

Collocational Analysis of Life Science English (3)

— Lists of common collocates of *addition, analysis, hypothesis, identification, level, production, risk* —

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Introduction

This is the third in a series of reports that focus on how certain English words are typically used in the life sciences and whose purpose is to help Japanese researchers who use English in their work to gain insight into the common collocates for each word. Traditionally, language learners have been advised to refer to grammar books and dictionaries in order to improve their language skills, but this has not always helped to raise their level of proficiency. The former bias toward grammar has led to the belief that natural sentences can be created solely on the basis of syntax and arbitrary vocabulary selections. As a result, learners have tended to focus their attention on acquiring as many independent words as possible without regard for their typical patterns and collocations. This traditional perspective, however, has been discredited by more recent research in the field of second language learning which has shown, on the basis of empirical evidence, that words do not function in isolation but are co-selected with other words to produce meaning (Howarth, 1998; Hunston & Francis, 1998; Partington, 1998; Sinclair, 1991; Stubbs, 2001). There is therefore a need to provide nonnative writers with detailed information on the key lexical items and common collocational patterns that are typical of their field of research and that they require when writing their academic research papers (Ohtake & Morren, 2001, 2003).

In this respect, the use of corpora and concordance techniques may provide more accessible information on collocations and the selection restrictions that govern them. Nonnative writers may thereby come to avoid collocational mismatches by being

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exposed to multiple examples of words that tend to co-occur. Through such exposure to regularly recurring patterns, they may become more sensitive to the ways in which words combine with other words to produce particular meanings. Certainly, statistical analyses showing the frequency and collocational patterns of any given word used in life-science papers would be very useful for Japanese researchers when writing academic reports. In particular, they may realize the importance of referring to corpus evidence for guidance and no longer rely simply on dictionaries and reference grammars. They can thereby expand their search for appropriate forms of expression by examining and interpreting the immense amount of useful data that corpora provide.

Data Collection and Corpus Analysis

In 1993, we embarked on a project – the Life Science Dictionary Project (LSD Project) – in which English abstracts appearing in international medical research journals were collected through the publicly available on-line MEDLINE database. The initial aim of the collection was to compile a genre-specific English corpus (LSD Corpus) and then to create an electronic bilingual dictionary (English–Japanese and Japanese–English) with a particular emphasis on frequently appearing general and technical terms in life-science fields. The LSD Corpus now contains approximately 144,000 abstracts published in distinguished life-science related journals around the world and consists of over 31 million running words. This corpus can be regarded as a valid source of authentic English materials because the articles and abstracts published in such eminent journals as *Nature* and *Science* are known to have undergone a rigorous review prior to publication with regard to both content and language.

The collected data have been recorded in a versatile relational database and subjected to statistical analysis. This has led to the compilation of an electronic English–Japanese/Japanese–English dictionary, WebLSD, which is available to the public on the Internet (<http://lsd.pharm.kyoto-u.ac.jp/>). The up-dated version of the electronic dictionary currently contains 39,790 entries of English terms with Japanese translations and definitions, 26,000 sample sentences for 5,100 words, and 938,000 records of concordance for 9,500 words.

Some of the most frequently used words in the LSD Corpus have been selected for inclusion in this paper. The particular words taken up here are *carry*, *confer*, *contribute*,

detect, elucidate, give, know, obtain, raise, and understand. For each word, we have provided a list of common collocations that includes information about the frequency, a Japanese translation, and a sample sentence when it is considered useful and relevant. The collocational patterns introduced here are noteworthy in that most of them cannot be classified simply as an idiomatic expression or set phrase, so that they provide language learners with information not usually found in marketed dictionaries. On the surface, the list may just look like a miscellaneous assortment of arbitrary word patterns, but a closer look will reveal that it is a very useful collection of information concerning the lexical items (verbs, nouns, adjectives, prepositions) with which a given word commonly collocates and, in the case of a noun, which article is commonly used or which of the two forms, plural or singular, appears more often. This kind of information is particularly important for Japanese learners of English because they are often confused about how to properly use articles, singular/plural forms, or how to find common collocates or natural expressions.

Owing to the nature of the computer analysis, related items sharing the same form are classified as one word, so that no distinction is made between the verb form *study* and the noun form *study*. In addition, homographs are not differentiated and are treated as one word. However, in some cases, the collocates shown in the tables should provide some information concerning the part of speech of a given item, which may help in the identification of any homographs that appear. Furthermore, some of the data shown in the tables may look redundant, but we believe that such redundancy will not be a hindrance in the exploration of the meaning of a particular lexical item. Instead, it may help language learners to deepen their understanding. For example, in the case of articles and prepositions, which habitually present great problems for nonnative writers in terms of their interpretation and use, grammatical explanations are often inadequate in helping them to avoid erroneous decisions in the selection of a correct article or appropriate preposition in their writing. We have therefore intentionally included instances of articles and prepositions with each entry word. By examining the various samples of articles and prepositions appearing in the tables, language learners may come to recognize their proper uses and confirm their understanding.

How to Read the List

The format is explained by using the following sample list:

	English	Japanese	Frq.	PubM_ID	Sample
	implication*	意味	2,854		
	implication	意味	152		
	implications	意味	2,702		
Note	複数形で使われることが圧倒的に多い。訳語は便宜上「意味」を使用…				
1	the implications	意味	414		
2	an implication	意味	8		
3	implications for	～のための意味	1,599	11499504	This approach should have significant future <implications for> dental research.
4	implications for the development of	～の開発のための意味	59	10725728	This neonatal immune bias has important <implications for the development of> vaccine …
:	:	:	:	:	:
17	have @2 implications for	～のための意味を持つ	918	10199733	The findings <have potential implications for> islet transplantation as well as …

1st Column: (Note) The information given here is based on the analysis of the LSD Corpus and collocational patterns of the entry word, and is expected to help learners of English to gain insight into a given word. This is meant primarily for Japanese learners and is therefore written in Japanese in order to make it more accessible for them.

1st Column: (1, 2, 3 ...) A number is given to each entry in sequence.

2nd Column: (English) In the uppermost line(s) above **Note**, a head word and its related form(s) of word(s) are given. The asterisk mark (*) stands for a lemma, or a head word. The at-mark sign (@) followed by a number stands for the maximum number of words that can be inserted.

3rd Column: (Japanese) The Japanese equivalent or translation is given.

4th Column: (Frq.) Frq. stands for the frequency of each entry.

5th Column: (PubM_ID) PubM_ID stands for the ID number of the accompanying sample sentence, by means of which the original abstract can be identified on the PubMed (<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed>).

6th Column: (Sample) This column shows a sample sentence for the entry collocation. In some cases, no samples are shown when a similar entry contains a sample sentence from which readers can easily infer a sentence or expression containing the entry collocation.

It is hoped that the following statistical analysis of the LSD corpus will assist Japanese researchers in gaining further information concerning common collocations for frequently used words in the life sciences. Furthermore, crude as the information listed in the tables may appear at first glance, we trust that this paper will be well received by Japanese researchers because of its special distinction in providing information on word frequencies relating to words appearing immediately before or after a given lexical item. In this paper, we present the statistical data as they are, hoping that such first-hand information will help to facilitate the acquisition of common expressions relating to each word.

From the initial stages of data collection, we have aimed at making the best use of corpus analysis to help Japanese researchers in writing academic papers in English. So far, we have succeeded in producing the previously mentioned electronic dictionary as well as gathering useful sample sentences and concordances. Because of space limitations, we are unable to include in this particular paper each and every word we have analyzed. We are, however, planning to publish further reports in the same format as part of an ongoing series.

In the meantime, we hope that the lists of collocations introduced here in this paper will help bring about better technical English writing among Japanese researchers, and ultimately pave the way to the publication of an innovative and practical book on common collocational patterns in English after all the lists have been unified and completed. Finally, in providing a Japanese translation for each English word or expression, we have made every possible effort to ensure accuracy. However, we cannot be certain that the translations are completely free from error because of the specialized character and complexity of the various life science disciplines. There may therefore be some minor discrepancies that evaded our scrutiny and in such cases we sincerely ask for our readers' indulgence, and would be grateful if they would inform us of any shortcomings that they may find.

Collocation of *addition*

English	Japanese	Frq.	PubM ID	Sample
addition*	添加	19,527		
addition	添加	19,398		
additions	添加	129		
Note in addition, in addition to, addition of の用例が多い。直前の前置詞として upon (～するとすぐ) の頻度が高いのが特徴。				
1 addition of	～の添加	4,999	11401973	<Addition of> exogenous LPS to the lpxA strain only partially restored cytokine production and did not restore IL-12 production.
2 the addition of	～の添加	2,250	9920948	<The addition of> etanercept to methotrexate therapy resulted in rapid and sustained improvement.
3 the addition of a	～の添加	178	11053147	Inclusion of an alpha-helix tends to rigidify peptides and so-called building blocks of the structure, whereas <the addition of a> beta-structure has less effect.
4 the addition of the	～の添加	163	11752017	<The addition of the> LRR fusion protein to cells in culture resulted in a significant dose-dependent reduction in the rate of proliferation.
5 the addition of exogenous	外来性の～の添加	70	11416204	This consumption modulates inhibition of cytochrome c oxidase by NO and is enhanced by <the addition of exogenous> membranes.
6 the addition of recombinant	組換え型の～の添加	37	10426384	<The addition of recombinant> IGF-1 to nondiabetic NOD-MC resulted in a decrease in MMP-2 and TIMP activity.
7 by the addition of	～の添加によって	613	10092652	When aggregation was inhibited <by the addition of> an E-cadherin-blocking antibody, apoptosis increased synergistically.
8 with the addition of	～の添加と	97	11917116	The rearrangements were primarily translocations or events resulting in deletion of a portion of a chromosome arm along <with the addition of> a new telomere.
9 after the addition of	～の添加の後	79	10077589	Within 5 min <after the addition of> estradiol, most of the eNOS translocates from the membrane to intracellular sites close to the nucleus.
10 upon the addition of	～の添加の直後に	65	11544208	The DnaK K70A protein, in contrast, does not release the peptide <upon the addition of> ATP.
11 to the addition of	～の添加に～	50	11983865	In vivo and in vitro analyses indicate that disulfide bond formation in CrtJ is insensitive <to the addition of> hydrogen peroxide but is sensitive to molecular oxygen.
12 without the addition, of	～の添加なしに	34	11294652	When subjected to assembly-promoting conditions, this tubulin formed microtubules <without the addition of> any exogenous protein.
13 by addition of	～の添加によって	365	11134005	This competitive inhibition is rescued <by addition of> ACF, suggesting that GRY-RBP binds to and sequesters ACF.
14 upon addition of	～を添加するとすぐに	166	11466371	<Upon addition of> exogenous N-formylated peptides, M3 trafficks rapidly to the cell surface.
15 after addition of	～の添加の後	86	10537291	<After addition of> the deuterium-labeled internal standard to urine, N-OH-MeIQx-N2-glucuronide was isolated using solid-phase extraction and immunoaffinity separation.
16 on addition of	～の添加の直後に	42	12058065	<On addition of> ligand, AhR rapidly translocates to the nucleus and accumulates in multiple bright foci.
17 exogenous addition of	～の外来性の添加	30	12377764	Recently, it has been shown that the <exogenous addition of> hydrogen peroxide (H ₂ O ₂) increases endothelial nitric oxide (NO(.)) production.
18 in addition	加えて	13,541	10490619	<In addition>, we demonstrate that a single IE protein, IE2, is critical for the induction of illb.

