

**Universidade de Lisboa
Faculdade de Farmácia**



**Classification of dermatophytes by a multilocus phylogenetic approach
based on Tef-1 α , beta tubulin and ITS genes**

Carolina Pedro Gomes Tomé

Mestrado Integrado em Ciências Farmacêuticas

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**Monografia de Mestrado Integrado em Ciências Farmacêuticas apresentada à
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Resumo

Os dermatófitos são fungos que têm a capacidade de invadir tecidos queratinizados de humanos e de outros animais. As infecções causadas por dermatófitos são comumente conhecidas como tinhas, e podem afetar a pele, cabelos e unhas.

Este estudo diz respeito a *Trichophyton mentagrophytes*, *Trichophyton interdigitale*, *Trichophyton violaceum* e *Trichophyton soudanense*, quatro espécies conhecidas por causar *Tinea capitis*, uma infecção que afeta os folículos capilares sendo predominantemente uma doença que afecta crianças pré-adolescentes.

Embora as dermatofitoses não sejam consideradas de natureza urgente, são um problema de Saúde Pública. O aumento dramático da incidência das dermatofitoses e a necessidade de aumentar o nosso conhecimento acerca da ecologia e epidemiologia dos dermatófitos têm implicado uma investigação mais intensa em métodos de diagnóstico para identificação rápida e precisa destes patogéneos fúngicos.

A filogenia dos dermatófitos, no entanto, permanece incerta, porque os seus membros são filogeneticamente e taxonomicamente muito próximos e as suas características fenotípicas às vezes são precárias.

Este trabalho descreve uma tentativa de um método de identificação de dermatófitos, usando a sequenciação de DNA fúngico de três genes específicos, ITS, BT2 e Tef-1 α para identificar filogeneticamente e distinguir *T. mentagrophytes* de *T. interdigitale* e *T. violaceum* de *T. soudanense*, uma vez que foram identificados erroneamente ao longo dos anos, a fim de fornecer informações sobre a sua taxonomia e promover a possibilidade de efetuar uma terapia direcionada.

Palavras-chave: *Tinea capitis*; *Trichophyton interdigitale*; *Trichophyton mentagrophytes*; *Trichophyton violaceum*, *Trichophyton soudanense*

Abstract

Dermatophytes have the capacity to invade human keratinized tissues and other animals to produce infections, dermatophytosis. Dermatophyte infections are commonly known as *ringworm* or *Tinea*, and can affect the skin, hair and nails.

This study concerns *Trichophyton mentagrophytes*, *Trichophyton interdigitale*, *Trichophyton violaceum* and *Trichophyton soudanense*, four species known to cause *Tinea capitis*, an infection that affects the hair follicles. It is predominantly a disease of preadolescent children.

Although a dermatophyte infection is not an emergency, the dramatic increase in the incidence of opportunistic fungal infections and the need to increase our knowledge of the dermatophytes ecology and epidemiology has led to a critical need for diagnostic methods that can rapidly and accurately identify fungal pathogens.

The phylogeny of dermatophytes, however, remains unclear because their members are phylogenetically and taxonomically very closely related, and their phenotypic features are sometimes poor.

This project describes an attempt to establish a method of identification of dermatophytes by sequencing the fungus DNA, Internal transcribed spacer (ITS) , Beta tubulin gene (BT2) and the nucleotide sequence of translation elongation factor 1- α (*Tef-1 α*) were used as tools to identify phylogenetically these four species, and distinguish *T. mentagrophytes* from *T. interdigitale* and *T. violaceum* from *T. soudanense*, since they have been misidentified over the years, in order to provide information about their taxonomy and promote the possibility for a targeted therapy.

Key words: *Tinea capitis*; *Trichophyton interdigitale*; *Trichophyton mentagrophytes*; *Trichophyton violaceum*, *Trichophyton soudanense*

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List of Abbreviations

aLRT: Approximate likelihood ratio test

BLAST: Basic Local Alignment Search Tool database

BCP: Bromocresol purple

BT2: β Tubulin Gene

CBS: Centraalbureau voor Schimmelcultures database

DMSO: Dimethyl sulfoxide

DNA: Deoxyribonucleic acid

dNTP: Deoxyribonucleotide triphosphate

GTR: Generalised time reversible

HPLC: High performance liquid chromatography

IHEM: Belgian Coordinated Collections of Microorganisms

ITS: Internal transcribed spacer

mtDNA: Mitochondrial DNA

MUSCLE: Multiple Sequence Comparison by Log-Expectation

PCR: Polimerase chain reaction

PCR-RFLP: Polimerase chain reaction - Restriction fragment length polymorphism

PhyML: Phylogeny software

rDNA: Ribosomal DNA

RT PCR: Real time Polimerase chain reaction

Tef-1 α : Translation elongation factor 1- α gene

T. inter: *Trichophyton interdigitale*

T. menta: *Trichophyton mentagrophytes*

T. soud: *Trichophyton soudanense*

T. viol: *Trichophyton violaceum*

UV: Ultraviolet radiation

1. General Introduction

1.1 Dermatophytes

Dermatophytes are the most common, superficial, filamentous fungi that cause skin, hair and nail infections (1). They are a unique, highly specialized, and a closely interrelated group of filamentous fungi that share the peculiar ability to digest and grow on keratinized tissue of the host (2), and usually colonize the non-living, cornified layer of the epidermis, as they are unable to penetrate the deeper tissues of an immunocompetent host (3) (4).

They are classified in three anamorphic genera, based on the conidial morphology and the accessory structures: *Trichophyton*, *Microsporum* and *Epidermophyton* (1).

Based on their ecology, dermatophytes have been divided into three groups, as anthropophilic, zoophilic, and geophilic species (4). Anthropophilic dermatophytes are primarily associated with humans, causing mycoses, and rarely infect animals. Zoophilic species are common pathogens of animals, and occasionally infect humans, whereas geophilic dermatophytes are primarily associated with keratinous materials (i.e., hair, feathers and horns) present in the environment, and they might be transmitted to humans and animals through contact with soil (5).

The distribution of dermatophytes in a given geographical area depends on climate, like a highly humid weather, environmental or socioeconomic factors which tend to change over time, whereby immigration, tourism, poor hygienic conditions and over population (6) (7).

The infection which is caused by these fungi is termed as dermatophytosis and it is the most common fungal infection and one of the most common infectious diseases. The majority of superficial cutaneous fungal infections are caused by 10 of the approximately 40 species of dermatophytes (8).

It is a contagious disease and the severity of the infection depends on the pathogenic attributes of the invading species, and factors associated to host and local environmental conditions (9).

The infections affect different parts of the body and can be divided by those who infect the glabrous skin (*Tinea corporis*, *Tinea cruris*, *Tinea faciei*), the highly keratinised skin

(palms, soles), skin rich in terminal hair follicles (*Tinea capitis*, *Tinea barbae*) and nail infections (10).

1.2 *Tinea capitis*

The one that we will be focusing on is *Tinea capitis*, predominantly a disease of preadolescent children.

When the hair is invaded by dermatophytes, the infections are classified as favus, endothrix, or ectothrix.

Favus is inflammatory, characterized by yellow, cupshaped crusts around the hair shafts.

Endothrix hair invasion where hyphae grow down the hair follicle and then penetrate the hair shaft. The fungus grows completely within the hair shaft, and the cuticle surface of the hair remains intact. The hyphae within the hair are converted to arthroconidia (spores);

Ectothrix hair invasion where the hyphae invade the hair shaft at mid follicle, then grow out of the follicle and cover the hair surface. Arthroconidia may develop both within and without the hair shaft. The arthroconidia that surround the hair have the appearance of a sheath. Ectothrix hair invasion develops in a manner similar to endothrix except that the hyphae destroy the hair cuticle and grow around the exterior of the hair shaft. The hyphae are subsequently converted into infectious arthroconidial spores (11).

In very severe forms, a frank kerion may be formed which is a swollen mass, discharging pus, as we can see in Figure 1 (10).



Figure 1: *Tinea capitis* kerion-type (10).

These infections frequently spread among family members and classmates. Certain hairdressing practices such as shaving of the scalp, plaiting or the use of hair oils may promote disease transmission, but their precise role remains the subject of study (12).

Until recently, *Tinea capitis* was thought to have a high prevalence mainly in the developing world because of poor hygiene, overcrowding and low socio-economic standards. During the last few decades, a substantial increase in the prevalence of mycotic scalp infection and a remarkable change in the pattern of the causative dermatophytes among different European countries have been observed. Moreover, in most countries differences have been found between rural and urban areas (13).

Over the last few years there have been some significant changes in the reported incidences with an overall increase in the number of cases of anthropophilic infections (14).

Evidence continues to accumulate indicating that *Tinea capitis* poses an increasing public health concern since it is the most common paediatric dermatophyte infection. (11).

There are approximately 30 species that are responsible by *Tinea capitis*. We will focus on four, *Trichophyton mentagrophytes*, *Trichophyton Interdigitale*, *Trichophyton soudanense* and *Trichophyton violaceum* (15).

T. mentagrophytes is the second most important pathogen in most countries. It is a prevalent pathogen of human and animal dermatophytosis. It started of being a species complex containing many species and varieties with different morphological characters in the past. With the aid of modern molecular taxonomic analysis, species and varieties of *T. mentagrophytes* species complex have been reduced to four species only, *T. mentagrophytes sensu stricto*, *T. interdigitale*, *T. erinacei*, and *Arthroderma benhamiae*.

Some members of the species complex are zoophilic and have different host predilections: *T. mentagrophytes sensu stricto* infects voles, *T. erinacei* infects hedgehogs, and *A. benhamiae* infect the rodents such as mice and rabbits. Humans sometimes contract infections through close contact with diseased rabbits, dogs, cats and hedgehogs and although some zoophilic varieties of *T. mentagrophytes* produce only minor or subclinical infections in animals, they can initiate a severe inflammatory response in man (7)(16).

T. interdigitale is the only dermatophyte taxon that unifies strains of both human and animal-associated lineages (17), but It is mostly anthropophilic and frequently found in man (18).

Microscopically, both varieties possessed septate hyphae with single-celled hyaline microconidia, of which *T. interdigitale* were subspherical to pyriform and *T.*

mentagrophytes were spherical to subspherical. Nevertheless, *T. mentagrophytes* isolates generally had smoother, thin walled, clavate multiseptated macroconidia than *T. interdigitale*. For some isolates, the cultural characteristics were inconsistent, and further testing was required to confirm their identity (18).

However, some authors refer to *T. interdigitale* as a separated species from *T. mentagrophytes* because most *T. interdigitale* and *T. mentagrophytes* isolates could be distinguished on the basis of their gross colonial and microscopic morphology, as the former tended to have powdery to downy colonies and the latter powdery to granular colonies (18) (19) and also, these two species have been distinguished by molecular methods before (20).

Moreover, the phylogeny of this complex remains unclear because the phenotypic features of members of *T. mentagrophytes* complex are poor and many isolates from medical and veterinary samples have lost their sexual activity (21).

From a clinical point of view, because *T. mentagrophytes* complex includes both anthropophilic and zoophilic species, it is important to have a reliable method to identify the species of the complex (22) and also from an epidemiological point of view, it is necessary to determine the variety of *T. mentagrophytes* complex and its origin in order to prevent spread of infection (20) (16).

Trichophyton violaceum and *Trichophyton soudanense* are common causes of *Tinea capitis* in parts of Africa and West Asia, respectively, and are a lot of times misidentified and misdiagnosed (23) (24).

Regarding colony morphology and microscopic characteristics, *T. violaceum* isolates were slow-growing, with waxy, glabrous, wrinkled colonies. Colonies were a distinctive, deep, purple-red and sometimes had a white, waxy fringe. Over time, some cultures became fluffy and lost their characteristic colony morphology. Microscopically, there was lack of sporulation.

T. soudanense isolates were also slow-growing. Colonies were flat, with a suede-like texture, a spidery edge, and a distinctive yellow or orange-yellow color. Over time, the colonies became folded and pleomorphic. Microscopically, no conidia were seen. Reflexive branching, in which the hypha bends back toward the inoculum site, was observed (23).

T. soudanense was reduced to synonymy with *T. violaceum* based on molecular techniques but the unification of *T. soudanense* and *T. violaceum* may conceal

possible evolutionary diversification, since both species have their unique geographical distributions (25)(26).

1.3 Importance of diagnosis

Over \$500,000,000 per year are spent globally on medications that target dermatophytosis (26) (17). Additionally, dermatophytosis is considered a public health problem in developed and developing countries, as it is already a problem for immunocompromised patients (27) (28), and its incidence has been increasing (17)(6). However, nowadays, nothing is done in terms of public health measures to control the spread of dermatophyte infection (29).

The dramatic increase in the incidence of opportunistic fungal infections along with the development of new antifungal agents with various spectra of activity and the emergence of antifungal resistance has led to a critical need for diagnostic methods that can rapidly and accurately identify fungal pathogens (6). Also, identification of the dermatophyte species is essential to verify if the infection is due to relapse or due to a newly acquired organism (30) (17) and, most importantly, to start the appropriate treatment at the earliest (9) (31)(32).

Adding to this, there are countless scientific queries that benefit from the ability to discriminate pathogen strains within the species, to apply the preventive strategies for infection, as well as to extend our knowledge in the realm of dermatophytes ecology and epidemiology (2)(33)(34), and also to establish an accurate taxonomy of individual species, because it has changed fundamentally. During the last decade, progress has been made in the modern systematics of dermatophytes, nevertheless some pending issues remain (17) (35).

However, identification of dermatophytes sometimes remains difficult or uncertain due to their overlapping phenotypic characteristics, variability and pleomorphism (3) (4). Accurate and rapid diagnosis of the infection and reliable species identification of the isolates in clinical laboratory are noteworthy issues in clinical studies of dermatophytes and dermatophytosis (36) (1) (29) because if the diagnosis is based on clinical symptoms alone, about 50 % of patients are presumably misdiagnosed (36).

Without the tools necessary to reliably distinguish strains belonging to a singular species of microorganism, investigators would be unable to examine the origins of phylogenetic diversity within a species; track the introduction, maintenance, and disappearance of strains within a community or broaden their understanding of the unique relationship that exists between a pathogen and its host (33).

1.4 Diagnostic Methods

1.4.1 Traditional Methods

Traditional diagnosis of cutaneous tinea infections have been based on the colony morphology (pigmentation of the surface and reverse sides, topography, texture and rate of growth) and microscopic characteristics (size and shape of macroconidia and microconidia, spirals, nodular organs) in combination with biochemical and physiological tests (nutritional requirements, temperature tolerance, enzyme production, hair perforation and others) (9).

Gross microscopic morphology is the basis of classification and identification of dermatophytes. However, it often varies with culture conditions (3). It involves scraping of the scaling skin, and application of a dilute KOH 10% to 20% solution to look for hyphal elements by light microscopy. Either heat or addition of DMSO 20% to 40% solution can be used to break up the keratinocytes to aid in visualization of the hyphae (27).

In *Tinea capitis*, a UV-A light (Wood's lamp) can be used to identify fluorescence of fungal infected hair shafts. Short, broken, easily removed hairs can also be examined with KOH and heat or DMSO (37).

Moreover, despite a positive KOH preparation, pathogen cultivation may not be possible, especially if antifungal treatment has already been initiated.

Culture-based diagnostics should therefore be conducted (38).

Identifying characters include colony pigmentation, texture, growth rate and distinctive morphological structures, such as micro conidia, macro conidia, spirals, pectinate branches, pedicels and nodular organs. Some usable media are as follows:

1. Urea agar or broth is used to assist gratitude of urease-negative species of *Trichophyton* genera.
2. Bromcresol purple (BCP)-milk solids-glucose agar is used to distinguish dermatophytes as *T. rubrum*, *T. mentagrophytes*, *T. soudanense*, *T. megninii*, *M. persicolor* and *M. equinum*, on the divergence of releasing ammonium ion from casein and the catabolite domination by glucose.
3. Potato flake agar or Cycloheximide amended potato glucose use of isolation, identification of *T. rubrum* by quick red pigmentation in germfree, usual isolates and with relatively antibiotic-susceptible contaminants.

4. Casamino acids-erythritol- albumin medium. It is an extremely useable medium for isolating dermatophytes from heavily contaminated by bacteria or cycloheximide-tolerant such as *C. albicans*.

5. Another isolation medium is (BCP)-casein-yeast extract agar which grows all dermatophytes(39).

Even successful cultivation does not guarantee correct pathogen identification as it may not be sufficiently distinctive in the first culture (38). Also, culture of fungal organisms is usually slow (1-4 weeks), requires considerable skill in identification of the fungus, and has a relatively low sensitivity and specificity (26) because it does not enable differentiation between dermatophytic and non-dermatophytic infections, especially in nail samples, thus has a high false-negative rate: up to 40% of microscopy-positive samples fail to become positive in culture (40)(28)(35).

Furthermore, the results are often misleading due to the pleomorphic appearance and change of colony morphology resulting from subculturing of the strains (41).

Also, the colonies evaluated on specific media, along with analysis of some nutritional requirements or biochemical characters, remain imprecisely identified due to the high similarity and variability in morphology, the pleomorphism phenomenon, and a long time required for emergence of phenotypic characteristics (2).

In addition, some strains cannot be cultivated and hence the pathogen cannot be identified at the species level (31).

Epidemiological studies of dermatophyte infection have now entered a new era with the ability to differentiate strains of fungi by molecular strain typing methods. The epidemiology of many fungal infections can now be studied in more detail (29).

1.4.2 Molecular methods

Molecular techniques appear to offer the promise of faster, more accurate diagnosis of superficial dermatophyte infections, with potential turnaround times of 3 days or less. (36). Molecular techniques are attractive because of their reproducibility, simple handling and degree of skill required in comparison with traditional methods (1). Molecular diagnosis requires extracting fungal DNA from a clinical sample and then the use of various methods of polymerase chain reaction (PCR) to amplify the fungal DNA (42)(4) which enables rapid detection and determination of various dermatophytes from minute amounts of starting materials (18). Several groups have successfully applied PCR technology to the phylogeny and diagnosis of pathogenic fungi, including

dermatophytes (43). PCR technique consists in three steps being the first the denaturation of the double stranded DNA to form a single stranded that can then hybridize with specific primers that will allow the elongation of the chain in order to create several copies.

Several studies have applied molecular diagnostics to fungal infections. During the last decade, a wide variety of DNA-based techniques have become available for studies on species identification, such as species-specific PCR, PCR- Restriction fragment length polymorphism (RFLP), real-time PCR (RT PCR), nested PCR and various targets such as ribosomal-DNA (rDNA), β tubulin gene (BT2), mitochondrial DNA (mtDNA), and others (6). A common argument in favour of these molecular techniques in the scientific reports is that genotypic differences are considered more stable and more precise than phenotypic characteristics (9)(44).

RT PCR is a potentially more sensitive approach that is based on detection with cyber green or with specific fluorophore-labelled oligonucleotide probes.

The RT PCR has several advantages like the omission of post-PCR analysis, which diminish the risk of false-positivity (45) and the increase of sensitivity assay which could markedly improve the investigation of scalp dermatophytoses, where conventional mycology often suffers from low sensitivity due to a combination of low-level or patchy fungal load, heavy encrustation of debris blocking microscopy, and the contamination of samples by clinically ineffective topical antifungals such as ketoconazole from shampoos. In addition, *Tinea capitis* of the elderly, an entity often remaining unrecognised could be further elucidated by RT PCR (46)(47).

However, it is not practical enough for a large number of laboratories that are either small scale or very tightly budget (48).

PCR-RFLP is a technique based on detection of genomic restriction fragments by PCR amplification, which can be used with DNA of any organism and has been proven to be useful for rapid and correct identification of dermatophyte species and able to generate species-specific DNA polymorphisms with many dermatophyte species on the basis of characteristic band patterns detected by agarose gel electrophoresis (49). (50).

Unfortunately, it is a complex technique with poor discriminative power to make an easy and specific diagnosis (48) (47) .

Nested PCR involves the use of two primer sets and two successive PCR reactions and can be used to identify dermatophytes in clinical samples, which is particularly useful for *Tinea capitis* in which adequate treatment depends on the incriminated

dermatophyte and should be initiated as soon as possible, being that it depends on the identification of the source of the infection (48).

Furthermore, it can be used when only a small amount of material is collected for mycological analysis and the number of species that can be identified by sequencing a nested PCR product is unlimited (51).

It was observed to be more sensitive for the detection of dermatophytes than single-round PCR, it is faster than traditional methods and it is helpful for diagnosis of cases with dermatophytoses which were recently treated with antifungal agents, or showed uncultivable filaments (48).

Also, It has been possible to discriminate without ambiguity closely related species such as *T. violaceum* and *T. soudanense* by this method (51).

An inconvenience with nested PCR is the high risk of contamination and the need of two negative controls (51).

Nevertheless, the main disadvantage of these methods is their higher cost relative to other detection methods (27).

With the introduction of molecular methods it has become clear that the phenotypes and genotypes of this group of fungi are not always congruent (26).

To help distinguish this and other species that are usually confused, a lot of methods have been applied, as it was described earlier. One of them, relies on genome sequencing and was developed to study the future outbreaks on the biology, virulence, pathogenicity and the host specificity of the clinically important dermatophytes (52)(31).

1.4.2.1 ITS gene

The ribosomal DNA (rDNA) genes are found in all microorganisms and known to accumulate mutations at a slow constant rate over time. Nucleotide sequence heterogeneity within this region can be used to phylogenetically classify microorganisms. Interspaced among the highly conserved sequences of the rDNA genes are regions of variable sequences called spacer regions historically referred to as spacers since they separate the functional DNA sequences of the various rDNA genes.

Since mutations within the spacer regions of the rDNA gene complex occur with greater frequency than with the rDNA genes, the sequence heterogeneity within this

area has been useful for the separation of both genera and species. Similarly, it is also recognized that eukaryotic cells such as fungi have a rDNA gene complex region with comparable characteristics (53). The intervening ITS regions have become important molecular targets for taxonomy and identification (54).

Due to greater sequence variation and polymorphism (44), the ITS1ITS2 domains are more suited for species and strain identification than the 18S region (small subunit), the 5.8S region and the 28S region (large subunit). For example the 5.8S region is only about 160 bp long and highly conserved within major organism groups.

Several groups have developed methods utilizing the ITS regions to identify species and strains of a range of dermatophytes, yeasts and moulds (55)(21).

Most studies have shown that sufficient variation exists within the ITS regions to allow species identification. The ITS regions have been used as targets to investigate the validity of dermatophyte taxonomy, and to determine the phylogenetic relationships among other fungal species by comparing the base pair sequences of the ITS1 regions (22).

Some of the cited studies (and others) have provided ITS sequence information for a variety of fungi and are available in GenBank for analysis using a single representative isolate of each taxon (44)(40).

This ITS based identification system saves time (it takes 2 to 3 days) and is accurate and applicable even to strains with atypical morphological features (22).

Currently, ITS-rDNA sequencing is the golden standard for species delineation of dermatophytes. However, the method is expensive and may be impracticable for large scale analysis (55).

1.4.2.2 Beta tubulin gene

Beta tubulin is a monomeric globular protein involved in the generation of microfilaments. The locus includes some introns which are known to be good estimators for distinction of closely related species (17). BT2 protein-encoding gene has been broadly used in fungal phylogenetic analyses because it contains both variable and highly conserved regions and it can provide high resolution and support for fungal systematics. It is known that most *Trichophyton* spp., especially the human-adapted species, are similar to each other in ITS (17)(2).

1.4.2.3 Tef-1 α

The nucleotide sequence of translation elongation factor 1- α (*Tef-1 α*) gene encoding a part of the protein translation machinery was first used in *Fusarium*. The gene appears to be consistently single-copy and shows a high level of sequence polymorphism among related species (56)(57).

Due to this, this study aims to investigate if it is possible to identify and distinguish these species phylogenetically, *T. mentagrophytes* and *T. interdigitale*, *T. violaceum* and *T. soudanense*, by sequencing and comparing three parts of the fungal genome such as internal transcribed spacer (ITS), beta-tubulin gene (BT2) and the translation elongation factor 1- α (*Tef-1 α*) gene.

2. Objectives

This investigation work was developed in the CHU de Liège, *Le Centre hospitalier universitaire*, in the microbiology department, as it was an Erasmus+ Placement project.

The search of methods to identify dermatophytes has been studied for many years, and although some researchers have found some reliable techniques, some species of dermatophytes are continually misdiagnosed and misidentified.

The use of ITS, BT2 and Tef-1 α have been described by several authors as promising genes that are capable of identifying fungus to the species level, although they are not always successful.

The aim of this project is to combine these three genes in order to establish a method that would be able to improve the identification of these species as well as to improve the knowledge in their taxonomy and phylogeny.

To pursue this goal some objectives were established: Extraction and purification of fungus DNA, amplification of DNA by PCR technique for the three genes and sequence of the amplified DNA.

3. Materials and Methods

3.1 Strains

We worked with 65 different strains that had been isolated in culture at the CHU of Liège from samples collected of infected hair from patients (15 had been previously classified as *T. interdigitale*, 14 as *T. mentagrophytes*, 13 as *T. violaceum* and 23 as *T. soudanense*). These strains were conserved frozen in the laboratory at -78°C.

Reference strains (IHEM) were also included in this study, IHEM 620 and IHEM 584 as reference strains of *T. interdigitale*, IHEM 10342, IHEM 4268, IHEM 4203 as reference strains of *T. mentagrophytes* and IHEM 13492 as reference strain of *T. soudanense*.

3.2 Culture Conditions

The dermatophytes were cultured in liquid medium and the medium of choice was Sabouraud, prepared in the laboratory with 30 g of Sabouraud powder (Sigma) and 1 litre of distilled water.

Sabouraud's agar containing antibiotic(s) (chloramphenicol ± gentamicine) and cycloheximide (Actidione) is commonly used as primary isolation medium, and it is the reference medium to culture dermatophytes (58).

Cultures are usually incubated at 20–25°C, but higher incubation temperatures of 30–32°C can be used when lesions are suspected to be caused by some species (37).

The procedure consists in 15 mL of medium applied inside a falcon tube and one or two drops of milk containing the strain put after in the tube. Then the tubes are left in a stove at 30°C for approximately a week.

