Collocational Analysis of Life Science English (4)
— Lists of common collocates of *affinity, aim, difference, growth, importance, knowledge, observation, understanding* —

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Introduction

This is the fourth 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 303,000 abstracts published in distinguished life-science related journals around the world and consists of over 60 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 72,995 English terms with Japanese translations and definitions, 83,060 Japanese to English translations, 26,000 sample sentences for 5,100 English words, and retrievable concordances for any given word on demand.

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 *affinity, aim, difference,*

growth, importance, knowledge, observation, understanding. 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 and the noun form of a given word. 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.

	English	Japanese	Frq.	PubM_ID	Sample
	affinity*	親和性	13,586		
	affinity	親和性	12,286		
	affinities	親和性	1,300		
Note	affinity forが多い。				
1	affinity for	～への親和性	1,986	11707439	The PNP from P. falciparum differs from the human enzyme by a lower K(m) for inosine, decreased preference for deoxyguanosine, and reduced **<affinity for>** the immucillins, with the exception of 5'-deoxy-immucillin-H.
2	affinity for the	～への親和性	442	9685673	Ibogaine and noribogaine were shown to have **<affinity for the>** serotonin transporter, and inhibition of serotonin reuptake has been proposed to be involved in their anti-addictive actions.
3	high affinity for	～への高い親和性	263		
4	a high affinity for	～への高い親和性	62	10933810	Further studies showed that the nuclear holoenzyme, but not the B. subtilis holoenzyme, had **<a high affinity for>** single-stranded RNA in the absence of attached tRNA structure.
5	with high affinity for	～への高い親和性を持つ	47	11353868	Surprisingly, GIRK1/2 channels **<with high affinity for>** PIP(2) were inhibited by ethanol, like IRK1 channels.
6	binding affinity for	～への結合親和性	195	11861917	CREB **<binding affinity for>** CRE DNA decreased 3-fold, but binding to the other DNA sequences decreased >1000-fold.
7	the binding affinity for	～への結合親和性	27	9548964	**<The binding affinity for>** the vesicles, however, is only reduced 2-fold.
8	higher affinity for	～へのより高い親和性	146	12351646	From the copper dependence of phosphoenzyme formation, the mutants appear to have 2-3 fold **<higher affinity for>** Cu(I) than wild type CopA.
9	a higher affinity for	～へのより高い親和性	50	10565773	Deoxyglucose has **<a higher affinity for>** transporters than glucose and a lower affinity for hexokinase.
10	low affinity for	～への低い親和性	86	10715149	All analogues tested with these substitutions were inactive as antiovulatory agents at 1 mg/rat (5-9) and had **<low affinity for>** rGnRHR.
11	lower affinity for	～へのより低い親和性	59	10373434	In addition, the mutant HisPs are shown to have **<lower affinity for>** ADP and to display no cooperativity for ATP.
12	apparent affinity for	～への明らかな親和性	44	9554879	F131A, H277A, T221A, R310K, or S317A mutant receptors exhibited an **<apparent affinity for>** MRS 2179 that was similar to that observed with the wild-type receptor.
13	greater affinity for	～へのより大きな親和性	42	12093279	Our data support the hypothesis that ligands exhibiting **<greater affinity for>** the beta-amyloid peptide are effective at altering its aggregation and inhibiting cell toxicity.
14	reduced affinity for	～への減少した親和性	87	10611296	MalE-MinC19 has reduced ability to inhibit division, **<reduced affinity for>** FtsZ, and reduced ability to inhibit FtsZ polymerization.
15	increased affinity for	～への上昇した親和性	43	10482562	The mutant gD(rid1t) had an **<increased affinity for>** HveC(346t) and HveC(143t) due to a faster rate of complex formation.
16	decreased affinity for	～への低下した親和性	43	9692985	SB203386 is a potent inhibitor of HIV-1 protease (Ki = 18 nM) but has a **<decreased affinity for>** HIV-2 protease (Ki = 1280 nM).

	English	Japanese	Frq.	PubM_ID	Sample
17	the affinity for	～への親和性	144	12056890	**<The affinity for>** 37 bp hmU-containing DNA is also reduced, from approximately 3 nM for wild-type TF1 to approximately 90 nM for TF1-K3Q.
18	its affinity for	～へのそれの親和性	93		
19	their affinity for	～へのそれらの親和性	43	9651150	Target compounds were examined for **<their affinity for>** sigma1 and sigma2 receptor subtypes using guinea pig brain membranes and rat liver membranes, respectively.
20	affinity of	～の親和性	1,511	12517952	Detection of autoreactive T cells using MHC II tetramers is difficult because of the low **<affinity of>** their TCR.
21	affinity of @5 for	～の‥への親和性	771	10698939	Mutation of residues predicted to form part of this hydrophobic pocket either abolished or significantly diminished the **<affinity of PDK1 for>** PIF.
22	affinity of the	～の親和性	441	11016943	DGPP stimulated the activity of pure phosphatidylserine synthase by a mechanism that increased the **<affinity of the>** enzyme for its substrate CDP-diacylglycerol.
23	the affinity of	～の親和性	739	10385692	**<The affinity of>** each of these inhibitors for PDE5 is much higher than that of cGMP itself (Km = 2000 nM).
24	increases the affinity of	～の親和性を上昇させる	41	10213624	The lowered Km shows that NCp **<increases the affinity of>** the acceptor template for the transferring DNA.
25	in the affinity of	～の親和性において	49	12667067	Differences **<in the affinity of>** the position 124 CRP variants for cAMP were observed.
26	on the affinity of	～への親和性において	35	12562992	The data suggest that ethanol influences channel closing with no effect **<on the affinity of>** the receptor for GABA or the channel opening rate constant.
27	binding affinity of	～の結合親和性	241	9599245	Of all of the compounds synthesized, the 3-n-propyl derivative (-)-9 was found to be the most potent with a **<binding affinity of>** 3 nM.
28	apparent affinity of	～の明らかな親和性	55		
29	high affinity of	～の高い親和性	47	11090283	The **<high affinity of>** GM2-AP for GM2 is based on specfic recognition of the oligosaccharide moiety as well as the ceramide lipid tail.
30	affinity to	～への親和性	416		
31	affinity to the	～への親和性	115	10871840	This mutant form of Grb10 bound with higher **<affinity to the>** IR in cells than that of the wild-type protein, suggesting that tyrosine phosphorylation of Grb10 may normally negatively regulate its binding to the IR.
32	with high affinity to	～への高い親和性で	137	9746523	The overall data show that epibatidine activates muscle receptors by binding **<with high affinity to>** alphagamma and alphaepsilon sites, but with low affinity to the alphadelta site.
33	binding affinity to	～への結合親和性	76	12080045	The isolated gD-binding site is an octasaccharide, and has a **<binding affinity to>** gD around 18 microm, as determined by affinity coelectrophoresis.
34	affinity in	～における親和性	109	9862732	The peptides were selected for immunogenic potential based on their strong binding **<affinity in>** vitro to HLA-A*0201.
35	affinity at	～における親和性	107	10924132	Increasing the L-arginine concentration decreased the NO binding **<affinity at>** equilibrium.
36	affinity by	～によって親和性を	72	10521278	The data suggest that sucrose enhanced ligand **<affinity by>** slowing the backbone motion of the lipocalin.

