenção inclui metodologia passível de utilização na terapêutica utilizando os polimorfismos descritos.