We also prepared solid cultures, and the medium used was Sabouraud plus chloramphenicol in a glass tube. The strains were applied with a inoculation loop and left in the stove at 30°C for approximately a week. (58).

It is important to mention that the tubes were not completely closed because the dermatophytes need oxygen to grow.

3.3 DNA Extraction

A common protocol for DNA extraction involves two principal steps: first, the breakdown of cell walls that is generally carried out by mechanical disruption with bead-beating material, enzymatic digestion or homogenization with liquid nitrogen, and second, the isolation and purification of DNA. Frequently, filamentous fungi DNA is extracted by conventional methods (i.e., disrupt the cell wall and nuclear membrane, removing contaminant proteins, and resuspension in buffered solution), nevertheless, the DNA integrity and purity are regularly compromised, even more, loss of DNA yield on purification step can occur (59).

It was used bead beating material and several buffers, one of them being proteinase K, an enzyme that catalyze fungal cell lysis and removes the proteins (60).

The DNA extraction from the culture was performed with liquid medium where the material to extract was introduced in a 2 mL Eppendorf tube with small glass beads and 1 mL of distilled water.

Every time that an extraction is performed, is mandatory that a negative control is introduced (an Eppendorf with distilled water) to guarantee the absence of contamination.

The tubes are vortexed for 30 minutes, centrifuged for 10 minutes at 16,100 rpm. The supernatant is withdrawn, and it is added of 200 μ L of AL buffer (Qiagen), 180 μ L of ATL buffer (Qiagen), and 20 μ L of proteinase K (Qiagen).

Finally, the mixture is incubated in an inoculation plate for 2h at the temperature of 56°C.

This procedure joins a mechanical lysis with an enzymatic lysis, which is very important to guarantee that the cell wall is broken so that we can access the genetic material.

3.3.1 Maxwell Procedure

The Maxwell 16 Instrument makes use of paramagnetic particles to capture DNA following cell lysis. After cell lysis occurs, the particles are introduced to the samples to bind the DNA.

Following a series of sequential washes, the target DNA is eluted into a storage buffer suitable for downstream amplification applications.

Because the paramagnetic particles exhibit a maximum binding capacity, by standardizing the number of particles employed for extraction of the various samples

one can expect the amount of DNA eluted during the final step to be fairly consistent between samples. The instrument bases sample transfer on magnetic handling, problems normally associated with clogged tips, partial liquid transfers, rotational mixing, and maintenance of consumables are not an issue when using this system.

Magnetic handlers are inserted into disposable plunger mechanisms that are used for a single sample throughout the purification process, which minimizes the risk of sample-to-sample contamination (61).

We used Maxwell (Promega) machine and the Cell DNA Purification Kit (Promega). Magnetic handlers are inserted into disposable plunger mechanisms that are used for a single sample throughout the purification process, which minimizes the risk of sample-to-sample contamination. The DNA IQ Reference Sample Kit comes with cartridges that are sealed to contain pre-loaded aliquots of purification solutions (Figure 2). It contains a lysis buffer, DNA IQ Resin, and a wash buffer.

We applied:

1. 400 μ L of the samples in the first well;
2. A plunger in the last well which serves to sheath the magnetic poles during processing;
3. 300 μ L of elution buffer in the elution tubes.

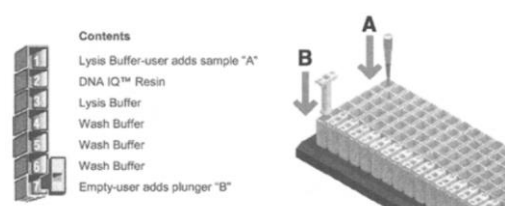


Figure 2: Diagram of the DNA IQ Reference Sample Kit/Maxwell 16 Instrument(61).

The procedure takes 35 minutes and then the DNA withdrawn (approximately 200 μ L) is ready to amplify.

3.4 DNA Amplification

3.4.1 PCR

The PCR of ITS, Tef-1 α and BT2 were performed in a Thermo Cycler Hybaid using:

1. 10 μ L of the DNA sample
2. 40 μ L of a mix that contains:
 - a. 5 μ L of buffer II 10X (AB)
 - b. 7 μ L of MgCl₂ (25mM, from AB)
 - c. 0.4 μ L of dNTP (25 mM, from Promega)
 - d. 0.5 μ L of each primer

- e. 0.25 µL of Taq polymerase (5U/ µL, from AB)
- f. 26.35 µL of distilled water (Braun).

A positive control is used to check if there the procedure occurs normally and a negative control to guarantee that there are not any contaminants in the samples.

The primers used for ITS were ITS1 5' TCCGTAGGTGAACCTGCGG 3' and ITS4 5' TCCTCCGCTTATTGATATGC 3', for BT2 gene were Bt2a 5' GGTAACCAAATCGGTGCTGCTTTC 3' and Bt2b 5' ACCCTCAGTGTAGTGACCCTTGGC 3' and for Tef 1-αF 5' CACATTA ACTTGGTCGTTATCG 3' and Tef 1-αR 5' CATCCTTGGAGATACCAGC 3', as it is shown in Table 1 and the programs of PCR applied differed between genes, as it can be seen in Table 2, Table 3 and Table 4.

Primers	Foward	Reverse
ITS (IDT)	ITS 1: 5' TCCGTAGGTGAACCTGCGG 3'	ITS 4 5' TCCTCCGCTTATTGATATGC 3'
BT2 (IDT)	Bt2a: 5' GGTAACCAAATCGGTGCTGCTTTC 3'	Bt2b: 5' ACCCTCAGTGTAGTGACCCTTGGC 3'
Tef 1-α (IDT)	5' CACATTA ACTTGGTCGTTATCG 3'	5' CATCCTTGGAGATACCAGC 3'

Table 1: Primers of ITS, BT2 and Tef-1α used to amplify the dermatophytes DNA.

The following programs are applied:

ITS Program

Temperature	Time	Cycles
94° C	5 min	x1
94°C	15 sec	x35
55°C	5 sec	
68°C	40 sec	
68 °C	7 min	x1
4°C	infini	

Table 2: ITS program of PCR technique.

Tef -1α Program

Temperature	Time	Cycles
94° C	1 min	x1
94°C	1 min	x35
65°C	5 sec	
72 °C	1 min	
72 °C	7 min	x1
4°C	infini	

Table 3: Tef -1α program of PCR technique.

BT2 Program

Temperature	Time	Cycles
94° C	5 min	x1
94°C	15 sec	x35
58°C	5 sec	
72°C	1 min	
72 °C	7 min	x1
4°C	infinite	

Table 4: BT2 program of PCR technique.

After PCR is done, the amplified products are revealed in an agarose 2% gel, in a E-Gel power Snap (Invitrogen) and the procedure consists in applying 10 µL of distilled water in each well, 10 µL of the 100 bp marker in the first well, 10 µL of the samples on the other wells and 10 µL of distilled water in every well. After 10 minutes, while the gel is running, the bands will get separated by size and will appear by applying an UV light because the gel is pigmented and it will bind with DNA.

3.5 Sequence Method

To obtain the sequence of each strain the following steps have to be accomplished:

1. Purification of the PCR products by ExoSap-IT technique
2. Sequence of the DNA fragments previously purified
3. Purification of the sequencing reaction

3.5.1 Purification of the PCR products

A mix of 1 µL of ExoSapIT pure solution and 5 µL of Nuclease Free Promega water is done and 6 µL of it is put in the 96 well plate along with 6 µL of the samples.

The ExoSap programme is applied for 15 minutes at 37°C and then 15 minutes at 80°C.

3.5.2 Sequencing Reaction

To initiate the sequencing procedure the samples were added to the mixture seen in Table 5, and then the tubes are centrifuged and the sequence program, shown in table 6 is applied and the DNA fragments are sequenced.

	Purification at ExoSapIT
Big Dye Termi	0.5 µL
Buffer Big Dye 5x	2 µL
Primer (3.2 µM)	0.5 µL
Samples to be sequenced	4 µL (8 ng)
H ₂ O HPLC	3 µL
Total	10 µL

Table 5: Reagents and their amounts used in the sequencing reaction.

Temperature	Time	Cycles
96°C	3 min	x1
96°C	15 sec	x25
50°C	15 sec	
60°C	4 min	
10°C	infinity	

Table 6: Description of the Program applied to sequence the dermatophytes DNA.

3.5.3 Purification of the sequencing reaction

The purification of the sequencing reaction is done by the CleanSeq Agencourt Technique, with the Kit CleanSeq Agencourt Ref. A29151 (800 rxn) A29154 (5000 rxn).

Finally the sequence is analysed by CBS database or BLAST database in Tef case (annexes).

3.6 Phylogenetic Analysis

Samples of interest were sequenced for the following three genes: ITS, Tef-1 α and BT2.

The following two species were chosen as outgroups: *Purpureocilium lilacinum* and *Aspergillus fumigatus*.

The sequences for the three genes of interest for each one of the two outgroups species were retrieved from Genbank.

Namely the accession numbers for *Purpureocilium lilacinum* sequences are: KJ476413.1 (Tef-1 α), MH613756.1 (BT2) and LC413751.1 (ITS); the ones for *Aspergillus fumigatus* are: KJ476410.1 (Tef-1 α), KU714964.1 (BT2) and AJ853744.1 (ITS).

For each one of the three genes, sequences from all samples and from the two outgroups were grouped.

Sequences were complemented when needed to correct the Sanger sequence and allow for alignment.

Alignments were performed using MUSCLE in Seaview (<https://www.ncbi.nlm.nih.gov/pubmed/19854763>) for each gene. The alignments for each of the three genes were then concatenated together based on the name of the sample and gaps were added between genes.

Phylogenies were then inferred on the concatenated alignment using PhyML (<https://www.ncbi.nlm.nih.gov/pubmed/20525638>).

PhyML was launched with a GTR model with aLRT branch support, optimized nucleotide equilibrium frequencies, optimized invariable sites and optimized across site rate variation. Tree search operations were performed using the best of NNI and SPR.

4. Results

4.1 Classification of the strains Classification of Strains by Sequencing method and later analysis in CBS and BLAST database

All the strains were grown in Sabouraud medium and DNA was amplified from all strains using PCR technique for all the three genes, Tef-1 α , ITS and BT2, with the exception of 5 strains that the PCR was negative when examined in the electrophoresis gel, perhaps because of an error during in the extraction.

The DNA was sequenced, and the results were analysed by CBS database, concerning ITS and BT2 genes, and BLAST database concerning Tef-1 α .

As we can see in Table 7, 13 of the species analysed were classified as *T. interdigitale*, where two of them were reference strains, IHEM 620 and IHEM 584.

<i>T. interdigitale</i>	170824-0008 170428-0054 170410-0060 170314-0069 171026-0006 171026-0004 171025-0081 171026-0007 171026-0009 171026-0010 180925-0065 IHEM 620 IHEM 584
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Table 7: Discrimination of species of *T. interdigitale* sequenced and analysed by CBS and BLAST databases.

The strains identified as *T. mentagrophytes* (Table 8) were 14 in total in which 3 were reference strains, IHEM 10342, IHEM 4268 and IHEM 4203.

<i>T. mentagrophytes</i>	180814-0029
	180730-0023
	180604-0007
	180209-0032
	180925-0031
	190129-0017
	IHEM 10342
	IHEM 4268
	IHEM 4203
	190220-0076
	190226-0091
	190315-0029
	190313-0069
	161208-0065

Table 8: Discrimination of species *T. mentagrophytes* sequenced and analysed by CBS and BLAST databases.

Ten strains were identified as *T. violaceum* and are presented in Table 9. For each species, at least one reference strain was included in the study except for *T. violaceum*, because although this strain was a part of the research, it was not possible to extract the DNA, probably due to not enough time of growth in culture.

Besides this strain, other 3 were contaminated so after a second analysis we excluded them from the study.

<i>T. violaceum</i>	180227-0044
	180227-0045
	180227-0072
	180410-0017
	180410-0021
	180420-0056
	180611-0016
	180611-0049
	180621-0047
	180625-0012

Table 9: Discrimination of species of *T. violaceum* sequenced and analysed by CBS and BLAST databases.

Of all the 65 strains analysed, 19 were classified as *T. soudanense* (Table 10), where one is the reference strain, IHEM 13492.

<i>T. soudanense</i>	180227-0053
	180227-0070
	180227-0075
	180306-0068
	180410-0019
	180410-0022
	180410-0026
	180410-0027
	180410-0028
	180410-0033
	180410-0037
	IHEM 13492
	190118-0006
	190118-0005
	190118-0012
	181212-0075
	181212-0074
	180611-0017
	180611-0069

Table 10: Discrimination of species of *T. soudanense* sequenced and analysed by CBS and BLAST databases.

There was concordance on the results between the three segments analysed, which means that when sequencing every segment, ITS, BT2 and Tef-1 α , they all classified each strain as one species.

4.2 Phylogenetic Analysis

After sequencing, the dendrograms were elaborated concerning *T. mentagrophytes*, *T. interdigitale*, *T. violaceum* and *T. soudanense* (Figure 3).



Figure 3: Dendrogram representing the phylogenetic differentiation of *T. mentagrophytes*, *T. interdigitale*, *T. soudanense*, and *T. violaceum*.

Firstly, *Purpureocilium lilacinum* from the class *Sordariomycetes*, and *Aspergillus fumigatus* from the class *Eurotiomycetidae* were used as outgroups, and they were chosen due to the lack of homology between them and the species that are being investigated.

It is necessary to include at least one distantly related sequence from the sequences being analysed in order to elaborate the dendrogram.

It can be seen in Fig. 4, there are clearly seen two clusters that separate the species of *T. violaceum* and *T. soudanense*, from *T. mentagrophytes* and *T. interdigitale*.

In the first cluster it is present a separation between *T. violaceum* and *T. soudanense*, and this cluster can be divided in two, of the two species, but in the *T. mentagrophytes* and *T. interdigitale* cluster the separation between species is more tenuous, being that we cannot determine the existence of two clusters that separate both species.

As it can be observed, some strains were not classified as they had been by CBS and BLAST platform. In the *T. mentagrophytes* dendrogram we can see that all the strains that were classified as this species are classified correctly but 2 strains that were well classified as *T. mentagrophytes*, appear in the dendrogram area of *T. interdigitale* (IHEM 4268 and 190313-0069), one of them being a reference strain.

On the other hand, all species that were previously classified as *T. interdigitale* were well evaluated and maintained their identification.

Analysing the *T. violaceum* dendrogram, all the strains were identified as they were by sequencing, although 2 strains were in *T. soudanense* dendrogram (180410-0017 and 180410-0021), and in the *T. soudanense* dendrogram the same happened, as they were all identified as previously but one strain (180306-0068) was in *T. violaceum* dendrogram.

5. Discussion

The overall increase of *Tinea capitis* during the last decades is due to the emerging anthropophilic infections in Europe probably as a result of increasing numbers of immigrants of different ethnic origin. (13)

Whatever the reasons behind the current outbreak, the procedures for surveillance are clearly not able to detect cases in order to control the spread of infection (14).

Tinea capitis does not respond to topical therapy alone, and therefore requires oral antifungal agents, which implies the need of the exact treatment regimen dependent on the species (38).

Worldwide *Tinea capitis* is most commonly caused by several dermatophytes, being that the aim of this study was to identify and distinguish some of them, *T. interdigitale* from *T. mentagrophytes* and *T. violaceum* from *T. soudanense*.

We used only a molecular method to identify the strains because the morphological properties of the strains are not always accurate to identify them with certainty, as they have been misidentified before (62), also it is hard to differentiate some based on conventional methods (26) and due to the time traditional methods take to develop, since that factor was limited.

5.1 Strains Identification

To identify each strain this study focused on ITS, BT2 gene and Tef-1 α which have been used before to discriminate fungal species (35)(63).

5.1.1 ITS

The Internal transcribed spacer (Figure 4) is located in the rDNA gene complex of all eukaryotic cells between the 18S and 5.8S rDNA genes (ITS1) and the 5.8S and 28S rDNA genes (ITS2) (Figure 3) and has areas of high conservation and areas of high variability. It is an ideal starter for the development of specific PCR primers for identification of fungal species (68)(55).

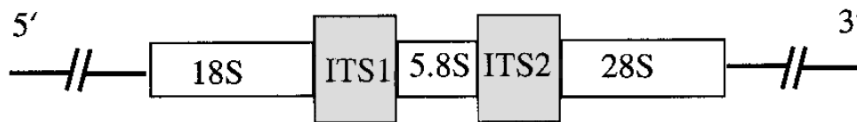


Figure 4: Representation of the rDNA gene complex in fungi denoting gene order and position of the ITS regions (Iwen et al., 2002).

Once isolated, the ITS regions can be compared to the wealth of other sequences in the sequence database.

Although the ITS region is the main target, other genes are becoming more widely studied, in particular the β -tubulin gene.

5.1.2 β -Tubulin gene

Microtubules are found in all eukaryotic cells and are involved in maintenance of cell shape, mitosis, and a variety of other morphogenic events. At the core of these multimeric structures, lie heterodimeric tubulin filaments made up of two very similar α - and β -tubulin proteins. Despite the highly conserved nature of α - and β -tubulins, sufficient differences exist between cell types and taxa to provide opportunities for identification based on these tubulin proteins (64).

The database of β -tubulin sequences is not as large as that for ribosomal ITS sequences but can be particularly useful when ITS sequence variation or conservation is not suitable for production of a taxon-specific diagnostic (65)(66).

5.1.3 Tef-1a

Finally, Tef-1a gene, which encodes part of the protein translation machinery, has shown a high level of sequence polymorphism among related species and is recommended for the discrimination of fungal species (67).

5.2 Amplification and sequencing of DNA

PCR is the enzymatic exponential amplification of a specific target region using short primers, leading to detectable amounts of amplified DNA from one or a few original sequences (68).

Sequencing is seen as the gold standard method to identify species (69).

The Sanger sequencing method uses 2',3' dNTPs which lack a hydroxyl group on the 3' carbon of the sugar ring. In a regular nucleotide, the 3' hydroxyl group acts as a "hook," allowing a new nucleotide to be added to an existing chain.

Once a dideoxy nucleotide has been added to the chain, there is no hydroxyl available and no further nucleotides can be added. The chain ends with the dideoxy nucleotide, which is marked with a particular colour of dye depending on the base (A, T, C or G) it carries.

Dermatophyte species identification by sequence comparison is often problematic using the publicly available NCBI database. It is plethoric with identical sequences under different names (especially ITS and 28S sequences).

A way to circumvent this problem is to directly use the publicly available ITS sequence database at the CBS dermatophyte database website. Identification of fungi in dermatological samples using PCR is reliable and provides significantly improved results in comparison with cultures (32).

As our results show, 65 strains were analysed and with the combination of the three genes it was achieved an identification by DNA sequencing and comparison with CBS database and BLAST database.

5.3 Phylogenetic analysis

It could be inferred this method as good approach to evaluate and distinguish dermatophytes, however, after making a phylogenetic study with these three genes the results were not satisfactory due to lack of separation between species.

This can be explained because they are very closed related, and they have been misidentified before, or perhaps because the targeted genes were not ideal to separate these specific species. Some authors wrote that the variations found in ITS analysis were very slight suggesting that these differences are not useful markers for strain identification (32) (3) and there are some studies that still consider *T. interdigitale* a subtype of *T. mentagrophytes*, and see them as only one specie.

It has also been written that *T. soudanense* and *T. violaceum* had also been recognised as a synonym before, but the unification of these species may conceal a possible evolutionary diversification since both species have their unique geographical distribution (3)(1) (70)(23).

6. Conclusion

In conclusion, it was possible to discriminate the different species of dermatophytes by the sequencing method but the phylogenetic analysis performed did not have the expected results, because the species that we were trying to distinguish are very close related, and are a lot of times misidentified.

To sum up, this project helped understand the differences and difficulties in discriminating dermatophytes and also the importance of its identification being that more research has to be done to achieve a more reliable method.

7. Future perspectives

Firstly, since this project lacked the morphologic evaluation and research, this analysis should be performed in order to sustain the identification reached with the molecular studies, since although the results with the traditional methods take longer, and have some disadvantages as it was said before, they still are very important to discriminate dermatophytes.

Secondly, being that the genes amplified have been investigated before, and were successful on identifying several species our focus should be placed on different types of techniques.

There are several types of molecular techniques and procedures that have been used before to identify dermatophytes, among them, RT PCR, nested PCR and PCR- RFLP, which could all be used as an alternative to the technique performed in this study.

Given the advantages and performance, a nested PCR could be performed to the samples analysed in this study, to search if the results obtained would be more satisfactory.

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Table 11: Results of ITS sequencing in *T. interdigitale* and *T. mentagrophytes*

Number	Sequence	ID
170824000 8	GGGGTTTCGCGCAGCCGGAGGCTGGCCCCACGATAGGGCCAAACGTC CGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTGTC TACATTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGCCGT TCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCCGCCGGA GGACAGACGCAAAAAAATTCTTTCAAGAAGAGCTGTCAGTCTGAGCGTTA GCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCGGC ATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGAATT CCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTCCG GGGGGCATGCCTGTTTCGAGCGTCATTTAGCCCCCTCAAGCCCGGCTTGT GTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGACGC GCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGAATG GGCAACAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAATCT GTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAA CTTAAGCATATCAATAAGCGGAGGAAGTGTGCCCCACCCAGCGGAAGC TGCCCCCAGGATGGGCAAAGTCCGGGGGGGTGACCCATTGCCCGCC GTCCACCCATTCTGTCGATTTCTCG	T. inter
170428005 4	CGGTTTTGCGGCGGAGGCCGGGAGGCTGGCCCCACGATAGGGCCAA ACGTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTC TTGTCTACATTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAG CCGTTCCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCCG CGGAGGACAGACGCAAAAAAATTCTTTCAAGAAGAGCTGTCAGTCTGAGC GTTAGCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTC CGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCA GAATTCGTCGATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCAT TCCGGGGGGGCATGCCTGTTTCGAGCGTCATTTAGCCCCCTCAAGCCCG GCTTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGG GACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGC GAATGGGCAACAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAA AATCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCG CTGAACCTAAGCATATCAATAAGCGGAGGAATGTTTCCCCCGCGGCC GGAGGCTGGCCCCCGATGGCCAACCTTCGGTTCGGGGTGTGACACATG TGCCCGCGGTACCCCCATTCTTGTGCAATTAATCGGTTGCTCGGGGGA CGCGCTCTCCAGGAGAGCGTTTGGCGACCTCCTTTAGGGGCTGAACCT GGAGCGCCGCCGAAGGATAATCAAAAAATCTTTCAAAAATGTCTTGAAG CGTTACAGTAA	T. inter
170410006 0	AGGTTTTCGCGGCGAGGCCGGAGCTGGCCCCACGATAGGGCCAAACGT CCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTGT CTACATTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGCCG TTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCCGCCG AGGACAGACGCAAAAAAATTCTTTCAAGAAGAGCTGTCAGTCTGAGCGTTA GCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCGGC ATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGAATT CCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTCCG GGGGGCATGCCTGTTTCGAGCGTCATTTAGCCCCCTCAAGCCCGGCTTGT GTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGACGC	T. inter

	<p>GCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCGAATG GGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAATCT GTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAA CTTAAGCATATCAATAAGCCGGAGGAAAGGTCCCCCGCGAGGCCGGA GGCTGGCCCCCGATGGGCAAAGGTCCGTCTGGGGTGAGCACATGTGG CGGCGTACCGCCATTCTTGTCTACATTATCGGTTGCTCGGAGGGCGCG CTCTCCAGAGAGCTTTTCGGCAGCTCTCTTTTAGTGGCTAACGCTGGGAG CGCGCGGAAGGAATACGAAAAAATTCTTTCGAGACTGTCGTGAGCGTT TACAGCAGAATCATTTAACTTTACACGGATCTCTTGCTTCGGCATCATG AAGAGCAGCGAATGCAATAGTATGTGAATGAGAATCGTGATACTCAATCA TTAAGCATTGACCCGGGCGATCGGGGGAGAGCTGTCAGCCATTCTCCTC ACCGCGGTGGTGTGATGAGACTCGCCGCGCTCTCGGTGGGAGACCGAA CAGTGACAGCGCATTACGGCTTCTAGTGGCGATGTAACGGCGACTCTG AAGCGCGCACGCGTAAATGCTTGAATCTTCAGTGGGATCCCATATACTA CGC</p>	
<p>170314006 9</p>	<p>AGGGGTTTGCGGGCAGCCGGAGCTGGCCCCCACGATAGGGCCAAAC GTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTT GTCTACATTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGC CGTTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCC GGAGGACAGACGCAAAAAAATTCTTTCAGAAGAGCTGTCAGTCTGAGCG TTAGCAAGCAAAAATCAGTTAAACTTTCAACAACGGATCTCTTGTTCC GGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAG AATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATT CCGGGGGGCATGCCTGTTTCGAGCGTCATTTAGCCCTCAAGCCCGGC TTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGA CGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCGA ATGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAA TCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCT GAACTTAAGCATATCAATAAGGCGGAGGAAAGCGCCCCCCCCGAGGCC GGACGCGGCCCCACGATGGGGCAAAGTCCGTCTGGTGTGAACCCAATG TGGCGGCGTAACGCCATTCTGTTAATTCTCGTTTGCTCGAAGGCGCC TCTCCAGCAAAACGTTGGGGAACCTCTTTATGGCTAACCGGGCGGGCG CCAGAAGAATCACAAAAAATTCTTTCAGACTGTGGTGGAAACAATAGAGA GAAATTTTTAAAGTTCACACGGATTCTGGCTCCGCAAAATAAAAAACAG GGAAGCAATAGGGAGGGGGGAAATGCTAAGC</p>	<p>T. inter</p>
<p>171026000 6</p>	<p>GGGGGCTTTGCGCGCAGCCGGAGCTGGCCCCCACGATAGGGCCAAA CGTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCT TGTCTACATTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAG CCGTTCCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGC CGGAGGACAGACGCAAAAAAATTCTTTCAGAAGAGCTGTCAGTCTGAGC GTTAGCAAGCAAAAATCAGTTAAACTTTCAACAACGGATCTCTTGTTCC CGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCA GAATTCGCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCAT TCCGGGGGGCATGCCTGTTTCGAGCGTCATTTAGCCCTCAAGCCCGG CTTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGG ACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCG AATGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAA ATCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGC TGAATTAAGCATATCAATAAGGCGGAGGAAAGACATGCCCCCGCAGCG GACCCGGCCCCACGATGGGCAACGTCGTAGGGGTGAGCAATGTGCGC GGCGTACGCCATTCTGTCTAATACTCGGTGCTCGGCGGGCGCGCTCT CCGGAAAGCCTTCGGGAGCTCTCTTTAGTGGCTAAACCTGGACCGCCC GCCGAGGAAAACCAAAAAATTTTTCGAAGACTGTCGTCTGAGCGTTACA</p>	<p>T. inter</p>