	English	Japanese	Frq.	PubM_ID	Sample
37	affinity as	～としての親和性	65	9692954	A limited proteolysis product containing residues 21-approximately 260 bound to heparin with similar **<affinity as>** the intact PEDF.
38	affinity between	～の間の親和性	50	10220355	These results suggest that the divalent metal activator is an important element in determining the **<affinity between>** Csk and the phosphate-accepting substrate.
39	affinity with	～との親和性	45	11813133	The binding **<affinity with>** the -112A oligonucleotide was reduced by approximately one half, as compared with the -112G oligonucleotide.
40	affinity and	親和性と～	788	9737967	Both enzymes also have different substrate binding **<affinity and>** catalytic parameters.
41	affinity and specificity	親和性と特異性	104	9566962	PKCalpha bound with high **<affinity and specificity>** to caveolae membranes.
42	high affinity and specificity	高い親和性と特異性	50	10618442	A member of the phosphodiesterase (PDE)7 family with **<high affinity and specificity>** for cAMP has been identified.
43	with high affinity and specificity	高い親和性と特異性を持つ	37	9490797	Analysis of the binding specificity of yeast telomerase indicates that it recognizes the G-rich strand of yeast telomeres **<with high affinity and specificity>.**
44	affinity and selectivity	親和性と選択性	53	11123996	Introduction of a methoxy group to indatraline affected its **<affinity and selectivity>** greatly.
45	affinity binding	‥親和性結合	535	10884384	High **<affinity binding>** of SAH to the active site of cellular methyltransferases results in product inhibition of the enzyme.
46	affinity binding of	～の‥親和性結合	100	11734555	This suggests that HSF-1 might repress TNFalpha transcription through redundant mechanisms, some of which might not require high **<affinity binding of>** HSF-1.
47	affinity binding site	‥親和性結合部位	96	9632639	In contrast, these four amino acid substitutions in BRS-3 did not result in the formation of a high **<affinity binding site>** for the recently described non-peptide NMB-R antagonist PD168368.
48	affinity binding to	～への‥親和性結合	94	9756917	The A domain is required for high **<affinity binding to>** C, while the B domain regulates access to the A domain.
49	affinity binding sites	‥親和性結合部位	56	11435417	Similarly, co-expression of mutant p75 containing altered transmembrane and cytoplasmic domains with Trk A also resulted in predominantly low **<affinity binding sites>.**
50	high affinity binding	高親和性結合	460		
51	high affinity binding of	～の高親和性結合	95	11717307	**<High affinity binding of>** full-length WRN protects an area surrounding the melted region of the substrate from DNase I digestion.
52	high affinity binding to	～への高親和性結合	87	10908352	**<High affinity binding to>** the other structural motifs in the decoding region were not observed.
53	high affinity binding site	高親和性結合部位	83	10459011	A **<high affinity binding site>** has previously been localized to the NH(2)-terminal region of the AP-2 alpha subunit.
54	high affinity binding site for	～の高親和性結合部位	40		
55	for high affinity binding	高親和性結合にとって	76	12477731	This study defines the segment of Pik1 required **<for high affinity binding>** of Frq1.
56	the high affinity binding	高親和性結合	54	9748237	Thus, **<the high affinity binding>** of apocytochrome c to mitochondria is not directly related to holocytochrome c formation.
57	a high affinity binding	高親和性結合	50	10212199	Although each vWf subunit displays **<a high affinity binding>** site for factor VIII in vitro, in plasma, only 2% of the vWf sites for factor VIII are occupied.

	English	Japanese	Frq.	PubM_ID	Sample
58	low affinity binding	低親和性結合	38		
59	affinity chromatography	親和性クロマトグラフィー	431	12058076	Using **<affinity chromatography>** and yeast two-hybrid interaction screens, we identified ASAP1 as a major binding partner of protein tyrosine kinase focal adhesion kinase (FAK).
60	by affinity chromatography	親和性クロマトグラフィーによって	88	11535617	Here, we show that these necleoporins can be isolated from yeast extracts **<by affinity chromatography>** on karyopherin Kap95p-coated beads.
61	affinity site	親和性部位	127	9856992	The 5'-cap distal or low alpha-Pal **<affinity site>** binds both alpha-Pal and Max.
62	affinity receptor	親和性受容体	111	10753843	These results indicate that EDG-6 is a high **<affinity receptor>** for SPP, which couples to a G(i/o) protein, resulting in the activation of growth-related signaling pathways.
63	high affinity receptor	高親和性受容体	86	9862725	The regulation of the mast cell **<high affinity receptor>,** Fc epsilonRI, is poorly understood.
64	affinity purification	アフィニティー精製	86	9843376	Permease constructs containing a biotin acceptor domain are biotinylated in vivo, followed by solubilization and avidin **<affinity purification>.**
65	affinity ligands	親和性リガンド	66	10691684	These compounds were designed as **<affinity ligands>** for the androgen receptor (AR).
66	high affinity ligands	高親和性リガンド	47	11278862	In this report, we describe a parallel synthesis strategy that transforms consensus sequence peptides into **<high affinity ligands>.**
67	affinity ligand	親和性リガンド	65	9716416	This method is based on the coupling of a high-**<affinity ligand>** to the binding of the low-affinity ligand.
68	high affinity ligand	高親和性リガンド	48	9677385	Earlier mutational studies demonstrated that the distal segment of the collagen domain of the receptor was critically important for **<high affinity ligand>** binding activity.
69	high affinity interaction	高親和性相互作用	55	9857076	The active small-t peptides adopt a beta-strand structure that was essential for **<high affinity interaction>** with the PP2A dimer.
70	affinity maturation	親和性成熟	61	12202747	Somatic hypermutation (SHM) of the Ig genes is required for **<affinity maturation>** of the humoral response to foreign antigens.
71	affinity state	親和性状態	59	9724809	Thus, activation of thrombin receptors increases Galphaq association with thromboxane A2 receptors thereby shifting them to a higher **<affinity state>.**
72	affinity purified	アフィニティー精製された	249	10497201	A highly specific, **<affinity purified>** polyclonal antibody against HCDA was used to analyze the intracellular localization of native HCDA in a variety of mammalian cells by in situ immunochemistry.
73	affinity purified antibodies	アフィニティー精製された抗体	30	9699735	Immunoprecipitation and immunoblotting with these **<affinity purified antibodies>** revealed shared as well as unique epitopes in the tail domains of these plakins.
74	high affinity	高親和性	3,443	9632647	Both forms bound native LDL with **<high affinity>,** but the larger form bound LDL with higher affinity than the smaller form.
75	with high affinity	高親和性を持つ	678	9730822	Both yeast and human RPA bind ssDNA **<with high affinity>** and low cooperativity.
76	binds with high affinity	高親和性で結合する	88	11745638	GDNF **<binds with high affinity>** to the GDNF family receptor alpha-1 (GFRalpha-1), which is highly expressed in the midbrain.
77	the high affinity	高親和性	515	11136816	Immunization with the weakest (wild-type) antigen expanded **<the high affinity>** T cells required to induce encephalomyelitis.

	English	Japanese	Frq.	PubM_ID	Sample
78	of the high affinity	高親和性の～	106	11384969	Here we present the first site-directed mutagenesis study on the dissociation **<of the high affinity>** complex between CaM and full-length CaM kinase II.
79	a high affinity	高親和性	461	10998257	Rat liver ALDH1 had **<a high affinity>** for retinal (K(m) = 0.6 microM), while no oxidation by ALDH-PB could be detected with 20 microM retinal.
80	for high affinity	高親和性にとって	183	9538017	The two bulges are also essential **<for high affinity>** and stoichiometric binding of tobramycin.
81	of high affinity	高親和性の～	182	10213629	The interaction between ExoS and 14-3-3zeta is **<of high affinity>,** with an equilibrium dissociation constant of 7 nM.
82	binding affinity	結合親和性	1,309	11016919	Furthermore, Smurf2 exhibited higher **<binding affinity>** to activated Smad2 upon TGF-beta stimulation.
83	DNA binding affinity	DNA結合親和性	100	10194380	In summary, physical interaction between E1 and E2 increases the **<DNA binding affinity>** of each.
84	in binding affinity	結合親和性における	85	10090750	For some of the protein and RNA mutations studied, changes **<in binding affinity>** probably reflect longer-range adjustments of the protein-RNA contact surface.
85	high binding affinity	高結合親和性	42	9651158	With the exception of the 3-amino ligands 40 and 41, all the beta-carbolines were found to exhibit **<high binding affinity>** at BzR sites.
86	low affinity	低親和性	760	11278538	However, studies of ligand interactions with human IFNAR-1 are compromised by its **<low affinity>.**
87	the low affinity	低親和性	166	10859315	However, **<the low affinity>** of the interactions observed in these studies suggests the existence of additional binding regions in both the chemokines and the
88	a low affinity	低親和性	121	9778368	Excess Ni(II)-precorrin-2 did not decrease CbiL methylation of Co(II)-precorrin-2, implying that CbiL has **<a low affinity>** for Ni(II)-precorrin-2.
89	with low affinity	低親和性を持つ	73	9632641	It is concluded that the conversion of Glu-381 of beta to Cys induces an activated conformation of the high affinity catalytic site **<with low affinity>** for substrate and products.
90	of low affinity	低親和性の～	41	11602608	In conjunction with simple carrier molecules (such as propyl or benzyl residues), they trigger the release **<of low affinity>** ligands, which permits the rapid binding of peptides with higher affinity.
91	higher affinity	より高い親和性	392		
92	higher affinity than	～より高い親和性	80	9632647	Both forms bound native LDL with high affinity, but the larger form bound LDL with **<higher affinity than>** the smaller form.
93	a higher affinity	より高い親和性	81	11222767	On the other hand, T4 RegA exhibited **<a higher affinity>** than RB69 RegA protein for RB69 gene 45 RE RNA.
94	fold higher affinity	～倍高い親和性	73	11222767	Comparative gel shift assays demonstrated that RB69 RegA protein has an approximately 7-**<fold higher affinity>** for T4 gene 44 RE RNA than T4 RegA protein.
95	with higher affinity	より高い親和性で	44	11809871	Agonists bind **<with higher affinity>** to G protein-coupled heptahelical receptors than to uncoupled receptors.
96	lower affinity	より低い親和性	257	9804819	The other OSE2 element, located more upstream and presenting a **<lower affinity>** for Osf2, affects only weakly OG2 promoter activity.
97	lower affinity for	～へのより低い親和性	59	12021405	GRP has high affinity for GRPR and **<lower affinity for>** NMBR.