Collocation of addition		Sample
English	Japanese	PubM_ID
19 in addition to	～に加えて	10562336
20 in addition to the	～に加えて	12106671
21 in addition to its	その～に加えて	11359769
22 in addition to a	～に加えて	12167672
23 in addition to their	それらの～に加えて	10851055
24 in addition to being	～であることに加えて	12471116
25 in addition to providing	～を提供することに加えて	9547235
26 in addition, the	加えて	9647640
27 in addition, we	加えて、我々は	9628723
28 in addition, a	加えて	10987308
29 in addition, these	加えて、これらの～は	10521658
30 in addition, this	加えて、これは	10597256
31 in addition, there	加えて、	12019158
32 in addition, there was	加えて、～があった	10484950
33 in addition, it	加えて、それは～	10617574
34 in addition, our	加えて、我々の～	12538657
35 in addition, in	加えて、～において	10942382
36 in addition, two	加えて、2つの～	12493752
37 in addition, both	加えて、両方の～	11503141
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<i>Collocation of addition</i>				
English	Japanese	Frq.	PubM_ID	Sample
38 in addition, expression	加えて、発現は～	56	12196484	<In addition, expression> of Pax-3, a gene encoding a transcription factor required for neural tube development, is significantly decreased.

English	Japanese	Frq.	PubM_ID	Sample
analysis*	解析、分析	41,221		
analysis	解析、分析	34,231		
analyses	解析、分析	6,990		
Note 共起する動詞は、reveal, show の頻度が高い。直後の前置詞は of が圧倒的に多い。				
1 the analysis	解析	1,381	12588888	<The analysis> reveals that alphaV132L markedly impairs ACh binding to receptors in the resting closed state, decreasing binding affinity for the second binding step 30-fold, but attenuates gating efficiency only about twofold.
2 an analysis	解析	529	11554722	<An analysis> of interactions between two proteins and/or peptides is also illustrated using two examples.
3 our analysis	我々の解析	422	10887081	<Our analysis> indicates that dDP is required for several essential processes during oogenesis.
4 analysis of	～の解析	14,330	11579105	Although <analysis of> gene maps and exon structures allows tentative assignments of mouse-human Siglec ortholog pairs, the possibility of unequal genetic recombination makes the assignments inconclusive.
5 analysis of gene expression	遺伝子発現の解析	161	10779467	Tissue <analysis of gene expression> with cDNA microarrays provides a measure of transcriptional or posttranscriptional regulation and cellular recruitment.
6 analysis of variance	分散分析	170	11546964	Univariate and multivariate <analysis of variance> were performed to analyze independent risk factors for development of decubitus ulcers; p <.05.
7 analysis of the data	データの解析	54		
8 analyses of	～の解析	1,862	11134315	<Analyses of> viral DNA synthesis in HEp-2 cells indicated that apoptosis prevention by HSV-1 requires that the infection proceeds to the stage in which viral DNA replication takes place.
9 the analysis of	～の解析	938	9989687	Recently, <the analysis of> dietary patterns has emerged as a possible approach to examining diet-disease relations.
10 an analysis of	～の解析	464	11255018	<An analysis of> the genomic structure of the human SOX6 gene revealed 16 exons.
11 analysis of @3 in	～における～の解析	1,055	11221858	Recent <analysis of genetic alterations in> human cancer points to a major role for selection in neoplastic development but provides few details about the dynamics of the process.
12 analysis of @2 by	～による～の解析	171	12413877	The <analysis of the data by> this model suggested the existence of at least two distinct subpopulations of cells with different proliferative activity.
13 analysis of @3 for	～に対する～の解析	203	12525640	These studies demonstrate the power of genome-based <analysis of retroviral insertion sites for> cancer gene discovery, identify several new genes worth examining for a role in human cancer, and implicate the pathways in which those genes act in lymphomagenesis.
14 analysis in	～における解析	449		
15 analyses in	～における解析	104	10631181	Expression <analyses in> wild-type mice revealed two major classes of Bmpr1B transcripts.
16 analysis with	～による解析	398	10640356	<Analysis with> a mathematical model suggests that diluting cDNA libraries with other plasmids without the SV40 origin should improve the detection of COS cells expressing target cDNAs.
17 analysis by	～による解析	298	11972349	Our model illustrates how minimization of heteroduplex molecules before cloning may reduce artificial genetic diversity detected during sequence <analysis by> clone screening.
18 analysis for	～の解析	207	11452362	We performed a genomewide <analysis for> linkage in a family with 10 individuals affected by chordoma.

Collocation of analysis

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English	Japanese	Frg.	PubM_ID	Sample
19 analysis on	～に関する解析	132	10817567	Tyrosine phosphorylation was studied by Western blot <analysis on> PB monocyte lysates in the presence of signaling inhibitors.
20 analysis at	～における解析	95	9554951	Changes in gene expression were analyzed by Northern <analysis at> different time points following injury.
21 analysis to	～するための解析	564		
22 analysis to identify	～を同定するため の解析	61	12053174	We used microarray <analysis to identify> a genetic program for myocardial apoptosis in Gq-mediated and pressure-overload cardiac hypertrophy.
23 analysis to determine	～を決定するため の解析	43	10523664	We carried out a genetic <analysis to determine> the regions of Sisl required to perform its key function(s).
24 for analysis	解析のため	319	9708532	Twelve experiments had complete sets of data <for analysis>.
25 for analysis of	～の解析のため	168	10857748	An effective method <for analysis of> gene expression is through differential display.
26 for the analysis of	～の解析のため	244	11994530	These data have important implications <for the analysis of> (18)F-FDG signals in vivo.
27 by analysis of	～の解析によって	242	11428460	Normal variation in repeat size was determined <by analysis of> more than 600 DNA samples from seven human populations.
28 of analysis	解析の～	129	12528122	At the time <of analysis>, 48 of the 58 patients (83%) were still enrolled in the study; 43 of them (74%) had completed 2 years of treatment.
29 analysis revealed	解析は、～を明らか にした	1,517	12074553	Single-neuron <analysis revealed> that Flamingo did not affect the general dendritic branching patterns in postmitotic neurons.
30 analysis revealed that	解析は、～であるこ とを明らかにした	913	12397105	This <analysis revealed that> the expression of a subset of ventral telencephalic markers, including Dlx2 and Gsh2, although greatly diminished, persist in Shh(-/-) mutants, and that these same markers were expanded in Gli3(-/-) mutants.
31 analyses revealed	解析は、～を明らか にした	324	9737554	Sex-specific <analyses revealed> a greater impact of smoking among men mainly due to a higher prevalence of past smoking.
32 analyses revealed that	解析は、～であるこ とを明らかにした	206	11918709	Immunohistochemical <analyses revealed that> the human vitamin D receptor was highly expressed in the basal layer of the epidermis and outer root sheath of the hair follicle.
33 analysis showed	解析は、～を示し た	1,182	11222548	Immunoblot <analysis showed> a high expression of bFGF in the treated retinas even 2 months after treatment.
34 analysis showed that	解析は～ということ を示した	849	9722587	Moreover, protein immunoblotting <analysis showed that> CPT-I, as well as the inner CPT-II, was localized in the mitoplast fraction.
35 analyses showed	解析は、～を示し た	263	10024556	Furthermore, Southern blotting and PCR <analyses showed> a restricted distribution of this locus in laboratory and clinical isolates of this bacterium.
36 analyses showed that	解析は～ということ を示した	198	10380885	Cell cycle <analyses showed that> the presence of p53 was associated with loss of the G1 and S cells to apoptosis after irradiation.
37 analysis was	解析は、～であつ た	887	11536597	Thus, the actual time needed for <analysis was> about 1 min per assay.
38 analysis was performed	解析が行われた	299	10910074	A retrospective <analysis was performed> on 54 patients who underwent surgery for squamous cell cancers of the larynx.
39 analysis was used to	分析が、～のため に使われた	185	11481274	Western <analysis was used to> assess extracellular signal-related kinase (ERK) and cAMP response element-binding protein (CREB) in cell lysates.

Collocation of analysis

English	Japanese	Frq.	PubM_ID	Sample
40 analysis demonstrated that	解析は～ということ を裏証した	403	11063983	Northern blot <analysis demonstrated that> the expression of neuronal nNOS mRNA was significantly reduced in the colonic tissues in aged rats.
41 analysis indicated that	解析は～ということ を示した	432	10887194	Sequence <analysis indicated that> the protease is encoded by a previously unidentified gene, falcipain-2.
42 analysis indicates that	解析は、～を示す	352	9604865	Finally, cytokine <analysis indicates that> these CD4+ regulatory T-cells have a T-helper 2 phenotype.
43 analyses indicate that	解析は、～を示す	188	10551886	Immunoblot <analyses indicate that> APT1 is expressed in bovine aortic endothelial cells, which express eNOS.
44 analysis identified	解析は、～を同定 する	301	12072453	This <analysis identified> five regions that are required for efficient gamma-ray damage repair or mitotic recombination.
45 analysis shows that	解析は～ということ を示す	245	10913176	Our biochemical <analysis shows that> p53 prevents the interaction between SL1 and UBF.
46 analysis suggests that	解析は、～であるこ とを示唆する	234	9573279	Deletion <analysis suggests that> the WPRE consists of three independent subelements.
47 analyses suggest that	解析は、～を示す	137	10880486	Biochemical and cell culture <analyses suggest that> Rho signal transduction regulates the activity of myosin.
48 analysis reveals that	解析は、～を明ら かにする	168	11842161	Sequence <analysis reveals that> FQR1 belongs to a family of flavin mononucleotide-binding quinone reductases.
49 analysis is	解析は、～である	239	10698963	We show here that an evolutionary <analysis is> a key to understanding the biology of a housekeeping gene.
50 analysis confirmed	解析は、～を確認 した	224	12651895	Sequence <analysis confirmed> chromosome circularization and revealed the insertion of adventitious DNA between joined chromosome ends.
51 analysis demonstrates that	解析は～ということ を裏証する	132	11759004	Immunohistochemical <analysis demonstrates that> Alk8 is expressed in developing zebrafish and mouse teeth.
52 analyses demonstrated	解析は、～を明ら かにした	152	11823429	Genetic <analyses demonstrated> that Krox20 is required for activity of the Hoxb3 r5 enhancer, but not of the Hoxa3 r5/6 enhancer.
53 analysis using	～を使う解析	459	11753648	Immunohistochemistry <analysis using> affinity purified L552S polyclonal antibodies demonstrated specific nuclear staining in 10 of 12 lung adenocarcinoma samples.
54 analyses using	～を使う解析	109	9671381	Western blot <analyses using> a polyclonal anti-human SP-A antibody demonstrated that SNAP also decreased SP-A peptide expression.
55 analysis that	～である解析	133	10933154	These findings were reinforced by an <analysis that> was restricted to living donor transplants without acute rejection.
56 blot analysis	プロット解析	2,060	11238589	Increased GRbeta mRNA expression in neutrophils at baseline, and after IL-8 exposure, was observed using RNA dot <blot analysis>.
57 Western blot analysis	ウェスタンプロット 解析	1,060	11418684	<Western blot analysis> demonstrated that mPCES protein was induced by IL-1beta, and maximum expression was sustained for up to 72 h.