	<p>GCAAATAATTTAAAATTTACACGGATCTCTGGGTTCGGCATCAAGAAA AAGCAGCGAAGCGATAGTAAGTGAATGGAAGATCGTGAATATCAATTTG AACTATGCGCCGCGGCATCGGGGGGAGCGTGATCAAGGTTTTTCCC CCCCGCTGCTGGGTAGAAAACCCCGCCCCCTCTTGGGTGCGAGAAA AGC</p>	
<p>171026000 4</p>	<p>GGGTTGGCGCGCAGACGGAGCTGGCCCCCACGATAGGGCCAAACG TCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTG TCTACATTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGCC GTTCCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCCCG GAGGACAGACGCAAAAAAATCTTTTCAAGAAGAGCTGTCAGTCTGAGCGT TAGCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCG GCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGA ATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATT CGGGGGGCATGCCTGTTGAGCGTCATTTAGCCCCCTCAAGCCCGGCT TGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGAC GCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGAA TGGGCAACAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAT CTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTG AACTTAAGCATATCAATAAGCCGGAGGAAAGGGGGCCCCCGCGAGGCG GACGCCGGCCCCACGATAGGGCAAAGTTCGTCGGGGTGAACATTG GCGGCGTACGCCATTCTGTCTACATTACTCGTTGCTCGGCGGGCGGCT CTCCAGGACGCGTTTGGGATCTCTTTACTGCTAACCCGGAGGCCGCG GAGAAATAGCAAAAAAATCTTTTCAACACTGTCGTCGAGGTTGCAGCAA AATAGTTAAATTTTACACGGATCTCTTGGATTGGCATCATAAGAGCAAGG AATGCATAATGAATGAGAATTGCGAGTTAAATCCATCTGTAGCAATGCGC GGATTCCGGGAGAAGCAGTGAGCCCTTTTCAACGGGCGCCGTGTAGA ACTCGGCGCCTCTGGGGTGAAGGCGGAAAGCGGAAAGCGACCATTCGCT CTGGCAATGCAAAACGGCTGAAGGCAGGTCATATCTCGTTTCAAGAGTCTC ACTGCAGGGGAGACGTCACCTATGCATCACGAG</p>	<p>T. inter</p>
<p>171025008 1</p>	<p>CGGGTTTGCAGCGCAGCCGGAGCTGGCCCCCACGATAGGGCCAAACGT CCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTGT CTACATTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGCCG TTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCCGCGG AGGACAGACGCAAAAAAATCTTTTCAAGAAGAGCTGTCAGTCTGAGCGTTA GCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCGGC ATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGAATT CCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTCCG GGGGGCATGCCTGTTGAGCGTCATTTAGCCCCCTCAAGCCCGGCTTGT GTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGACGC GCCCCAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGAATG GGCAACAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAATCT GTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAA CTTAAGCATATCAATAAGGCGGAGGAAAGGGGGCCCCCCCCCAAGCCG CAACTGGCCCCAGATGGGGCCAAAGTCCGTCAGGGGTGACACATGTG GCGGCCTACGCCATTCTTGTCTACATTACACGGTGCCTCGGCGGGCG CGCTCTCCAGATATCGTTGGGATCTCTTTGTGGCTCACGCGGGACGC CCCCGGAGAATCAAAAAATTTTAAATAGCGGTGTCTGACCTAGACA GCGAAATAGTTTAACTTTACACGGATTCTTGGTCCGCTAATAAGAAACA GCGAATGGATAAATAAGGTGAAATGACTGATGCTTTATCTCTATCTGAAA CAATGCGCTCGGGATTCCGGGGAGAAAGCCATTCGAGCCCTTTTCCAAC CGCTGTCCGGAGTGAAGACCCCCCGCGCACCTTTTGGGAGAAAGAAAC GCGCAAAAAATAAACAGCCCATTTCTGTTTCTGGGGGGATGGGAAACCA CGGATCGCACGACCACCGCCGCAACATGTTTTCCCGTGGATAGAGTA</p>	<p>T. inter</p>

	CTCTTACGATGTATGAGACGCTCTCATCTATTACTTAATTATCGGAGAAA GAAAAAAAAACAC	
171026000 7	AGGCTTGCGGGCAGCGGAGCTGGCCCCCAGATAGGGCCAAACGTCC GTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTGTCT ACATTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCCAGGAGAGCCGTT CGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCCGCCGGAG GACAGACGCAAAAAAATTCTTTTCAAGAAGAGCTGTCAGTCTGAGCGTTAG CAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCGGCA TCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGAATTC CGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTCCGG GGGGCATGCCTGTTTCGAGCGTCATTTAGCCCCCTCAAGCCCGGCTTGTG TGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGACGCG CCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCGAATGG GCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAATCTG TTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAAC TTAAGCATATCATAAGCCCCGGAGGAAGTTGGTCCCCCAGCCGGACGCC GGCCCCCACGATGGGGCAAACGTCGTCAGGGGTGAGCACATGTGCGC GGCCGTACGCCCATCTTGTCTGCATTCTCGGTTGCTCGGCGGGCGCG CTCTCCCAGGACACCGTTCGCGAGCTCTCTGTGTGGCTAACGCGGGAG GCCCGCGGAGGACGACCAAAAATTCTTTCAAGACTGTCGTCTGAGCGT TACAGCAAAATCGTTTAACTTTACACGCGATCTCTGGTTTCGCTCAAAG ACACGAAATAGATAAATATGTGGAATAATAAACTCAATTAATCTTAAGCC ATGACCCCGGCATTGGGGACAGCGGTTCAAGTATTCCCCTCTCCCGCTG TGTGATGAACATCGTCTGTTTTCGGGTTGCAGAACTCGGAACATGCA GAGCCCGAATTCGCTCTAGCCAATGTCAACGGCTCTCGACGCCATGCC AAATTTTTGTCTGTATGAGTACTGCATAGATGAATCGCTAACTATAAGTGC GTTAATACCGGCGAGATAACAATCAATTCT	T. inter
171026000 9	GGGTTTGGCGCGCAGGACGGAGGCTGGCCCCCAGATAGGGCCAAA CGTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCT TGTCTACATTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCCAGGAGAG CCGTTCCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGC CGGAGGACAGACGCAAAAAAATTCTTTCAAGAAGAGCTGTCAGTCTGAGC GTTAGCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTC CGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCA GAATTCGCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCAT TCCGGGGGGCATGCCTGTTTCGAGCGTCATTTAGCCCCCTCAAGCCCGG CTTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGG ACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTTCTAGGCG AATGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAA ATCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGC TGA ACTTAAGCATATCAATAAGGCGGAGGAAAGTTAGTTGCGCCCAGGC GGGAGGCTGGCCCCCAGATGGGGCAACGTCCGTCAGGGTGTGACACAT GTGCCGGCCGTACCGCCCCCTTTCTTGTCTAATTAATCGTTGCTGGCGGG CCGCGCTCTCCCAGGAGACCGTTCGCGATCTCTCTTTTGTGGCTAACGC TGGAGCGCCGCGAGGAGGACCAAAAATCTTTCAAGACTGTCACTGAA GCTTAACAGCAAATAATTAATTTACACGCGATCTCTGGGTTCCGGCTCAA TAAAGAACCCCGAATGCGAAAGTAGGGGAATTGGAAATCCGCACTCTCT ATTTTGACACGATTGACCCTGGGATCCCGGGGGCGTGCTGTGACGATT TTCCCCCCCCGAGGTGTGTCTGAGAAAAAGCCGCCCCCCCGCCTTTGG	T. inter
171026001 0	AGAATTTGGCGCGCAGCCGGAGCTGGCCCCCAGATAGGGCCAAACG TCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTG TCTACATTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCCAGGAGAGCC	T. inter

	<p>GTTTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCCG GAGGACAGACGCAAAAAAATTCTTTTCAGAAGAGCTGTCAGTCTGAGCGT TAGCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCG GCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGA ATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTG CGGGGGGCATGCCTGTTTCGAGCGTCATTTTCAGCCCCCTCAAGCCCGGCT TGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGAC GCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCCGAA TGGGCAACAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAT CTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTG AACTTAAGCATATCAAAGGCCGGAGGAAAGTTGGCCCCCGAAGCGGG ACGCTGGCCCCCAGATGGGGCAAACGTCGCGGGGGTGACCCATGTGCC GGCGTACGCCCAATTCTGTACATTACCGGTTGCCCGGAGGCCCGCTCT CCAGACACCTTTGGGAGCCTCTCTTTGTGGGCCCCCCCTGGACCGCCCG CGAAGAATAACCAAAAATTTTTCGAAAACGGTGGTGGACGTAGCAGCAG AATAGTTTAACTTTACCCGGATCTCTGGTGTGGCTCAAAGAAAAAGCGC GGAATGCGATAGGTAAAGGTGAAATGGAACTGTGTATATCTCAATTTG AACATGAGCCCCGGGGTTCGGGGGGGGCGGCGTTTAGCCTTTCTCCAC CCGCTGTGTGCGGTGAGAGACGACCCCCCGCCTTTGGGGTTCGAGAAGCC CGAAAACGACAAGACCGTTCCCGCTTCGGGGCAAGGGAACACAGCCC CTCTCAACCGCCCGGGCGAAATTTTTCGTCTGTTAGTGATTACGTCTGTG ATGGAGATCACACATTACTAGACTTTGTGAGGGGAGGGTACACGACG</p>	
<p>180925006 5</p>	<p>GGGCTGGCGCGCAGCCGGAGCTGGCCCCCACGATAGGGCCAAACGT CCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTGT CTACACTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGCCG TTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCCGG AGGACAGACGCAAAAAAATTCTTTTCAGAAGAGCTGTCAGTCTGAGCGTTA GCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCGGC ATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGAATT CCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTCCG GGGGGCATGCCTGTTTCGAGCGTCATTTTCAGCCCCCTCAAGCCCGGCTTGT GTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGACGC GCCCCAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCCAATG GGCAACAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAATCT GTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAA CTTAAGCATATCAATAAGGCGGAGGAAACGAAAGGGGGGCCCGCCG GAGGCTGGCCCCCCATAGGGGCAAACGTCCGTGCGGGGTGAGCACATC CGCTCGGCGTACGCCCAATTCTGTCTACTTACTCGGTTGCTCCGCGGGC ACGCTCTCCAGGAGAACCTTTGCTAGCTCTTTTAGTGGCTAAAGCTGG ACGGCCGCCGGAAGAAGACCATAAAATCTTCGAAACTGTCGTTGACCTT AACAGCAAAAATAATTAATTTCAACGAATCTTTGGTTCGGCTCAAAAAAA CACGGAAGCCATAAGTAGGTGGAATGATAAGTCGGAATCCCATCTTTGA CATGAGACCCGCGGCTTCCGGGGATGCCTGTTGAGCTTTTCTCCTCTCC CGGTGCTCGATGGAAAAATCCCCCGCGCCTTTGCGGCTCTGAAAACC CCGAGAAGAGTGACCAAACCTTATGTGGTTGTTGGGTGAGGGGGAAACC CGCGCCGCCGAAAACGACGCGCGGCCGCCAAACAGCTTGTCTACTGAC AGCATGTCTCTCGTACATAGTGTGAGAGATACCCCCACTCAATATAAAT ACCTCCATGCGGAGGGGAGGCGGGCACTCCCT</p>	<p>T. inter</p>
<p>161208006 5</p>	<p>GGGGGTTTCGCGCGGCCGGAGGCTGGCCCCCACGATAGGGCCAAACG TCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTG TCTACCTTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGCC GTTTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCCG GAGGACAGACGCAAAAAAATTCTTTTCAGAAGAGCTGTCAGTCTGAGCGT</p>	<p>T. menta</p>

	<p>TAGCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCG GCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGA ATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATT CGGGGGGCATGCCTGTTGAGCGTCATTTAGCCCCCTCAAGCCCGGCT TGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGAC GCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCAGGCGAA TGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAT CTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTG AACTTAAGCATATCAAAGGCCGGAGGAAAGGATCTTGCCCCCAGGCGG AGGCGGCCCCCACTATGGGGCAAAGTCCGTGCGGGGTGAGCACATGCTG GCGGCGTACGTCCCATTCTTGTCTCGTTAGCGGTAGCTCGGCGGCGCG CTCTCAGGAGACCTTTCGCGAGCTTCTTTAGTGGCTAGCCTGGAGGCCG GCGGAGAGAACC AAAAATCTTTCGGAGACGTCAGTCGACCTTAAAGCAA AATAGTTAACTTTACACGATCTTTGGCTTCGCATCAAAGAACCACGAA TGCATAGGTATGGTGCAATTATACTCTGTGTCCAATCTTAAGACATGGA CCCGGGCATTGAGGGATGCTGTTAGAGCTTTACCTCCACGGTGTGCGA GAGAAGACTCGCCCCGTCTCGGGTAGAGGACCGCGAAATGTACAGGCC ATTGCTCTGCAATGGGTCACCGCCTCCAGGCCTGGGCAGATTCTTTG CAATTTCTCTAATGGTTAGGATCCTCACAAATAGCGTTATATCGGGGGAG AGAAAA</p>	
<p>180814002 9</p>	<p>TGGGGTCGCGCAGACGGAGCTGGCCCCCACGATAGGGCCAAACGTCC GTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTGTCT ACCTTACTCGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGCCGTT CGGCGAGCCTCTTTAGTGGCTAAACGCTGGACCGCGCCCCGCCGGAG GACAGACGCAAAAAAATTCTTTCAGAAGAGCTGTCAGTCTGAGCGTTAG CAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCGGCA TCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGAATTC CGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTCCGG GGGGCATGCCTGTTGAGCGTCATTTAGCCCCCTCAAGCCCGGCTTGTG TGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGACGCG CCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCAGGCGAATGG GCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAATCTG TTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAAC TTAAGCATATCAATAAGGCCGGAGGAAAGTTTATAACGCCCGCGGAGGC GGCCCCCAGATAGGGCAAACGTCCGTCAGGGGGTGAGCAATGTGCGCG GCGTACGCCCATCTTGTCTACTTACTCGATTGCTCGCCGGGCGCGCTC TCCCGAAAGCCTTTCGCGAGCTCTTTTTAGTGGCTTAACTGGGCC GCCGCCGAGGACAAAACAAAAAATATTTTAAGAAACGTCGTCTGAGGTTT ACAGGAAAAGGTTAACTTCACAAGGAACCTTTGGTTCCGCTAATAAAAACC CCGAATGCGAAAAGAAATGGGGAAATTGAAAAGTTGAATCAATTTAAGAAT AGCGTCGCGGGATGGGGGGGGGTGTCGTGTGTGTCTTTCTCCCCCG GCGGTGTGTGGATGAAACACCGCCGCTTCTTGTGGTGGCAGAGCACG ACGAAGAAGAGCCGCGCTCTGCGCTTTCGTGTGGTATGAGGGAAACAAC GGCCGTCCGACGACGCGCCGTGCGCGAGGTGGTTTCTTGTGACTGAAA GTATCA</p>	<p>T. menta</p>
<p>180730002 3</p>	<p>CGGGTTTTCGGCGCAGCCGGGAGCTGGCCCCCACGATAGGGCCAAACG TCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTG TCTACCTTACTCGTTGCCTCGGCGGGCCGCGCTTCCAGGAGAGCC GTTCCGGCGAGCCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCCG GAGGACAGACGCAAAAAAATTCTTTCAGAAGAGCTGTCAGTCTGAGCGT TAGCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCG GCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGA ATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATT</p>	<p>T. menta</p>

	<p>CGGGGGGCATGCCTGTTTCGAGCGTCATTTTCAGCCCCCTCAAGCCCCGGCT TGTGTGATGGACGACCGTCCGGCGCCCCCGTTTTTGGGGGTGCGGGAC GCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGAA TGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAAT CTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGAATACCCGCTG AACTTAAGCATATCAATAAGGCGGAGGAAAGATGGTTACGCGCAGGCCG GAGGCTGGCCCCAGATAGGGGCAAACGTCCGTCAGGGGTGAGCAGAA TGTGCGCGGCCGTACGCCCCATTCTTGTCTACTTACTCGGTTGCTCGGC GGCGCGCTCTTCAAGGAAAGCCGTTTCGGAGGCCTCTCTTTAGTGGCTA AAGCTGGACGCGCCGCCGGAGGAAGAACAACAAAAATCTTTTAAAAAACTG TCGTCTGACCGTTAAAGCAAAATATTTAACTTTCAACAGGATCCTGGGTC CGGATCAAGAAAAACAGCAAGGGAATAGGTAATGTGAAATGCAAAAT GGAAATCCAACTCTATGAGCAATGCACCCGGGCTTGGGGGGGAATCC GTGTAGAGGTTTTTCTCCACCCGCGTGTGTGTAGGAAAACACTCCCC CGCGTCTTCTTTGAGGGGGAGAGACGCCCGAAAAACAGTGGCAGGCCG CATTCGACGTCGTCGTGCGAAGAGGAACAACACGGCCTCCGAACAGG CGCCCCGGCCCCCTAATCTTTTGTATGTAGAG</p>	
<p>180604000 7</p>	<p>AGGGGGTTGCGGCGCAGACGGAGCTGGCCCCCACGATAGGGCCAAA CGTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCT TGTCTACACTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCCAGGAGAG CCGTTCCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGC CGGAGGACAGACGCAAAAAAATTCTTTCAGAAGAGCTGTCAGTCTGAGC GTTAGCAAGCAAAAATCAGTTAAACTTTCAACAACGGATCTCTTGGTTC CGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCA GAATTCGGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCAT TCCGGGGGGCATGCCTGTTTCGAGCGTCATTTTCAGCCCCCTCAAGCCCGG CTTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGG ACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCG AATGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAA ATCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGC TGAActTAAGCATATCAATAAGGCGGAGGAAACTTCATACCCCCAGGC GGAGGCTGGCCCCCACGATGGGCCAACGTCGTCGGGGGTGAGCAAATGT GCCCGCCGTACGCCATTCTGTCTGCATTACTGGTTGCCTCGGCGGGC GCGCTCTCCAGGAGAGCCTTCGCAAGCTCTCTTTAGTGGCTGAACCTGG AGCGCCGCCGAGGAAGAGCAAAATTTTTTCGAGACTGTCGTCTGACTTTA CAGCAAAATAGTTAAATTCACACGGATCTCTGGCTCGGCTCAAGAAAGCA CGAATGCGATAGTAAGTGAATGCTAAGTTCGGATCGCATCTTTGAGCAATA GACCTGGCATTCCGGGGGCGAGCTGTCAGGTCTATCTCCCTCCACGGTG TTATGAAAGTCAGCGGTTTGGGTGGAACCGAAACTGCAGCGATCCGCTG GCAGGACATAACTGCCGACAGGCCCCGGCAACTTGTCTGTGAGTCCAG AATGGGAGATAGGCCATGACTACGTACG</p>	<p>T. menta</p>
<p>180209003 2</p>	<p>AGGGCTCGGCGCAGCGGAGCTGGCCCCCACGATAGGGCCAAACGTC CGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTGTG TACCTTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCCAGGAGAGCCGT TCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCCGGA GGACAGACGCAAAAAAATTCTTTCAGAAGAGCTGTCAGTCTGAGCGTTA GCAAGCAAAAATCAGTTAAACTTTCAACAACGGATCTCTTGGTTCCGGC ATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGAATT CCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTCCG GGGGGCATGCCTGTTTCGAGCGTCATTTTCAGCCCCCTCAAGCCCGGCTTGT GTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGACGC GCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGAATG GGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAATCT</p>	<p>T. menta</p>

	<p>GTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAA CTTAAGCATATCAAAAAGCCGGAGGAAATGGTGGCCCCCAGCCGGAC GCTGGACCCCGATGGGGCAAACGTCCGTTGAGGGGTGACCGATCTG GCGGCGAACGCTCCATTCTTGTCTACTTACTCGATTGCCTCGGCGGGCC CGCTCTCCAAGACAGCCTTCGGCGAGCTCTCTTAGTGGCGAACGCTGGA CGGCCCGCCGAAGAAAAATCAAAAATTCTTCCAAGACTGTCCTTGGAGC GTAGCAGCAAAAACATTAATAATTTAACACGGATCTCGGCTCCGCCTCAT AAAAAGAAGGAATGCAATAGTATGGTGAATGTGAGAAGTCGGAATCC CAACTTTGAGAGCATTAGAGCCCGGGGATGCGGAGAGAAGCGTGTGT GAGAGTTTTCTCCCTCCCCGCCTGTGTTGTGTGGTGA AAAACTCGGCGC GCTCTTTTTGTCTGTGTGAACCGCCGAAAACATGTAAAGGACACCTTTGT CTCTGGGGGAAGGGGGAACAACGGCGACCGACAGAACAGCAGCGCTG GGCTAATATATCGTTCTAGTGGAGATCGATTACTAATGAGGTGTGAAGTA CTCTACTATATAACTGGTAGTGGAGGGAGGAAAAA AAAAAACA</p>	
<p>180925003 1</p>	<p>TGGGCTTCGCGCAGCGGAGCTGGCCCCCACGATAGGGCCAAACGTCC GTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTGTCT ACCTTACTCGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGCCGTT CGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCCGGAG GACAGACGCAAAAAAATTCTTTCAGAAGAGCTGTCAGTCTGAGCGTTAG CAAGCAAAAATCAGTTAAACTTTCAACAACGGATCTCTTGGTTCCGGCA TCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGAATTC CGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTCCGG GGGGCATGCCTGTTGAGCGTCAATTCAGCCCCTCAAGCCCGGCTTGTG TGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGACGCG CCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGAATGG GCAACAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAATCTG TTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAAC TTAAGCATATCAAAAAGCCGGAGGAAAGGTTGTCCCCCAGCGGGAC GCTGGCCCCACGATGGGGCAAACGTCCGGCAGGGTGAGCACATCTGCG CGGCGTACGCCATTCTGTCTCCTTATCGGTGCTCGCGGGCGCGCTCTC CGGCACACCTTTGGGAGCTCTCTTTGGTGGCTAAGCCGGGGACGCCGC CGAAGGAAGATCAAAAATTCTTCTAAGACTGTAGGCGGAGCATTACAGA AATCATTAAATTTAACACGAGTCTCTGGGTTGGCACATGAAAGACCG GAAATGCAATAATAAGTGTGAATTTGCAATCTTGAATGCACTTTGCAGC CATGGCCCGCGCATCCCGGGGGGAGCGGTTTGAGCTCTATCTCCCCC CGGTGGCGCGATATAAAAAACGCGGGTTCTTTGGTGTAGCAGAACCCC CAAAACAAAAAAGACCCAATTTCCGCCCTTGCCAGGGAATAACAAC CAGGCCTGCACAGAAAGCGACCACGGGCGCCCGAACATATTTTTTCTCT TTGCACAAATGCTACTACACACAGATGAGATAACACCCAATAATAGAC AATCTAACGGCGGGAGAGAGAAAAAATTTA</p>	<p>T. menta</p>
<p>IHEM 4268</p>	<p>GGGTTTCGCGCGGCCGGAGGCTGGCCCCCACGATAGGGCCAAACGT CCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTGT CTACCTTACTCGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGCCG TTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCCGG AGGACAGACGCAAAAAAATTCTTTCAGAAGAGCTGTCAGTCTGAGCGTTA GCAAGCAAAAATCAGTTAAACTTTCAACAACGGATCTCTTGGTTCCGGC ATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGAATT CCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTCCG GGGGGCATGCCTGTTGAGCGTCAATTCAGCCCCTCAAGCCCGGCTTGT GTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGACGC GCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGAATG GGCAACAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAATCT GTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAA</p>	<p>T. menta</p>