	English	Japanese	Frq.	PubM_ID	Sample
98	a lower affinity	より低い親和性	47	10545354	Higher Cd(2+) concentrations affected activation gating as well, possibly by a surface charge screening mechanism or by association with **<a lower affinity>** site.
99	fold lower affinity	～倍低い親和性	37	11815599	The medullary variant F exhibited 3-4-**<fold lower affinity>** than variants A and B for Na(+) and K(+).
100	with lower affinity	より低い親和性で	35	10366627	Unlike chick netrin-1, however, murine netrin-3 binds to DCC **<with lower affinity>** than to the other four receptors.
101	apparent affinity	明らかな親和性	137		
102	the apparent affinity	明らかな親和性	78	11024018	Substitution of H+ for Na+ reduces **<the apparent affinity>** of hSGLT1 for glucose from 0.3 to 6 mm.
103	the highest affinity	最も高い親和性	87	10543888	The compound with **<the highest affinity>** (25) at sigma(1) sites was also the compound with highest affinity at the dopamine transporter.
104	receptor affinity	受容体親和性	96	11390562	**<Receptor affinity>** was measured by Scatchard assay of rabbit liver.
105	greater affinity	より大きな親和性	89	9826662	Under these conditions, Gcr1p displayed an approximately 4-fold **<greater affinity>** for Rap1p-bound DNA than for otherwise identical free DNA.
106	greater affinity for	～へのより大きな親和性	42	10579824	In contrast to pentazocine and most 6,7-benzomorphans, the (1R,5R,9R)-isomers of 2a-c showed **<greater affinity for>** the sigma(1) receptor than the (1S, 5S,9S)-isomers.
107	similar affinity	同じような親和性	70	11287418	These data suggest that both ATP sites are dependent on each other for function and that each site exhibits **<similar affinity>** for 8-azido-ATP (ATP) or 8-azido-ADP (ADP).
108	with similar affinity	同じような親和性を持つ	41	10373475	Native thrombin and labeled thrombin bound **<with similar affinity>** to factor Va.
109	oxygen affinity	酸素親和性	63	9665699	Loss of C-terminal residues in hemoglobin raises **<oxygen affinity>** and reduces both cooperativity and the Bohr effect.
110	DNA affinity	DNA親和性	51	11502749	Peptide oligomerization and **<DNA affinity>** are strongly influenced by ionic strength.
111	using affinity	アフィニィティー～を使って	48	10206967	By **<using affinity>** chromatography, we isolated a 55-kDa lung cell-surface protein that selectively binds to the GFE-1 peptide.
112	ligand affinity	ﾘｶﾞﾝﾄﾞ親和性	47	9707435	One mutant, T277A, exhibits impaired transactivation which is disproportionate to its mildly reduced **<ligand affinity>** (Ka).
113	substrate affinity	基質親和性	44	10984491	By alternate substrate studies, we have resolved the contributions of the individual binding steps to **<substrate affinity>** and catalysis.
114	reduced affinity	減少した親和性	137	10194380	Under titration conditions identical to those used for Fl-E2BS, the E2 protein exhibited **<reduced affinity>** for Fl-E1E2BS (Kd > 100 nM).
115	increased affinity	上昇した親和性	105	10807925	This increase in processivity correlated with an **<increased affinity>** for telomeric DNA primer.
116	decreased affinity	減少した親和性	66		
117	enhanced affinity	増強された親和性	56	11126358	These differences may be attributable to an **<enhanced affinity>** of S37A beta-catenin for LEF1 and TCF4, as observed here by immunoprecipitation assays.
118	their affinity for	～へのそれらの親和性	43	9927754	The resulting mutant proteins could be divided into four groups that varied with respect to **<their affinity for>** DNA and specificity for the engrailed consensus.

	English	Japanese	Frq.	PubM_ID	Sample
119	with an affinity	親和性を持つ	121	11226168	In contrast, a dimeric peptide efficiently bound an optimally arranged dimeric TAR in vivo, and bound **<with an affinity>** at least 10-fold higher than the monomeric peptide in vitro.
120	in affinity	親和性において	215	9578623	The receptors differ **<in affinity>** for cAMP and in the sequences of their C-terminal domains.
121	in affinity for	～への親和性において	58	10648646	The decrease **<in affinity for>** CH(2)H(4)PteGlu correlates well with K(i) values obtained for three TS-directed inhibitors.
122	increase in affinity	親和性の上昇	43	12610209	The **<increase in affinity>** is attributed to greater stability in the mismatched site associated with stacking by the heterocyclic aromatic ligand.
123	by affinity	アフィニィティー～を使って	136	12554692	Treatment of EGFR-expressing A431 cells with autoantibodies purified **<by affinity>** chromatography on immobilized exEGFR resulted in specific staining of
124	by affinity chromatography	アフィニティクロマトグラフィーによって	88	11535617	Here, we show that these necleoporins can be isolated from yeast extracts **<by affinity chromatography>** on karyopherin Kap95p-coated beads.
125	purified by affinity	アフィニィティー～によって精製される	37	10889041	The enzyme was expressed in Escherichia coli with a fusion tag and **<purified by affinity>** methods.
126	of affinity	親和性の～	129	10358093	Immunoanalysis **<of affinity>** labeled caspases demonstrated that caspase-3 was the major effector caspase.
127	with affinity	親和性を持つ	53	12361403	However, in vivo efficacy did not correlate **<with affinity>.**

	English	Japanese	Frq.	PubM_ID	Sample
	aim*	目的	2,682		
	aim	目的	1,128		
	aims	目的	850		
	aimed	～を目的とする	685		
	aiming	～を目的とする	19		
Note	名詞、動詞の用法がある。名詞の場合、直後にくる前置詞は of が標準である。				
1	the aim of	～の目的	826	9670921	**<The aim of>** this study was to investigate whether PARS activity may modulate endothelial-neutrophil interaction.
2	the aim of this study was to	この研究の目的は～することであった	494	10799688	**<The aim of this study was to>** determine if acetic acid evokes this wiping response by decreasing subepidermal pH.
3	the aim of this study was to determine	この研究の目的は、～を決定することであった	143	10362807	**<The aim of this study was to determine>** the pattern and time course of genomic instability occurring in UC-related neoplasia.
4	the aim of this study was to investigate	この研究の目的は、～を精査することであった	70	9890314	**<The aim of this study was to investigate>** the contribution of apoptosis to neutrophil dysfunction in uremia.
5	the aim of this study was to examine	この研究の目的は、～を調べることであった	39	9721149	**<The aim of this study was to examine>** the prevalence and characteristics of proximal adenomas in patients with distal adenomas.
6	the aim of this study was to evaluate	この研究の目的は、～を評価することであった	38		
7	the aim of this study was to assess	この研究の目的は、～を評価することであった	26	11106565	**<The aim of this study was to assess>** the role of tissue proteases in a mouse model of colitis.
8	the aim of this study was to compare	この研究の目的は、～を比較することであった	22	11431743	**<The aim of this study was to compare>** outcomes in Asian and white patients listed for liver transplantation for HBV infection.
9	the aim of the present study was to	現在の研究の目的は	100	12105850	**<The aim of the present study was to>** elucidate the cellular sites of 5-HT3R expression in the rat GI tract using immunohistochemistry.
10	the aim of the present study was to determine	現在の研究の目的は、～を決定することであった	24	12115196	**<The aim of the present study was to determine>** the utility of new developments in vascular magnetic resonance (MR) technology in patients with TA.
11	the aims of	～の目的	81	10915741	**<The aims of>** this study were to determine the effects of bile acid structure on the expression of mdr2 in vitro and in vivo.
12	the aims of this study were to	この研究の目的は	39	10220498	**<The aims of this study were to>** determine p16 methylation status and its possible association with K-ras mutations in human colon cancer.
13	with the aim of	～の目的で	71	10675343	We are analyzing highly conserved heat shock genes of unknown or unclear function **<with the aim of>** determining their cellular role.