Collocation of analysis

4/6

English	Japanese	Frq.	PubM ID	Sample
58 Northern blot analysis	ノザンブロット解析	667	10827153	<Northern blot analysis> revealed increased expression of bax-alpha messenger RNA (mRNA) in IFN-tau-treated lambs (P <.01) compared with control lambs, consistent with the expression pattern for bax-alpha protein.
59 Southern blot analysis	サザンブロット解析	193	9602122	Genomic <Southern blot analysis> indicates that the rabbit eIF2C is a single copy gene.
60 blot analyses	ブロット解析	346	9628030	Transcripts of three of these genes can be detected in healthy plants by RNA gel <blot analyses>.
61 blot analysis of	〜のブロット解析	315	10552930	Northern <blot analysis of> 35 tissues showed that a 2.7-kb INMT mRNA species was expressed in most tissues.
62 blot analyses of	〜のブロット解析	53	11083858	Western <blot analyses of> APC inactivation of homocysteine-modified factor Va are consistent with the results of clotting assays.
63 blot analysis showed that	ブロット解析は〜と いうことを示した	128	11481281	Northern <blot analysis showed that> both genes are expressed in multiple tissues, including the retina.
64 blot analysis revealed that	ブロット解析は、〜 ということを示した	100	10852716	Western <blot analysis revealed that> the receptor alpha-subunit was not present in the beta-X complex.
65 sequence analysis	シーケンス解析	1,573	9733696	DNA <sequence analysis> of the region immediately upstream of btgA revealed three sets of inverted repeats, potentially locating the orf1 region.
66 sequence analysis of	〜のシーケンス 解析	642	9696046	Nucleotide <sequence analysis of> clone 5K-1 revealed that it represents a variant transcript of EPHB2 (EPHB2v).
67 sequence analyses	シーケンス解析	154	9687065	DNA and RNA hybridizations and <sequence analyses> indicate that we have isolated cDNAs representing 13 genes.
68 sequence analyses of	〜のシーケンス 解析	55	9746580	DNA and derived amino acid <sequence analyses of> HifD and HifE confirmed the uniqueness of the RFLP types.
69 DNA sequence analysis	DNAシーケンス 解析	144	9949211	<DNA sequence analysis> of 66 low-risk a1 alleles revealed no evidence for hypermutation.
70 sequence analysis revealed	シーケンス解析 は、〜を明らかにし	158	12215486	<Sequence analysis revealed> high homology to a partial cDNA termed modulator recognition factor 2 (Mrf2).
71 regression analysis	回帰分析	497	9804140	A logistic <regression analysis> was used to determine functions of disease probability.
72 regression analyses	回帰分析	188	10845580	<Regression analyses> were performed on the three major proteoglycan peaks to identify age-related changes in scleral proteoglycan composition.
73 PCR analysis	PCR解析	414		
74 PCR analysis of	〜のPCR解析	131	9548500	On day 4 post-PPD bead challenge, <PCR analysis of> the whole lung revealed that NOS II expression appeared to be similar in both of the L-NAME treatment protocols.
75 immunoblot analysis	イムノブロット解析	388	11294622	<Immunoblot analysis> showed that PIPKII alpha was present in anti-PY immunoprecipitates from phosphorylated ROS but not from nonphosphorylated controls.
76 linkage analysis	連鎖分析	375	10631146	Genetic <linkage analysis> excluded known loci, and a novel locus was identified on chromosome 10p12-p14.
77 deletion analysis	欠失解析	348	9882668	Through <deletion analysis> of the upstream region, we have determined the minimal promoter region necessary for aniA expression.

Collocation of analysis

English	Japanese	Freq.	PubM_ID	Sample
78 Northern analysis	ノザン解析	322	11094073	<Northern analysis> shows that Vav3 has a broad tissue expression profile that is distinct from those of Vav and Vav2.
79 mutational analysis	変異解析	546	10411727	We have investigated the regulation of sigmaE through a transcriptional and <mutational analysis of> sigE and the surrounding genes.
80 mutational analysis of	～の変異解析	233	12221117	To analyze the role of ARF in GGA protein localization and function, we performed <mutational analyses> of both human and yeast GGAs.
81 mutational analyses	変異解析	124	12221117	To analyze the role of ARF in GGA protein localization and function, we performed <mutational analyses> of both human and yeast GGAs.
82 genetic analysis	遺伝解析	536	11408621	This fly model may allow a <genetic analysis of> the cellular mechanisms underlying tau
83 genetic analysis of	～の遺伝解析	239	11408621	This fly model may allow a <genetic analysis of> the cellular mechanisms underlying tau
84 genetic analyses	遺伝解析	161	12297633	<Genetic analyses> indicated that bell segregates as a single recessive mutation, and complementation tests showed that the two mutants are not allelic.
85 multivariate analysis	多変量解析	455	10809261	<Multivariate analysis> demonstrated a strong, independent association between cerebrospinal fluid IL-8 and mortality (p = .01).
86 multivariate analyses	多変量解析	154	12393746	<Multivariate analyses> confirmed the major contribution of cytogenetics to the probability of attaining CR, CIR, and OS.
87 kinetic analysis	動力学的な解析	443		
88 kinetic analysis of	～の動力学的な解析	203	10564508	A <kinetic analysis of> bacterial growth in L2 cell monolayers showed that each of the TIER mutants was defective with respect to long-term intracellular proliferation and viability.
89 kinetic analyses	動力学的な解析	145	9784542	<Kinetic analyses> of the antibody production to individual antigens during infection revealed that the heterogeneous antigen recognition profile changed markedly in a given infected animal as disease progressed.
90 kinetic analyses of	～の動力学的な解析	51		
91 further analysis	さらなる解析	400	10364319	<Further analysis> suggested that in vivo a corepressor interacts with EBNA3C in this DNA binding complex.
92 further analysis of	～のさらなる解析	175	11113180	<Further analysis of> Ptc1 function in vivo showed that it inactivates the MAPK, Hog1, but not the MEK, Pbs2.
93 phylogenetic analysis	系統学的解析	371	9696756	<Phylogenetic analysis> shows that the cores from eight known elements fall into three subfamilies, RhsA-B-C-F, RhsD-E, and RhsG-H.
94 phylogenetic analysis of	～の系統学的な解析	158	11673438	<Phylogenetic analysis of> cyanobacterial group 2 sigma factor sequences revealed that they fall into several subgroups.
95 phylogenetic analyses	系統学的解析	160	9694671	<Phylogenetic analyses> demonstrated a significant (P < 0.0001) association between strains of a given RFLP lineage with those of a given MLEE lineage.
96 phylogenetic analyses of	～の系統学的な解析	56	11343221	<Phylogenetic analyses of> these HIV-1 RT and PR sequences indicated epidemiological linkage.
97 functional analysis	機能解析	306	12242016	<Functional analysis> suggested that exon 11 promoter activity was most evident in neuronal-like cells.
98 functional analysis of	～の機能的解析	199	11017087	To address these questions, we performed a <functional analysis of> human ABCR and its variants.

Collocation of analysis

6/6

	English	Japanese	Frq.	PubM_ID	Sample
99	quantitative analysis	定量的解析	272	12651959	Identifying neurons and their spatial coordinates in images of the cerebral cortex is a necessary step in the <quantitative analysis> of spatial organization in the brain.
100	quantitative analysis of	～の定量的解析	199	11875046	We developed a cell culture system which enables the <quantitative analysis of> the effects of molecular chaperones on the biochemical properties of an expanded repeat AR.
101	detailed analysis	詳細な解析	267	11498796	We carried out a <detailed analysis> in Caski cells, that are derived from HPV-containing cervical cancer tissues.
102	detailed analysis of	～の詳細な解析	219	11294868	These results reveal several previously unknown effects on the host cell and lay the foundation for <detailed analysis of> their role in the host-pathogen interaction.
103	immunohistochemical analysis	免疫組織解析	259	10845579	<Immunohistochemical analysis> of glucocorticoid and mineralocorticoid receptors using monoclonal antibodies was carried out on rat eye tissue sections.
104	image analysis	イメージ分析	234	12355500	Computerized <image analysis> revealed that expression of OPG significantly protected against bone collagen loss.
105	biochemical analysis	生化学的分析	229	12226757	<Biochemical analysis> indicates that these defects are attributable to a combination of inefficient signal propagation between Ras and Raf within the ERK pathway and increased tonic deactivation by MAP kinase phosphatases.
106	biochemical analyses	生化学的分析	135	10729356	<Biochemical analyses> show the association of calretinin with the membrane is detergent-soluble and calcium-independent.
107	microarray analysis	マイクロアレイ分析	219	11080288	Using DNA <microarray analysis> we observed increased expression among the type III GSTs after inducer treatment of maize shoots, with different genes responding to different treatments.
108	expression analysis	発現解析	219	11231903	<Expression analysis> of the mutant cDNA indicates that this mutation inactivates the enzyme.
109	structural analysis	構造解析	196	12473121	Detailed <structural analysis> has revealed possible molecular mechanisms that determine the different stabilities of the five proteins.
110	statistical analysis	統計的解析	191	11376249	<Statistical analysis> was performed to determine the variables influencing cuff retention.
111	cytometric analysis	細胞数の測定解析	188	10438856	Flow <cytometric analysis> revealed that the gammaHV68 RCA protein was expressed on the surfaces of infected cells.
112	western analysis	ウェスタンブロット解析	186	11146057	<Western analysis> revealed that the hyperglycemia-induced intraneuronal overexpression of beta-APP was not associated with an overall increase in tissue levels.
113	comparative analysis	比較分析	186	11814685	<Comparative analysis> suggests that the second binding site may have been maintained for an important function in vivo.
114	comparative analysis of	～の比較分析	140	10087204	<Comparative analysis of> the human and mouse genomes indicates that the KHSRP gene is located in regions of conserved synteny between the two species.
115	hybridization analysis	ハイブリダイゼーション分析	180	11481330	In situ <hybridization analysis> revealed distinct expression patterns of FF1 and FF2 in the rat central nervous system.
116	molecular analysis	分子分析	178	10783393	<Molecular analysis> revealed that LdNT2 is present as a single gene copy within the leishmanial genome and encodes a single transcript of 3 kilobase pairs.