	CTTAAGCATATCAATAAGGCGGAGGAAAGAGTTCCCCCCCAGGCGGACG CTGCCCCCAGATAGGCCAAAGGCGGCAGGGGTGAGCCATGTGGCCG CGTACCCCCCTTTCTTGTCTACTTACTCGGTTGCTCGGGGGGCGCCTCT CCAGGATATCTTTTCGCGAGCTTCTTTGGGGCTGACCCGGGGCGCCGC CGAAGAAAAACAAAAAATTTTTCAAAAACGTTGTCGACCTTTACAGCAAAA TTTTTTAAAATTTAAAGGATCTTGGCTCCGCTAAAGAAA	
190220-0076	TGGGCTTTGGCGCAGGCCGGAGGCTGGCCCCCAGATAGGGCCAAAC GTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTT GTCTACCTTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGC CGTTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCC GGAGGACAGACGCAAAAAAATTTTCAGAAGAGCTGTCAGTCTGAGCG TTAGCAAGCAAAAATCAGTTAAACTTTCAACAACGGATCTCTTGGTTCC GGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAG AATCCGTCGATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATT CCGGGGGGCATGCCTGTTTCGAGCGTCATTTACGCCCTCAAGCCCGGC TTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGA CGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCGA ATGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAA TCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGATAACCCGCT GAACTTAAGCATATCAATAAGCCGGAGGAAAGTTTAGGCACCCCCAGTG GGCGATGGCCCCACGATGGGGCAAACGTCGTCAGGGGGTGTGACATC TCGCGCCTTACACCCATTCTTGTCTACTGAGTCAGTTGCTCGGCGGGCG GCTCTCCAGAAATCTTTTCGTGAGCTCTTATGGCTACCCTGGACGGCG CGAGAAAACCAAAAATTTTTAGAGACTGCGGTTGTACATAACAGCGAGAG TATTAATTATACAGATTCTGCGTTGCTCATGAAAAGAGGAAAGCAATA GGAAGGTGAATGGGAATTTGCATTCACTGTAACATGGCGGCCTTCCGG GGGATGTGTGTGCCTTTCTACCCGTCTCGCGTCGTATAGAAAACGAGC GC	T. menta
190226-0091	GGCCTTGCGCGGCAGGCCGGAGGCTGGCCCCCAGATAGGGCCAAA CGTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCT TGCTACCTTACTCGGTTGCCTCGGCGGGCCGCGCTCTTCCAGGAGAG CCGTTCCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGC CGGAGGACAGACGCAAAAAAATTTTCAGAAGAGCTGTCAGTCTGAGC GTTAGCAAGCAAAAATCAGTTAAACTTTCAACAACGGATCTCTTGGTTC CGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCA GAATCCGTCGATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCAT TCCGGGGGGCATGCCTGTTTCGAGCGTCATTTACGCCCTCAAGCCCGG CTTGTGTGATGGACGACCGTCCGGCGCCCCCGTTTTTGGGGGTGCGGG ACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCG AATGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAA ATCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGAATACCCGC TGAActTAAGCATATCAATAAGCGGAGGAAAGGCGGGCCCCCCCCCGC GGCAGGCTGGCCCCACGATGGGGGCAACGTCGTCGGGGGTGAGCCAT GTGCGCGCGTACGCCATTCTTGTCTACTTCTCGGTTGCTCGGCGGGCG CGTCTTCAGGACATCTTTTCGGATCTCTTTTTGTTGGCTACCCGGGAGGG CGCGGAGGAAAGCAAAAAATCTTAAAGAAGTGTGTGGGGCTAGACAGAG AAATATATAAAAATTTACAGGATTTGGTTGGCATATGAAGAAGCACAAATG GATAGGTAATGGTGAATTGCGAATTTGAAACACAAACTCTAAAATGCT	T. menta
IHEM 4203	TGGGCTTTTCGGCGCAGGCCGGAGGCTGGCCCCCAGATAGGGCCAAA CGTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCT TGCTACCTTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAG CCGTTCCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGC CGGAGGACAGACGCAAAAAAATTTTCAGAAGAGCTGTCAGTCTGAGC	T. menta

	<p>GTTAGCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTC CGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCA GAATCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCAT TCCGGGGGGCATGCCTGTTGAGCGTCATTTAGCCCCCTCAAGCCCGG CTTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGG ACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCG AATGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAA ATCTGTTTTATACTTATCAGTTGACCTCGGATCAGGTAGGGATACCCGC TGAACCTTAAGCATATCAATAAGGGCGGAGGAAGGTGCCCCCCCCGAAG GGGAAGGCGGCCTCAGGATAAGGCAAAGTCGTGAGGGGTGAGCCCAT GTGGCGCCTTCCCCATTCTTGTCTGGTACTCGCTGCTCGAGAGGCGC CTCTCCAGGATATCTTTGGGAGCTCTCGTAGTGGCCCCCGCGGGAGC GCCGCCGAAGACATCCCAAAAATCTTTCAACGACGGGGTGGAAACATAG AAGCGAAATATATAAATTACACACGATCCTGGCTTCCGAGAAAAAAGG</p>	
<p>IHEM 10342</p>	<p>GGCTTTGCGCGCAGCCGGAGGCTGGCCCCCACGATAGGGCCAAACGT CCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTGT CTACACTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCCAGGAGAGCCG TTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCCGCGG AGGACAGACGCAAAAAAATTCTTTCAGAAGAGCTGTCAGTCTGAGCGTTA GCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCCGGC ATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGAATT CCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATTCCG GGGGGCATGCCTGTTGAGCGTCATTTAGCCCCCTCAAGCCCGGCTTGT GTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGACGC GCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCGAATG GGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAATCT GTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTGAA CTTAAGCATATCAAGGCCGGAGGAAATTATAAGGGCCCCCCCCACGGGAG GCTGACCCCCACATGGGGGCAAAAATCAGTCGGGGGGGAGCACATCTG CTCTGCGTACTTTTTCATTTTTTGTCTCGTACTCGGTAGCTCGGGGGCAC GCTCTCCAGGACATCTTTGGGAGCTCTCTGTGTGGCTAGCGCTGGAGCG CCGCGGGAGAAAAACCTAAAATCTTTGGAAGACTGTCGTCCGAGGCAT ACAGCAAATGGTTAAATTTACACGAGCTTGGTTCCGCTCAAAGAAGCAACG AAGGCGAAAGTGAGGTGAAATGATAAGGCAGTAATATCTATTTTGAACAA GCCGGGGTTCCGGGGGGCGACGGTGTAAAGCTATTCCCTCTCCGCGGGG GTGAGGGAAGCGTGG</p>	<p>T. menta</p>
<p>IHEM 584</p>	<p>AGGCTTTGGCGCGCAGCCGGAGGCTGGCCCCCACGATAGGGCCAAAC GTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTT GTCTACACTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCCAGGAGAGC CGTTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCCGCC GGAGGACAGACGCAAAAAAATTCTTTCAGAAGAGCTGTCAGTCTGAGCG TTAGCAAGCAAAAATCAGTTAAAACCTTTCAACAACGGATCTCTTGGTTCC GGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAG AATCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATT CCGGGGGGCATGCCTGTTGAGCGTCATTTAGCCCCCTCAAGCCCGGC TTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGA CGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTAGGCGA ATGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAA TCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCT GAACTTAAGCATATCAATAAGGGCGGAGGAACGGTAGAGCGCGGCCCGC GGGAGGCTGGCCCCACAATGGGGGCAACGTCATTGGGGGTGAACACAC CCGCCCGGCTACCTCCCATTCTTGTCTCTTACGCGGTTGCTCGGCGGG CCGCTCTCCAGGAACACCGTTTGGCAGCCCTCTTAGTGGGTGCGCCCG</p>	<p>T. menta</p>

	GGCCGCCGCCGGAGAGAAAAACAAAAATTTTAGAGAAGGGTGTTCGAG GGTAAAAAGAAAAATTAACCTTGAGATGATTCTGGGGTCCGCACGTAAA GAAACAGCGAAGGAAAAAGAGAAGGTGAAAAAGAGAATTCGAGATTCTT AATCTTTTTAGATCGCGCGGCTGTGCGGGGGGGGGTGGGGGGGGTTTG CCCTCCCGGGG	
IHEM 620	AGGGGTTTCGCGCAGCCGGAGGCTGGCCCCCACGATAGGGCCAAACG TCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTTG TCTACCTTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGCC GTTTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCCG GAGGACAGACGCAAAAAATTCCTTTCAGAAGAGCTGTCAGTCTGAGCGT TAGCAAGCAAAAATCAGTTAAAACCTTCAACAACGGATCTCTTGTTCCG GCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAGA ATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATT CGGGGGGCATGCCTGTTTCGAGCGTCATTTAGCCCCCTCAAGCCCGGCT TGTGTGATGGACGACCGTCCGGCGCCCCGTCTTTGGGGGTGCGGGAC GCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGAA TGGGCAACAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAT CTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCTG AACTTAAGCATATCAAAGGCGGGAGGAAACCTCGTCCCCCAGCCGGA GGCTGGCCCCACGATGGGGGCAAAGTCGTCGGGGGTGAGCACATCTGC GCGCGTACGCCATTCTGTCTACTTGCTCGGTTGCTCGCGGGCGCCTCT CCGAGAGAACCTTTGGGAGCTCTCTTAGTGGCTAACGCTGGGACGCCG CGAGAAAACCTAAAAATCTTTCGAAGGACTGTCGTGAGGGTTAACGAG CGAAAATGTTTAAAACCTTAAAGGATTCTTGCTTCGCTCAATGAACAAGA CGAAGTGCAATAGGTAATGTGAATGGATAAGTCCGTAATATAATTCTTTA AATTGCGCGGGACTTGCGGGGGGATGCGGATGATGTGA	T. menta
190129- 0017	AGGACTTCCGCGCAGCCGGAGGCTGGCCGCCACGATAGGGCCAAAC GTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGTCCCATTCTT GTCTACCTTATTCGGTTGCCTCGGCGGGCCGCGCTCTCTCAGGAGAGC CGTTCGGCGAGCCTCTCTTTAGTGGCTCAACGCTGGACCGCGCCCGCC GGAGGACAGACGCAAAAAATTCCTTTCAGAAGAGCTGTCAGTCTGAGCG TTAGCAAGCAAAAATCAGTTAAAACCTTCAACAACGGATCTCTTGTTCC GGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAG AATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATT CCGGGGGGCATGCCTGTTTCGAGCGTCATTTAGCCCCCTCAAGCCCGGC TTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGA CGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGA ATGGGCAACAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAA TCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATACCCGCT GAACTTAAGCATATCAAAGGCGGGAGGAAAGCTGAGGGCCCCCAGGC GGAGGGCAGCCCCCTATGGGGGCGAAAATCGTAAGGGGGGAGCGAA CTGCTCGCCGTACCTTCTTTTTGTCTACTTATGCGGTTCTCGCGGGCC CCTCTCTCGAGACACCTTTTGAACCTCTCTTTAGTGGGGTCCCCTGGA CGCCGGCGGAGAAAAACAAAAAAAATTTGAAAAGACGTGCTGTGAAGA TTAACAGAAAAAAGATTATATTTTCAACGAACCTGGGTTTGGCTAATAAAA AAAAAAGGAAAGACAATAAGTAAGGTGATAGAACAATGCGTAAACCAAT TTGATAACATGCCGGGCTG	T. menta
190315- 0029	TGGGCTTCGGCGCAGCCGGAGGCTGGCCCCCACGATAGGGCCAAAC GTCCGTCAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTT GTCTACCTTACTCGGTTGCCTCGGCGGGCCGCGCTCTCCAGGAGAGC CGTTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCC GGAGGACAGACGCAAAAAATTCCTTTCAGAAGAGCTGTCAGTCTGAGCG	T. menta

	<p>TTAGCAAGCAAAAATCAGTTAAAACTTTCAACAACGGATCTCTTGTTCC GGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAG AATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATT CCGGGGGGCATGCCTGTTTCGAGCGTCATTTAGCCCCCTCAAGCCCGGC TTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGA CGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGA ATGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAA TCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATAACCGCT GAACTTAAGCATATCAATAAGGCGGAGGAAAGGTCATTACCCCCAGCCG GAAGCTGGCCCCACGATAGGGCCAACGTCGGTCCGGGGGTGAGCGAT GTGCCCGGCGTACGCCATTCTGTCTACTTATTGGGTTGCTCGGCCGGC GCGCTCTCCAGGAGAGCGTTCCGGAGCTCTTTAATGGCTAACGCTGGAC GCCCCGCGGAGGACGACCAAAAATTCTTTGAAAACGTGCTGTGAGCTTTA CGGCAAAATATTAACTTTCAAGGATCTTTGCTTCGGCTCATAAAAACAG AAGCAATAAGTAAGGTGGAATGAAAATCGAATATCATTTTTAAACATTGC GGCGTCCGCGGGGCAGCGTGATGACGTCTTCTTCTCCCCCGTGTGGA GGACAACCACCACCCGCTCTTTGGGGGTGAGAG</p>	
<p>190313- 0069</p>	<p>AGGCTTGGCGCGCAGCCGGAGGCTGGCCCCCAGCAGTAGGGCCAAAC GTCCGTGAGGGGTGAGCAGATGTGCGCCGGCCGTACCGCCCCATTCTT GTCTACATACTCGGTTGCCTCGGCCGGCCGCGCTCTCCAGGAGAGC CGTTCGGCGAGCCTCTCTTTAGTGGCTAAACGCTGGACCGCGCCCGCC GGAGGACAGACGCAAAAAATTCTTTAGAAAGAGCTGTCAGTCTGAGCG TTAGCAAGCAAAAATCAGTTAAAACTTTCAACAACGGATCTCTTGTTCC GGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTGCAG AATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCCCTGGCATT CCGGGGGGCATGCCTGTTTCGAGCGTCATTTAGCCCCCTCAAGCCCGGC TTGTGTGATGGACGACCGTCCGGCGCCCCCGTCTTTGGGGGTGCGGGA CGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTAGGCGA ATGGGCAACAAACCAGCGCCTCCAGGACCGGCCGCCCTGGCCTCAAAA TCTGTTTTATACTTATCAGGTTGACCTCGGATCAGGTAGGGATAACCGCT GAACTTAAGCATATCAATAAGCCGGAGGAAAGCTCCCCCCCCGAGCGG CAGCTGGCCCCACGATAGGGCAACGTCGGTCCAGGGGTGAGCCATGT GCGCGCGTACGCCATTCTTGTCTACATACTCGGTTGCTCGCAGGCGC GCTCTCCAGGACATCGTTTGGCGAGCTTCTTTAGCGGCTAAGCTGGAC GGCCGCCGAAGAAAAGCAAAAATCTTTCAAGACTGTCGTGAAGTTAGCA GCAAGATGTTAAACATTACAGGATCTCTGCTCGCATCATCAACAGCACAA ATGCAATAGTAATGTGAAATTGCAAATGCGTAATCTCATTTTTGTAGCATTT GCTGGCATCGGGGGACGTCGATTGCAGTCTTCTCCTCACGGCGCTGTGA GGACACACCGCCCCTCTCTC</p>	<p>T. menta</p>

Table 12: Results of Tef- 1 α sequencing in *T. interdigitale* and *T. mentagrophytes*

Number	Sequence	ID
170824000 8	TGKCGGAATCGCGGGCGATCKATGGGATCAATCCAGACTACTGGAAGRC CAKCCACGAGATATACATAACCACTAGCCAGGCACCACACACTACACACA GAAACTGACTATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTAT CGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAATAACCCCTTTTGT GACCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCTTTCT CAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGG CACTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATGCA GCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTGCT TTTTCTGTCTTCMGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCGA ARAGTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCTC AAGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGT TCGAGACCCCAAGTACMATGTCACCGTCATTGGTATGTTTTCTCTTTAC CTTCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCC CCCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCYAGG CCGACTGTGCTATTCTCATCATTGCTGCCCKGGTACTGGTGAGTTCGAGG CTGGGTATCTCCAAGGATGGGYYATASCYGKTTYCCTGAA	T. inter
170428005 4	TGACGTATCGCGTCCTTCTATTCCGGCTATCCACCACTACTGGTAGGCC RGCCACGAGAATATACATAACCACTAGCCAGGCACCACACACTACACACA GAAACTGACTATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTAT CGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAATAACCCCTTTTGT GACCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCTTTCT CAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGG CACTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATGCA GCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTGCT TTTTCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCGAA GAGTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCTCA AGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTT CGAGACCCCTAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTACC TTTCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCC CCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGGC CGACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTCGAGGCT GGTATCTCCAAGGATGGGTCTAGCCKGTTTCCTAAA	T. inter
170410006 0	GGCCGGCCWCKGCCWCACCRKTACYGGSASYRAKGC AKTGAGAWTW RMACAGTCGGCCTGGGAGGTACCAGTGATCATGTTCTTGATGAAGTCAC GGTGACCGGGGGCGTCTACTCTCGTTAGTTATGGCACAGCAAGACGATG GAGGGGAAAGGTAAAGAGAAAACATACCAATGACGGTGACATTGTACTT GGGGGTCTCGAACTTCCAGAGGGCGATATCGATGGTGATACCACGCTCA CGCTCGGCCTTGAGCTTGTCAAGAACCCAGGCGTATTTGAAGGACTTCT TGCCCAACTCTTCGGCTTCCTACAGGTACCTTGTTAGCATCGACCCTGAA GACAGAAAAAAGCAAATCTGAACATGACATGAGGCTCGATCGTTGCCTG GAGCGATGGCTGCATGTTTTGATGTTGGTGGGGGGTGGATTTTGCTGCC CAAGCGAGTGCCAAGCCACATCCCACCAAGCAACAAAAAAGTCGCCTG TGGTGGGTTGAAGAAAGGGAGAGAAAAAATGTGCAGCGGAACGAATGA GACAGCAGGGTCAAACAAAAGGGTTATTTACCTTCTCGAACTTCTCAATG GTACGCTGGTCGATACCACCGCACTTGTAGATCAAGTGACCTGTAATGTT ATAGTCAGTTTCTGTGTGTAGTGTGTGGTGCCTGGCTAGTGGTATGTATA	T. inter

	TCTGGTGGCTGGCTTACCAGTAGTGGTGGATTTGCCGGAATCGACGTGG CCGATAACGACCAAGTTAATGTGACTGGCGSTYCGTTTTTACAA	
170314006 9	TGGCGTATCGCGTGYTTTCGCTTCGGATCTCTCCKGACTGCTGTATAATGT TTCACGAGAATATACATAACCACTAGCCAGGSACCACACACTACACACAGA AACTGACTATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCG ACCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTTGTTTGA CCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCTTTCTTCA ACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGGCA CTCGCTTGGGCAGCAAAATCCACCCCCCMCCAACATCAAACATGCAGC CATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTGCTTTT TTYTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCGAAGA GTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCTCAAG GCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTTCTG AGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTACCTTT CCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCCCCCG GTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGCCGAC TGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTTCGAGGCTGGTAT CTCCAAGGATGGGTCATAGCYKGTTCCTGA	T. inter
171026000 6	TSYGGTTATCGGYSRCGATCKATTCCGGCARATCCACCRCTRCTGGTAR RCCAGCCACCAGRATATACATAACCACTAGCCAGGCACCACACACTACAC ACAGAACTGACTATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGG TATCGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTTG TTTGACCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCTTT CTTCAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTT GGCACTCGCTTGGGCAGCAAAATCCACCCCCACCAACATCAAACATG CAGCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTG CTTTTTCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCG AAGAGTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCT CAAGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAA GTTTCGAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTT ACCTTTCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGC CCCCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAG GCCGACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTTCGAGG CTGGTATCTCCAAGGATGGGTCATAGCTKGTTCYTA	T. inter
171026000 4	TGAYGTATCGCRCGAACAGCTGGTATCTCCAAGGATGGGTCTRTARCTGT TTCAAGAGATATASATACCRYTAGCCAGGCACSACRCACTACACACAGAA ACTGACTATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGA CCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTTGTTTAC CCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCTTTCTTCAA CCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGGCAC TCGCTTGGGCAGCAAAATCCACCCCCACCAACATCAAACATGCAGCC ATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCARATTTGCTTTTT TCTGTCTTCAGGGTCRATGCTAACAAGGTACCTGTAGGAAGCCGAAGAG TTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCTCAAGG CCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTTCTGA GACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTACCTTT CCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCCCCCGG TCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGCCGAC TGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTTCGAGGYKGGTAT YTCCARGGATGGGTCATASCTGTTTTYCYWGA	T. inter
171025008	TGGYSGTATCGSYMSGTTCKATTCCGGCARATCCACCRCTRSTGGTARR	T. inter

1	<p>CCRKCCACCSAGAATATACATAACACTAGCCAGGCACCACACACTACACA CAGAAACTGACTATAACATTACAGGTCACTTGATCTACAAGTGCGGTGGT ATCGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTTGT TTGACCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCTTTC TTCAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTG GCACTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATGC AGCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTGAGATTTGC TTTTTTCTGTCTTCAGGGTTCGATGCTAACAAGGTACCTGTAGGAAGCCGA AGAGTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCTC AAGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGT TCGAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTAC CTTCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCC CCCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGG CCGACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTGAGGC TGGTATCTCCMAGGATGGGTCATAGCYKGTTCCKTAA</p>	
171026000 7	<p>AGGCGTATCGGYACGWTCKATTCCGGCAATCCACCACTACTGGTAGRCC AGCCACCAGAATATACATAACACTAGCCAGGCACCACACACTACACACA GAAACTGACTATAACATTACAGGTCACTTGATCTACAAGTGCGGTGGTAT CGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTTGT GACCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCTTCT CAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGG CACTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATGCA GCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTGAGATTTGCT TTTTCTGTCTTCAGGGTTCGATGCTAACAAGGTACCTGTAGGAAGCCGAA GAGTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCTCA AGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGT CGAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTACC TTTCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCC CCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGCC GACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTGAGGCCTG GTATCTCCMAAGGATGGGTCATASCTGGTTTYCCTGAA</p>	T. inter
171026000 9	<p>TGCGTATCGCGTCCGATCKATTCCGATCKATCCACCACTGCTGGMTAGA CAKCCACGAGATATACATAACACTAGCCAGGCACCACACACTACACAC AGAAACTGACTATAACATTACAGGTCACTTGATCTACAAGTGCGGTGGTA TCGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTTGT TGACCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCTTCT TCAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTG GCACTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATGC AGCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTGAGATTTGC TTTTTTCTGTCTTCAGGGTTCGATGCTAACAAGGTACCTGTAGGAAGCCGA AGAGTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCTC AAGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGT TCGAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTAC CTTCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCC CCCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGG CCGACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTGAGGC TGGTATCTCCAAGGATGGGTCATAGCCTGTTTCCTGA</p>	T. inter
171026001 0	<p>TGAYGTATCGSGYSASGWTCKMTTCCGRTRRATCCACCRCTRYTGSCA ARCCRGCCACCAGRATATACATAACACTAGCCAGGCACCACACACTACA CACAGAAACTGACTATAACATTACAGGTCACTTGATCTACAAGTGCGGTG GTATCGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTT GTTTGACCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCT</p>	T. inter

	TCTTCAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCT TGGCACTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACAT GCAGCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTT GCTTTTTTCTGTCTTCAGGGTTCGATGCTAACAAGGTACCTGTAGGAAGCC GAAGAGTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGC TCAAGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAA GTTTCGAGACCCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTT ACTTTTCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGC CCCCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAG GCCGACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTTCGAGG CTGGTATCTCCAAGGATGGGTCWAGCCKKTTTCCTAAA	
180925006 5	TCCGGTATCGGYCCKTCKATTCCGGCAATCCACCACTACTGGTAAGCCR GCCACCAGATATACATAACCACTAGCCAGGCACCACACACTACACACAGA AACTGACTATAACATTACAGGTCACTTGATCTACAAGTGCGGTGGTATCG ACCAGCGTACCATTGAGAAGTTTCGAGAAGGTAAATAACCCTTTTTGTTTGA CCCTGCTGTCTCATTGTTCCGCTGCACATTTTTTTCTCTCCCTTTCTTCA ACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGGCA CTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATGCAGC CATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTGCTTTT TTCTGTCTTCAGGGTTCGATGCTAACAAGGTACCTGTAGGAAGCCGAAGA GTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCTCAAG GCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTTTCG AGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTACCTTT CCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCCCCCG GTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGGCCGA CTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTTCGAGGCTGGT ATCTCCAAGGATGGGTCATAGCCTGTTTTYCTGA	T. inter
161208006 5	TGACGCATCGCRTGGGTTTCGCTGGGATCTCTCCGGCTGTGGTGTATGTG TTTCWACGAAATATACATAACCACTAGCCAGGCACCACACACTACACARAA ACTGACTATAACAATTACAGGTCACTTGATCTACAAGTGCGGTGGTATCG ACCAGCGTACCATTGAGAAGTTTCGAGAAGGTAAATAACCCTTTTTTTTGA CCCTGCTGTCTGTTTCGTTCTGCTGCACATTTTTCTCTCTCCCTTTCTTCA ACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGGCA CTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATGCAGC CATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTGCTTTT TTCTGTCTTCAGGGTTCRATGCTAACAAGGTACCTGTAGGAAGCCRAARA GTTGGGCAAGAAGTCCTTCAAGTACGCTTGGGTTCTTGACAAGCTCAAG GCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTTTCG AGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTACCTTT CCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCCCCCG GTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGGCTGA CTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTTCGAAGCTGGTA TCTCCAAGGATGGGTCATASCTGTTTTYCTGA	T. menta
180814002 9	TSSKKWWTYGGGGSMASGTCCGATTCCGGCAAATCCACCACTACTGGT AAGCMAGCCACCAGATATACATAACCACTAGCCAGGCACCACACACTACA CAGAACTGACTATAACAATTACAGGTCACTTGATCTACAAGTGCGGTGG TATCGACCAGCGTACCATTGAGAAGTTTCGAGAAGGTAAATAACCCTTTTT TTTGACCCTGCTGTCTGTTTCGTTCTGCTGCACATTTTTCTCTCTCCCTTT CTTCAACCCACCACAGGCGACTTTTTTTGTTGYTTGGKGGGATGTGGCTT GGCACTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATG CAGCCATCGCTCCAGGCAACGATCGAGCCTCAKGTTCATGTTTCARATTTG CTTTTTTCTGTCTTCAGGGTTCGATGCTAACAAGGTACCTGTRGGAAGCCR	T. menta