	English	Japanese	Frq.	PubM_ID	Sample
14	aim was to	目的は、～することであった	156	9711932	Our **<aim was to>** observe ultrasound-induced intravascular microbubble destruction in vivo and to characterize any resultant bioeffects.
15	our aim was to	我々の目的は、～することであった	117	10764301	**<Our aim was to>** compare respiratory function at 1 yr of age in infants assigned to receive either ECMO or conventional management (CM).
16	our aim was to determine	我々の目的は、～を決定することであった	26	12404239	**<Our aim was to determine>** the affinity of the human BSEP for bile salts and identify inhibitors.
17	aim to	～することを目的とする	40	10495796	Intervention should **<aim to>** maximize functional potential rather than to simply maintain the status quo.
18	aims to	～することを目的とする	57	11292339	This study **<aims to>** provide further support for the structural basis of [PSI] variation.
19	aimed to	～することを目的とした	259	11083789	In this study, we **<aimed to>** establish whether immunocompetent mice were susceptible to infection and whether gamma interferon (IFN-gamma) contributed to the pathogenesis of infection.
20	aimed to assess	～を評価することを目的とした	50	11567699	We **<aimed to assess>** the long-term effects of subclinical hyperthyroidism on mortality.
21	aimed to determine	～を決定することを目的とした	37	11334805	This study **<aimed to determine>** whether hippocampal neurons have the ability to develop acute tolerance to alcohol in behaving rats.
22	we aimed to	我々は、～することを目的とした	171	11356439	**<We aimed to>** assess two methods of reducing GP requests for radiological tests in accordance with the UK Royal College of Radiologists' guidelines on lumbar spine and knee radiographs.
23	we aimed to assess	我々は、～を評価することを目的とした	41	12443594	**<We aimed to assess>** whether gene products of human cytomegalovirus could be detected in colorectal cancers.
24	study aimed to	研究は、～を目的とした	71	12393503	This **<study aimed to>** characterize oncogene abnormalities in PCLs.
25	this study aimed to	この研究は、～を目的とした	54	10969817	**<This study aimed to>** identify the pathway(s) of AA metabolism that are required for the invasion of prostate tumor cells.
26	aimed at	～を目的とした/～を目的とされる	411	10799399	Recent advances in carbohydrate metabolism during pregnancy suggest that preventive measures should be **<aimed at>** improving insulin sensitivity in women predisposed to GDM.
27	studies aimed at	～を目的とした研究	54	11120890	We have initiated **<studies aimed at>** elucidating the chemical nature of protein carbonyls.
28	strategies aimed at	～を目的とした戦略(方略)	47	11106388	Thus, drug discovery and vaccine development **<strategies aimed at>** inhibiting viral entry by blocking hairpin formation may be applied to the inhibition of HRSV.

	English	Japanese	Frq.	PubM_ID	Sample
	difference*	違い	16,199		
	differences	違い	10,754		
	difference	違い	5,442		
	differencing	違う	3		
Note	複数形での出現が多い。直後に共起する前置詞は、in が圧倒的に多い。				
1	differences in	～における違い	5,716	12551859	Absolute **<differences in>** operative mortality between VLVH and VHVH were somewhat larger in high-risk patients.
2	differences in the	～における違い	1,670	12417723	We found no **<differences in the>** survival rates and fungal burdens of wild-type and MBL-A(-/-) mice with disseminated C. albicans infection.
3	differences in their	それらの～における違い	152	12511501	Our findings suggest that proteins from the same cellular pathway encoded by genes from the same operon have different evolutionary constraints on their structures that reflect **<differences in their>** functions.
4	differences in gene	遺伝子に～おける違い	51	11121068	Thus, we could avoid **<differences in gene>** expression caused by slow growth or nitrogen limitation per se.
5	differences in expression	発現における違い	48	9546432	However, RT-PCR analysis identified **<differences in expression>** of JAK3 splice variants (B and M) in tumor cells.
6	differences in cell	細胞～における違い	42	10962556	However, SIRPalpha1-overexpressing U87MG clonal derivatives exhibited no **<differences in cell>** growth or levels of mitogen-activated protein kinase (MAPK) activation.
7	the differences in	～における違い	393	11562411	**<The differences in>** functional reserve were not confounded after adjustment for diabetes duration (P = 0.034).
8	the differences in the	～における違い	103	11461936	**<The differences in the>** distributions of P2Y(6) receptor mRNA and UDP responses may indicate the presence of luminal receptors in other nephron segments.
9	for the differences in	～における違いにとって	47	10096896	Chimeric channels were constructed to address the question of which parts of the molecules were responsible **<for the differences in>** kinetics.
10	no differences in	～における違いのない	352	11594896	Overall, there were **<no differences in>** total abstinence rates between the integrated care and independent care groups (68% vs 63%, P =.18).
11	were no differences in	～は、～において違いがない	158	10377109	There **<were no differences in>** ankle swelling or arthritis severity scores between control DBA mice and DBA IL-4 degrees mice at any of the time points tested.
12	to differences in	～における違いに～	218	12235141	This apparent size difference is due in part **<to differences in>** glycosylation of plasma and acrosomal SHBG isoforms.
13	due to differences in	～における違いゆえに	76	9774484	Ribonuclease protection showed that these differences were not **<due to differences in>** mRNA level.
14	related to differences in	～における違いに関連して	28	10556039	Further analyses suggested that differences in H/(2)H exchange rates reflect differences in the kinetic stability of the INK4 proteins, which in turn is **<related to differences in>** the aggregation tendency.

	English	Japanese	Frq.	PubM_ID	Sample
15	for differences in	～における違いにとって	114	10068357	Even after adjustment **<for differences in>** patients' prognoses and preferences, older age was associated with higher rates of decisions to withhold ventilator support, surgery, and dialysis.
16	by differences in	～における違いによって	103	10646600	Osmotic pressures are generated **<by differences in>** chemical potential of a solution across a membrane.
17	explained by differences in	～における違いによって説明される	34	10669421	This variation cannot be **<explained by differences in>** organismic complexity (the C value paradox).
18	of differences in	～における違いの～	93	10025913	A number of studies have investigated the possibility **<of differences in>** the immune response to these antigens in SS and SLE sera.
19	because of differences in	～における違いのために	25	10688907	These strain differences were not **<because of differences in>** circulating E2, progesterone or, prolactin.
20	with differences in	～における違いと	74	9571255	These differences in enzyme insensitivity correlated **<with differences in>** the severity of hypoglycemia in the two groups.
21	associated with differences in	～における違いと関連する	30	12031985	Type 1 diabetes is **<associated with differences in>** NMR-derived particle size, but their pathogenic significance is unclear.
22	from differences in	～における違いから～	47	12540829	Thus, taxonomic biases for showy males may stem **<from differences in>** sex chromosome systems.
23	significant differences in	～における有意な違い	610	11740391	There were no **<significant differences in>** the preoperative variables between the 39 recipients of SLD grafts and 34 recipients of LRD grafts.
24	significant differences in the	～における有意な違い	179		
25	no significant differences in	～における有意な違いのない	307	11856781	There were **<no significant differences in>** the incidence of rejection among patients stratified as with or without CCR5-Delta32 or by the CX3CR1-V249I or CX3CR1-T280M genotypes.
26	statistically significant differences in	～における統計的に有意な違い	44	11726642	There were no **<statistically significant differences in>** the CRA blood flow indices at 1 month after treatment.
27	specific differences in	～における特異的な違い	125	10924463	We have investigated the basis for the developmental stage-**<specific differences in>** the function of these two proteins.
28	large differences in	～における大きな違い	53	11237019	Subtelomeric sequence structure appears to vary widely, mainly as a result of **<large differences in>** subtelomeric repeat sequence abundance and organization at individual telomeres.
29	individual differences in	～における個々の違い	51	10995843	They point to a new role of hippocampal GR, strongly implicating this receptor in determining **<individual differences in>** anxiety and novelty-seeking behavior.
30	regional differences in	～における領域的な違い	47	9882474	The **<regional differences in>** cell migration characteristics suggests that influential factors may vary spatially along the rostrocaudal axis in the head.
31	striking differences in	～における著しい違い	46	12153561	**<Striking differences in>** selectivity and rates of inactivation were observed.
32	sex differences in	～における性差	121	9689486	These data demonstrate that **<sex differences in>** antinociception are mediated at least in part by the RVM.
33	small differences in	～における小さな違い	45	10518513	**<Small differences in>** either size or density lead to flow-induced segregation.