Collocation of *hypothesis*

	English	Japanese	Freq.	PubM_ID	Sample
	hypothesis*	仮説	7,504		
	hypothesis	仮説	6,862		
	hypotheses	仮説	642		
Note	共起する動詞としては、support, test の頻度が顕著に高い。				
1	hypothesis that	～という仮説	4,010	15064138	These findings support the <hypothesis that> NPY contribute to, but not be critical for, the nutritional inhibition of sexual receptivity.
2	the hypothesis that	～という仮説	3,734	12557125	Our data lend additional support to <the hypothesis that> PATRR-mediated genomic instability can lead to a variety of translocations.
3	the hypothesis that the	～という仮説	625	15081360	Together, these data support <the hypothesis that the> small cohort of Ap-let interneurons regulates larval ecdysis behavior by secretion of an unidentified amidated peptide(s).
4	support the hypothesis that	～という仮説を支持する	819	15060061	These results <support the hypothesis that> polycystin-1 is a surface membrane receptor that transduces the signal via changes in ionic currents.
5	these results support the hypothesis that	これらの結果は、～という仮説を支持する	136	15111326	All <these results support the hypothesis that> myopodin functions as a tumor suppressor gene to limit the growth and to inhibit the metastasis of cancer cells.
6	our results support the hypothesis that	われわれの結果は、～という仮説を支持する	41	15340068	Altogether, <our results support the hypothesis that> p62 may act as a critical ubiquitin chain-targeting factor that shuttles substrates for proteasomal degradation.
7	the results support the hypothesis that	結果は、～という仮説を支持する	36	15479817	<The results support the hypothesis that> CTL-driven selection has been a major factor in the long-term evolution of HIV-1.
8	these data support the hypothesis that	これらのデータは、～という仮説を支持する	140	15292208	Together, <these data support the hypothesis that> the increased Src activity observed in some pancreatic and colorectal cancers is due, in part, to the co-expression of CCK2i4svR.
9	these findings support the hypothesis that	これらの知見は、～という仮説を支持する	70	12543622	<These findings support the hypothesis that> ferrous and possibly other metal fumes reversibly predispose to infectious pneumonia.
10	strongly support the hypothesis that	～という仮説を強く支持する	29	15326314	These observations <strongly support the hypothesis that> MPO promotes HDL oxidation in the human artery wall.
11	tested the hypothesis that	～という仮説を検証した	800	12600886	This study <tested the hypothesis that> cathepsin S (Cat S) contributes to angiogenesis.
12	we tested the hypothesis that	我々は、～という仮説を検証した	582	15314163	Thus, <we tested the hypothesis that> CDK4 may be one of the critical downstream genes involved in Myc carcinogenesis.
13	this study tested the hypothesis that	この研究は、～という仮説を検証した	72	15155686	<This study tested the hypothesis that> CD4+ T cells specific for MSP2 recognize naturally processed epitopes conserved in MSP3.
14	we have tested the hypothesis that	我々は、～という仮説を検証した	36	14556946	<We have tested the hypothesis that> 8-10 Hz tremor is present in the digits of subjects following a complete nerve lesion.

Collocation of hypothesis

2/4

English	Japanese	Freq.	PubM_ID	Sample
15 to test the hypothesis that	~という仮説を検証すること	511	11112143	<To test the hypothesis that> rhinovirus (RV)-induced immune responses influence the outcome of RV infections, we inoculated 22 subjects with allergic rhinitis or asthma with RV16.
16 of this study was to test the hypothesis that	この研究の~は、~という仮説を検証することで	25	15364844	Therefore, the purpose <of this study was to test the hypothesis that> recurrent MR in patients after ring annuloplasty relates to continued LV remodeling.
17 study was designed to test the hypothesis that	研究は、~という仮説を検証された	19	15470212	The <study was designed to test the hypothesis that> the less invasive strategy, stenting, was not inferior to endarterectomy.
18 we test the hypothesis that	我々は、~という仮説を検証す	49	15263060	Here, <we test the hypothesis that> antisense peptide nucleic acid (PNA) and locked nucleic acid (LNA) oligomers can bind key IRES sequences and block translation.
19 consistent with the hypothesis that	~という仮説と一致している	365	15258163	These data are <consistent with the hypothesis that> CAP, Cbl iso-forms, and CrklI are not required components of insulin signaling to GLUT4 transporters.
20 are consistent with the hypothesis that	~という仮説と一致している	232	15286710	These findings <are consistent with the hypothesis that> distinct expression pathways are operative in these opposing phenotypic end points.
21 results are consistent with the hypothesis that	結果は、~という仮説と一致している	94	14507597	These <results are consistent with the hypothesis that> past, but not recent, multivitamin use may be associated with modestly reduced risk of colorectal cancer.
22 data are consistent with the hypothesis that	データは、~という仮説と一致している	68	11273842	These <data are consistent with the hypothesis that> all methods of estimating body fat work better in children with larger amounts of body fat.
23 to the hypothesis that	~という仮説へ	139	15186779	This led <to the hypothesis that> survival signals from the BCR are vital for mature B cells.
24 led to the hypothesis that	~という仮説につながった	67	12506194	This finding <led to the hypothesis that> these regions constitute a network supporting a default mode of brain function.
25 support to the hypothesis that	~という仮説に対する支持	29	12629170	The results lend <support to the hypothesis that> glial cells play an active role in information processing in the CNS.
26 supports the hypothesis that	~という仮説を支持する	123	14697516	This <supports the hypothesis that> the expression sites of these important immunogenic proteins are derived from a common precursor with later divergent evolution along genus lines.
27 supporting the hypothesis that	~という仮説を支持している	99	14742544	A monoclonal antibody recognizing COWP8 specifically localized to the C. parvum oocyst wall, <supporting the hypothesis that> multiple COWPs play a role in the oocyst wall structure.
28 support for the hypothesis that	~という仮説に対する支持	62	12195362	These findings provide additional <support for the hypothesis that> human and bovine C. parvum genotypes may be separate species.
29 we investigated the hypothesis that	我々は、~という仮説を精査した	34	14742645	<We investigated the hypothesis that> cells with high energy consumption are most susceptible to blue-light-induced mitochondrial inhibition.
30 we examined the hypothesis that	我々は、~という仮説を調べた	35	15486316	In this study, <we examined the hypothesis that> epidermal growth factor receptor (EGFR) transactivation and extracellular regulated kinases (ERK) are involved in alpha1-adrenoceptor-mediated SMC growth.
31 study tests the hypothesis that	研究は、~という仮説を検証す	29	15026352	This <study tests the hypothesis that> fluence rate also influences the inflammatory responses associated with PDT.

Collocation of hypothesis

3/4

English	Japanese	Frq.	PubM_ID	Sample
32 hypothesis of	～の仮説	181	15451369	The <hypothesis of> the present study was that synaptic dysfunction occurs following CA and that this precedes cell death.
33 the hypothesis of	～の仮説	97	14973485	Here we report a genetic approach to test <the hypothesis of> heterokaryosis in AM fungi.
34 hypothesis for	～の仮説	100	11820811	Our data thus provide the foundation for a new <hypothesis for> Shh function in hypaxial skeletal muscle development.
35 hypothesis in	～における仮説	88	15069206	We tested this <hypothesis in> an antigen (ovalbumin)-driven murine model of asthma.
36 hypothesis to	～する仮説	32	15567856	One <hypothesis to> explain these observations is seismic reverberation after impact events.
37 hypothesis is	仮説は、～である	242	15469967	One recent <hypothesis is> that endocytosis of the ligand Delta by the signaling cells is essential for Notch activation in the receiving cells.
38 hypothesis is that	仮説は、～という	104	15345558	Our <hypothesis is that> the two heads have distinct functional properties, which are tuned to maximize the performance of the wild-type heterodimer.
39 this hypothesis is	この仮説は、～である	86	15501223	<This hypothesis is> consistent with the fact that eggs progressing down the oviduct initially show evidence of allurin being incorporated into the J1 layer.
40 this hypothesis	この仮説	1,555	12509471	In support of <this hypothesis>, mitochondrial structural abnormalities were observed in adrenal cortical cells of ALD mice.
41 to test this hypothesis	この仮説を検証するために	590	10906187	<To test this hypothesis>, L929 cells were infected with Newcastle disease virus (NDV), which led to the induction of IL-15 mRNA and protein expression.
42 to test this hypothesis, we	この仮説を検証するために、我々は～	341	12161655	<To test this hypothesis, we> created mice that lack the three known betaARs (beta-less mice).
43 tested this hypothesis	この仮説を検証した	139	15071597	We <tested this hypothesis> by introducing an epidermal-specific Ikka (also known as Chuk) transgene into IKK-alpha-deficient mice.
44 tested this hypothesis by	～によってこの仮説をテストした	74	14673114	We <tested this hypothesis by> transferring lice among hosts of different sizes to simulate host switches.
45 tested this hypothesis in	～におけるこの仮説を検証した	32	12438444	We <tested this hypothesis in> mice by generating Map-deficient SA (Map(-)SA) and comparing disease outcome to wild-type Map(+)-SA-infected mice.
46 we tested this hypothesis	～我々は、この仮説を検証した	93	15451780	Accordingly, <we tested this hypothesis> by investigating whether microvessels in the tunica media, the base of the plaque, and the fibrous cap are increased in ruptured atherosclerotic plaques in human aorta.
47 we tested this hypothesis by	～我々は、～によってこの仮説を検証した	48	11889469	<We tested this hypothesis by> ablating the gene encoding the copper chaperone for SOD1 (CCS) in a series of FALS-linked SOD1 mutant mice.
48 this hypothesis by	～によるこの仮説	122	14583494	We tested <this hypothesis by> evaluating the ability of HCT116 colon carcinoma cell lines, which differ in MMR proficiency, to be radiosensitized by dFdCyd.
49 of this hypothesis	この仮説の～	113	15312646	A key prediction <of this hypothesis> is that individuals with face recognition impairments will also have impairments with other categories that control subjects have expertise with.
50 in support of this hypothesis	この仮説を支持するように	62	15342598	<In support of this hypothesis>, our lab previously identified an interaction between RhaS residue D241 and sigma70 residue R599.

Collocation of *hypothesis*

4/4

English	Japanese	Frg.	PubM_ID	Sample
51 consistent with this hypothesis	この仮説と一致している	81	15184662	<Consistent with this hypothesis>, we report that MxB is expressed without IFN treatment.
52 our hypothesis	我々の仮説	188	15096599	Together, these results support <our hypothesis> that the Rh1 protein is a bidirectional channel for the gas CO(2).
53 our hypothesis that	〜という我々の仮説	83	15304656	These data strongly support <our hypothesis that> mouse ES cells can be accelerated to differentiate into CM by NO treatment.
54 support our hypothesis that	〜という我々の仮説を支持する	31	15289337	These results <support our hypothesis that> metastatic potential of prostate cancer cells correlates with expression of proangiogenic factors.
55 a hypothesis	仮説	127	12798689	These results led to <a hypothesis> that the downfield resonance represents the proton (H(epsilon 2) of H48) involved in the H-bonding between D99 and H48, in analogy with serine proteases.
56 a hypothesis that	〜という仮説	58	11535637	These data support <a hypothesis that> the primary role of pTalpha is to stabilize the pre-TCR, and that much of the conserved structure of pTalpha probably plays a critical regulatory role.
57 the null hypothesis	帰無仮説	41	12651720	This suggests that the known difference among previous tests is mainly due to <the null hypothesis> considered.
58 one hypothesis	一つの仮説	43	14645205	<One hypothesis> to explain this outcome is that mutant PS alters the specificity of gamma-secretase to favor production of Abeta42 at the expense of Abeta40.
59 working hypothesis	作業仮説	36	15065127	Our <working hypothesis> is that deficiency in the supply of the NAA-derived acetate leads to inadequate lipid/myelin synthesis during development, resulting in CD.