	AARAGTTGGGCAARAAGTCCTTCAAGTACGCTTGGGTTCTTGACAAGCT CAAGGCCGAGCGKAGCGTGGTATCACCATCGATATCGCCCTCTGGAA GTTTCGAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTCTCTTTA CCTTTCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGC CCCCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAG GCTGACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTTCGAGG CTGGTATCTCCARGATGGGTCAWASCTGTTYCCTGA	
180730002 3	TGCCGGTTTTGSRGGAAMGCTGGKATCTCCMMGGATGGGTCRTARCTG TTTCCYGAGATATACRTACCGCTAGCGWGGCWCCACACACTACACACA GAACTGACTATAACATTACAGGTCATTGATCTACAAGTGCGGTGGTAT CGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAATAACCCTTTTGTTT GACCCTGCTGTCTCATTGTTCTGCTGCACATTTTTTCTCTCCCTTTCTT CAACCCACCACAGGCRACTTTTTTGTTGCTTGGTGGGATGTGGCTTGG CACTCGCTTGGGCAGCAAATCCACACCCCAACATCAAACATGCA GCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTGCT TTTTTCTGTCTTCAGGGTCKATGCTAACAAGGTACCTGTAGGAAGCCGAA RAGTTGGGCAAGAAGTCCTTCAAGTACSCCTGGGTTCTTGACAAGCTCA AGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTT CGAGACCCCAAGTAC	T. menta
180604000 7	AGGCGTTTCGCGCCCRATCGATTCCGGCKATCCRCCACTACTGGTAAGC CAGCCACGAKATAGACATAACACTAGCCAGGCACCACACACTACACACA GAACTGACTATAACATTACAGGTCATTGATCTACAAGTGCGGTGGTAT CGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAATAACCCTTTTGTTT GACCCTGCTGTCTCATTGTTCCGCTGCACATTTTTTCTCTCCCTTTCTT CAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGG CACTCGCTTGGGCAGCAAATCCACCCCCCAACATCAAACATGCA GCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTGCT TTTTTCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCGAA GAGTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCTCA AGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTT CGAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTACC TTTCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCC CCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGGC CGACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTTCGAGGCT GGGTATCTCCAAGGATGGGTATAGCYTGTTCCTGAA	T. menta
180209003 2	TGCCGTATCGGCCGCAATCGATTCCGATCTATCCRGC ACTACTGKTAAG CCRKCCACGAGATATACATAACACTAGCCAGGCACCACACACTACACAG AACTGACTATAACAATTACAGGTCATTGATCTACAAGTGCGGTGGTAT CGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAATAACCCTTTTTTTT GACCCTGCTGTCTGTTTCGTTCTGCTGCACATTTTTTCTCTCTCCCTTTCTT CAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGG CACTCGCTTGGGCAGCAAATCCACCCCCCAACATCAAACATGCA GCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTGCT TTTTTCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCRAA RAGTTGGGCAAGAAGTCCTTCAAGTACGCTTGGGTTCTTGACAAGCTCA AGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTT CGAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTCTCTTTACCT TTCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCC CCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGGCT GACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTRAGTTTCGAGGCTG GTATCTCCAARGGATGGGTATAGSCTGTTTTYCYWAAA	T. menta

180925003 1	TGTYGTATCGGCMCGTTCGATTCCGGCAAATCCACCACTACTGGTAAGCC AGCCACSAGATATACATACTAGCCAGGCACCACACACTACACAGAA ACTGACTATAACAATTACAGGTCACCTGATCTACAAGTGCGGTGGTATCG ACCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTTTTTTGA CCCTGCTGTCTGTTTCGTTCTGCTGCACATTTTTCTCTCTCCCTTTCTTCA ACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGGCA CTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATGCAGC CATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTCARATTTGCTTTT TTCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCRAARA GTTGGGCAAGAAGTCCTTCAAGTACGCTTGGGTTCTTGACAAGCTCAAG GCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTTCG AGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTCTCTTTACCTTT CCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCCCCCG GTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGGCTGA CTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTCGAGGCTGGT ATCTCCAAGGATGGGTCTARCCYKKTTCCTGAA	T. menta
IHEM 4268	GTCGSCGYKTYSTACACRCCMRGTAMCGCGSASYRATGATGAGAATAGC ACAGTCTGCCTGGGAGGTACCAGTGATCATGTTCTTGATGAAGTCACGG TGACCGGGGGCGTCTACTCTCGKTAGTTACGGCACAGCAAGACGATGG AGGGGAAAGGTAAAGAGAAACATACCAATGACGGTGACATTGTACTTGG GGGTCTCGAACTTCCAGAGGGCGATATCGATGGTGATACCACGCTCACG CTCGGCCTTGAGCTTGTCAAGAACCCAGGCGTACTTGAAGGACTTCTTG CCCAACTCTTCGGCTTCCACAGGTACCTTGTAGCATCGACCCTGAAGA CAGAAAAAAGCAAATCTGAATATGACATGAGGCTCGATCGTTGCCTGGA GCGATGGCTGCATGATTTGATGTTGGTGGGGTGTGGATTTTGTGCCCCA AGCGAGTGCCAAGCCACATCCCACCAAGCAACAAAAAAGTCGCCTGTG GTGGGTTGAAGAAAGGGAGAGAAAAAATGTGCAGCGGAACSAATGAGA CAGCAGGGTCAAACAAAAGGGTTATTTACCTTCTCGAACTTCTCAATGGT ACGCTGGTCGATACCACCGCACTTGTAGATCAAGTGACCTGTAATGTTAT AGTCAGTTTCTGTGTGTAGTGTGTGGGTGCCTGGCTAGTGGTATGTATAT CTGGTGGCTGGGCTTACMAGTAGTGGTGGATTTGCCGGAATCGACGTG GCCGATAACSRACCAAGTTWAMTGTGACTTGGCCGKTYSTTTTTMWCAA ATT	T. menta
190220- 0076	GKGGGCCCTSGACTMCCAGTACCGGCAGCAATGATGAGAATAGCACAG TCGGCCTGGGAGGTACCAGTGATCATGTTCTTGATGAAGTCACGGTGAC CGGGGGCGTCTACTCTCGTTAGTTATGGCACAGCAAGACGATGGAGGG GAAAGGTAAAGAGAAACATACCAATGACGGTGACATTGTACTTGGGGGT CTCGAACTTCCAGAGGGCGATATCGATGGTGATACCACGCTCACGCTCG GCCTTGAGCTTGTCAAGAACCCAGGCGTACTTGAAGGACTTCTTGCCA ACTCTTCGGCTTCCACAGGTACCTTGTAGCATCGACCCTGAAGACAGA AAAAAGCAAATCTGAACATGACATGAGGCTCGATCGTTGCCTGGAGCGA TGGCTGCATGTTTTGATGTTGGTGGGGTGTGGATTTTGTGCCCCAAGCG AGTGCCAAGCCACATCCCACCAAGCAACAAAAAAGTCGCCTGTGGTGG GTTGAAGAAAGGGAGAGAAAAAATGTGCAGCAGAACGAATGAGACAGC AGGGTCAAACAAAAGGGTTATTTACCTTCTCGAACTTCTCAATGGTACGC TGGTCGATACCACCGCACTTGTAGATCAAGTGACCTGTAATGTTATAGTC AGTTTCTGTGTGTAGTGTGTGGTGCCTGGCTAGTGGTATGTATATCTGGT GGCTGGCTTACCAGTAGTGGTGGATTTGCCGGAATCGACGTGGCCGATA ACGACCAAGTTAATGTGACTGGGCGTYSGTTTTTAMAA	T. menta
190226- 0091	GSYKGATCGGGCMCGTTCGATTCCGGCAAATCCACCACTACTGGTAAGCCA GCCACCAGATATACATACTAGCCAGGCACCACACACTACACAGAAA CTGACTATAACAATTACAGGTCACCTGATCTACAAGTGCGGTGGTATCGA	T. menta

	<p>CCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTTTTTTTGAC CCTGCTGTCTGTTTCGTTCTGCTGCACATTTTTCTCTCCCTTTCTTCAA CCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGGCAC TCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATGCAGCC ATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTCARATTTGCTTTTT TCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCRAARAG TTGGGCAAGAAGTCCTTCAAGTACGCTTGGGTTCTTGACAAGCTCAAGG CCRAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTTCGA GACCCCCAAGTACAATGTCACCGTCATTGGTATGTTTCTCTTTACCTTTC CCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCCCCCGG TCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGGCTGACT GTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTTCGAGGCTGGTAT CTCCAAGGATGGGTCATARCKKKTTYCCTWGAA</p>	
IHEM 4203	<p>GGGGGWAACCCGGCCCCMRTCGAATTCCGRGCAATCCRSCACTACTGG TAAGCCAKCCACGAGATATACATAACCTAGCCAGGCACCACACACTAC ACAGAACTGACTATAACAATTACAGGTCACCTTGATCTACAAGTGCGGTG GTATCGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTT TTTTGACCCTGCTGTCTGTTTCGTTCTGCTGCACATTTTTCTCTCCCTT TCTTCAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCT TGGCACTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACAT GCAGCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTCARATTT GCTTTTTTCTGTCTTCAGGGTCRATGCTAACAAGGTACCTGTAGGAAGCC RAAGAGTTGGGCAARAAGTCCTTCAAGTACGCTTGGGTTCTTGACAAGC TCAAGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAA GTTTCGAGACCCCCAAGTACAATGTCACCGTCATTGGTATGTTTCTCTTTA CCTTTCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGC CCCCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAG GCTGACTGTGCTATTCTCATCATTGCTGCCGGTACTTGGTGGAGTTCGA GGYKGGTATYCTCCAAGGATGGGGTCATTAGCTGTTTTCKWGA</p>	T. menta
IHEM 10342	<p>CGYKAWCGGCMCGTTCGATTCCGGCAAATCCACCACTACTGGTAAGCCA GCCACCAGATATACATAACCTAGCCAGGCACCACACACTACACACAGA AACTGACTATAACATTACAGWTCACCTTGATCTACAAGTGCGGTGGTATCG ACCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTTGTGTTGA CCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCTTTCTTCA ACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGGCA CTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATGCAGC CATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTGCTTTT TTCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCGAAGA GTTGGGCAAGAAGTCCTTCAATACGCCTGGGTTCTTGACAAGCTCAAG GCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTTTCG AGACCCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTACCTTT CCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCCCCCG GTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGGCCGA CTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTTCGAGGCTGGT ATCTCCAAGGATGGGTCATAGCCYTGTTTTCTAAA</p>	T. menta
IHEM 584	<p>GSSKTAWTCGGGSMCGWTCGAATTCCGGMAATCCACCACTACTGGTA AGCCAGCCACSAGATATACATAACCTAGCCAGGCACCACACACTACAC ACAGAACTGACTATAACATTACYAGTCACTTGATCTACAAGTGCGGTGG TATCGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAARTAACCCTTTT TTTGACCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTTCTCTCCCTT CTTCAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTT GGCACTCGCTTGGGCAGCAAATCCACCCCCACCAACATCAAACATG</p>	T. menta

	CAGCCATCGCTCCAGGCAACGATCGAGCCTCAKKGKCATGTTTCAGATTTG CTTTTTTCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCG AAGAGTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCT CAAGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAA GTTTCGAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTT ACCTTTCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGC CCCCGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAG GCCGACTGTGCTATTCTCATCATTGCTGCCGGTACTGGGTGAGTTCGAG GCTGGTATCTCCAAGGATGGGGTCATAGCCTKKTTYCCTGAA	
IHEM 620	GSSKTTATCGGSMCSGTCGATTCCGGSAATCCACCACTACTGGTARGC CAGCCACSAGATATACATAACCACTAGCCAGGCACCACACACTACACACA GAAACTGACTATAACATTACAGGTCACCTTGATCTACAAGTGCCGGTGGTAT CGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAATAACCCTTTTGTTT GACCCTGCTGTCTCATTGTTCCGCTGCACATTTTTTTCTCTCCCTTTCTT CAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGG CACTCGCTTGGGCAGCAAATCCACACCCCAACATCAAATCATGCA GCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATATTCAGATTTGCTT TTTTCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCGAA GAGTTGGGCAAGAAGTCCTTCAAGTACGCCTGGGTTCTTGACAAGCTCA AGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTT CGAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTCTCTTTACCT TTCCCTCCATCGTCTTGCTGTGCCGTAACGAGAGTAGACGCCCC CGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGGCA GACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTCGAGGCTG GTATCTCCAAGGATGGGGTCATAGCTKKTTTTYCTGGA	T. menta
190129- 0017	CSKKWWWTCGGGSSMCGTCGATTCCGGCAATCCACCACTACTGGTAAG CCAGCCACCAGATATACATAACCACTAGCCAGGCACCACACACTACACAG AAACTGACTATAACAATTACAGGTCACCTTGATCTACAAGTGCCGGTGGTAT CGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAATAACCCTTTTTTTT GACCCTGCTGTCTGTTTCGTTCTGCTGCACATTTTTCTCTCTCCCTTTCTT CAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGG CACTCGCTTGGGCAGCAAATCCACCCCAACATCAAAACATGCA GCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCARATTTGCTT TTTTCTGTCTTCAGGGTCRATGCTAACAAGGTACCTGTAGGAAGCCGAAR AGTTGGGCAAGAAGTCCTTCAAGTACGCTTGGGTTCTTGACAAGCTCAA GGCCRAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTTC GAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTCTCTTTACCTT TCCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCCCC GGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGCTGA CTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTCGAGGCTGGT ATCTCCAAGGATGGGGTCATAGCYKTTTTCCCTAAA	T. menta
190315- 0029	TGSYSSWWTCGGCMMGTTCGATTCCGGCAATCCACCACTACTGGGTAAG CCAGCCACCAGATATACATAACCACTAGCCAGGCACCACACACTACACAC AGAAACTGACTATAACATTACAGGTCACCTTGATCTACAAGTGCCGGTGGTA TCGACCAGCGTACCATTGAGAAGTTCGAGAAGGTAATAACCCTTTTGTT TGACCCTGCTGTCTCATTGTTCCGCTGCACATTTTTTTCTCTCCCTTTCT TCAACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGG GCACTCGCTTGGGCAGCAAATCCACACCCCAACATCAAAACATGC AGCCATCGCTCCAGGCAACGATCGAGCCTCATGTCATATTCAGATTTGCT TTTTCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCGAA GAGTTGGGCAAGAAGTCCTTCAAGTACGCCTGGGTTCTTGACAAGCTCA AGGCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTT	T. menta

	<p>CGAGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTCTCTTTACCT TTCCCCTCCATCGTCTTGCTGTGCCGTAACGAGAGTAGACGCCCC CGGTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGCCG ACTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTGAGGCTGG TATCTCCMAAGGATGGGGTCATAGCCTKGTTTYCCTA</p>	
<p>190313- 0069</p>	<p>GKKGATCGGGCMCGTCGATTCCGGCAATCCACCACTACTGGTAAGCCA GCCACCAGATATACATAACCACTAGCCAGGCACCACACACTACACACAGA AACTGACTATAACATTACAGGTCAC TTGATCTACAAGTGCGGTGGTATCG ACCAGCGTACCATTGAGAAGTTCGAGAAGGTAAATAACCCTTTTGTTTGA CCCTGCTGTCTCATTTCGTTCCGCTGCACATTTTTTCTCTCCCTTTCTTCA ACCCACCACAGGCGACTTTTTTTGTTGCTTGGTGGGATGTGGCTTGGCA CTCGCTTGGGCAGCAAAATCCACCCCCACCAACATCAAAACATGCAGC CATCGCTCCAGGCAACGATCGAGCCTCATGTCATGTTTCAGATTTGCTTTT TTCTGTCTTCAGGGTCGATGCTAACAAGGTACCTGTAGGAAGCCGAAGA GTTGGGCAAGAAGTCCTTCAAATACGCCTGGGTTCTTGACAAGCTCAAG GCCGAGCGTGAGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTTG AGACCCCAAGTACAATGTCACCGTCATTGGTATGTTTTCTCTTTACCTTT CCCCTCCATCGTCTTGCTGTGCCATAACTAACGAGAGTAGACGCCCCCG GTCACCGTGACTTCATCAAGAACATGATCACTGGTACCTCCCAGGCCGA CTGTGCTATTCTCATCATTGCTGCCGGTACTGGTGAGTTGAGGCTGGT WTCYYCAAGGATGGGTCATAGCTGTTTCCTGAA</p>	<p>T. menta</p>

Table 13: Results of BT2 sequencing in *T. interdigitale* and *T. mentagrophytes*

Number	Sequence	ID
170824000 8	GGGGGAATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTAC TGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGA TCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGACT TGAACGTTGACAACCTGGGATTTCTATAGCTACACCGGATCTTCTGACCTC CAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGA CCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGC AAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCAC AACCTGAAGGGTA	T. inter
170428005 4	GGGGTGACTCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTA CTGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGG ATCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGAC TTGAACGTTGACAACCTGGGATTTCTATAGCTACACCGGATCTTCTGACCT CCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAG ACCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAG CAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCT CTCGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATA ACGTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTC ACTAACCTGAGGGT	T. inter
170410006 0	GGGGGATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTACT GACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGAT CCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGACTT GAACGTTGACAACCTGGGATTTCTATAGCTACACCGGATCTTCTGACCTCC AATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGAC CCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCA AAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCACT CACCTTGGAGGGTA	T. inter
170314006 9	GGCGATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTACTG ACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATC CGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGACTTG AACGTTGACAACCTGGGATTTCTATAGCTACACCGGATCTTCTGACCTCCA ATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGACC CTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAA AAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCTC GATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATAACG TCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCACTA ACTTGAGGGTA	T. inter
171026000 6	GGGGGTATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTAC TGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGA TCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGACT TGAACGTTGACAACCTGGGATTTCTATAGCTACACCGGATCTTCTGACCTC	T. inter

	CAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGA CCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGC AAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCACT CACTTTGAGGGTA	
171026000 4	GGTGGTCTCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTAC TGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGA TCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGACT TGAACGTTGACAACTGGGATTTCTATAGCTACACCGGATCTTCTGACCTC CAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGA CCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGC AAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCAAC	T. inter
171025008 1	GGTGGGCTCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTAC TGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGA TCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGACT TGAACGTTGACAACTGGGATTTCTATAGCTACACCGGATCTTCTGACCTC CAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGA CCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGC AAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCACT	T. inter
171026000 7	GGGGGGATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTAC TGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGA TCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGACT TGAACGTTGACAACTGGGATTTCTATAGCTACACCGGATCTTCTGACCTC CAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGA CCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGC AAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCACT CACTTGAGGGTA	T. inter
171026000 9	GGGGGGAATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTA CTGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGG ATCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGAC TTGAACGTTGACAACTGGGATTTCTATAGCTACACCGGATCTTCTGACCT CCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAG ACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAG CAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCT CTCGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATA ACGTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCA ACTAACCTGAGGGTA	T. inter
171026001 0	GGGGGGGATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTA CTGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGG ATCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGAC TTGAACGTTGACAACTGGGATTTCTATAGCTACACCGGATCTTCTGACCT CCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAG ACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAG	T. inter

	CAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCT CTCGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATA ACGTCGTCTTCGGTCAGTCTGGTGCCGGAACAACCTGGGCCAAGGGTC ACTAACCTGAGGGTA	
180925006 5	CCTGGGGCTCTGCGTTGCAGCATAATTGTATATTTTCGTGTGAGTTGTTA CTGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGG ATCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGAC TTGAACGTTGACAACTGGGATTTCTATAGCTACACCGGATCTTCTGACCT CCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAG ACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAG CAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCT CTCGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATA ACGTCGTCTTCGGTCAGTCTGGTGCCGGAACAACCTGGGCCAAGGGTC ACTCCCTGAAGGGTA	T. inter
161208006 5	GGGGGGATCTGCATTGCAGCATAATTGTATATTTTCGTGTGAGTTGTTAC TGACTTGGTTTACAGGCAAACCATTGCTGGTGAACACGGTCTCGATGGA TCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTTCCGGTCTTGAGGGACT TGAACGTTGACAACTGGGATTTCTACAGCTACACCGGATCTTCTGACCTC CAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGA CCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGC AAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTCGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGGAACAACCTGGGCCAAGGGTCACT CACCTTGAGGGTA	T. menta
180814002 9	GGGGGGGCTCTGCGTTGCAGCATAATTGTATATTTTCGTGTGAGTTGTT ACTGACTTGGTTTACAGGCAAACCTATTGCTGGTGAGCATGGTCTCGATG GATCCGGCCAGTGAGTGATTCTGCAAGAAAAAGTCCCGGTCTTGAGGGAC TTGAATGTTGACAACTGGGATTTCTACAGCTACACCGGATCTTCTGACCT CCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAG ACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAG CAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCT CTCGATGCTGTCCGCGCCGGTCCTTTTCGGTCAGCTCTTCCGCCCCGATA ACGTCGTCTTCGGTCAGTCTGGTGCCGGAACAACCTGGGCCAAGGGTC ACTCACCTTGAGGGTA	T. menta
180730002 3	GGGGAATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGAGTTGTTACT GACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGAT CCGGCCAGTGAGTGATTCTGCAAGAAAAAGTCCCGGTCTTGAGGGACTT GAACGTTGACAACTGGGATTTCTATAGCTACACCGGATCTTCTGACCTCC AATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGAC CCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCA AAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGGAACAACCTGGGCCAAGGGTCAC	T. menta
180604000 7	CGGGGATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGAGTTGTTACT GACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGAT CCGGCCAGTGAGTGATTCTGCAAGAAAAAGTCCCGGTCTTGAGGGACTT GAACGTTGACAACTGGGATTTCTATAGCTACACCGGATCTTCTGACCTCC AATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGAC CCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCA AAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT	T. menta

	CGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCAC	
180209003 2	GGGGGGGAATCTGCATTGCAGCATAATTGTATATTTTCGTGTCGAGTTGTT ACTGACTTGGTTTACAGGCAAACCATTGCTGGTGAACACGGTCTCGATG GATCCGGCCAGTGAGTGATTCTGCAAGAAAAGTTCCGGTCTTGAGGGA CTTGAACGTTGACAACCTGGGATTTCTACAGCTACACCGGATCTTCTGACC TCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAA GCAAAAATACGTTCCCGGTGCGGTTCTTGTTGATCTTGAGCCCGCCGC TCTCGATGCTGTCCGCGCCGGTCCTTTTCGGTCAGCTCTTCCGCCCCGAT AACGTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGT CACAA	T. menta
180925003 1	GGGGGTGCTAATGCGTTGCAGCATAATTGTATATTTTCGTGTCGAGTTGTT ACTGACTTGGTTTACAGGCAAACCTATTGCTGGTGAACACGGTCTCGATG GATCCGGCCAGTGAGTGATTCTGCAAGAAAAGTCCCGGTCTTGAGGGAC TTGAATGTTGACAACCTGGGATTTCTACAGCTACACCGGATCTTCTGACCT CCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAAG ACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAG CAAAAATACGTTCCCGGTGCGGTTCTTGTTGATCTTGAGCCCGCCGC CTCGATGCTGTCCGCGCCGGTCCTTTTCGGTCAGCTCTTCCGCCCCGATA ACGTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTC ACT	T. menta
IHEM 4268	GTGGGATCTGCGTTGCAGCATAATTGTATATTTTCGTGTCGAGTTGTTACT GACTTGGTTTACAGGCAAACCTATTGCTGGTGAACACGGTCTCGATGGAT CCGGCCAGTGAGTGATTCTGCAAGAAAAGTCCCGGTCTTGAGGGACTTG AATGTTGACAACCTGGGATTTCTACAGCTACACCGGATCTTCTGACCTCCA ATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAAGACC CTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAA AAAATACGTTCCCGGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCCTC GATGCTGTCCGCGCCGGTCCTTTTCGGTCAGCTCTTCCGCCCCGATAACG TCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCAC	T. menta
190220- 0076	GGTGGGGCTCTGCATTGCAGCATAATTGTATATTTTCGTGTCGAGTTGTTA CTGACTTGGTTTACAGGCAAACCATTGCTGGTGAACACGGTCTCGATGG ATCCGGCCAGTGAGTGATTCTGCAAGAAAAGTTCCGGTCTTGAGGGAC TTGAACGTTGACAACCTGGGATTTCTACAGCTACACCGGATCTTCTGACCT CCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAAG ACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAG CAAAAATACGTTCCCGGTGCGGTTCTTGTTGATCTTGAGCCCGCCGC CTCGATGCTGTCCGCGCCGGTCCTTTTCGGTCAGCTCTTCCGCCCCGATA ACGTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTC ACTCACCTTTGAGGGTA	T. menta
190226- 0091	GGGGGGGAATTCTGCATTGCAGCATAATTGTATATTTTCGTGTCGAGTTGTT ACTGACTTGGTTTACAGGCAAACCATTGCTGGTGAACACGGTCTCGATG GATCCGGCCAGTGAGTGATTCTGCAAGAAAAGTTCCGGTCTTGAGGGA CTTGAACGTTGACAACCTGGGATTTCTATAGCTACACCGGATCTTCTGACC TCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAA GCAAAAATACGTTCCCGGTGCGGTTCTTGTTGATCTTGAGCCCGCCGC TCTCGATGCTGTCCGCGCCGGTCCTTTTTCGGTCAGCTCTTCCGCCCCGAT AACGTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGT	T. menta

	CACTA	
IHEM 4203	GGGGGGAATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTA CTGACTTGGTTTACAGGCAAACCTATTGCTGGTGAGCATGGTCTCGATGG ATCCGGCCAGTGAGTGATTCTGCAAGAAAAGTCCCGGTCTTGAGGGACT TGAATGTTGACAACTGGGATTTCTACAGCTACACCGGATCTTCTGACCTC CAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGA CCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGC AAAAAATACGTTCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTCGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCACT AACTGAGGGTTATCCAGCGTTTAGCCCTAAAGAGAGGCTCGCCGAACG GCTCTCCTGGGAGAGCGCGGCCCGCCGAGGCAACCGAGTAATGTAGAC AAGAATGGGGCGGTACGGCCGGCGCACATCTGCTCACCCCTGACGGA CGTTTGGCCCTATCGTGGGGGGCCAGTCTCCGGCCTGCGCGCTAATG ATCCTTCCGGAGGCCCTGGGGAAAAGG	T. menta
IHEM 10342	GGGGGGACTCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTA CTGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGG ATCCGGCCAGTGAGTGATTCTGCAAGAAAAGTCCCGGTCTTGAGGGAC TTGAACGTTGACAACTGGGATTTCTATAGCTACACCGGATCTTCTGACCT CCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAG ACCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAG CAAAAAATACGTTCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCT CTCGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATA ACGTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTC ACTCACCTGAGGGTA	T. menta
IHEM 584	GGGGGGGCTTATGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTT ACTGACTTGGTTTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATG GATCCGGCCAGTGAGTGATTCTGCAAGAAAAGTCCCGGTCTTGAGGGA CTTGAACGTTGACAACTGGGATTTCTATAGCTACACCGGATCTTCTGACC TCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAA GCAAAAAATACGTTCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGC TCTCGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGAT AACGTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGT CACTAACTTTGAGGGTA	T. menta
IHEM 620	GGGGGGAATCTGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTA CTGACTTGGTTTACAGGCAAACCTATTGCTGGTGAGCATGGTCTCGATGG ATCCGGCCAGTGAGTGATTCTGCAAGAAAAGTCCCGGTCTTGAGGGACT TGAATGTTGACAACTGGGATTTCTACAGCTACACCGGATCTTCTGACCTC CAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGA CCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGC AAAAAATACGTTCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTCGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGAAACAACCTGGGCCAAGGGTCACT CACTTGGAGGGTAA	T. menta
190129- 0017	GGGGGGGCTCTGCATTGCAGCATAATTGTATATTTTCGTGTGCGAGTTGTTA CTGACTTGGTTTACAGGCAAACCATTGCTGGTGAACACGGTCTCGATGG ATCCGGCCAGTGAGTGATTCTGCAAGAAAAGTCCCGGTCTTGAGGGAC TTGAACGTTGACAACTGGGATTTCTACAGCTACACCGGATCTTCTGACCT CCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAG	T. menta

	ACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGGCAAAGGCCTCAAG CAAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCT CTCGATGCTGTCCGCGCCGGTCCTTTTCGGTCAGCTCTTCCGCCCCGATA ACGTCGTCTTCGGTCAGTCTGGTGCCGGAACAACGGGCCAAGGGTC ACTAAACATGAGGGT	
190315- 0029	GAGGGTATCTGCGTTGCAGCATAATTGTATATTTTCGTGTTCGAGTTGTTAC TGAATTGGTTTACAGGCAAACCTATTGCTGGTGAGCATGGTCTCGATGGAT CCGGCCAGTGAGTGATTCTGCAAGAAAAGTCCCGGTCTTGAGGGACTTG AATGTTGACAACCTGGGATTTCTACAGCTACACCGGATCTTCTGACCTCCA ATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGACC CTTCCCTTCAGCAGCATACTAACTCATTGGAGGGCAAAGGCCTCAAGCAA AAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCTC GATGCTGTCCGCGCCGGTCCTTTTCGGTCAGCTCTTCCGCCCCGATAACG TCGTCTTCGGTCAGTCTGGTGCCGGAACAACGGGCCAAGGGTCACTA	T. menta
190313- 0069	GCTGGGCTCTGCGTTGCAGCATAATTGTATATTTTCGTGTTCGAGTTGTTAC TGAATTGGTTTACAGGCAAACCTATTGCTGGTGAGCACGGTCTCGATGGA TCCGGCCAGTGAGTGATTCTGCAAGAAAAGTTCCCGGTCTTGAGGGACT TGAACGTTGACAACCTGGGATTTCTATAGCTACACCGGATCTTCTGACCTC CAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAGA CCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGGCAAAGGCCTCAAGC AAAAAATACGTTCCCCGTGCGGTTCTTGTTGATCTTGAGCCCGCCGCTCT CGATGCTGTCCGCGCCGGTCCTTTTGGTCAGCTCTTCCGCCCCGATAAC GTCGTCTTCGGTCAGTCTGGTGCCGGAACAACGGGCCAAGGGTCACT AACCTGAGGGTACCCGACAACCTTCGTCTTCCGGCCAGTCCGGTGCTGGTA ACAACGGGCCAAGGGTCACTACACTGAGGGTAAATTGGA	T. menta

Table 14: Results of ITS sequencing in *T. soudanense* and *T. violaceum*

Number	Sequence	ID
180410-0026	GGGTTTCCGCGCAGGCCGGAGGCTGGCCCCCACCATAGGGACCGAC GTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCT TGTCTACCTACCCGGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAGG GAGAGCCGTCCGGCGGGCCCCCTTCTGGGGGCTCGAGCCGGACCGCG CCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGAGCTGTCAGT CTGAGCGTTTAGCAAGCACAATCAGTTAAAACCTTCAACAACGGATCTCT TGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGA ATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCTC TGGCATTCCGGGGGGCATGCCTGTTGAGCGTCATTTCAACCCCTCAAG CCCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTTCGGGGGCGG GACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTGGGC GAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCCCA ATCTTTATATATATATATATCTTTTCAGGTTGACCTCGGATCAGGTAGG GATACCCGCTGAACTTAAGCATATCAATAAGCGGAGGAAAATTA AAAAAG GGGAGGCGGAGGCGGGCCCCACAATAGGACGATTTGTAAGGAGGAA CATAGTGGCCGCATTCGCCATTTTTTGTCTCTTCGCGGGTGCTGGGGG GCCCCCCCCCTGAGGGAAAACCCCCGGGGGCTTTTGGGGGGCCTCG CCGAACCCCCCGGAAGAAAAAACAGAAAAATTTCTTGAAAACGTTACT GTAGGGTGT	T.soud
180410-0027	AGGTTTCCGCGCAGGCCGGAGGCTGGCCCCCACCATAGGGACCGACGT TCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTG TCTACCTACCCGGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAGGGA GAGCCGTCCGGCGGGCCCCCTTCTGGGGGCTCGAGCCGGACCGCGCC CGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGAGCTGTCAGTCT GAGCGTTTAGCAAGCACAATCAGTTAAAACCTTCAACAACGGATCTCTTG GTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAAT TGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCTCTG GCATTCGGGGGGGCATGCCTGTTGAGCGTCATTTCAACCCCTCAAGCC CGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTTCGGGGGCGGGA CGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTGGGCGA ATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCCCAAT CTTTATATATATATATATCTTTTCAGGTTGACCTCGGATCAGGTAGGGA TACCCGCTGAACTTAAGCATATCAATAAGGGCGGGAGGAAATACGGGGA AGGGGGGGCGCGAGCTGGCCCCCAGATAGGAACTACTTTACAGGGTG GAGGGAGGGCCCCGCTACGCTCTTTTTTGTCTACTCCGCGGGTGCC GCGGGGCCCTCCCTGCAAGGAAAACGCCGGAGCCCTTCTGGGGG GCCTCGACCGCCCCCCCCGGAGAAAAAATAAAAAATTTCTAAAAA CTGTCGGCTAAGGTTTGGGGGGAACAGTT	T.soud
180227-0075	GTTTTCCGCGCAGGCCGGAGGCTGGCCCCCACCATAGGGACCGACGTT CCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTGT CTACCTACCCGGTTGCCTCGGCGGGCCCCCTTCTGGGGGCTCGAGCC GGACCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGA GCTGTGAGTCTGAGCGTTTAGCAAGCACAATCAGTTAAAACCTTCAACAA CGGATCTCTTGGTTCGGCATCGATGAAGAACGCAGCGAAATGCGATAA GTAATGTGAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACAT TGCGCCCTCTGGCATTCCGGGGGGCATGCCTGTTGAGCGTCATTTCAA CCCTCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTT CGGGGGCGGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGG	T.soud

	CTTCCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGC CCTGGCCCAATCTTTATATATATATATATATATCTTTTCAGGTTGACCTC GGATCAGGTAGGGATACCCGCTGAACTTAAGCATATCAAAGGCGGAGG AAATGTCGGGGGGGGGGGGCGGCCGGTGGCCCCCAGATTGGGACGGGT GCGGGAGGGGTGAGCGGAGGTGGCCGCCATCCCCCTTTTTTTTTTTAC TTCCCCGTTGCCCGGGCCCTTGGGGGGGCTCACCCACCCCCCGC GAAAAAAAAACAAAAAAATTTTGA AAAACTGTCTTCTAAGGTGTGAGG GCAAATAAATAAATTTCAAAGATCTTTGATTTGGGTGCGGAAAAAAAG GAAAGGGAAAAAAGGGGGAATTGCCAAAT	
180410-0028	AATTCGCGCGAGCCGGAGGCTGGCCCCCACGATAGGGACCGACGTTT CATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTGTC TACCTACCCGGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAGGGAGA GCCGTCCGGCGGGCCCTTCTGGGGGCCTCGAGCCGGACCGCGCCCCG CCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGAGCTGTCAGTCTGA GCGTTTAGCAAGCACAATCAGTTAAACTTTCAACAACGGATCTCTTGGT TCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTG CAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCTCTGGC ATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAACCCCTCAAGCCCG GCTTGTGTGATGGACGACCGTCCGGCCCTCCCTTCGGGGGCGGGACG CGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTGGGCGAAT GGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCCCAATCT TTATATATATATATATATCTTTTCAGGTTGACCTCGGATCAGGTAGGGATA CCCGCTGAACTTAAGCATATCAATAAGCGGGAAGAAAAGATCAAACGG GGGGGGAGGGTGGCCCCCACGATAGGGACCGACTTTCCTCAGGGGGG AAAAAAAATGGCGGGCGTACCCCTCTTTTTGTTACTCACCGTTTGCCTC GGCGGGCCGCTCCCTGCCAAAAGCGTTTCGGGGGCCCTCTGGGGGCC TGAGCGGACCCCCCGGGAGACAAAACAAAAAAATTCTAAAAAGCGGT TGTGAAGGTTTGAGGGCCAGTGATTAATTTTCAAGGGTC	T.soud
180410-0033	TATTCGCGCAGGCCGGAGGCTGGCCCCCACGATAGGGACCGACGTT CCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTGT CTACCTACCCGGTTGCCTCGGCGGGCCCTTCTGGGGGCCTCGAGCC GGACCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGA GCTGTCACTGAGCGTTTAGCAAGCACAATCAGTTAAACTTTCAACAA CGGATCTCTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAA GTAATGTGAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACAT TGCGCCCTCTGGCATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAA CCCCTCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCTCCCTT CGGGGGCGGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGG CTTCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGC CCTGGCCCCAATCTTTATATATATATATATATATCTTTTCAGGTTGACCTC GGATCAGGTAGGGATACCCGCTGAACTTAAGCATATCATAAGCGGGAGG AAAGCTCGGGACGCGGAGGCCCCACGCTGGCCCCACAATACGGACGAG TTCAGCAAGGGTGAAGCAGAGGTCCCCGCCATCGCCCCATTTTGTCTACT CACCGTTGCTCGCGGGCCCGTTCTGGGGGCTCACGGACACCCGGCG GAAGAAAACCAAAAAAATTTCTAAAGACTCTCGTCGCAGCGTGGGAGAG ACAATACTTAAATTTAAAACGAACATTGGTTTCGGCTGATAAAAAACACAAA GGAAAAATAATGGGGAATTGCAAAATCC	T.soud
180410-0037	TAATCGGCGCAGCCGGAGGCTGGCCCCCACGATAGGGACCGACGTTT CATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTGTC TACCTACCCGGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAGGGAGA GCCGTCCGGCGGGCCCTTCTGGGGGCCTCGAGCCGGACCGCGCCCCG CCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGAGCTGTCAGTCTGA	T.soud

	<p>GCGTTTAGCAAGCACAATCAGTTAAACTTTCAACAACGGATCTCTTGGT TCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAATTG CAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCTCTGGC ATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAACCCCTCAAGCCCG GCTTGTGTGATGGACGACCGTCCGGCCCTCCCTTCGGGGGGCGGGACG CGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTGGGCGAAT GGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCCAATCT TTCTTTATATATATATATATATCTTTTCAGGTTGACCTCGGATCAGGTAGG GATACCCGCTGAACTTAAGCATATCATAAAGCGGGAGGAAAAGCTCCGA ACGGGGGGCCGCACGCTGGCCCCCAGATAGGGACGACTTTCATCAGGG GTGAGCAGAAGTGGCGGCGTACCCCCCTTTCTTGTCTCCACCGGTTG CTCGGCGGGCCCTCCCTGCAAGGAAAGCCTCGGGGGCGCCCTCTG GGGGGCCAGCGACACGCCCCCGAAGAAAAACAAGAAAAATCTTTAAA ACTTTGCTCGTAGGGGGTAGAGGCAACATTT</p>	
<p>180410- 0017</p>	<p>GGCTTCGCGCAGCCGGAGGCTGGCCCCCAGATAGGGACCGACGTTT CATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTGTC TACCTACCCGTTGCCTCGGCGGGCCCTTCTGGGGGCCTCGAGCCG GACCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGAG CTGTCAGTCTGAGCGTTTAGCAAGCACAATCAGTTAAACTTTCAACAAC GGATCTCTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAG TAATGTGAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATT GCGCCCTCTGGCATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAAC CCCTCAAGCCGGCTTGTGTGATGGACGACCGTCCGGCCCTCCCTTC GGGGGCGGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGC TTCCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCC CTGGCCCAATCTTTATATATATATATATCTTTTCAGGTTGACCTCGGA TCAGGTAGGGATAACCCGCTGAACTTAAGCATATCAAAGGCCGGAGGAA AGCCGGGGAAGGGGGGGGGCCCAAGCGGGCCACACAATTCGACGAGT TGAAAAGGGTGAGCAGAGTGCCCCCTTATGCCTTTTTTTGTCTCTCC GGTGGCTGGCTGTCCCTTTGGGGGCTCACCCACCCCGAAAAAAA AACAAAAAAATTTCTAAGCGCTTTCTTGAATGTTGGGGGGCCACGATAA AATTTACAAGAACTTGGATGCGCGCAGAAAAAAGAAAAGAGAAAATTT</p>	<p>T.viol</p>
<p>180227- 0070</p>	<p>GGTGCTTGC GCGCAGCCGGAGGCTGGCCCCCAGATAGGGACCGAC GTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCT TGTCTACCTACCCGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAGG GAGAGCCGTCCGGCGGGCCCTTCTGGGGGCCTCGAGCCGGACCGCG CCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGAGCTGTCAGT CTGAGCGTTTAGCAAGCACAATCAGTTAAACTTTCAACAACGGATCTCT TGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGA ATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCTC TGGCATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAACCCCTCAAG CCCGGCTTGTGTGATGGACGACCGTCCGGCCCTCCCTTCGGGGGGCGG GACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTGGGC GAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCCA ATCTTTATATATATATATATATATATCTTTTCAGGTTGACCTCGGATCAG GTAGGGATAACCCGCTGAACTTAAGCATATCAATAAGGCGGAAGAAATATT CCTGCGCGGGCCCCCCCCGCCCCCCCCAAAAGGGACTAATTTTCATGGGG GTGGAGCAAAGGGCGCCGCCCCCTTTTTTTGTCCCTCACCGGG GGCGGGGGGGGCCCTCCCCAGAAAGGAAAAGCTCGGGCGCTCTT TTGGGGGCCCGACCAACCCGCCGCCAAGAAAAACAAAAAAA</p>	<p>T.soud</p>
<p>180410- 0019</p>	<p>TGGTTTCGCGCAGGCCGGAGGCTGGCCCCCAGATAGGGACCGACGT TCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTG</p>	<p>T.soud</p>

	<p>TCTACCTCACCCGTTGCCTCGGCGGGCCCCTTCTGGGGGCCTCGAGC CGGACCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAG AGCTGTCACTGAGCGTTTAGCAAGCACAATCAGTTAAACTTTCAACA ACGGATCTCTTGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATA AGTAATGTGAATTGCAGAATCCGTGAATCATCGAATCTTTGAACGCACA TTGCGCCCTCTGGCATTCCGGGGGGCATGCCTGTTGAGCGTCATTTCA ACCCCTCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCCTCCCT TCGGGGGCGGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCG GCTTCCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCG CCCTGGCCCCAATCTTTATATATATATATATATATATATCTTTTCAGGTTGA CCTCGGATCAGGTAGGGATACCCGCTGAACTTAAGCATATCAATAAGGC GGAGGAAACGCGATTACGCGCTGCCACGCCCCCCCCCACATGGG GGACGAGTTTCATCAAGAGTGGGGAGACGTGCCCCCCCTCCCCCAT TCTTGTCTCCTCACCCGTTGCCACCGGGGGCTTTCTGGGGGCTGAACC CGCCCCCCCCCGAAGACAAAACCAAAAAAATTTTTTAAAACTTGCG TTCGGGGGGGGGAACACAAATACAAAAAATTTACACGAAATTTTGGTTT CGGCGCATAAAAAA</p>	
<p>180410- 0022</p>	<p>GGTGTTCGCGCAGGCCGGAGGCTGGCCCCCAGCATAGGGACCGAC GTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCT TGTCTACCTCACCCGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAGG GAGAGCCGTCCGGCGGGCCCCTTCTGGGGGCCTCGAGCCGGACCGCG CCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGAGCTGTCAGT CTGAGCGTTTAGCAAGCACAATCAGTTAAACTTTCAACAACGGATCTCT TGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGA ATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCTC TGGCATTCCGGGGGGCATGCCTGTTGAGCGTCATTTCAACCCCTCAAG CCCGGCTTGTGTGATGGACGACCGTCCGGCCCTCCCTTCGGGGGCGG GACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTGGGC GAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCCCA ATCTTTATATATATATATATCTTTTCAGGTTGACCTCGGATCAGGTAGG GATACCCGCTGAACTTAAGCATATCATAAGGCGGGAGGAAAATGTGCA CGGGGGGGGGGCCGGCCGCCCCCGAAAAGGGACCAAGTTCTTGGGGG TGAGGGAAGTGGGCCGCCTCCCCCTCATTCTTGTCTTCTCACCGGGTGG CTGGGGGGGCGCGCTCCCCAGCGGAGAAAACCACCGGGGGCCTTTCTG GGGGGCCTCAGCGGAGCGCCCCCGGGGAAGAACAACAAAAAATCTGGA AAACTGTGGCGGGAGCGTGGG</p>	<p>T.soud</p>
<p>180227- 0053</p>	<p>AGGGTTGGCGGCAGGCCGGAGGCTGGCCCCCAGCATAGGGACCGAC GTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCT TGTCTACCTCACCCGTTGCCTCGGCGGGCCCCTTCTGGGGGCCTCGA GCCGGACCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGA AGAGCTGTCAGTCTGAGCGTTTAGCAAGCACAATCAGTTAAACTTTCAA CAACGGATCTCTTGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGA TAAGTAATGTGAATTGCAGAATCCGTGAATCATCGAATCTTTGAACGCA CATTGCGCCCTCTGGCATTCCGGGGGGGCATGCCTGTTGAGCGTCATTT CAACCCCTCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCTCC CTTCGGGGGCGGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATT CGGCTTCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGC CGCCCTGGCCCCAATCTTTATATATATATATATATCTTTTCAGGTTGAC CTCGGATCAGGTAGGGATACCCGCTGAACTTAAGCATATCAATAAGGCG GAGAGGACCAGGGGGCCACGCCGAAGCTCGCCCCGATAGGGGACG GAGTTCATCGGGGGGGAGCAACCTGCACCGCGTACTCCCCTTCTGTCTC CTCCCCGTTGGCTCGGGGGGGCCCTTCTGGGGGGCTCAGCCCGACG CGCCCGCCGAAGAAAAACAAAAAATTTCTGAAAGACGGTCGTGCGGAG</p>	<p>T.soud</p>

	GGGGTTACAGCAATCATTTAAACTTTACACGAATCTTTGGGTGCGGCGTGA GAAAAAACACAAAGTGCATAATTAGGGAGAATTGCAGAATTGCGGGAA GTCACAAACGTTAAACATTTCTGGCATGTGCGTGGGGGTGCGTGTGAG ATTGTCCTCACCCCTGCTGTGAATGTGAAAAGCG	
180306- 0068	AGGTTTTGCGCGCAGGCCGGAGGCTGGCCCCCACGATAGGGACCGACG TTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTT GTCTACCTCACCCGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAGGG AGAGCCGTCCGGCGGGCCCCCTTCTGGGGGCCTCGAGCCGGACCGCGC CCGCCGGAGGACAGACACCAAGGAAAATTCTCTGAAGGGCTGTCACTCT GAGCGTTTAGCAAGCACAATCAGTTAAAAACTTTCAACAACGGATCTCTT GGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAA TTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCTCT GGCATTCCGGGGGGCATGCCTGTTGAGCGTCATTTCAACCCCTCAAGC CCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTTCGGGGGGCGG ACGCGCCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTGGGCG AATGGGCAGCCAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCCCAA TCTTTATATATATATATATATATATATCTTTTCAGGTTGACCTCGGATCAGG TAGGGATACCCGCTGAACCTAAGCATATCAATAAGGCGGAGAAGCACCT CTTTTGGGGGGCCCCCGCGGGCCCCACGATGGGGACGAGTTACATCG GGGGTGAGAGACCGGCGGCGTACTCCCCATTCGTGTCTACTACCGGG TGCGCGCGGGCCGCTCCCTACAAGGAGAGCATCGCGGGCCTTCTGGG GGCTCCGCGACCCCCCGCGAAGAACAACAAGAAAATTCAGAAGGGG TGATATGGGAGTCGTTAAACAACGATAAAAACTATAAAGTAATCTTGTGT GGTGCAAGAGAGCGCAAAGACGAATCAATAATGTGAAATGGCTGAAG TTCGGGAAACGCGGAACCTTACAA	T.soud
180621- 0047	AGGTTTTGCGCGCAGGCCGGAGGCTGGCCCCCACGATAGGGACCGAC GTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCT TGTCTACCTCACCCGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAGG GAGAGCCGTCCGGCGGGCCCCCTTCTGGGGGCCTCGAGCCGGACCGCG CCCGCCGGAGGACAGACACCAAGGAAAATTCTCTGAAGGGCTGTCACT CTGAGCGTTTAGCAAGCACAATCAGTTAAAAACTTTCAACAACGGATCTC TTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTG AATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCT CTGGCATTCCGGGGGGCATGCCTGTTGAGCGTCATTTCAACCCCTCAA GCCCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTTCGGGGGGCG GGACGCGCCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTGGG CGAATGGGCAGCCAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCC CAATCTTTATATATATATATATATATCTTTTCAGGTTGACCTCGGATCAGG TAGGGATACCCGCTGAACCTAAGCATATCAATAAGCGGGAGAA	T.viol
180611- 0049	TGGGGTTGCGCGCAGGCCGGAGGCTGGCCCCCACGATAGGGACCGA CGTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCT TTGTCTACCTCACCCGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAG GGAGAGCCGTCCGGCGGGCCCCCTTCTGGGGGCCTCGAGCCGGACCGC GCCCGCCGGAGGACAGACACCAAGGAAAATTCTCTGAAGGGCTGTCACT TCTGAGCGTTTAGCAAGCACAATCAGTTAAAAACTTTCAACAACGGATCT CTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGT GAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCC TCTGGCATTCCGGGGGGCATGCCTGTTGAGCGTCATTTCAACCCCTCA AGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTTCGGGGGG GGACGCGCCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTGGG GCGAATGGGCAGCCAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCC CAATCTTTATATATATATATATATATCTTTTCAGGTTGACCTCGGATCAGG	T.viol

	AGGGATACCCGCTGAACTTAAGCATATCAATAAGCGGAGGAA	
190118-0005	AGGGATTCGCGCGGGCGGAGCTGGCCCCCACGATAGGGACCGACGTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTGTC TACCTCACCCGGTTGCCTCGGCGGGCCCTTCTGGGGGCCTCGAGCCG GACCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGAG CTGTCAGTCTGAGCGTTTAGCAAGCACAATCAGTTAAAACTTTCAACAAC GGATCTCTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAG TAATGTGAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATT GCGCCCTCTGGCATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAAC CCCTCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCTCCCTTC GGGGGCGGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGC TTCCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCC CTGGCCCAATCTTTATATATATATATATATATATATCTTTTCAGGTTGACC TCGGATCAGGTAGGGATACCCGCTGAACTTAAGCATATCAATAAGGCGG AGGAAATTTGTTACGCGCAGCGGGAGGCTGGCCACTATAGGGACGAC GTTTCATGAGGGGTGAGCAGAGTGCGCGCGTCTCCCCATTCTTGTCTAC TCACCGGTTGCGTGGGGGGTCCCTTCGGGGGCTCAGGGACGGCGCGG AAGAAAAACAAAAAAATTTCCGTGAGCTGTGGTGGGGCGTGTACAGCA ATAATTATACTTTAAACGAATCTTTGGTGTGCGGCTCATGAAAAACAGCAA GGGATTATTATGTGAATGTGGAAGTGCGGAATCTAACTTTAACTGGCT CTCGCTTCCGGGGGAGCGTGTGAGGGATTCCCTACCCCGGTGTTGG	T.soud
180625-0012	TGGGTTTTTCGCGCAGGCCGGAGGCTGGCCCCCACGATAGGGACCGA CGTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCT TGTCTACCTCACCCGGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAG GGAGAGCCGTCCGGCGGGCCCTTCTGGGGGCCTCGAGCCGGACCGC GCCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGGGCTGTCAG TCTGAGCGTTTAGCAAGCACAATCAGTTAAAACTTTCAACAACGGATCT CTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGT GAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCC TCTGGCATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAACCCCTCA AGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCTCCCTTCGGGGGGC GGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTTG GCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCC CCAATCTTTATATATATATATATATATATCTTTTCAGGTTGACCTCGGATCAG GTAGGGATACCCGCTGAACTTAAGCATATCAATAAGCGGAGGAA	T.viol
180410-0021	GGGCTTCGGCGCGGACGGAGGCTGGCCCCCACGATAGGGACCGACG TTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTT GTCTACCTCACCCGGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAGGG AGAGCCGTCCGGCGGGCCCTTCTGGGGGCCTCGAGCCGGACCGCGC CCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGAGCTGTCAGTC TGAGCGTTTAGCAAGCACAATCAGTTAAAACTTTCAACAACGGATCTCTT GTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAA TTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCTCT GGCATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAACCCCTCAAGC CCGGCTTGTGTGATGGACGACCGTCCGGCCCTCCCTTCGGGGGGCGGG ACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTGGGCG AATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCCAA TCTTTATATATATATATATATATATATCTTTTCAGGTTGACCTCGGATCAG GTAGGGATACCCGCTGAACTTAAGCATATCAATAAGGCGGAGGAAATTT CGTCGCGCGGCCAAGCTGGCCCCCAAAGGGACGAGTTTCATCAGGG GTGAGCGACGTGGCGCCGTCCCCCATTTCTTGTCTACTCACCCGGTTT GCTCGGGGGCCCTCCCTGCAGGGAAAACCCTCGGCGGCCCTTTC	T.viol