	English	Japanese	Frq.	PubM_ID	Sample
34	subtle differences in	～における僅かな違い	43	11773410	Five out of seven protease variants demonstrated **<subtle differences in>** specificity that may have significant impacts on their abilities to function in viral maturation.
35	gender differences in	～における性差	42	10733498	**<Gender differences in>** vascular thromboses are well known, and there is evidence that platelets may be involved in these differences and that sex hormones affect platelet function.
36	these differences in	～におけるこれらの違い	103		
37	marked differences in	～における顕著な違い	66	12082091	Although BRCA1 induced JNK activation in both cell lines, there were **<marked differences in>** ERK1/2 activation in response to BRCA1 expression in these two cell lines.
38	observed differences in	～における観察される違い	59	11560929	**<Observed differences in>** ligand recognition among adenylosuccinate synthetases may be due in part to conformational variations in the IMP pocket of the ligand-free enzymes.
39	related differences in	～における関連する違い	45	12595567	These data also provide a novel mechanism for the gender-**<related differences in>** lifespan and suggest a tissue-specific regulation of telomere length during development and ageing in the rat.
40	reflect differences in	～における違いを反映する	47	12359734	Differences in PLA(2) sensitivity of intact bacteria **<reflect differences in>** cell wall, not cell membrane, properties since protoplasts from all three strains are equally sensitive to PLA(2).
41	differences between	～の間の違い	1,709	10555964	These structural **<differences between>** the non-bay and bay region lesions are correlated with site-specific mutagenesis data.
42	differences between @3 and	～と～の間の違い	764	11012721	However, there are no amino acid **<differences between resistant and>** sensitive chromosomes at Mdr65A.
43	differences between the	～の間の違い	579		
44	differences between these	これらの～の間の違い	77	12012425	Thus we detect no **<differences between these>** two anatomically distinct classes of release sites, other than their incidence: sites on spines occurred only 12% as often as those on the cell body.
45	significant differences between	～の間の有意な違い	214	10479225	There were no **<significant differences between>** vegetarians and nonvegetarians in mortality from cerebrovascular disease, stomach cancer, colorectal cancer, lung cancer, breast cancer, prostate cancer, or all other causes combined.
46	functional differences between	～の間の機能的な違い	90	9670917	These results highlight **<functional differences between>** TEF-1 and RTEF-1 and suggest a novel function of RTEF-1 in mediating the alpha1-adrenergic response in hypertrophic cardiac myocytes.
47	structural differences between	～の間の構造的な違い	57	9837880	**<Structural differences between>** alphaoA and alphaoC were also compared before and after limited tryptic proteolysis using SDS-polyacrylamide gel electrophoresis containing 6 M urea.
48	no differences between	～の間の違いのない	88	12122211	Analysis of the exudate surrounding the materials revealed **<no differences between>** surfaces in the types or levels of cells present.

	English	Japanese	Frq.	PubM_ID	Sample
49	the differences between	～の間の違い	163	12562924	The seven amino acid insert in the smooth muscle myosin heavy chain is thought to regulate the kinetics of contraction, contributing to **<the differences between>** fast and slow smooth muscle.
50	differences among	～の間の違い	204	9571051	Due to the insertion of this helix, a shorter and slightly re-positioned primary DNA contact helix is observed, which we believe leads to the DNA-binding specificity **<differences among>** family members.
51	significant differences among	～の間の有為な違い	32	11607422	Precise assessment of these two traits allowed distinction of small but **<significant differences among>** genotypes.
52	differences from	～との違い	97	10438369	Although rodent models of experimental vaginal candidiasis have been useful, several **<differences from>** humans limit the correlation of experimental data.
53	differences of	～の違い	82	11560491	Solution NMR was utilized to determine the structural and dynamic **<differences of>** MT-3 from MT-1 and 2.
54	differences for	～に対する違い	55	11581407	However, a c-kit-targeted recombinant retroviral vector failed to transduce cells, indicating the existence of significant **<differences for>** c-kit target gene transfer between these two viruses.
55	differences with	～との違い	43	11387341	A model is proposed that explicitly correlates these similarities and **<differences with>** the sequence-specific structural properties inherent to each promoter.
56	differences at	～における違い	43	9621098	Comparison of X-ray crystal structures show **<differences at>** the bottom of domain 2.
57	differences were	違いが、～であった	747	10967082	No significant **<differences were>** found in the histologic appearance of the cells after mitochondrial blockade, but there was massive death of cells after inhibition of glycolysis with iodoacetate.
58	differences were observed	違いが、観察された	182	11549376	No significant **<differences were observed>** between PBS-treated and control groups.
59	differences were found	違いが、見つかった	161	11097966	No group **<differences were found>** in either the metabolism or the volume of the amygdala or the hippocampus.
60	differences were seen	違いが、見られた	50	10195148	No **<differences were seen>** in the hindlimb region.
61	differences were not	違いが、なかった	49	11296154	These **<differences were not>** explained by measured environmental variables, including smoking, or by genotypes.
62	differences were detected	違いが、検出された	43	12507908	However, no significant **<differences were detected>** between the clinically localized PCa and noncancerous prostate tissues.
63	differences were noted	違いが、述べられた	43	9563488	No significant **<differences were noted>** between the MSI-L and MSS group for any of the parameters tested.
64	these differences were	これらの違いは、～であった	78	9731088	**<These differences were>** primarily due to a higher prevalence of physiologic, trace, or mild regurgitation.
65	significant differences were	有為な違いは、～であった	170	10096524	**<Significant differences were>** seen in the acute rejection rates and the frequency of pretransplantation random transfusion.

	English	Japanese	Frq.	PubM_ID	Sample
66	differences are	違いが、～である	189	10392574	Here, their similarities and **<differences are>** highlighted, and common themes of the interactions between basic and clinical sciences for their understanding and treatment are explored.
67	these differences are	これらの違いが、～である	56	11591737	The molecular mechanisms underlying **<these differences are>** poorly defined.
68	differences exist	違いが、存在する	86	9830028	However, **<differences exist>** in the location of two loops outside of the respective binding sites containing residues 114-125 and 222-227.
69	differences exist in	違いが、～に存在する	41	10086335	These results emphasize that cell type **<differences exist in>** the signaling pathways by which oncogenic Ras causes transformation.
70	differences exist between	違いが、～の間に存在する	28	11709543	Intriguingly, despite this substantial evolutionary history, only 22 single nucleotide **<differences exist between>** the two copies over the entire 35.5 kb, making the duplications >99% identical.
71	differences observed	観察される違い	58	12031543	In the simulation, active channels were distributed evenly across the cells so that the electrophysiological **<differences observed>** in the neurons would only be due to morphological differences.
72	were no differences	～は、違いがなかった	225	11303142	Similarly, there **<were no differences>** in carbon dioxide production and oxygen consumption.
73	showed no differences	違いを示さなかった	31	11406631	Light microscopy **<showed no differences>** in cochlear morphology of wild-type versus AQP4 null mice.
74	these differences	これらの違い	552	11923356	The genetic bases for **<these differences>** in virulence have not been determined.
75	these differences in	～におけるこれらの違い	104	10992517	**<These differences in>** sensitivity among chlamydial strains to IFN-gamma-mediated inhibition may profoundly influence the clinical outcome of infection.
76	these differences are	これらの違いは、～である	56	11000237	**<These differences are>** in excellent agreement with our sequence comparisons of HHV-8 and HSV-1 capsid proteins.
77	of these differences	これらの違いの～	59	12235158	Exploitation **<of these differences>** may lead to novel inhibitors, which favor the microbial form of the enzyme.
78	similarities and differences	類似性と差異	66	11784116	We discuss the **<similarities and differences>** between the cellular defects seen in Rac mutants and let-60 Ras or lin-17 Frizzled mutants.
79	sequence differences	配列の違い	100	10888625	The **<sequence differences>** between these isolates were within or near the range of variability of the T30 population.
80	large differences	大きな違い	77		
81	striking differences	著しい違い	73	10438745	We observed **<striking differences>** in the lysine auxotrophic phenotypes of these three species of mycobacteria.
82	individual differences	個々の違い	69	9603521	There is increasing evidence that genetic factors can influence **<individual differences>** in vulnerability to drugs of abuse.
83	important differences	重要な違い	69	11318639	These different modes of inhibition correlate with clinically **<important differences>** in isoform selectivity.
84	subtle differences	僅かな違い	68	12097558	However, these **<subtle differences>** were amplified at the cell fusion stage because the wild-type H protein failed to fuse CD46-expressing cells.