1/2

Collocation of *identification*

English	Japanese	Frq.	PubM_ID	Sample
identification*	同定	5,092		
identification	同定	5,047		
identifications	同定	45		
Note	直後の前置詞は of が圧倒的に多い。共起する動詞は、report, describe, facilitate, allow などの頻度が高い。			
1 the identification	同定	2,608		
2 an identification	同定	10		
3 identification of	～の同定	3,886		
4 the identification of	～の同定	2,201		
5 the identification of a novel	新規の～の同定	68	11567055	Here we report <the identification of a novel> astrocyte-derived migration-inducing activity (MIA).
6 the identification of a new	新しい～の同定	36	11320207	Activation tagging of a weak <i>bril-5</i> resulted in <the identification of a new> locus, <i>brs1-1D</i> .
7 identification of two	2つの～の同定	98		
8 the identification of two	2つの～の同定	81	9545261	We report <the identification of two> novel families of odorant receptor (OdR)-like proteins, termed spermatid chemoreceptors (SCRs), in rat spermatids of the
9 identification of genes	遺伝子の同定	83	10029630	Rapid progress is being made in the <identification of genes> regulating gastrointestinal development.
10 identification of novel	新規の～の同定	57		
11 the identification of novel	新規の～の同定	37		
12 identification of proteins	タンパク質の同定	43	11158611	The <identification of proteins> such as Cap1 that associate with the inclusion membrane will be required to fully understand the interaction of <i>C. trachomatis</i> with its host cell.
13 identification of several	いくつかの～の同定	37		
14 identification of specific	特異的な～の同定	37	11027136	This is the first direct <identification of specific> amino acids in the RA-binding site of CRABPs by photoaffinity labeling.
15 identification of new	新しい～の同定	33		
16 the identification and characterization of	～の同定と特徴づけ	183	11278614	We describe here <the identification and characterization of> a novel member of the IL-1 family, IL-1HY2.
17 the identification and cloning of	～の同定とクローニング	23		
18 detection and identification of	～の検出と同定	23		
19 we report the identification of	我々は、～の同定を報告する	268	11553562	In this study, <we report the identification of> a new gene, <i>iraA</i> (iron-responsive element).
20 we report here the identification of	我々は、ここに～の同定を報告する	58	10801890	<We report here the identification of> four isoforms of ATPase II in bovine brain.
21 we describe the identification of	我々は、～の同定について述べる	63	12374749	Here, <we describe the identification of> an HMG1-like protein SSRP1 as a co-activator of p63.

Collocation of identification

2/2

English	Japanese	Frq.	PubM_ID	Sample
22 facilitate the identification of	～の同定を容易する	45	11237009	The complete human genome sequence will <facilitate the identification of> all genes that contribute to disease.
23 allowed the identification of	～の同定を可能にした	41	12054858	This <allowed the identification of> amino acid residues involved in binding to F and to EDP208 pili.
24 allowed identification of	～同定を可能にした	35		
25 to the identification of	…の同定に～	296		
26 to identification of	…の同定に～	42		
27 led to the identification of	～の同定に至った	191	9819424	This strategy <led to the identification of> HCRs that alter gene expression in response to oxidative or mitogenic stress.
28 led to identification of	～の同定に至った	21		
29 in the identification of	…の同定における～	169	11090193	These proteins might be useful tools <in the identification of> new disease-causing mutations as well as for screening compounds for therapeutic efficacy.
30 in identification of	…の同定における～	27		
31 resulted in the identification of	～の同定という結果になった	71	11601855	Screening <resulted in the identification of> several novel sequences that appear to mediate helix-helix interactions.
32 for the identification of	…の同定のための～	207	11595177	This work shows that mRNA differential display is an important tool <for the identification of> metabolic genes in prokaryotes.
33 for identification of	…の同定にとって～	121		
34 method for the identification of	～の同定の方法	22		
35 by the identification of	…の同定によって～	40	11438157	Immunogenetic analysis of disease susceptibility has been encouraged <by the identification of> strong HLA associations with several diseases of uncertain cause.
36 on the identification of	…の同定に関する～	36	10929128	These findings have important implications for studies <on the identification of> symplasmic domains and host macromolecule vascular transport.
37 rapid identification of	～の迅速な同定	51	10593985	Given the conserved nature of the cell death pathway, this genetic screen can be used for <rapid identification of> novel inhibitors of apoptosis from diverse
38 recent identification of	～の最近の同定	49	9665995	Epidemiologic evidence and the <recent identification of> herpesvirus-like DNA sequences in patients with KS have suggested a role for viral agents in the etiopathogenesis of this disease.
39 first identification of	～の最初の同定	49		
40 molecular identification of	～の分子同定	23		
41 gene identification	遺伝子同定	64		
42 protein identification	タンパク質同定	58		
43 identification by	～による同定	40		

English	Japanese	Frq.	PubM ID	Sample
level	レベル	51,774		
level	レベル	14,523		
levels	レベル	37,228		
leveling	水平にする	12		
leveled	水平にされる	11		
Note	levels ofの用例が多い。			
1 the level	レベル	3,628		
2 the levels	レベル	1,871		
3 a level	レベル	351		
4 levels of	～のレベル	16,116		
5 the levels of	～のレベル	1,685	9570541	In young homozygous ali/ali animals, <the levels of> a2 molecules found in the serum increase with age.
6 high levels of	高いレベルの～	2,283	9579400	However, in the mature retina, <high levels of> SNAP-25-IR were no longer observed in the ChAT-IR amacrine cells.
7 low levels of	低いレベルの～	920	10581259	Additionally, a rapid TSE transmission was demonstrated despite extremely <low levels of> disease-associated PrP.
8 higher levels of	より高いレベルの～	758	11292738	<Higher levels of> infection in HC-treated SCID mice, but not HC-treated WT mice, were associated with extensive infection and destruction of parenchymal cells at the margins of granulomas.
9 lower levels of	より低いレベルの～	334	11447224	Dopaminergic neurons have intrinsically <lower levels of> superoxide than nondopaminergic neurons.
10 normal levels of	正常なレベルの～	255	11463836	We found, however, that the enhancer is not necessary for <normal levels of> rRNA synthesis from chromosomal rDNA or for cell growth.
11 similar levels of	同じようなレベルの～	184	10523617	Both NK T cells and conventional T cells express <similar levels of> Lck, implying that Fyn and Lck have distinct roles in regulating NK T cell ontogeny.
12 different levels of	異なるレベルの～	180	10200306	By using these techniques, the oxygen tension was mapped at <different levels of> the GI tract from the stomach to the rectum.
13 steady-state levels of	定常状態レベルの～	221	10684867	Overexpression of IDE in mammalian cells markedly reduced the <steady-state levels of> extracellular Abeta(40) and Abeta(42), and the catalytic site mutation (E111Q) abolished this effect.
14 elevated levels of	上昇したレベルの～	647	10712557	This in turn results in <elevated levels of> the enzyme ascorbic acid oxidase (AAO), resulting in a reduction of ascorbic acid (AA) within the QC and mitotic quiescence.
15 increased levels of	上昇したレベルの～	633		
16 reduced levels of	減少したレベルの～	387	10995443	The alpha-Syn(-/-) mice show no evidence of myopathy, despite <reduced levels of> alpha-dystrobrevin-2.

English	Japanese	Frq.	PubM_ID	Sample
17 decreased levels of	減少したレベルの～	198	10644370	Despite <decreased levels of> acute virus replication, M1.LacZ established a latent infection comparable to wild-type (wt) gammaHV68, but exhibited an approximately fivefold increase in efficiency of reactivation from latency.
18 expression levels of	～の発現レベル	323	11292846	We have analyzed <expression levels of> the hHcsA gene in HeLa cells during various phases of the cell cycle using in situ hybridization analysis.
19 serum levels of	～の血清レベル	271	10323440	Low <serum levels of> 25-vitamin D may be associated with incident changes of radiographic hip OA characterized by joint space narrowing.
20 plasma levels of	～の血漿レベル	243	11104792	These mice have increased <plasma levels of> the peptide acetyl-SDKP, a possible stem cell suppressor.
21 mRNA levels of	～のメッセージジャーRNAレベル	186	11545713	Interestingly, the <mRNA levels of> this gene in various tissues are so low that the cDNA has eluded detection by standard library screening approaches.
22 protein levels of	～のタンパク質レベル	159	10594044	In rat cerebellar granule neurons, mRNA and <protein levels of> the NR2A and NR2C subunits of the NMDA receptor increase during the second postnatal week.
23 levels of expression	発現レベル	320	11259613	Several chemotherapeutic agents target topoisomerase II and <levels of expression> are an important factor in chemosensitivity.
24 levels in	～におけるレベル	3,546	11809807	Reduction of RhoH <levels in> T cells augments the response to Rac activation.
25 high levels in	～における高いレベル	354	11604136	In the embryo, slit-1 is expressed at <high levels in> anterior epidermis.
26 mRNA levels in	～におけるメッセージジャーRNAレベル	273	11527957	Retinal VEGF <mRNA levels in> 1-week diabetic animals were 3.2-fold higher than in nondiabetic controls (P < 0.0001).
27 protein levels in	～におけるタンパク質レベル	175	12097404	<Protein levels in> lung and BAL were also determined by ELISA.
28 low levels in	～における低いレベル	172	12406579	These were expressed at <low levels in> mouse and human cells.
29 levels by	～によってレベルを～した	465	10938126	These polyphosphates could be reduced below their natural <levels by> aberrant expression in the cytosol of a truncated Minpp1 lacking its ER-targeting N terminus.
30 levels for	～の～レベル	277	11067866	Endogenous <levels for> all markers were decreased 7 days after injury and returned to nearly control levels by 14 days.
31 mRNA levels for	～のメッセージジャーRNAレベル	93	10536259	In the pituitary, the <mRNA levels for> angiotensinogen (AGT) were increased by 45% following estrogen administration.
32 levels at	～における～レベル	242	11724771	The serum mineral complex reaches maximal <levels at> 6 h after subcutaneous injection of
33 levels during	～の間のレベル	176	11759859	Increased hormone <levels during> pregnancy can contribute to increased gingival inflammation.
34 levels after	～のあとのレベル	155	10561095	These data have provided the rationale for surgeons to perform a more extensive lymphadenectomy at the time of initial thyroidectomy and to consider reoperative cervical lymphadenectomy in patients with persistently elevated calcitonin <levels after> thyroidectomy.
35 levels on	～におけるレベル	132	10393925	Moreover, PSI appeared in high <levels on> the surface of lamellipodia upon adhesion of the cells to a collagen matrix.

English	Japanese	Frg.	PubM_ID	Sample
36 to levels	～であるレベルへ	320	10400766	In contrast, PE38 mutants with alanine substitutions for conserved cysteine residues (C109 or C138) of the RING finger motif were able to increase IE1-induced apoptosis <to levels> equivalent to those of wild-type PE38.
37 at levels	～であるレベルで	320	12297098	Surprisingly, APC1 function in embryos occurs <at levels> of expression nearly too low to detect.
38 in levels of	～のレベルの～	193	10891963	The majority of women reported no change/favorable effects <in levels of> emotional stability (68%/23%), level of stress (58%/28%), self-esteem (69%/13%), sexual relationships (73%/4%), and feelings of femininity (67%/8%).
39 levels were	～のレベルは～であった	2,238	10428734	Average final hemoglobin A1c <levels were> 6.5% in the metformin group and 7.6% in the placebo group (difference, 11%).
40 levels were significantly	～のレベルは有意に～であった	175	10722598	Interestingly, anti-Bordetella serum immunoglobulin M (IgM) <levels were significantly> lower in animals infected with RB63 than in animals infected with wild-type B. bronchiseptica at 10 days postinoculation.
41 levels were measured	～のレベルが測定された	111	9791111	mRNA <levels were measured> in vivo for each promoter under strongly activating conditions.
42 levels were increased	～のレベルが上昇した	111	10846094	In contrast, the cytokine and chemokine <levels were increased> in the brains of mice infected with HK/483 but not HK/486.
43 levels were elevated	～のレベルが上昇した	101		
44 mRNA levels were	メッセンジャーRNAレベルは～であった	282	11413193	ET-1 <mRNA levels were> unchanged in wild-type mice throughout the hyperoxia treatment, suggesting that ET-1 mRNA expression is not regulated by the increase in inspired
45 protein levels were	タンパク質レベルは～だった	186	10194154	Total <protein levels were> higher in the RSV group (median 0.49 mg/ml; range 0.13 to 2.46 mg/ml versus median 0.36 mg/ml; range 0.07 to 1.65 mg/ml, p = 0.0079).
46 levels are	～のレベルは～である	686	11739957	Excess glucocorticoids produce visceral obesity and diabetes, but circulating glucocorticoid <levels are> normal in typical obesity.
47 level was	～のレベルは～であった	304	11157089	C-Fos expression at the lumbar laminae I-II <level was> significantly reduced, whereas it was significantly greater in the raphe magnus and pallidus nuclei in the double stimulation situation in wild-type compared with NK1-/- mice.
48 level is	～のレベルは～である	165	9545027	Such mechanical tuning at the molecular <level is> the result of mechanical coupling between individual cross-bridges, mediated by thick filament deformations, and the resultant realignment of binding sites on the thin filament.
49 levels increased	レベルは上昇した	229	12597751	The proportion of all patients with adequate hemoglobin <levels increased> 3-fold.
50 levels that	～であるレベル	209	11278891	Its production is regulated by numerous stimuli including ischemia and hypoxia, and the enhanced <levels that> occur during myocardial ischemia may contribute to the progression of heart failure.
51 high levels	高いレベル	2,913	12453463	It is expressed at <high levels> during early oogenesis, but no detectable vasa RNA and little Vasa protein are present in mature unlaid eggs.