	GGGGGGCTTCACCAGACCGCCCCGGGAGAAAAACAAAAAAATCTCT AAGAAGTGTTCGTGGGAGGGTTTGGAGAAATCATTTAACTTATAAAAGAA TCCTTTGGTGTTCGCTCCTGAGAGACACAGCAAAGCCATAGGAAAGTGT GAAATGGGAGAATTCTGAAATCGCAAACCTTATAAAAATATCCGATGCGTG GGCGGGGGCGGGCGAGCCGCGCTCCCCTCCCCCCTGTGTGAT	
180227- 0045	GGTTTTCGCGGCAGGCGGAGGCTGGCCCCCACGATAGGGACCGACGT TCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTG TCTACCTCACCCGGTTGCCTCGGCGGGCCGCGCTCCCCTGCCAGGGA GAGCCGTCCGGCGGGCCCCCTTCTGGGGGCCTCGAGCCGGACCGCGCC CGCCGGAGGACAGACACCAAGGAAAATTCTCTGAAGGGCTGTCAGTCTG AGCGTTTAGCAAGCACAATCAGTTAAAACTTTCAACAACGGATCTCTTG GTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAAT TGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCTCTG GCATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAACCCCTCAAGCC CGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTTCGGGGGCGGGA CGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTGGGCGA ATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCCCAAT CTTTATATATATATATATATATATATATATATCTTTTCGGGTTGACCTCAGATC GTGTAGGGATACCCGCTGAACCTACGCATATCAATAAGCAGAAGAATTTT TTTCTTTCCCCCCCCCTCCCCGCCCCCGGGGAAGAAGGGTCTTACGG GGGGGGAGGAGGGGGGGCCGCATTCCCCCTTTTTTCTCCCCCCGGG GGGGGCGGGGGGGCCGCCCTCCCAGGAAGGAAAACCCCGCGCGGCTT CTTTTGTGGTCTCCACCTACCCCCCGGAAAAAAGAAATTTT TTGAGGGGTGGGGGGCTGGGGGTTAGAACACACCACTAAAACATAAAA AAAATCTTTGTTTTCCCTGCTGAAAAACAGAAGTACGAAAAGTCAATGC TGGTTTGTGAGAAAGGGGCAGAGCACCCCTCTTAGAAACATCCTAAAGCG CGGGGGGGCGGTGGGGGCGCTCCTCCCCTCCCGCA	T.viol
180227- 0044	TGGGTTTCCGCGGCGGCCGGGAGGCTGGCCCCCACGATAGGGACCG ACGTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATT CTTGCTACCTCACCCGGTTGCCTCGGCGGGCCGCGCTCCCCTGCCA GGGAGAGCCGTCCGGCGGGCCCCCTTCTGGGGGCCTCGAGCCGGACCG CGCCCGCCGGAGGACAGACACCAAGGAAAATTCTCTGAAGGGCTGTCA GTCTGAGCGTTTAGCAAGCACAATCAGTTAAAACTTTCAACAACGGATC TCTTGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATG TGAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCC CTCTGGCATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAACCCCTC AAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTTCGGGGG CGGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTG GGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGC CCCAATCTTTATATATATATATATATATATATATATCTTTTCAGGTTGACCT CAGATCAGGTAGGGATACCCGCTGAACCTAAACATATCAATAAGGGGGA AGAA	T.viol
180420- 0056	GGGTTTCGCGCAGGACGGAGGCTGGCCCCCACGATAGGGACCGACG TTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTT GTCTACCTCACCCGGTTGCCTCGGCGGGCCGCGCTCCCCTGCCAGGG AGAGCCGTCCGGCGGGCCCCCTTCTGGGGGCCTCGAGCCGGACCGCGC CCGCCGGAGGACAGACACCAAGGAAAATTCTCTGAAGGGCTGTCAGTCT GAGCGTTTAGCAAGCACAATCAGTTAAAACTTTCAACAACGGATCTCTT GGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTGAA TTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCTCT GGCATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCAACCCCTCAAGC CCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTTCGGGGGCGGG	T.viol

	<p>ACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTGGGCG AATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCCCAA TCTTTATATATATATATATATCTTTTCAGGTTGACCTCGGATCAGGTAGGG ATACCCGCTGAACTTAAGCATATCAATAAGGCGGAGGAAGGATGAAGCG CGGCCCGAAGCTGGCCCCACAATAGGGGACGACGTTTCATCAGGGTGA GCGACGTGCGCCGGCGTACTCTCCATTCTTGTCTACCTCACCGGTTTG CTCGGCGGGCGCGCTCCCTGCAAGGAAAAGCCGCGGGGGCCCTTC TGGGGGGCTCAGCGGACGCCCCCGGAAGGAAAACCCAAGAAAATTTT CTGAAGGGCGGGTGTGTTGAGCTTTTGAAGCAACCGTTTAAAAATTTCAAC GGATCTTGGGATTCTGCTTCGTGAAAAACGCAAGAGGGGAAAAGAAAAGG AGAGAGTGAAAATCTGGGAAAAGAAAATTTAAATAGCCCTGCTTGGG GGGTGGGG</p>	
<p>180611- 0016</p>	<p>GGGGTTTCCGCGCGGCCGGAGGCTGGCCCCCACGATAGGGACCGAC GTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCT TGTCTACCTCACCCGTTGCTCGGCGGGCCGCGCTCCCCCTGCCAGG GAGAGCCGTCCGGCGGGCCCTTCTGGGGGCTCGAGCCGGACCGCG CCCGCCGGAGGACAGACACCAAGGAAAATTCTCTGAAGGGCTGTCACT CTGAGCGTTTAGCAAGCACAATCAGTTAAAACTTTCAACAACGGATCTC TTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTG AATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCT CTGGCATTCCGGGGGGCATGCCTGTTGAGCGTCATTTCAACCCCTCAA GCCCGGCTTGTGTGATGGACGACCGTCCGGCCCTCCCTTCGGGGGCG GGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCCTGGG CGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCC CAATCTTTATATATATATATATATATCTTTTCAGGTTGACCTCGGATCAGG TAGGGATACCCGCTGAACTTAAGCATATCAATAAGGCGGGGAGAAAAT GGGAAGGCGCAGGCCGGAGGCGGGCCCCCGATAGGGACGACTTTCA TCAGGGTGAGCGAGTGGCCGGCCGTACCCCCATTCTTGTCTACTTACC GGGGTGCCTCGGGGCCGCTCCCGGCAAGGAAAACCCCGGCGGCC CCTTTTGGGGCCAGCGGACCCCGCCGGGAGAGAAAACAAAAGAAAAT TTTTGAGAGGGTTGGCAGTTGTAGCGTGGGGAGACACAGATTTAAAAT TTACCGAATCTTAATTTGCGCGCCGGGAAAAAAAAGAAAAGGCAGAAAA AGGGGAATTGAAAATGGGGAAATAAAAAATGTTAAAAGCTCCTGAATC GCGCGGGGGC</p>	<p>T.viol</p>
<p>190118- 0006</p>	<p>GGTTTTCGCGCATGCCGGGAGGCTGGCCCCCACGATAGGGACCGACG TTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTT GTCTACCTCACCCGTTGCCTCGGCGGGCCCTTCTGGGGGCCTCGAG CCGACCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAA GAGCTGTCACTGTGAGCGTTTAGCAAGCACAATCAGTTAAAACTTTCAAC AACGGATCTCTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGAT AAGTAATGTGAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCAC ATTGCGCCCTCTGGCATTCCGGGGGGCATGCCTGTTGAGCGTCATTTT AACCCCTCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCTCCC TTCGGGGGCGGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCC GGCTTCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCC GCCCTGGCCCAATCTTTATATATATATATATATATCTTTTCAGGTTGA CCTCGGATCAGGTAGGGATACCCGCTGAACTTAAGCATATCAATAAGCG GAGGAA</p>	<p>T.soud</p>
<p>190118- 0012</p>	<p>AGGGTTCGCGCAGCCGGAGGCTGGCCCCCACGATAGGGACCGACGTT CCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTGT CTACCTCACCCGTTGCTCGGCGGGCCCTTCTGGGGGCCTCGAGCC GGACCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGAAGA</p>	<p>T.soud</p>

	<p>GCTGTCAGTCTGAGCGTTTAGCAAGCACAATCAGTTAAAACCTTTCAACAA CGGATCTCTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAA GTAATGTGAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACAT TGCGCCCTCTGGCATTCCGGGGGGGCATGCCTGTTGAGCGTCATTTCAA CCCCCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTT CGGGGGCGGGACGCGCCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGG CTTCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGC CCTGGCCCCAATCTTTATATATATATATATATATATATATCTTTTCAGGTTGACC TCGGATCAGGTAGGGATAACCCGCTGAACTTAAGCATATCAATAAGGCGG GAGGAAAGCTATTAACGCGCAGGCCGAAGGCTGGCCCCACAATGGGA CGGAGTTCCATCAGGGGTGAGCAGACGTGCGCGCCGTACGCCTCATT TTGTCTACTCACCGGTTGCCTCGGCGGGGCCCTTCTGGGGGGCTCAGC CGACGCGCCGCAAGAAAAACAAAAAAATTTCTGAAGAGCTCTC GTCGGAGGGTTTACAGCAATATTAATAATTTTACAGGGATCTGTGGCTTCG CGTCGTGAAAAACAGGAATGCAATAATTAATGGGAATGGAAAATTGCG GAGATAAAAAATTGGAAACATGTGTGCGGTGCATTGAGGGGGGGGGCGGG TGGAGTGATTTCTCACGCGCGTGTGGGAAAGGAGAAAACGCCGCCCTCCT CTCGTGGGGCGCGAGCACACAGTG</p>	
<p>IHEM 13492</p>	<p>CGGGTTTGC GCGCAGGACGGAGGCTGGCCCCCACGATAGGGACCGA CGTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATT TTGTCTACCTCACCGGTTGCCTCGGCGGGCCGCGCTCCCCCTGCCAG GGAGAGCCGTCCGGCGGGGCCCTTCTGGGGGCCTCGAGCCGGACCGC GCCCGCCGAGGACAGACACCAAGAAAAATTCTCTGAAGAGCTGTGAG TCTGAGCGTTTAGCAAGCACAATCAGTTAAAACCTTTCAACAACGGATCTC TTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATAAGTAATGTG AATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCACATTGCGCCCT CTGGCATTCCGGGGGGGCATGCCTGTTGAGCGTCATTTCAACCCCTCAA GCCCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCTTCGGGGGCG GGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCCGGCTTCTGGG CGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCGCCCTGGCCC CAATCTTTATATATATATATCTTTTCAGGTTGACCTCGGATCAGGTAGGGA TACCCGCTGAACTTAAGCATATCAATAAGCGGAGGAAACGATAACGCCA GGCGGAAGCGGGCCCCCGATAGAGACCGACTTCATCAGGGGTGAG CAACGTGCGCCGCCGTAGCCATTCTTGTCTCTCACCGGTTGCCTGGCG GGCCGGCTCCCCGGCAGGGAAACCTCGCGGCCCTTCGGGGGGCCCCG CCGCACCCGCCCCCGGAGAAAAACCAAAAAAATTTCTAAAAATGTCTCT GACGTTTTACGGCAACCGTTTAAAATTTTACAGGAATCT</p>	<p>T.soud</p>
<p>180611- 0069</p>	<p>GGGGTTCCGCGGCGGCGGAGGCTGGCCCCCACGATAGGGACCGAC GTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCT TGTCTACCTCACCGGTTGCCTCGGCGGGCCCTTCTGGGGGCCTCGA GCCGGACCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTCTCTGA AGAGCTGTCAGTCTGAGCGTTTAGCAAGCACAATCAGTTAAAACCTTTCAA CAACGGATCTCTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGA TAAGTAATGTGAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCA CATTGCGCCCTCTGGCATTCCGGGGGGGCATGCCTGTTGAGCGTCATTT CAACCCCTCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCC CTTCGGGGGGCGGGACGCGCCCCGAAAAGCAGTGGCCAGGCCGCGATT CGGCTTCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGC CGCCCTGGCCCCAATCTTTATATATATATATATATATCTTTTCAGGTTGAC CTCGGATCAGGTAGGGATAACCCGCTGAACTTAAGCATATCAATAAGGCG GAAAAGAACCAGGGGGCGCCCCCGCGGAGGGCGGCCCCACCATGG GGGACGACGTTTCATCAGGGGTGGGGAGACCGCACCGGCGTACTCCCA TTCTTGTCTCTCACCGGTTGCTCGGGGGGGCTCTTCTGGGGGCTCG</p>	<p>T. Soud</p>

	<p>AGCGGACGCGCCGCGGGAGAAAAAACAAAAAATTTCTGAAGACTGTA GTTGAGGTGTACAGACAATATTTAATACTTCACAGGAACATTTGCGTCCG CTTGAGAAAAACCACGAAAGTGAAAATTAAGGTGAATTTGAAAATCCTGA AACAGAAAACTGTGACACATTGCCGCTGGGATTGGAGAGGGGTGCGGTT GAGTAGGTGTACCCCTCGCTCGTGTGAATGAAGACGTCGTCCTCTTCTG GGTGTGGACGACAAAGAAAAGCACCGAGCAATAGTACTGGAAATAAGC</p>	
<p>180611- 0017</p>	<p>AGGGCTTCGCGCAGCCGGAGGCTGGCCCCCACGATAGGGACCGACG TTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCCATTTCTT GTCTACCTCACCCGGTTGCCTCGGCGGGCCCTTCTGGGGGCCTCGAG CCGACCCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTTCTCTGAA GAGCTGTCAGTCTGAGCGTTTAGCAAGCACAATCAGTTAAACTTTCAAC AACGGATCTCTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGAT AAGTAATGTGAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGCAC ATTGCGCCCTCTGGCATTCCGGGGGGCATGCCTGTTGAGCGTCATTTT AACCCCTCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCTCCC TTCGGGGGGCGGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATTCC GGCTTCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCC GCCCTGGCCCAATCTTTATATATATATATATATATCTTTTCAGGTTGACC TCGGATCAGGTAGGGATAACCCGCTGAACTTAAGCATATCAATAAGGCGG AGGAGAAGTGAAGTGCACGCGCGAAGCTGGCCCCCACGATAGGGAC GAGTTTCATCAGGGTGAAGACGTGCCGGCGTCCCCCATTTCTTGTCTA CTCACCGGTTGCTCGCGGGCCCTTCTGGGGGCTGAGCCGACGCGCCG CGGAAGAAAACAGAAGAATTCTCTAAGAGCTCTCGTCGAGGCGTGTGG ACAGCAATCATATAAAATTTACACGATCTTTTGGGTTCCGGCTTCGATGA AAAAGCACAAAAGGCGATAATAATGGTGATTTGAGAAGTCTGGGATACG AAATCTTTAGAGTATTGCCTCGCATTTTCGGAGGGATGCGTGCAGGTATTT ATCTCACGCGTTGGGTGGAGAGAGGCTCCGCACTCTGGGGGCGGTGAC GCAAAAAAATGGCGGCGATATCTGTTTCGTGAATGGAGCGACAAGCAG CCTCAA</p>	<p>T. Soud</p>
<p>181212- 0075</p>	<p>GGTGCTGCGCGGCAGGCCGGAGGCTGGCCCCCACGATAGGGACCGA CGTTCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCCATTC TTGTCTACCTCACCCGGTTGCCTCGGCGGGCCCTTCTGGGGGCCTCG AGCCGGACCGCGCCCGCCGGAGGACAGACACCAAGAAAAAATTTCTCTG AAGAGCTGTCAGTCTGAGCGTTTAGCAAGCACAATCAGTTAAACTTTCA ACAACGGATCTCTTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCG ATAAGTAATGTGAATTGCAGAATTCCGTGAATCATCGAATCTTTGAACGC ACATTGCGCCCTCTGGCATTCCGGGGGGCATGCCTGTTGAGCGTCAAT TCAACCCCTCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCTC CCTTCGGGGGGCGGGACGCGCCCGAAAAGCAGTGGCCAGGCCGCGATT CCGGCTTCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGG CCGCCCTGGCCCAATCTTTATATATATATATATATATCTTTTCAGGTTGA CCTCGGATCAGGTAGGGATAACCCGCTGAACTTAAGCATATCAATAAGGC GGAGAAGAACGAGGACGCGCACGCCGGAGGCTGGCCCCACGATAGGG GACGACGTTTCATCAGGGGTGAGCAGAGTGCCCGGCCGTACGCCCCATT CTTGTCTACCTCACCCGGTTGCTCGGCGGGCGCTTCTGGGGGCTCAGC CGGACGCGCCGCAAGAAGAACAATAAATCTTGAAGAGCGTCGTCGA GGGGTTACAGCAATATTTAACTTACACGATCTCTGGGTTCCGGCTCATG AAAAAGCAGCAAGGCGATAAATAATGGGAGTTGCAAATTCGGAACGC AACTGGAACCATGTCTCTGACATTCCGGGAGGGAGCGGTCAAATAAGTA CCTCAGTCGCGTGGTTGATGGAGAAGTCGCCTCCTCTGGGTGAGACGG CAGAAAGAAGTGACGGGCGCAATACGCTCCTGGTTAGGAGAGAGGCAC GGCCTGACAGGCTCTGTGCCACTAA</p>	<p>T. Soud</p>

<p>181212-0074</p>	<p>GGGGCTTCGCGCGGGCGGAGGCTGGCCCCCAGATAGGGACCGACGT TCCATCAGGGGTGAGCAGACGTGCGCCGGCCGTACGCCCCATTCTTG TCTACCTCACCCGTTGCCTCGGCGGGCCCCTTCTGGGGGCCTCGAGC CGGACCGCGCCCGCCGGAGGACAGACACCAAGAAAAATTCTCTGAAG AGCTGTCACTGAGCGTTTAGCAAGCACAATCAGTTAAACTTTCAACA ACGGATCTCTGGTTCCGGCATCGATGAAGAACGCAGCGAAATGCGATA AGTAATGTGAATTGCAGAATTCGGTGAATCATCGAATCTTTGAACGCACA TTGCGCCCTCTGGCATTCCGGGGGGCATGCCTGTTTCGAGCGTCATTTCA ACCCCTCAAGCCCGGCTTGTGTGATGGACGACCGTCCGGCCCCCTCCCT TCGGGGGCGGGACGCGCCCCGAAAAGCAGTGGCCAGGCCGCGATTCCG GCTTCCTGGGCGAATGGGCAGCCAAACCAGCGCCCTCAGGACCGGCCG CCCTGGCCCCAATCTTTATATATATATATATATATCTTTTCAGGTTGACCT CGGATCAGGTAGGGATACCCGCTGAACCTAAGCATATCAATAAGCGAGA AGAGAAGCCCGTAGGCGCGGGCGGAAGGGGGCCCCCATGATGGGGGCGA GTTTTACGGGGGGAGCAGAATGCCCGCCCCCCCCCTTTCTTGTCT ACTCCCCGGGTTGCTTGGGGCGCCCTTCTGGGGGGCTCAGCCGCCG GCGCCCCGAAAAAAAAAAAAAAAAAATTTTTAGGACTGTCATCTGAGGG TGTGCCACCAATCATTTTAAATTTACACGAATTATGGGTTCCGCTCGTG AAAAACGAGACAGGGATGAAATAGTGTGAAGTGAATATGCGTGAATATA AATTTGAACCTTGCCCTGGCTTTGGGAGGGGGGCGCGGCCGAGCTGTT TCCCCCGCGCCTGTGGTGTGATGAAGCAGCGCGCCCCCTCCTCGGTG GGGGGACGCCACAAAAAATAGGCCGGGCGCTCGCCTCTTTGTGGAG AGGGGGGCACCAACGCCCGCGCGCACCGCCCTC</p>	<p>T. Soud</p>
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Table 15: Results of Tef-1 α sequencing in *T. soudanense* and *T. violaceum*

Number	Sequence	ID
180410-0026	TKGTSKGWATCGGGCMCGTTCGATTCCGGCAAATCCACCACTACTGGTAA GCCAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGA CTATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGC GTACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTG CTGTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCACTACAGGTGA AATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCA AAATCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAAC GATCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATG CTAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCA AGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTAT CACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCCAAGTACAATGTC ACCGTCATTGGTATGTTTCTTTGCCTTGTTCCTCATGTGGTTGTACCATA TCTAACGAGAGTAGACGCCCCCGTCCACCGTGACTTCATCAAGAACATG ATCACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCG GTA CTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCYTGT TTCCT	T.soud
180410-0027	TGAYGTTATCGGGCMACGTCGATTCCGGCAAATCCACCACTACTGGTAA GCCAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGA CTATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGC GTACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTG CTGTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCACTACAGGTGA AATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCA AAATCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAAC GATCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATG CTAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCA AGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTAT CACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCCAAGTACAATGTC ACCGTCATTGGTATGTTTCTTTGCCTTGTTCCTCATGTGGTTGTACCATA TCTAACGAGAGTAGACGCCCCCGTCCACCGTGACTTCATCAAGAACATG ATCACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCG GTA CTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCCTGT TTCCTGAA	T.soud
180227-0075	TGTYGTATCGGCMCRTCGATTCCGGCAAATCCACCACTACTGGTARGCC AGCCACSAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGACTA TAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCGTA CCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCTG TCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCACTACAGGTGAAAT TTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAAA TCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACGAT CGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCTA ACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAGT ACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCAC CATCGATATCGCCCTCTGGAAGTTCGAGACCCCCAAGTACAATGTCACC GTCATTGGTATGTTTCTTTGCCTTGTTCCTCATGTGGTTGTACCATATCT AACGAGAGTAGACGCCCCCGTCCACCGTGACTTCATCAAGAACATGATC ACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGTA	T.soud

	CTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCCTGTTTCCTGA	
180410-0028	TKGTKGTATCGGCMCGTCGATTCCGGCAAATCCACCACTACTGGTAAGC CAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGACT ATAACATTACAGGTCACCTGATCTACAAGTGCGGTGGTATCGACCAGCGT ACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCT GTCTCCGTTCTGTTGCACAATTTCCCCCTTCATCCCACTACAGGTGAAA TTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAA ATCCACACCCCAACATCAAACATGCAGCCATCGCTCCAGGCAACGA TCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCT AACAAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAG TACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCA CCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCAC CGTCATTGGTATGTTTCTTGCCTTGTCCCTCATGTGGTTGTACCATATC TAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGAT CACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGT ACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCCTGTTT CCTGA	T.soud
180410-0033	TGAKGCTATCGGCMCGTCGATTCCGGCAAATCCACCACTACTGGTAAGC CAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGACT ATAACATTACAGGTCACCTGATCTACAAGTGCGGTGGTATCGACCAGCGT ACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCT GTCTCCGTTCTGTTGCACAATTTCCCCCTTCATCCCACTACAGGTGAAA TTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAA ATCCACACCCCAACATCAAACATGCAGCCATCGCTCCAGGCAACGA TCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCT AACAAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAG TACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCA CCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCAC CGTCATTGGTATGTTTCTTGCCTTGTCCCTCATGTGGTTGTACCATATC TAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGAT CACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGT ACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCCTGTTT CCTGAA	T.soud
180410-0037	TGAYGAWTCGSGYMCGTCKATTCCGGCAAATCCACCRCTRCTGGTARG CCRGCCACCAGAATACCTCTAGCCAGGCACCGAATTACACAGAACTGA CTATAACATTACAGGTCACCTGATCTACAAGTGCGGTGGTATCGACCAGC GTACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTG CTGTCTCCGTTCTGTTGCACAATTTCCCCCTTCATCCCACTACAGGTGA AATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCA AATCCACACCCCAACATCAAACATGCAGCCATCGCTCCAGGCAAC GATCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATG CTAACAAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCA AGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTAT CACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTC ACCGTCATTGGTATGTTTCTTGCCTTGTCCCTCATGTGGTTGTACCATA TCTAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATG ATCACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCG GTA CTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCCTKT TTCCTGA	T.soud
180410-	AGGSKGWWATCGGCMACGTTCGATTCCGGCAAATCCACCACTACTGGT	T.viol

0017	<p>AAGCCAGCCACCSAGATACCTCTAGCCAGGCACCGAATTACACAGAACT GACTATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCA GCGTACCATTGAGAAGTTGAGAAGGTAATAACCCCCCTTTTTTGACCC TGCTGTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCCTACAGGT GAAATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAG CAAATCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCA ACGATCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGA TGCTAACAAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTT CAAGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGT ATCACCATCGATATCGCCCTCTGGAAGTTGAGACCCCCAAGTACAATG TCACCGTCATTGGTATGTTTCTTTGCCTTGTCCCTCATGTGGTTGTACC ATATCTAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAAC ATGATCACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGC CGGTACTGGTGAGTTCGAGGCTGGTATCTCCMAGGATGGGTTCATAGCYT GTTTCCYTA</p>	
180227-0070	<p>TKKKGTAATCGGGCMCGTTCGATTCCGGCAAATCCACCACTACTGGTAAG CCAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGAC TATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCG TACCATTGAGAAGTTGAGAAGGTAATAACCCCCCTTTTTTGACCCTGC TGTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCCTACAGGTGAA ATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAA AATCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACG ATCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGC TAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAA GTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATC ACCATCGATATCGCCCTCTGGAAGTTGAGACCCCCAAGTACAATGTCA CCGTCATTGGTATGTTTCTTTGCCTTGTCCCTCATGTGGTTGTACCATAT CTAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGA TCACTGGTACCTCCCAGCTGACTGCGCTATTCTCATCATTGCTGCCGGTA CTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTTCATAGCYTGTTT CTGAA</p>	T.soud
180410-0019	<p>TGAKGTAATCGGCMCGTTCGATTCCGGCAAATCCACCACTACTGGTAAGC CAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGACT ATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCGT ACCATTGAGAAGTTGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCT GTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCCTACAGGTGAAA TTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAA ATCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACGA TCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCT AACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAG TACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCA CCATCGATATCGCCCTCTGGAAGTTGAGACCCCCAAGTACAATGTCAC CGTCATTGGTATGTTTCTTTGCCTTGTCCCTCATGTGGTTGTACCATATC TAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGAT CACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGT ACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTTCATASCYTGTTT YCYWAA</p>	T.soud
180410-0022	<p>TGCYGTWTCGGCMCGTTCGATTCCGGCAAATCCACCACTACTGGTAAGC CAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGACT ATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCGT ACCATTGAGAAGTTGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCT GTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCCTACAGGTGAAA</p>	T.soud

	TTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAA ATCCACACCCCAACATCAAACATGCAGCCATCGCTCCAGGCAACGA TCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCT AACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAG TACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCA CCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCAC CGTCATTGGTATGTTTCTTGCCTTGTTCCCTCATGTGGTTGTACCATATC TAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGAT CACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGT ACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCCTGTTT CCTAAA	
180227-0053	TGACGCATCGCTGYTTCTGTGGGATCTCTCCKGGCTGGTTCATGACTGT TTACGAAATACCKCTAGSYAGGYRCCGAATTACACAGAACTGACTATAA CATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCGTACC ATTGAGAAGTTCGAGAAGGTAATAACCCCTTTTTTGGACCCTGCTGTC TCCGTTCTGTTGCACAATTTCCCTTTCATCCACTACAGGTGAAATTTT GGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAAATC CACACCCCAACATCAAACATGCAGCCATCGCTCCAGGCAACGATCG AGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCTAAC AAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAGTAC GCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCACC TCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCACCGT CATTGGTATGTTTCTTGCCTTGTTCCCTCATGTGGTTGTACCATATCTAA CGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGATCAC TGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGTACT GGTGAGTTCGAGGCTGGTATCTCCAARGATGGGTCATAGCTGTTTCTG A	T.soud
180306-0068	GCGTACGCRTGMAATCTRRCYGATCTCTCCAGGCTGGTGCATGACTGT TTACGAGATACCTCTAGGCAGTCACCGAACTACACACAGAACTGACTAT AACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCGTA CCATTGAGAAGTTCGAGAAGGTAATAACCCCTTTTTTGGACCCTGCTG TCTCCGTTCTGTTGCACAATTTCCCTTTCATCCACTACAGGTGAAAT TTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAAA TCCACACCCCAACATCAAACATGCAGCCATCGCTCCAGGCAACGAT CGAGCCTCATGTCATGTTTGGATTTGCTTTTTTCTGTCTCAAGATCGATG CTAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCA AGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTAT CACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTC ACCGTCATTGGTATGTTTCTTGCCTTGTTCCCTCATGTGGTTGTACCATA TCTAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATG ATCACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCG GACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCTGTT TCCCTGAA	T.soud
180621-0047	AYGGCCTCGAACTCACCAGTACCGGCAGCAATGATGAGAATAGCGCAGT CAGCCTGGGAGGTACCAGTGATCATGTTCTTGATGAAGTCACGGTGACC GGGGGCGTCTACTCTCGTTAGATATGGTACAACCACATGAGGGAACAAG GCAAAGAAACATACCAATGACGGTGACATTGACTTGGGGGTCTCGAAC TTCCAGAGGGCGATATCGATGGTGATACCACGCTCACGCTCGGCCTTGA GCTTGTCAAGAACCAAGCGTACTTGAAGGACTTCTTGCCCAACTCTTGA GCTTCTACAGGTACCTTGTAGCATCGATCTTGAGACAGAAAAAAGCAA ATCCAAACATGACATGAGGCTCGATCGTTGCCTGGAGCGATGGCTGCAT GTTTGATGTTGGTGGGGTGTGGATTTGCTGCCCAAGCGAGTGCCAAGC	T.viol

	CACATCCCACCAGCAGCACCAAATTTACCTGTAGTGGGATGAAGGGG GAAAATTGTGCAACAGAACGGAGACAGCAGGGTCAAAAAAGGGGGTTA TTTACCTTCTCGAACTTCTCAATGGTACGCTGGTCGATACCACCGCACTT GTAGATCAAGTGACCTGTAATGTTATAGTCAGTTTCTGTGTGTAGTTCCG TGA CTGGCTAGAGGTATCTGGTGGCTGGCTTACCAGTAGTGGTGGATTT GCCGGAATCGACGTGGCCGATAACGACCAAGTTAATGTGACTGGCGTY CGTTTTACA	
180611- 0049	GGCWTYGGGCMMGTCGATTCCGGCAATCCACCACTACTGGTAAGCCAG CCACCAGATACCTCTAGCCAGTCACCGAACTACACACAGAACTGACTAT AACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCGTA CCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCTG TCTCCGTTCTGTTGCACAATTTCCCCCTTCATCCCACTACAGGTGAAAT TTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAAA TCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACGAT CGAGCCTCATGTATGTTTGGATTTGCTTTTTTCTGTCTCAAGATCGATG CTAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCA AGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTAT CACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTC ACCGTCATTGGTATGTTTCTTTGCCTTGTCCCTCATGTGGTTGTACCATA TCTAACGAGAGTAGACGCCCCCGTCAACCGTACTTCATCAAGAACATG ATCACTGGTACCTCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCG GTA CTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCCTGT TTTTCTGAA	T.viol
190118- 0005	GYGTTTTCGGGCRSWTCGATTCCGGCAATCCACCACTACTGGTARGCCA KCCACCSAGATACCTCTAGGCAGGCRCCGAATTACACAGAACTGACTAT AACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCGTA CCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCTG TCTCCGTTCTGTTGCACAATTTCCCCCTTCATCCCACTACAGGTGAAAT TTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAAA TCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACGAT CGAGCCTCATGTATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCTA ACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAGT ACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCAC CATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCACC GTCATTGGTATGTTTCTTTGCCTTGTCCCTCATGTGGTTGTACCATATCT AACGAGAGTAGACGCCCCCGTCAACCGTACTTCATCAAGAACATGATC ACTGGTACCTCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGTA CTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCYTGT TTTT CCTGAA	T.soud
180625- 0012	TGYKKTWWYGGCMSGTGATTCCGGCAATCCACCACTACTGGTAAGCC AGCCACCAGATACCTCTAGCCAGTCACCGAACTACACACAGAACTGAC TATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCG TACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGC TGTCTCCGTTCTGTTGCACAATTTCCCCCTTCATCCCACTACAGGTGAA ATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAA AATCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACG ATCGAGCCTCATGTATGTTTGGATTTGCTTTTTTCTGTCTCAAGATCGAT GCTAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTC AAGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTA TCACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGT CACCGTCATTGGTATGTTTCTTTGCCTTGTCCCTCATGTGGTTGTACCA TATCTAACGAGAGTAGACGCCCCCGTCAACCGTACTTCATCAAGAACA	T.viol

	TGATCACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCC GGTACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCCTG TTTCCTAAA	
180410-0021	TGGCGTAATCGCGYMCKTCKATTCCGGCAATCCACCRCTACTGGTAAGC CAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGACT ATAACATTACAGGTCACTTGATCTACAAGTGCGGTGGTATCGACCAGCGT ACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCT GTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCCTACAGGTGAAA TTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAA ATCCACACCCCAACAACATCAAACATGCAGCCATCGCTCCAGGCAACGA TCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCT AACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAG TACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCA CCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCAC CGTCATTGGTATGTTTCTTGCCTTGTTCCCTCATGTGGTTGTACCATATC TAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGAT CACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGT ACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCCTGTTT CCTWAA	T.viol
180227-0045	GSYGTAATCGGYMMSKTCGATTCSGGCAAATCCACCACTACTGGTAAGC CAGCCACSAGATACCTCTAGCCAGTCACCGAACTACACACAGAACTGA CTATAACATTACAGGTCACTTGATCTACAAGTGCGGTGGTATCGACCAGC GTACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTG CTGTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCCTACAGGTGA AATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCA AAATCCACACCCCAACAACATCAAACATGCAGCCATCGCTCCAGGCAAC GATCGAGCCTCATGTCATGTTTGGATTTGCTTTTTTCTGTCTCAAGATCG ATGCTAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCT TCAAGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGG TATCACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAAT GTCACCGTCATTGGTATGTTTCTTGCCTTGTTCCCTCATGTGGTTGTAC CATATCTAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAA CATGATCACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTG CCGGTACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCT KGTTCCTAGA	T.viol
180227-0044	GSSGTATCGGYMCRATCKATTCCGGCAATCCACCACTACTGGTAGRCCA GCCACSAGATACCTCTAGCCAGTCACCGAACTACACACAGAACTGACT ATAACATTACAGGTCACTTGATCTACAAGTGCGGTGGTATCGACCAGCGT ACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCT GTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCCTACAGGTGAAA TTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAA ATCCACACCCCAACAACATCAAACATGCAGCCATCGCTCCAGGCAACGA TCGAGCCTCATGTCATGTTTGGATTTGCTTTTTTCTGTCTCAAGATCGATG CTAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCA AGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTAT CACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTC ACCGTCATTGGTATGTTTCTTGCCTTGTTCCCTCATGTGGTTGTACCATA TCTAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATG ATCACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCG GACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCCTGT TTCCTWAA	T.viol

180420-0056	<p>GSYYKGWATYGSSYMMRRATCGKATWCCGRGSRRATCCACCACTRYTG SMTARRCCAGCCACSAGATACCTCTAGCCAGTCACCGAACTACACACAG AAACTGACTATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATC GACCAGCGTACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTT GACCCTGCTGTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCACTA CAGGTGAAATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTG GGCAGCAAATCCACACCCCACCAACATCAAACATGCAGCCATCGCTCC AGGCAACGATCGAGCCTCATGTGATGTTTGGATTTGCTTTTTTCTGTCTC AAGATCGATGCTAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAG AAGTCCTTCAAGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTG AGCGTGGTATCACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAA GTACAATGTCACCGTCATTGGTATGTTTCTTGCCTTGTTCCCTCATGTG GTTGTACCATATCTAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCA TCAAGAACATGATCACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATC ATTGCTGCCGGTACTGGTGAGTTCGAGGCTGGGTATCTYCCARGGATGG GGTCATAGCTKGTTTTYCCTAG</p>	T.viol
180611-0016	<p>GGGGTTCCGGMGMCCAATCGATTCCGATCTATCCAGCTGTACTGKAAAGC CAKCCACGAGATACCTCTAGGCAGTCACCGAACTACACACAGAACTGA CTATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGC GTACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTACCCTG CTGTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCACTACAGGTGA AATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCA AAATCCACACCCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAAC GATCGAGCCTCATGTGATGTTTGGATTTGCTTTTTTCTGTCTCAAGATCG ATGCTAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCT TCAAGTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGG TATCACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAAGTACAAT GTCACCGTCATTGGTATGTTTCTTGCCTTGTTCCCTCATGTGGTTGTAC CATATCTAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAA CATGATCACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTG CCGGTACTGGTGAGTTCGAGGCTGGGTATCTCCAAGGATGGGTATAGC YTGTTTTCTWGAA</p>	T.viol
190118-0006	<p>GSKTAWTYGGGMMMSGTTCGATTCCGGCAATCCACCACTACTGGTAAGCC AGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGACTA TAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCGTA CCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTACCCTGCTG TCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCACTACAGGTGAAAT TTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAAA TCCACACCCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACGAT CGAGCCTCATGTGATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCTA ACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAGT ACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCAC CATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAAGTACAATGTCACC GTCATTGGTATGTTTCTTGCCTTGTTCCCTCATGTGGTTGTACCATATCT AACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGATC ACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGTA CTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTATAGCCTKGTTC CTGAA</p>	T.soud
190118-0012	<p>GCSGTWYGGGSMCGWTTCGATTCCGGCAATCCACCACTACTGGTARGC CAGCCACSAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGACT ATAACATTACAGGTCACCTTGATCTACAAGTGCGGTGGTATCGACCAGCGT ACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTACCCTGCT</p>	T.soud

	GTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCACTACAGGTGAAA TTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAA ATCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACGA TCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCT AACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAG TACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCA CCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCAC CGTCATTGGTATGTTTCTTTGCCTTGTTCCCTCATGTGGTTGTACCATATC TAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGAT CACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGT ACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCYKGT TCCTGAA	
IHEM 13492	GGCSGTATYGGGGRSRRTCGATTCCGGCAATCCACCACTACTGGTAAGC CAGCCACSAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGACT ATAACATTACAGGTCACTTGATCTACAAGTGCGGTGGTATCGACCAGCGT ACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCT GTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCACTACAGGTGAAA TTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAA ATCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACGA TCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCT AACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAG TACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCA CCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCAC CGTCATTGGTATGTTTCTTTGCCTTGTTCCCTCATGTGGTTGTACCATATC TAACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGAT CACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGT ACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCTKGT CCTAA	T.soud
180611- 0069	GSGWWTCGGGCMCGGTGCGATTCCGGCAATCCACCACTACTGGTAAGCC AGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGACTA TAACATTACAGGTCACTTGATCTACAAGTGCGGTGGTATCGACCAGCGTA CCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCTG TCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCACTACAGGTGAAAT TTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAAA TCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACGAT CGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCTA ACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAGT ACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCAC CATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCACC GTCATTGGTATGTTTCTTTGCCTTGTTCCCTCATGTGGTTGTACCATATCT AACGAGAGTAGACGCCCCCGGTCACCGTGACTTCATCAAGAACATGATC ACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGTA CTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCYTGTTC CTGAA	T. Soud
180611- 0017	AKGYGGWWCGGGSMSGTCGATTCCGGCAATCCACCACTACTGGTAAG CCAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAACTGAC TATAACATTACAGGTCACTTGATCTACAAGTGCGGTGGTATCGACCAGCG TACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGC TGCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCACTACAGGTGAA ATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAA AATCCACACCCACCAACATCAAACATGCAGCCATCGCTCCAGGCAACG ATCGAGCCTCATGTCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGC	T. Soud

	TAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAA GTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATC ACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCA CCGTCATTGGTATGTTTCTTTGCCTTGTTCCCTCATGTGGTTGTACCATAT CTAACGAGAGTAGACGCCCCGGTCACCGTGACTTCATCAAGAACATGA TACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGG TACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCYTKTTT TCCTGG	
181212-0075	GKKKGWWTYGGGSMCGTTCGATTCCGGCAAATCCACCACTACTGGTAAG CCAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAAACTGAC TATAACATTACAGGTCACCTTGATCTACAAGTGCCGGTGGTATCGACCAGCG TACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGC TGCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCCTACAGGTGAA ATTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAA AATCCACACCCCAACATCAAACATGCAGCCATCGCTCCAGGCAACG ATCGAGCCTCATGTGCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGC TAACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAA GTACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATC ACCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCA CCGTCATTGGTATGTTTCTTTGCCTTGTTCCCTCATGTGGTTGTACCATAT CTAACGAGAGTAGACGCCCCGGTCACCGTGACTTCATCAAGAACATGA TACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGG TACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATAGCTGTTT TCCTGAA	T. Soud
181212-0074	GSKKWWTCGGGCMGGTCGATTCCGGCAAATCCACCACTACTGGTAAGC CAGCCACCAGATACCTCTAGCCAGGCACCGAATTACACAGAAACTGACT ATAACATTACAGGTCACCTTGATCTACAAGTGCCGGTGGTATCGACCAGCGT ACCATTGAGAAGTTCGAGAAGGTAATAACCCCCCTTTTTTGACCCTGCT GTCTCCGTTCTGTTGCACAATTTTCCCCCTTCATCCCCTACAGGTGAAA TTTTGGTGCTGCTGGTGGGATGTGGCTTGGCACTCGCTTGGGCAGCAAA ATCCACACCCCAACATCAAACATGCAGCCATCGCTCCAGGCAACGA TCGAGCCTCATGTGCATGTTTGGGATTTGCTTTTTTCTAAGGATCGATGCT ACAAGGTACCTGTAGGAAGCCGAAGAGTTGGGCAAGAAGTCCTTCAAG TACGCTTGGGTTCTTGACAAGCTCAAGGCCGAGCGTGAGCGTGGTATCA CCATCGATATCGCCCTCTGGAAGTTCGAGACCCCAAGTACAATGTCAC CGTCATTGGTATGTTTCTTTGCCTTGTTCCCTCATGTGGTTGTACCATATC TAACGAGAGTAGACGCCCCGGTCACCGTGACTTCATCAAGAACATGAT CACTGGTACCTCCCAGGCTGACTGCGCTATTCTCATCATTGCTGCCGGT ACTGGTGAGTTCGAGGCTGGTATCTCCAAGGATGGGTCATASCTGTTTC CTGAA	T. Soud

Table 16: Results of BT2 sequencing in *T. sudanense* and *T. violaceum*

Number	Sequence	ID
180410-0026	GGGGGGGCTACGCGTTGCAGCATAATTGTATATTTTCGTGTCTGAATTATTACTGACTTGTTT TACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGC TGGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACA CCGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACC AAGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAAACAACT GGGCAAGGGTCACTA	T.soud
180410-0027	CGGGGGGCTTCCGCGTTGCAGCATAATTGTATATTTTCGTGTCTGAATTATTACTGACTTGTTT ACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCT GGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACAC CGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCA AGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAAACAACT GGGCAAGGGTCACTA	T.soud
180227-0075	GGGGGGGGATCCGCGTTGCAGCATAATTGTATATTTTCGTGTCTGAATTATTACTGACTTGTTT TACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGC TGGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACA CCGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACC AAGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAAACAACT GGGCAAGGGTCACTAACCT	T.soud
180410-0028	GGGGGGCTTCCGCGTTGCAGCATAATTGTATATTTTCGTGTCTGAATTATTACTGACTTGTTTTA CAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTG GAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACACC GGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAATACGT TCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAAACAACTGG GCCAAGGGTCACTCCCTTGAAGGGTA	T.soud
180410-0033	GGGGGGGCTTACGCGTTGCAGCATAATTGTATATTTTCGTGTCTGAATTATTACTGACTTGTTT TACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGC TGGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACA CCGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACC AAGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAAACAACT GGGCAAGGGTCACAA	T.soud
180410-0037	GGGGGGGCTTACGCGTTGCAGCATAATTGTATATTTTCGTGTCTGAATTATTACTGACTTGTTT	T.soud

	TACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGC TGGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACA CCGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACC AAGACCCTTCCCTT CAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAACAACCT GGGCAAGGGTCACAA	
180410-0017	GGGGTGCTCCGCGTTGCAGCATAATTGTATATTTCTGTGTCGAATTATTACTGACTTGTTTTAC AGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTGG AAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACACCG GATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAG ACCCTTCCCTT CAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGTT CCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAACAACCTGG GCCAAGGGTCACTAACTTTGAGGGTA	T.viol
180227-0070	GGGGGGGCTCCGCGTTGCAGCATAATTGTATATTTCTGTGTCGAATTATTACTGACTTGTTT TACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGC TGGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACA CCGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACC AAGACCCTTCCCTT CAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAACAACCT GGGCAAGGGTCACTAACTTTGAGGGTA	T.soud
180410-0019	GGTGGTGACTTACGCGTTGCAGCATAATTGTATATTTCTGTGTCGAATTATTACTGACTTGTTT TACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGC TGGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACA CCGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACC AAGACCCTTCCCTT CAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAACAACCT GGGCAAGGGTCACTCACCTTGAGGGTA	T.soud
180410-0022	GTGGTGCTTCCGCGTTGCAGCATAATTGTATATTTCTGTGTCGAATTATTACTGACTTGTTTTA CAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTG GAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACACC GGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCCTTCCCTT CAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGT TCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAACAACCTGG GCCAAGGGTCACAA	T.soud
180227-0053	GGGGGGGCTAGCGTTGCAGCATAATTGTATATTTCTGTGTCGAATTATTACTGACTTGTTTTA CAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTG GAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACACC GGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCCTTCCCTT CAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGT TCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTCAGCTCTTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAACAACCTGG	T.soud

	GCCAAGGGTCACTAACCTTTGAGGGTA	
180306-0068	GGGGGGGCTAGCGTTGCAGCATAATTGTATATTTTCGTGCCGAATTATTACTGACTTGTTTTA CAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTG GAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACACC GGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGT TCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTCAGCTCTTCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAAACAACCTGG GCCAAGGGTCACTAA	T.soud
180621-0047	GATGGGGCTAGCGTTGCAGCATAATTGTATATTTTCGTGCCGAATTATTACTGACTTGTTTTAC AGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTGG AAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACACCG GATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAAG ACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGT CCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTCAGCTCTTCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAAACAACCTGG GCCAAGGGTCACTCACCTGAAGGTAC	T.viol
180611-0049	GGGGGGCTTCGCGTTGCAGCATAATTGTATATTTTCGTGCCGAATTATTACTGACTTGTTTT ACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCT GGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACAC CGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCA AGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAAACAACCT GGGCAAAGGGTCACAA	T.viol
190118-0005	GGGGGGGCTAGCGTTGCAGCATAATTGTATATTTTCGTGTCGAATTATTACTGACTTGTTTTA CAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTG GAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACACC GGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGT TCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTCAGCTCTTCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAAACAACCTGG GCCAAGGGTCACTAACTTGAGGGGTA	T.soud
180625-0012	GGGGGGGGATACGGCGTTGCAGCATAATTGTATATTTTCGTGTCGAATTATTACTGACTTGTT TTACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCG CTGGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTAC ACCGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGAC CAAGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATA CGTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTC CTTTCGGTCAGCTCTTCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGGAAACAAC TGGGCAAAGGGTCACAACCTGAAGGGT	T.viol
180410-0021	GGGGGGGCTAGCGTTGCAGCATAATTGTATATTTTCGTGTCGAATTATTACTGACTTGTTTTA CAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTG GAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACTGGGATTTTTATAGCTACACC	T.viol

	GGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCCCTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGT TCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCTTT CGGTCAGCTCTCCGCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGAAACAACCTGG GCCAAGGGTCACTCACCTTGAGGGTAG	
180227-0045	GGGGGGGCTCCGCGTTGCAGCATAATTGTATATTTTCGTGCCGAATTACTGACTTGTTTT ACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTTTCGCT GGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACAC CGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCA AGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGAAACAACCT GGGCAAGGGTCACTAACCTTGAGGGTAAGT	T.viol
180227-0044	GGGGGGGCTACGCGTTGCAGCATAATTGTATATTTTCGTGCCGAATTACTGACTTGTTTT ACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTTTCGCT GGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACAC CGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCA AGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGAAACAACCT GGGCAAGGGTCACTAACCTTGAGGGTA	T.viol
180420-0056	GGGGGGGCTCCGCGTTGCAGCATAATTGTATATTTTCGTGCCGAATTACTGACTTGTTTT ACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTTTCGCT GGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACAC CGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCA AGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGAAACAACCT GGGCAAGGGTCACTAACCTTGAGGGTA	T.viol
180611-0016	GGGGGGGGCTTCGCGTTGCAGCATAATTGTATATTTTCGTGCCGAATTACTGACTTGTTTT TACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTTTCGCT TGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACA CCGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACC AAGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGAAACAACCT GGGCAAGGGTCACTA	T.viol
190118-0006	GGGGCGGCTGCGCGTTGCAGCATAATTGTATATTTTCGTGTCGAATTACTGACTTGTTTT ACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTTTCGCT GGAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACAC CGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCA AGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGAAACAACCT GGGCAAGGGTCACTCACCTGAGGGTA	T.soud

190118-0012	GGTGGGGCTAGCGTTGCAGCATAATTGTATATTTTCGTGCCGAATTATACTGACTTGTTTTA CAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTG GAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACACC GGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGT TCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTGAGCTCTTCCGCCCCGATAACGTGCTCTTCGGTCAGTCCGGTGCCGGAAACAACCTGG GCCAAGGGTCACTA	T.soud
IHEM 13492	GGTGGGGACTAGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAATTATACTGACTTGTTTT ACAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTG GAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACAC CGGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA AGACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATAC GTTCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCC TTTCGGTCAGCTCTTCCGCCCCGATAACGTGCTCTTCGGTCAGTCCGGTGCCGGAAACAACCT GGCCAAGGGTCACTAACCTGAGGGT	T.soud
180611-0069	GGTGGGACTCCGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAATTATACTGACTTGTTTTA CAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTG GAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACACC GGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGT TCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTGAGCTCTTCCGCCCCGATAACGTGCTCTTCGGTCAGTCCGGTGCCGGAAACAACCTGG GCCAAGGGTCACTA	T. Soud
180611-0017	GGTGGTGCTAGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAATTATACTGACTTGTTTTAC AGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTGG AAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACACCG GATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA ACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGTT CCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTGAGCTCTTCCGCCCCGATAACGTGCTCTTCGGTCAGTCCGGTGCCGGAAACAACCTGG GCCAAGGGTCACTAACCTGGAGGGTA	T. Soud
181212-0075	GCGTGTGACTAGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAATTATACTGACTTGTTTTA CAGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTG GAAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACACC GGATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA GACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGT TCCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTGAGCTCTTCCGCCCCGATAACGTGCTCTTCGGTCAGTCCGGTGCCGGAAACAACCTGG GCCAAGGGTCACTAACCTGAGGGT	T. Soud
181212-0074	GAGGGGTATAGCGTTGCAGCATAATTGTATATTTTCGTGTGCGAATTATACTGACTTGTTTTAC AGGCAAACCATTGCTGGTGAGCACGGTCTCGATGGATCCGGCCAGTGAGTGATTCGCTGG AAAATATTTCCAAGTCTCGAGGGACATGAATGTTGACAACCTGGGATTTTTATAGCTACACCG GATCTTCTGACCTCCAATTGGAGCGCATGAATGTCTACTTCAACGAGGTGTGCACGACCAA ACCCTTCCCTTCAGCAGCATACTAACTCATTGGAGGCAAAGGCCTCAAGCAAAAAATACGTT CCCCGTGCGGTGCTTGTGATCTTGAGCCCGCCGCTCTCGATGCTGTCCGTGCCGGTCCCTT CGGTGAGCTCTTCCGCCCCGATAACGTGCTCTTCGGTCAGTCCGGTGCCGGAAACAACCTGG GCCAAGGGTCACTAACCTGAGGGT	T. Soud

	CGGTCAGCTCTCCGCCCCGATAACGTCGTCTTCGGTCAGTCCGGTGCCGAAACA GCTGGCCAAGGGTCACTCACCTTGAGGGTA	
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