	English	Japanese	Frq.	PubM_ID	Sample
85	related differences	関連する違い	66	10234034	Sex-**<related differences>** in behavior are extensive, but their neuroanatomic substrate is unclear.
86	conformational differences	構造的違い	66	10051621	Our data suggests that **<conformational differences>** in the I domain are physiologically relevant and not merely a consequence of different crystal lattice interactions.
87	substantial differences	かなりの違い	65	12540622	In conclusion, we found **<substantial differences>** between published IR indexes in the prediction of diabetes, with ISI(0,120) consistently showing the strongest prediction.
88	small differences	小さな違い	64		
89	regional differences	領域的的違い	63	10351967	**<Regional differences>** were also noted, with reduced sensitivity but improved specificity for right coronary lesions using attenuation/scatter correction methodology.
90	phenotypic differences	表現型の違い	63	11675494	We found significant **<phenotypic differences>** between the rapid loss of activity caused by inhibition and the deletion of the genomic copy of PHO85.
91	genetic differences	遺伝的違い	60	11120808	We demonstrate that **<genetic differences>** are important in cells of hemopoietic origin and that the costimulation blockade-resistant phenotype is dominant.
92	gender differences	性差	59	11230112	**<Gender differences>** in the development of coronary heart disease and its outcomes are partly regulated by estrogen and its receptors, but the roles of the latter in thrombogenicity are less well-defined.
93	from differences	違いから	54		
94	qualitative differences	質的違い	53	11106609	The **<qualitative differences>** in use-dependent block appear to be the result of differences in drug dissociation rate.
95	difference in	～における違い	2,298	12131084	There was no clinically significant **<difference in>** quality of life, or satisfaction with IPAA surgery.
96	difference in the	～における違い	625	11865422	There was no **<difference in the>** levels of KA between these groups.
97	difference in survival	生存率の違い	37	10493483	There is no statistical **<difference in survival>** according to diagnosis or type of lung transplant.
98	no difference in	～における違いのない	465	11790704	There was **<no difference in>** capillary blood volume between end diastole and end systole at baseline.
99	the difference in	～における違い	422	12397175	**<The difference in>** Dnmt1o and Dnmt1 levels is due to a developmentally regulated mechanism that degrades the Dnmt1 protein.
100	a difference in	～における違い	157	12042198	The gender difference in depression may result from **<a difference in>** a specific type of depression-anxious somatic depression.
101	this difference in	～におけるこの違い	95	11389612	**<This difference in>** activity may have bearing on the large disparity in cytotoxicity of the two molecules.
102	significant difference in	～における有意な違い	413		
103	little difference in	～における違いのほとんどない	49	9588732	Despite differences in disease aggressiveness and disease pattern, there was **<little difference in>** the medical therapy in the men compared with the women.

	English	Japanese	Frq.	PubM_ID	Sample
104	-fold difference in	～における～倍の違い	69	10563825	These experiments show that 20 of the 450**<-fold difference in>** sensitivity between the T. foetus and human IMPDHs derive from the residues in the MPA binding site.
105	difference between	～の間の違い	939	11891237	Genome size **<difference between>** wheat and rice is, therefore, mainly because of amplification of the gene-poor regions.
106	difference between @3 and	～と～の間の違い	409	10551226	There was no significant **<difference between computed radiography and>** screen-film radiography for image quality (P > .05).
107	difference between the	～の間の違い	379	11850447	A second **<difference between the>** PP and SC pathways is that the PP has a larger NMDA/AMPA charge ratio.
108	the difference between	～の間の違い	236	11583768	Economic analyses of medical interventions must also take into consideration **<the difference between>** efficacy and effectiveness.
109	significant difference between	～の間の有意な違い	182	11325850	Furthermore, analysis of polymorphisms for GSTM1, GSTT1, CYP1A1, and BCL2 showed no **<significant difference between>** ATL patients and healthy carriers.
110	no difference between	～の間の違いのない	93	9769302	In patients, in 25 stented segments in both the Palmaz-Schatz and Wiktor groups, there was **<no difference between>** QCA and QCU diameters.
111	difference was	違いが、～であった	380	12405829	A further **<difference was>** the marked pH dependence of the signal in EcMetAP, suggestive of a change in ligation.
112	difference was observed	違いが、観察された	67	10380879	Little **<difference was observed>** between neoplasias and their metastases.
113	difference was not	違いが、観察されなかった	60	10199742	This **<difference was not>** significant, however, in grafts harvested at >150 days.
114	difference was found	違いが見つけられた	49	10884355	The largest structural **<difference was found>** to occur in a flexible surface loop, consisting of residues 359 to 375 of the capsid protein.
115	this difference was	この違いが、～であった	93	10338513	**<This difference was>** not apparent following plate-bound anti-immunoglobulin E or SEA stimulation.
116	significant difference was	有意な違いが、～であった	63		
117	the difference was	違いが、～であった	62	12552003	**<The difference was>** most profound when cells were infected at a relatively low multiplicity of infection, presumably due to the compounding effects of multiple rounds of infection.
118	difference is	違いが、～である	131	10671512	The main **<difference is>** that insulin has a larger effect on the trafficking of vpTR in the adipocytes.
119	this difference is	この違いが、～である	63	11018029	**<This difference is>** due to a unique structural element in the MH1 domain of SMAD2 that inhibits protein-protein interactions in the basal state.
120	difference of	～の違い	116	10195599	Power computations indicate that the study has power to detect a mean **<difference of>** 2.8% in body fat.
121	a difference of	～の違い	44	10843860	However, the change in stability is more dramatic, with **<a difference of>** 2.6 kcal mol(-1) between pH 2.0 and pH 5.4.
122	difference spectra	差スペクトル	67	12196011	Raman **<difference spectra>** from crystals with the substrate bound are dominated by bands from the protein's amide bonds and aromatic side chain residues.

	English	Japanese	Frq.	PubM_ID	Sample
123	difference spectrum	差スペクトル	41		
124	the difference	違い	820	10608786	**<The difference>** remained significant after controlling for poultry exposure (P=.01).
125	the difference in	～における違い	422	11294640	**<The difference in>** the apparent affinity of 2'AMP is proposed to result from a rapidly equilibrating isomerization step that occurs in both mechanisms prior to the binding of NADPH.
126	the difference between	～の間の違い	236	10993850	However, **<the difference between>** atrial reversal and transmitral A wave duration was increased in the mutant rabbits (P:<0.001).
127	the difference was	違いが、～であった	62	10882763	**<The difference was>** especially pronounced among older women; for a woman 85 years of age or older, the adjusted relative risk was 0.75 (95 percent confidence interval, 0.68 to 0.83).
128	of the difference	違いの～	62	10716328	By applying the optimal timing to human studies, the statistical significance **<of the difference>** in deltaBP between patients with schizophrenia and healthy volunteers increased from P = 0.038 to 0.012.
129	for the difference	違いにとって	48	12130679	Exchanging the C-terminal domains between the two receptors revealed that these domains are largely responsible **<for the difference>** in coupling.
130	no significant difference	有為な違いのない	473	11732004	There was **<no significant difference>** in mean urine alcohol concentrations between the groups fed ethanol.
131	a significant difference	有為な違い	119	10232678	None of these three transporters showed **<a significant difference>** in abundance between the groups fed equimolar (7.2 mmol/220 g body wt per d for 7 d) NaHCO3 or NaCl.
132	statistically significant difference	統計的に有意な違い	91	9710093	No **<statistically significant difference>** exists in the deviation of such impairment between the groups.
133	this difference	この違い	474	12355491	However, **<this difference>** was explained by the between-group differences in expectations.
134	this difference was	この違いは、～であった	93	11698423	**<This difference was>** eliminated when uPA(-/-) and WT lymphoblasts were injected into uPA(-/-) recipients.
135	this difference is	この違いは、～である	63	10712212	**<This difference is>** expected because of the lower effective population size of mtDNA and Y chromosomes.
136	mean difference	平均の違い	115	10586936	The **<mean difference>** in age between the subjects with glaucoma and normal subjects was 29 days (P = 0.44, maximum 1.42 years).
137	-fold difference	～倍の違い	92	11373278	This difference in the carboxyl tail accounts for a 45**<-fold difference>** observed in transcription regulatory activity between Prx1a and Prx1b.
138	-fold difference in	～における～倍の違い	68	11121534	There was a more than 12-**<fold difference in>** the maximal amplitude of I(Na, P) of fluorescent compared to non-fluorescent cells.
139	little difference	ほとんど違いのない	71	10945533	**<Little difference>** in the accuracy of detection or localization was seen between FBP with and without AC.
140	little difference in	～においてほとんど違いのない	49	9765257	In the presence of DNA there was **<little difference in>** the stoichiometry of dTTP binding to 4A'.