Collocation of level

English	Japanese	Frg.	PubM_ID	Sample
52 low levels	低いレベル	1,337	11923243	Substantial keratocyte activation and <low levels> of cellular apoptosis occur 1 week after human corneal transplantation.
53 higher levels	より高いレベル	981	10961868	The CR rate was significantly associated with <higher levels> of asparaginase (P = .012).
54 lower levels	より低いレベル	519	9548511	High levels of TCA4 mRNA are expressed in thymus; <lower levels> of message are found in spleen, heart, and kidney.
55 normal levels	正常レベル	419	12562941	Thus, a 5 day euglycaemic recovery period from chronic hypoglycaemia reestablished GSIS to <normal levels>, but there was a persistent reduction of beta-cell responsiveness to glucose and arginine.
56 basal levels	基礎レベル	284	9574544	The dramatic decrease in high <basal levels> of NF-kappaB/Rel activity induced by anti-IgM treatment led to cell death.
57 highest levels	最高レベル	241	11035772	The <highest levels> of batrachotoxins were generally present in the contour feathers of belly, breast, or legs in Pitohui dichrous, Pitohui kiriocephalus, and Ifrita kowaldi.
58 molecular level	分子レベル	293	12464638	Although several auxin biosynthetic pathways have been proposed, none of these pathways has been precisely defined at the <molecular level>.
59 similar levels	同じようなレベル	269	12145324	By 12 months of age, PDAPP, clusterin(-/-) mice had <similar levels> of brain Abeta deposition as did PDAPP, clusterin(+/-) mice.
60 transcriptional level	転写レベル	252	9573193	Acid shock induction of PhoP appears to occur at the <transcriptional level> and requires the PhoPQ system.
61 detectable levels	検出可能レベル	209	9647237	Our results demonstrate that IL-4 does not induce <detectable levels> of germline gamma1 or epsilon transcripts in STAT6-deficient B cells.
62 different levels	異なるレベル	224	9547251	Stimulation at <different levels> in the CNS was used to determine the site of reorganization.
63 significant levels	かなりのレベル	169	11263775	Additionally, IL-1beta induced <significant levels> of collagenase (matrix metalloproteinase 1 [MMP-1]) within 4 hours, and this was sustained over a period of 48 hours.
64 undetectable levels	検出不可能なレベル	169	9637500	Both DPPI mRNA and granzyme A mRNA expression in CD8+ T cells decreased to very low or <undetectable levels> during the first 48 h after allostimulation in MLCs.
65 mRNA levels	メッセンジャー-RNAレベル	1,833	11940647	Nrf2 <mRNA levels> increased approximately 2-fold 6 h after D3T treatment.
66 protein levels	タンパク質レベル	1,457	12665522	Moreover, DIM inhibited endogenous PSA transcription and reduced intracellular and secreted PSA <protein levels> induced by DHT in LNCaP cells.
67 expression levels	発現レベル	870	12483536	Despite the complete loss of caspase-3, the <expression levels> of other caspases, such as caspase-8 and caspase-9, were normal in all of the tumor samples studied.
68 transcript levels	転写物のレベル	314	10594119	Moreover, we show that the O2 protein is not involved in the regulation of its own <transcript levels>.
69 serum levels	血清レベル	322	12413480	The patients tested had preexisting <serum levels> of anti-adenoviral antibodies.
70 plasma levels	血漿レベル	318	11044427	We hypothesized that <plasma levels> of C-reactive protein (CRP) and interleukin-6 (IL-6), markers for systemic inflammation, would correlate with cardiac transplant graft survival.
71 glucose levels	グルコースレベル	255	12513038	Fasting <glucose levels> increased significantly among women assigned to placebo but did not change among women receiving hormone therapy.

English	Japanese	Frg.	PubM_ID	Sample
72 cholesterol levels	コレステロールレベル	244	9632729	APP gene-targeted mice lacking apoE, also have high serum <cholesterol levels> but do not show alterations in APP processing, suggesting that effects of cholesterol on APP processing require the presence of apoE.
73 control levels	コントロールレベル	221	9546380	This activity remained elevated for 12 hours but had decreased to <control levels> by day 1.
74 cAMP levels	cAMPレベル	220	12194441	Thus, the inhibition is not attributable to elevated <cAMP levels>.
75 baseline levels	ベースラインレベル	165	11861294	<Baseline levels> of SOCS-2 were significantly higher in BCR-ABL-positive as compared with BCR-ABL-negative cell lines.
76 antibody levels	抗体レベル	159	11015381	Furthermore, the borreliaecidal <antibody levels> correlated with the severity of B. burgdorferi infection.
77 elevated @4 levels	上昇したレベルの～ ～レベルを上昇させた	1,305	10845620	<Elevated glutamate levels> can also lead to a perturbation in glutamate receptors.
78 with elevated @4 levels	上昇した～レベルと	119	11158210	Similar protein changes have recently been associated <with elevated aldosterone levels> in rats.
79 increased @4 levels	上昇した～レベルの～ ～レベルを上昇させた	1,598	11500462	<Increased levels> of IL-1 were first detected 8 h after infection with gonococci, suggesting that the earlier IL-8 and IL-6 responses were not mediated through the IL-1 signaling
80 reduced @4 levels	減少した～レベルの～ ～レベルを減少させた	853	12209006	EP treatment significantly <reduced circulating levels> of HMGB1 in animals with established endotoxemia or sepsis.
81 expressed at @3 levels	～レベルで発現した～	629	11973645	Since EAR-2, COUP-TFI, and RARgamma are <expressed at high levels>, it is likely that S1 is a negative regulatory element that suppresses aromatase promoters 1.3 and II in normal breast tissue.
82 expressed at @3 levels in	～において～レベルで 発現した～	380	10884342	All six genes are <expressed at higher levels in> young adults of long-lived daf mutant strains than in normal-longevity controls, suggesting that increased expression of these genes may play a protective function, thus favoring survival in diverse contexts.
83 is expressed at @3 levels in	～において～レベルで 発現する	160	10096568	It <is expressed at low levels in> a few blood vessels, infiltrating mononuclear cells in the skin and colon, and at moderate levels in skin melanocytes.
84 expressed @3 levels of	～レベルの～を発現した ～	346	10187828	Parental and CEM/Mtx-1 cells <expressed identical levels of> the 3.1-kilobase RFC transcript.
85 decreased @4 levels	減少した～レベルの～ ～レベルを減少させた	573	10506588	The <decreased KBP levels> were confirmed by Western blot analysis.
86 induced @4 levels	誘導された～レベルの～ ～レベルを誘導した	343	12632435	TTS alone <induced collagen levels> in normal fibroblasts to the levels observed in SSC skin fibroblasts, thereby diminishing the hallmark difference in basal collagen levels in these cell types.
87 associated with @3 levels of	～レベルの～と関連した ～	203	10400770	Transient increases in viral load during continued therapy were <associated with increases in the levels of> virus-specific CTLs in both individuals.
88 wild-type levels	野生型レベル	338	10975820	However, if B7-1 was induced on the stimulating cells then CTL generation was restored to <wild-type levels>.
89 high-level expression	高いレベルの発現	190	10989033	Results showed <high-level expression> in SMCs at various embryonic time points and in adult tissues.

Collocation of level

6/6

English	Japanese	Frq.	PubM_ID	Sample
90 at the level of	～のレベルで	942	11063740	NFAT family members appear to be regulated primarily <at the level of> their subcellular localization.
91 in the level of	～のレベルにおいて	348	10438865	There was not, however, an increase <in the level of> viral replication in the brain.
92 in the levels of	～のレベルにおいて	287	12477853	HTNV-infected cells treated with ribavirin showed a slight reduction <in the levels of> cRNA, viral RNA, and mRNA populations on the first day postinfection.
93 to the level of	～のレベルに	127		
94 with the level of	～のレベルと	94	11978767	Disease severity increases <with the level of> expression of the expanded protein and the size of the repeat.
95 of the level of	～のレベルの	81	10068631	Manipulation <of the level of> GDNF, in vitro or in vivo, suggested that this defect was due to insufficient rather than excessive RET signaling.
96 on the level of	～のレベルに	80	12134150	In contrast, the density of introns in a gene does not strongly depend <on the level of> gene expression.
97 levels of @2 in	～における～のレベル		10772795	In this study we have used a novel fusion assay based on intracristronic complementation of lacZ, in combination with fluorescent X-gal histochemistry and immunocytochemistry to assess <levels of NCAM expression in> individual muscle cells.
99 at @2 levels	高い～レベルで		11691807	On human multiple-tissue Northern blot analysis, mRNAs for both claudin-3 and claudin-4 were expressed <at high levels> in prostate tissue.
100 to @2 levels	高い～レベルに		10535887	With initiation of interferon therapy, serum aminotransferase levels decreased to normal range, became abnormal again when the dose was reduced, and increased <to pretreatment levels> when therapy was stopped.
101 in @1 levels	高い～レベルに		12588887	However, there was no change <in the levels> of angiogenic growth factors in comparison to tumors grown in wild-type mice, although there was a statistically significant difference in total vascular area.
102 the level of	～のレベル		10716325	In particular, the parameter r, proportional to <the level of> resistance of the tumors, was obtained.

Collocation of production

English	Japanese	Frg.	PubM ID	Sample
production*	産生	13,765		
production	産生	13,758		
productions	産生	7		
Note 通常不可算名詞として使われる。production ofの用例が多い。				
1 the production	産生	2,267		
2 production of	～の産生	4,756	11313376	Development of T cell defects in tumor-bearing hosts are often associated with increased <production of> immature myeloid cells.
3 the production of	～の産生	2,123	9892692	Insulin stimulates <the production of> leptin, thereby establishing an adipoinular axis.
4 production of IFN-gamma	IFN-γの産生	140	10191226	These data suggest that elevated <production of IFN-gamma>, as part of a carefully regulated cytokine network, is important in the control of PM.
5 the production of IFN-gamma	IFN-γの産生	43		
6 production of NO	一酸化窒素の産生	128	10506488	<Production of NO> from coronary arterioles was significantly increased by adenosine.
7 production of NO in	～における一酸化窒素の産生	32		
8 the production of NO	一酸化窒素の産生	38		
9 in the production of	～の産生における～	346		
10 resulted in the production of	～の産生という結果になつた	43	11067856	Expression of either CoFADX-1 or CoFADX-2 in somatic soybean embryos <resulted in the production of> calendic acid.
11 involved in the production of	～の産生に関係した	32	11331380	These results suggest that activation of 5-HT(3) receptors may be <involved in the production of> CO.
12 increase in the production of	～の産生の上昇	24		
13 in production	産生における～	101	9696768	We have determined that exoZ mutants, which are blocked in the acetylation of succinoglycan, exhibit an increase <in production> of LMW succinoglycan.
14 in production of	～の産生における～	85	11786423	Although cardiac myosin is known to produce myocarditis in susceptible animals, it has never been investigated for its role <in production of> valvular heart disease, the most serious sequelae of group A streptococcal infection in acute rheumatic fever.
15 for the production of	～の産生にとって～	242	11259601	elit-1 is expressed in precursor cells and is essential <for the production of> most hypodermal cells (22).
16 required for the production of	～の産生に必要である	37	10586081	Using these animals, we show that LTA4 hydrolase is <required for the production of> LTB4 in an in vivo inflammatory response.
17 responsible for the production of	～の産生の原因である	32	12084730	The enzyme(s) <responsible for the production of> inositol hexakisphosphate (InsP(6)) in vertebrate cells are unknown.
18 for production of	～の産生にとって～	102	9557646	We found that the Pol protein is dispensable <for production of> extracellular particles containing viral nucleic acid.

Collocation of production

2/4

English	Japanese	Frq.	PubM ID	Sample
19 to the production of	～の産生に～	129	11009612	RuvC is a Holliday junction resolvase that cleaves the helical strands at a symmetric sequence, leading <to the production of> two recombinant molecules.
20 leads to the production of	～の産生につながる	31	9920656	Importantly, the signaling response elicited by beta-amyloid and prion fibrils <leads to the production of> neurotoxic products.
21 to production of	～の産生に～	38		
22 on the production of	～の産生における～	58	11490015	Understanding the influence of Tau-C1 <on the production of> inflammatory mediators by alveolar macrophages provides an opportunity for determining the mechanism of Tau-C1 action.
23 with the production of	～の産生と～	50	10377109	Genetic resistance and susceptibility to experimental Lyme arthritis have been linked <with the production of> interleukin-4 (IL-4) or gamma interferon (IFN-gamma), respectively.
24 with production of	～の産生と～	40		
25 by the production of	～の産生よって～	46	10428261	We have previously reported that the early phases of the immune response of rats to hamster xenografts are characterized <by the production of> IgM xenoantibodies encoded by a restricted group of Ig germline V(H) genes (V(H)HAR family).
26 of the production of	～の産生の～	30		
27 of production	産生の～	70	9531574	We have developed an in vitro model <of production> of human RBCs from normal CD34(+) hematopoietic progenitor cells, using recombinant growth factors to promote terminal RBC differentiation.
28 of production of	～の産生の～	40	11313267	T cells from tolerant mice showed impaired proliferative responses after stimulation with rVIII in vitro and lack <of production of> the cytokines interleukin-2 (IL-2), IL-4, interferon gamma, and IL-10.
29 increased production of	上昇した～の産生	178	9927382	We conclude that antigen challenge in atopic subjects causes <increased production of> fibronectin by airway cells and speculate that this response may contribute to airway remodeling in allergic inflammation.
30 -induced production of	～に誘導された～の産生	63	12456657	The LPS-<induced production of> TNF-alpha and IL-6 is suppressed in MAPKAP-K2-deficient mice (a kinase activated by SAPK2a/p38).
31 enhanced production of	増強された～の産生	42	12228301	Cells from indomethacin-treated mice also exhibit <enhanced production of> gamma interferon (IFN-gamma) following in vitro stimulation with IL-12.
32 decreased production of	減少した～の産生	39		
33 local production of	～の局所の産生	43		
34 production in	～における産生	1,179	12414801	We have previously shown that colonic epithelial cells are a major site of MIP-3alpha <production in> human colon and that enterocyte MIP-3alpha protein levels are elevated in inflammatory bowel disease.
35 production in response to	～に応じた産生	85	10708161	The ability to maintain and enhance tissue GSH may be of particular importance in controlling cytokine <production in response to> a stimulus like injury.

Collocation of production

3/4

English	Japanese	Frg.	PubM ID	Sample
36 production in vivo	生体内での産生	54	10553052	These results indicate that NK cells are involved in the induction of Ag-specific IgG2a <production in vivo>.
37 production in vitro	試験管内での産生	50	10438938	We have developed a means to block TNF-alpha production with ribozymes directed against TNF-alpha mRNA to selectively inhibit its <production in vitro> and in vivo.
38 production by	～による産生	925	10903740	We and others have demonstrated that the Stat4 is critical for IFN-gamma <production by> activated T cells and Th1 cells.
39 production by macrophages	マクロファージによる産生	25		
40 production from	～からの産生	137	11489778	We hypothesized that increased NO <production from> iNOS expression causes myocardial dysfunction and results in higher mortality after MI.
41 production with	～による産生	66	10577640	The half-life of free virions can be estimated by inhibiting virion <production with> antiretroviral agents and modelling the resulting decline in plasma HIV-1 RNA.
42 production during	～の間の産生	62	10377083	We hypothesized that either angiotensin II or ET-1 may increase vascular O2- <production during> nitrate therapy.
43 production at	～における産生	62	10359808	Gelatinase B-deficient mice failed to show IL-10 <production at> the site of CHS, an essential feature of resolution in control mice.
44 production was	産生は、～であった	484	11729238	Free radical <production was> elevated by ischemia-reperfusion but was significantly lower in SOD-treated animals.
45 production is	産生は、～である	280	9600852	NifR3 is increased at least fivefold upon nitrogen limitation whereas NtrC <production is> constitutive.
46 cytokine production	サイトカイン/産生	685		
47 cytokine production by	～によるサイトカイン/産生	94	10623851	Inosine inhibited <cytokine production by> a posttranscriptional mechanism.
48 cytokine production in	～におけるサイトカイン産生	78	11222392	These observations raise the possibility of autocrine or paracrine <cytokine production in> the pathogenesis of human CML.
49 of cytokine production	サイトカイン産生の～	64	11083779	To determine the kinetics <of cytokine production> by THP-1 cells, we stimulated them with L-OspA and also with heat-killed B. burgdorferi cells (HBb) and lipopolysaccharide (LPS).
50 IFN-gamma production	IFN-gammaの産生	533	11069239	Decreased antigen-specific <IFN-gamma production> may enhance the susceptibility of HIV-1-infected women to C. trachomatis PID.
51 IFN-gamma production by	～によるIFN-gammaの産生	110	10202045	In contrast, <IFN-gamma production by> splenic cells isolated from treated IL-2-/- TNP-OVA-immunized mice was significantly higher than in untreated mice.
52 IFN-gamma production in	～におけるIFN-gammaの産生	67	10749577	MIP-1alpha deficiency profoundly decreased resistance to MCMV and was associated with dramatically reduced NK cell accumulation and <IFN-gamma production in> liver.
53 of IFN-gamma production	IFN-gammaの産生の～	46		
54 -induced IFN-gamma production	～に誘導されたIFN-gammaの産生	25		

Collocation of production

English	Japanese	Frq.	PubM ID	Sample
55 NO production	一酸化窒素産生	571		
56 NO production in	～における一酸化窒素産生	85	10414975	However, gp41-treated microglia released a factor(s) that triggered iNOS mRNA expression and <NO production in> astrocytes.
57 NO production by	～による一酸化窒素産生	62	10948137	Furthermore, a lipid fraction of B. bovis-infected erythrocytes stimulated iNOS expression and <NO production by> Mphi.
58 of NO production	一酸化窒素産生の～	79	9663485	Cultures of specific areas of cartilage from ACLT knees showed high levels <of NO production> in the medial femoral and medial tibial cartilage.
59 -induced NO production	～に誘導された一酸化窒素産生	31		
60 increased NO production	上昇した一酸化窒素産生	25		
61 TNF-alpha production	TNF-α産生	230		
62 TNF-alpha production by	～によるTNF-α産生	36	10605004	In fact, IFN-gamma and <TNF-alpha production by> Ag-specific T cells was enhanced in both the B7-1 and B7-2-deficient NOD mice.
63 TNF-alpha production in	～におけるTNF-α産生	36	10358198	We examined the effects of LPS and ethanol on p38 activation and the corresponding IL-8 and <TNF-alpha production in> human mononuclear cells.
64 of TNF-alpha production	TNF-α産生の～	30	10415078	Disease amelioration at disease onset was associated with suppression <of TNF-alpha production>.
65 superoxide production	スーパーオキシライド産生	165	12595345	Dihydroethidium staining showed that Ang II elicited losartan- and TEMPOL-sensitive <superoxide production> in arterioles.
66 superoxide production in	～におけるスーパーオキシライド産生	27		
67 glucose production	グルコース産生	169	11872674	Epinephrine increases <glucose production>, lipolysis, and peripheral insulin resistance as well as blood flow and glucose delivery.
68 endogenous glucose production	内在性のグルコース産生	49		
69 hepatic glucose production	肝臓のグルコース産生	43		
70 protein production	タンパク質産生	155	10484765	These results provide evidence that the DM mutation acts in cis to reduce <protein production> (consistent with DMPK haploinsufficiency) and in trans as a 'riboregulator' to inhibit myogenesis.
71 protein production in	～におけるタンパク質産生	21		
72 cAMP production	cAMP産生	108	11238280	This effect is most likely caused by A(2A)-receptor-mediated stimulation of <cAMP production>.
73 cAMP production in	～におけるcAMP産生	20		
74 stimulated cAMP production	刺激されたcAMP産生	24		
75 nitric oxide production	一酸化窒素産生	108	11382730	Simvastatin therapy also significantly increased vascular <nitric oxide production> in apoE(-/-) mice.
78 production of @2 in	～における～の産生	12196457		Nutrient secretagogues can increase the <production of succinyl-CoA in> rat pancreatic islets.