	English	Japanese	Frq.	PubM_ID	Sample
141	major difference	主な違い	54	10233950	The **<major difference>** between the wild-type and both mutant viruses was the lower rate and lower level of mutant virus replication in these thymic subpopulations.
142	sex difference	性差	53	10446322	In some of these species, steroid hormones have been implicated in both the development and the maintenance of the **<sex difference>.**

	English	Japanese	Frq.	PubM_ID	Sample
	growth*	成長/増殖	30,044		
	growths	成長/増殖	11		
	the growth	成長/増殖	2,528		
	a growth +	成長/増殖	332		
Note	単独で使われることは少なく、他の名詞との組み合わせで、専門用語として使われる場合が多い。				
1	growth factor	成長因子/増殖因子	7,834		
2	epidermal growth factor	上皮細胞成長因子	1,349	10753510	Furthermore, insulin, insulin-like growth factor-I, and **<epidermal growth factor>** increased proliferation of progenitors at the retinal margin, while basic fibroblast growth factor had no effect.
3	transforming growth factor	トランスフォーミング成長因子	1,289	11074002	Smad4 plays a pivotal role in all **<transforming growth factor>** beta (TGF-beta) signaling pathways.
4	fibroblast growth factor	線維芽細胞成長因子	829	11734546	An additional homologous motif was detected in a gene product fused to the **<fibroblast growth factor>** receptor type 1 in patients with an atypical stem cell myeloproliferative disorder.
5	insulin-like growth factor	インシュリン様成長因子	700		
6	vascular endothelial growth factor	血管内皮増殖因子	758	9918929	Interestingly, production of **<vascular endothelial growth factor>** was observed in hepatocytes before endothelial disruptions.
7	platelet-derived growth factor	血小板由来成長因子	552	10446196	We measured migration of cultured tracheal myocytes in response to **<platelet-derived growth factor>,** interleukin-1beta, and transforming growth factor-beta.
8	nerve growth factor	神経成長因子	445	12034707	The neurotrophin **<nerve growth factor>** (NGF) supports neuronal survival by activating the transcription factor nuclear factor-kappaB (NF-kappaB).
9	hepatocyte growth factor	肝細胞増殖因子	220		
10	growth factor receptor	成長因子レセプタ	875	10777553	Here, we investigated mechanisms underlying CCh-stimulated epidermal **<growth factor receptor>** (EGFR) transactivation.
11	growth arrest	増殖停止	758	10220373	Cellular differentiation is a complex process involving **<growth arrest>,** exit from the cell cycle, and expression of differentiated cell-type-specific
12	growth inhibition	増殖抑制	627		
13	growth rate	増殖速度	508	11844765	The half-lives of ksgA- and pdxB-specific transcripts were not affected by the **<growth rate>,** whereas the half-life of the pdxA-ksgA cotranscript was too short to be measured accurately.
14	growth hormone	成長ホルモン	392	12160367	Human **<growth hormone>** is now readily available and approved for treatment of the growth hormone deficiency syndrome in adults.
15	growth cones	成長円錐	327	11035813	Semaphorin molecules serve as axon guidance signals that regulate the navigation of neuronal **<growth cones>.**
16	growth conditions	生育条件	291	11160101	We further demonstrate the utility of this technology for rapidly discovering genes that affect the fitness of E. coli under a variety of
17	growth phase	増殖相	185		

	English	Japanese	Frq.	PubM_ID	Sample
18	growth defect	増殖の欠陥	178	11679074	Disruptions of luxS in these mutants also produced a media-dependent **<growth defect>.**
19	growth suppression	増殖抑制	168	9710613	Inhibition of cyclin E-dependent kinases is required in p16-mediated **<growth suppression>.**
20	growth control	増殖のコントロール	166	11115882	Therefore, the first **<growth control>** point is not restricted to a narrow developmental window.
21	the growth medium	増殖培地	102	12444965	The enzyme is released into **<the growth medium>** during the transition to stationary phase.
22	growth retardation	増殖遅滞	138	10967069	Degree of **<growth retardation>,** measured by body weight, also appeared to be time dependent.
23	growth phenotype	増殖の表現型	108		
24	growth plate	成長板	97		
25	growth regulation	成長調節	86		
26	growth advantage	増殖優位	76		
27	cell growth	細胞増殖	2,178	11585768	Here we show that Notch signaling may be involved in prostatic development and cancer **<cell growth>.**
28	tumor growth	腫瘍の増殖	990	11118063	These data suggest that SCF modulates **<tumor growth>** and angiogenesis via the involvement of mast cells.
29	plant growth	植物の生育	163	9880341	The genetic manipulation of within-plant nutrient movement may therefore provide a means to enhance **<plant growth>** under conditions of variable soil nutrient availability.
30	axon growth	軸索成長	111	10954840	These neurotrophins also affect trigeminal **<axon growth>** within the whisker pad.
31	tissue growth	組織成長	88	10921883	Re-expression of the AT(2) receptor in remodeling tissues in the adult is linked to control of **<tissue growth>** and regeneration.
32	root growth	根の成長	78	12535345	The act7-4 mutant showed the most dramatic reduction in **<root growth>.**
33	anchorage-independent growth	足場非依存性の増殖	227	10463612	In this study, the activation of NF-kappaB was examined as a mechanism through which Trx overexpression might promote **<anchorage-independent growth>.**
34	normal growth	正常な成長	186	11358958	In this report, we show that E1A inhibits the **<normal growth>** of Saccharomyces cerevisiae HF7c, and this inhibition also depends on the domains required for transcriptional regulation.
35	cellular growth	細胞の増殖	137	11880344	By contrast, RBF-280 does not block activated Ras-induced **<cellular growth>.**
36	bacterial growth	細菌の増殖	119	10816480	In contrast, while the absence of IL-4 resulted in increased IFN-gamma production, this had no significant effect upon **<bacterial growth>.**

	English	Japanese	Frq.	PubM_ID	Sample
37	exponential growth	指数関数的な増殖	116	11752476	We propose a stochastic model of aging to explain deviations from **<exponential growth>** in mortality rates commonly observed in empirical studies.
38	vegetative growth	栄養生長	113	12058023	Yeast cells organize their actin cytoskeleton in a highly polarized manner during **<vegetative growth>.**
39	axonal growth	軸索成長	99		
40	slow growth	遅い成長	97		
41	fetal growth	胎児成長	96		
42	dependent growth	依存性の成長	95		
43	filamentous growth	繊維状の成長	91		
44	intracellular growth	細胞内の成長	81		
45	in vitro growth	試験管内での成長	80		
46	-induced growth	～に誘導された成長～	185	10640727	Pyrazolopyrimidine, a selective inhibitor of Src family tyrosine kinases, significantly blocked the VEGF-**<induced growth>** of KS cells.
47	-mediated growth	～に仲介された成長～	135	9557678	This result indicates that functional transactivation activity is required for acute E2-**<mediated growth>** inhibition.
48	growth inhibitory	成長抑制の	308	12234997	Treatment of cells with KIP1/P27 antisense oligonucleotides reversed the **<growth inhibitory>** effects of corticosterone.
49	growth regulatory	成長調節の	76	10906133	We show here that a novel **<growth regulatory>** molecule is also the target of MDM2-mediated inhibition.
50	growth of	～の増殖	2,385	10758168	**<Growth of>** mutant cells was inhibited by a nitrosative challenge that had little effect on wild-type cells, whereas the resistance of mutant cells to oxidative stress was unimpaired.
51	the growth of	～の増殖	1,068	9623977	We evaluated the effect of E2F-1 overexpression on **<the growth of>** gliomas in vitro and in vivo.
52	growth of @3 cells	～細胞の増殖	462	12526812	EPIs inhibit the **<growth of epithelial cells>** but induce them to secrete the neutrophil attractant IL-8, while PEPI blocks neutrophil activation by tumor necrosis factor, preventing release of oxidants and proteases.
53	growth in	～における増殖	1,380	10906194	These results suggest that m09 is dispensable for viral **<growth in>** these organs and that the presence of the transposon sequence in the viral genome does not significantly affect viral replication in vivo.
54	growth in @3 cell	～細胞における増殖	138		
55	growth on	～における増殖	260	11673438	Insertional inactivation of sigD, sigE, and sigF genes did not affect **<growth on>** nitrate under standard laboratory conditions but did transiently impair the abilities of sigD and sigE mutant strains to establish diazotrophic
56	growth by	～によって～の増殖を～	224	12019157	Our results suggested that MCP-1 is involved in the suppression of human glioblastoma cell **<growth by>** cx43.