English	Japanese	Frq.	PubM_ID	Sample
risk*	リスク/危険(度)	14,979		
risk	リスク/危険(度)	14,128		
risks	リスク/危険(度)	851		
Note 直前の形容詞は、high, relative が頻出。直後の前置詞は、of が圧倒的に多いが、for も多数ある。at risk for/of(〜のリスクのある)は必修熟語。				
1 risk of	〜のリスク	4,437	9673299	The subjects were observed for two seasons during which the <risk of> transmission of Lyme disease was high.
2 risk of death	死の危険	227	11532780	The <risk of death> from natural causes remained lower among Gulf veterans compared with non-Gulf veterans.
3 risk of developing	〜を発症する危険	221	10328073	Our data suggest that long-term exercise decreases the atherogenic activity of blood mononuclear cells in persons at <risk of developing> ischemic heart disease.
4 risk of breast cancer	乳ガンの危険	102	12023992	Salpingo-oophorectomy in carriers of BRCA mutations can decrease the <risk of breast cancer> and BRCA-related gynecologic cancer.
5 risk of cardiovascular disease	心臓血管疾患の危険	70	12628952	Rheumatoid arthritis may be associated with an increased <risk of cardiovascular disease>.
6 risk of coronary	冠動脈〜の危険	91	11583751	Previous studies have suggested that circulating concentrations of soluble adhesion molecules are useful predictors of <risk of coronary> heart disease
7 risk of coronary heart disease	冠動脈心疾患の危険	52	10449696	Several markers of hemostatic function and inflammation have been associated with increased <risk of coronary heart disease>, but prospective evidence for their role in ischemic stroke is scant.
8 risk of mortality	死亡のリスク	74	10637197	Patients with both normal epicardial flow (TIMI grade 3 flow) and normal tissue level perfusion (TMP grade 3) have an extremely low <risk of mortality>.
9 the risk of	〜の危険	1,540	11509056	Physical activity appears to decrease <the risk of> pancreatic cancer, especially among those who are overweight.
10 increase the risk of	〜の危険を上昇させる	129	11352254	Declines in the ability to engage in recreational activities and social interactions appear to significantly <increase the risk of> new depressive symptoms.
11 reduce the risk of	〜のリスクを低下させる	119	11157315	A high intake of fish may <reduce the risk of> AMD.
12 in the risk of	〜の危険において	110	10890612	There is a presumed increase <in the risk of> ventilator-associated pneumonia (VAP) with tube feeding.
13 with the risk of	〜のリスクと	73	12456850	The toenail mercury level was directly associated <with the risk of> myocardial infarction, and the adipose-tissue DHA level was inversely associated with the
14 of the risk of	〜の危険の	53	10708414	Information of this sort will help in the assessment <of the risk of> spread of virulent polioviruses from long-term excretors and in the design of therapies to stop long-term excretion.

Collocation of risk

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English	Japanese	Freq.	PubM_ID	Sample
15 to the risk of	～の危険に	48	11682361	Previous studies have examined the relation of endogenous estrogen levels or estrogen replacement therapy <to the risk of> poor cognitive function, but results have been inconclusive.
16 on the risk of	～のリスクに対する	44	11136684	In the present prospective study with a different patient cohort, we evaluated the effect of pathogen burden <on the risk of> myocardial infarction (MI) or death among CAD patients.
17 at risk of	～のリスクのある	100	12393398	In the current study, we develop a new rapid diagnostic and subtyping FA assay amenable for screening broad populations <at risk of> FA.
18 with risk of	～の危険と	85	12197996	Intake of refined grains was not significantly associated <with risk of> type 2
19 in risk of	～の危険において	56	10695600	However, among men with prostate cancer, SES-associated differences appear to explain almost all of the racial difference <in risk of> death from other causes.
20 decrease the risk of	～のリスクを低下させる	27		
21 increased risk of	上昇した～のリスク	836	10201537	PJS patients are at <increased risk of> benign and malignant tumors, particularly of the colon, breast, pancreas, testis, and ovary, although the increased risk for any one of these sites may be quite modest.
22 an increased risk of	上昇した～のリスク	359	10775524	Rearrangements of the acrocentric chromosomes (Robertsonian translocations and isochromosomes) are associated with <an increased risk of> aneuploidy.
23 with increased risk of	上昇した～のリスクと	109	10801754	However, whether elevations of TNF-alpha in the stable phase after myocardial ischemia (MI) are associated <with increased risk of> recurrent coronary events is
24 at increased risk of	上昇した～のリスクのある	98	11237848	In addition, neither homozygotes nor heterozygotes for any NRAMF1 variants were <at increased risk of> typhoid fever.
25 significantly increased risk of	有意に上昇した～のリスク	45	9753337	MMF use does not appear to be associated with an <significantly increased risk of> infection occurring after liver transplantation and is associated with fewer episodes of acute rejection.
26 the increased risk of	上昇した～のリスク	37	10811596	The pattern of racial differences during cold stress raises the possibility that both myocardial and vasoconstrictive mechanisms may contribute to <the increased risk of> hypertension in blacks.
27 reduced risk of	減少した～のリスク	99	11705562	Dietary vitamin D supplementation is associated with <reduced risk of> type 1 diabetes in animals.
28 a reduced risk of	減少した～のリスク	57	12413371	Women who used HRT had <a reduced risk of> AD (26 cases among 1066 women) compared with non-HRT users (58 cases among 800 women) (adjusted HR, 0.59; 95% CI, 0.36-0.96).
29 decreased risk of	減少した～のリスク	62	10025476	This study supports prior research showing a <decreased risk of> breast cancer associated with increased body size among premenopausal or young women.
30 relative risk of	～の相対的なリス	219	10067908	Users of vitamin C supplements had a <relative risk of> 1.03 (95% CI 0.71-1.50).

Collocatiin of risk

3/5

English	Japanese	Frq.	PubM_ID	Sample
31 the relative risk of	～の相対的なリスク	99	12055590	The cumulative risk and <the relative risk of> ALF were determined by Kaplan-Meier and Cox Proportional Hazard survival analysis, respectively.
32 a relative risk of	～の相対的なリスク	37	11455254	In a multivariate analysis, pretransplant smoking was associated with <a relative risk of> 2.3 for graft loss.
33 high risk of	～の高度のリスク	160	10919930	African Americans have a <high risk of> obesity.
34 at high risk of	～の高度のリスク	74	9874801	As a result, patients are <at high risk of> life-threatening infection.
35 a high risk of	～の高度のリスク	60	9920009	Obesity and aging are associated with <a high risk of> new knee OA developing in women.
36 lower risk of	～のより低いリスク	143	10096552	Dietary consumption of the carotenoid lycopene (mostly from tomato products) has been associated with a <lower risk of> prostate cancer.
37 a lower risk of	～のより低いリスク	73	11000647	In this cohort, higher intake of whole grain foods was associated with <a lower risk of> ischemic stroke among women, independent of known CVD risk factors.
38 higher risk of	～のより高いのリス	135	12364861	Patients who are CMV seromismatched are at <higher risk of> acute renal allograft rejection.
39 a higher risk of	～のより高いのリス	68	10075319	Unfit, lean men also had <a higher risk of> all-cause and CVD mortality than did men who were fit and obese.
40 greater risk of	～のより大きなリス	75	11471098	Thai residents have a <greater risk of> heterosexual transmission of human immunodeficiency virus (HIV) than do US residents.
41 low risk of	～の低いリスク	40	10203086	Because of a small but definite rate of false-negative results, this procedure is most valuable in patients with a <low risk of> axillary nodal metastases.
42 a risk of	～の危険	42	12072660	Stress ulcers present <a risk of> clinically important bleeding, which is associated with alterations in physiology, such as hypotension or tachycardia, or results in anemia or the need for transfusion.
43 risk for	～のリスク	1,664	10648765	The apolipoprotein E genotype can identify patients with lobar intracerebral hemorrhage who are at highest <risk for> early recurrence.
44 risk for developing	～を発症するリス	60	11916943	We conclude that carriers of the Q variant of ENPP1 are at increased <risk for developing> ESRD early in the course of type 1 diabetes.
45 increased risk for	上昇した～のリスク	293	11522657	Li-Fraumeni patients inheriting a mutant p53 allele have an <increased risk for> developing tumors including breast cancer.
46 at risk for	～のリスクのある	252	10868958	It may be possible to apply this approach to large studies of beta-cell function designed to identify changes in islet function in subjects <at risk for> diabetes.
47 the risk for	～のリスク	233	10966499	<The risk for> major IHD events occurring >1 yr after transplantation among 1124 transplant recipients was estimated by using the risk calculated from the Framingham Heart Study (FHS).
48 at high risk for	～の高いリスク	157	11711609	Elderly individuals are <at high risk for> morbidity and mortality when infected with influenza virus.

Collocation of risk

English	Japanese	Frq.	PubM_ID	Sample
49 relative risk for	~の相対的なリスク	95	10933150	African-Americans had a significantly higher <relative risk for> graft loss than either Caucasians (1.57, P<0.0005) or Hispanics (2.01, P<0.0003).
50 the relative risk for	~の相対的なリスク	43	9634427	<The relative risk for> breast and gynecologic cancers is particularly high.
51 higher risk for	~のより高いリスク	53	9842954	For antiarrhythmic drugs, women are at a <higher risk for> these cardiac arrhythmias, but few other classes of drugs have been studied.
52 risk in	~における危険	250	12578804	Higher retinyl palmitate concentrations were associated with a lower <risk in> CLUE I but not CLUE II.
53 risk to	~するリスク	86	11903028	However, the association does not represent a great enough <risk to> justify early mass screening for celiac disease.
54 risk among	~の間でのリスク	70	9973207	We also evaluated the effect of the polymorphism on <risk among> low and high consumers of fruits and vegetables.
55 risk factors	危険因子	1,886	12379574	Patients with CAD have more rapid progression of IMT than CAD-free controls, and <risk factors> are related to progression in them.
56 risk factors for	~の危険因子	653	10573063	The use of antithymocyte globulin and prolonged exposure to ganciclovir are <risk factors for> the development of ganciclovir resistance.
57 risk factors in	~における危険因子	70	12045123	Thus, minimum CSA is a useful measure for evaluating SDB <risk factors in> preadolescent children.
58 risk factors associated with	~に関連する危険因子	44	10360124	<Risk factors associated with> rehospitalization were examined.
59 cardiovascular risk factors	心臓血管危険因子	97	12480655	Homocysteine had an independent positive association with blood pressure after adjusting for <cardiovascular risk factors>.
60 other risk factors	他の危険因子	79	11222518	Risk of cortical cataract by contrast fell with increasing birth weight, but the trend was not significant and became weak after adjusting for gestational age and <other risk factors> for cataract.
61 of risk factors	危険因子の	70	9701266	Outcomes for renal transplantation are excellent for American Indians, despite a high prevalence <of risk factors>.
62 the risk factors	危険因子	62	11807697	Tobacco smoking, nicotine in particular, is one of <the risk factors> for respiratory infections.
63 independent risk factors	独立の危険因子	52	11546964	Univariate and multivariate analysis of variance were performed to analyze <independent risk factors> for development of decubitus ulcers; p <.05.
64 significant risk factors	重要な危険因子	45	10426694	Among the <significant risk factors>, only nutritional status is amenable to medical intervention.
65 high risk patients	高いリスクの患者	93		
66 risk reduction	リスクの減少	89	10535433	Equivalent energy expenditures from walking and vigorous activity resulted in comparable magnitudes of <risk reduction>.
67 risk group	リスクグループ	78	9817889	The correlation between infectious viral load and HIV RNA load was 0.58 overall, which did not differ by gender or <risk group>.

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Collocation of risk

English	Japanese	Freq.	PubM_ID	Sample
68 high risk group	リスクの高いグループ	31		
69 risk associated with	〜と関連するリスク	80	9663401	This result indicates a modestly increased <risk associated with> the C677T genotype.

Note

1. As the number (3) in the title “Collocational Analysis of Life Science English (3)” indicates, this paper is the third report of the series. To avoid redundancy, the introductory part of the paper appearing before the lists is almost identical to that of the second report in this series so that the initial part of the current article is shorter and more concise than in the first report. To obtain more detailed information on pedagogical aspects relating to this series, it is recommended that readers refer to the first report (Kawamoto et al., 2004).
2. In the first report (Kawamoto et al., 2004), the list includes *possibility, probability, implication, involvement, absence, presence, evidence*.
3. In the second report (Kawamoto et al., 2005), the list includes *carry, confer, contribute, detect, elucidate, give, know, obtain, raise, and understand*.

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