	English	Japanese	Frq.	PubM_ID	Sample
57	growth at	～(温度など)における増殖	212	11737651	Complementation of the insertional mutant with wild-type VPH1 resulted in a recovery of virulence factor expression, normal **<growth at>** 37 degrees C and restoration of full virulence.
58	growth with	～を伴う増殖	83	9696779	Overproduction of AST enzymes resulted in faster **<growth with>** arginine and aspartate.
59	growth as		81		
60	growth during	～の間の増殖	77	12562948	Glucose clamp procedures were used to determine whether the slowing of fetal **<growth during>** the final third of gestation in overnourished adolescent ewes is due to a reduction in placental glucose transport
61	growth to	～への増殖	76	11976310	Disruption of aerR resulted in increased photopigment biosynthesis during aerobic **<growth to>** a level similar to that of disruption of crtJ.
62	growth under	～下の増殖	67	12383080	Lines 271 and 223 showed enhanced **<growth under>** salinity when compared with the control and had lower sodium in the root.
63	growth through	～を経た/～による増殖	59	11504921	Present data show that FEZ1/LZTS1 inhibits cancer cell **<growth through>** regulation of mitosis, and that its alterations result in abnormal cell growth.
64	of growth	増殖の～	1,139	12067339	Two of the five putative antiporter mutants exhibit a characteristic interplay between the pH and Na+ dependence **<of growth>,** but only one of the antiporters appears to be necessary for high NaCl tolerance.
65	for growth	増殖のために	495	11751818	Neisseria gonorrhoeae ordinarily requires both HpuA and HpuB to use hemoglobin (Hb) as a source of iron **<for growth>.**
66	in growth	増殖における	493	11154273	Cell-cell and cell-ECM signalings were required to elicit VHL-dependent differences **<in growth>** and differentiation.
67	to growth	増殖に対する～	329	12208765	DLD-1 cells that stably express 12S E1A are resistant **<to growth>** suppression by DRA, similar to HEK293 cells.
68	by growth	増殖(～)によって	255	11517341	We also discovered that transcription of genes encoding hemolysins, and proteins with inferred roles in iron regulation, transport, and homeostasis, was influenced **<by growth>** at 40 degrees C.
69	during growth	増殖の間	231	10092594	YJR019C mRNA levels were increased significantly **<during growth>** on fatty acids, suggesting that it may play a role in fatty acid metabolism.
70	on growth	増殖に対する～	137	11123695	This level of ppGpp had no effect **<on growth>** rate, implying a causal role for ppGpp in activating actII-ORF4 transcription.
71	with growth	増殖～による/増殖～と	136		
72	after growth	増殖の後	64	9784520	The relative virulence of strain Reynolds and its capsule-defective mutants **<after growth>** on either solid or liquid medium was examined in mice challenged intraperitoneally or intravenously.
73	as growth		62		
74	growth was	増殖は、～であった	236	11516151	The observed stimulation of radial expansion did not compensate for the decreased elongation, and overall **<growth was>** reduced in the

	English	Japanese	Frq.	PubM_ID	Sample
75	growth is	増殖は、～である	222	9725901	When the amount of IGFBP-5 that is bound to ECM is increased by exogenous addition, IGF-I's effect on fibroblast **<growth is>** enhanced.

	English	Japanese	Frq.	PubM_ID	Sample
	importance*	重要性	3,986		
Not	定冠詞つきで使われることが多い。直前に of が共起する場合には、定冠詞の使用は無く、important の意味で好んで使われる表現である。				
1	the importance of	～の重要性	2,328	10878041	This finding highlights **<the importance of>** careful molecular analysis in addition to standard biochemical tests in identifying the increasing number of Helicobacter spp. isolated from humans and animals.
2	the importance of the	～の重要性	431	12419235	These data provide insights into the effects of histone H3 hypoacetylation in vivo and underscore **<the importance of the>** overall charge of the histone tail for transcription.
3	the importance of this	この～の重要性	162	9986832	**<The importance of this>** virus as a cause of disseminated disease, however, has remained underappreciated.
4	the importance of these	これら～の重要性	99	11607073	**<The importance of these>** results is discussed in relation to the physiology of lignin biodegradation and possible extracellular regulatory mechanisms for the control of oxidase and peroxidase activities.
5	demonstrate the importance of	～の重要性を実証する	116	9699656	These results **<demonstrate the importance of>** both carcinogen exposure and hormone stimulation on the induction of neoplasia in the prostate of Wistar-Unilever rats.
6	underscore the importance of	～の重要性を強調する	79	10068598	These results **<underscore the importance of>** the class II-mediated immune response in recovery from HBV infection.
7	highlight the importance of	～の重要性を強調する	78	10473604	These findings **<highlight the importance of>** inducible phosphorylation of RelA in the control of NF-kappaB activity.
8	emphasize the importance of	～の重要性を強調する	74	11498786	Our results **<emphasize the importance of>** c-Myc suppression in GC-evoked apoptosis of CEM-C7-14 cells.
9	of the importance of	～の重要性の～	53	11879632	As our appreciation **<of the importance of>** the process has grown, its study has matured, moving beyond the single cell to the entire organism.
10	for the importance of	～の重要性にとって～	48	12535210	This study provides further evidence **<for the importance of>** homeobox transcription factors in the regulation of scarless wound healing.
11	confirm the importance of	～の重要性を確認する	46	10225932	These results **<confirm the importance of>** biofilm production, mediated by PIA/HA, in the pathogenesis of S. epidermidis experimental foreign body infection.
12	despite the importance of	～の重要性にもかかわらず	41	10603406	**<Despite the importance of>** LAM to the pathogenesis of mycobacterial infection, there is no information available on its fate in vivo.
13	determine the importance of	～の重要性を決定する	40	9817695	We sought to **<determine the importance of>** the timing and magnitude of expiratory muscle activity in causing patient-ventilator dyssynchrony.
14	indicating the importance of	～の重要性を示している	37	11032860	Acute CD4 T cell-mediated rejection required MHC class II expression by the allograft, **<indicating the importance of>** direct graft recognition.
15	demonstrating the importance of	～の重要性を実証している	36	10823941	Loss-of-function mutations in tyrosinase are the cause of oculocutaneous albinism, **<demonstrating the importance of>** the enzyme in pigmentation.
16	assess the importance of	～の重要性を評価する	36	10025828	The goal of this study was to **<assess the importance of>** neuronal MAO activity on the kinetics of PHEN in the normal human heart.

	English	Japanese	Frq.	PubM_ID	Sample
17	the relative importance of	～の相対的な重要性	149	12511954	**<The relative importance of>** the two mechanisms has not been investigated except for a limited study, which suggested that the role of duplicate genes in compensation is negligible.
18	the functional importance of	～の機能的な重要性	105	10777730	These experiments underscore **<the functional importance of>** purine contacts with three residues in the cyclic nucleotide-binding domain.
19	the potential importance of	～の潜在的な重要性	47	11164784	These findings underscore **<the potential importance of>** EW in alcohol-related behaviors.
20	the physiological importance of	生理学的重要性	28	11114746	**<The physiological importance of>** these kinases was amply demonstrated by their link to the development of immunodeficiency diseases, due to germ-line mutations.
21	importance in	～における重要性	324	10692485	Regulation of this protein may be of critical **<importance in>** modulating the role of Ang II in vascular disease.
22	its importance in	～におけるそれの重要性	40	9989697	Although body fat patterning has been related to adverse health outcomes in adults, **<its importance in>** children and adolescents is less certain.
23	their importance in	～におけるそれらの重要性	32	12070088	However, our results indicate that dlx3 and dlx7 act in concert and **<their importance in>** placode formation is only revealed by inactivating both paralogs.
24	importance for	～のための重要性	160	11371635	Despite its obvious **<importance for>** carcinogenesis, the role of Gln-61 in the GAP-stimulated GTPase activity of Ras has remained a mystery.
25	importance to	～に対する重要性	92	10516054	This factor is of obvious **<importance to>** the design of gene therapy vectors based on HSV-1.
26	of importance	重要である	92	10728689	Increases in cell proliferation are widely viewed as being **<of importance>** in carcinogenesis.
27	be of importance	重要である	31	10639434	We conclude that MBL may **<be of importance>** in first-line immune defense against several important pathogens.
28	of critical importance	決定的に重要である	48	10744670	Oxidation of low density lipoprotein (LDL) may be **<of critical importance>** in the pathogenesis of atherosclerosis.
29	of particular importance	特に重要である	46	11816594	**<Of particular importance>** was that the sensitivity was proportional to the number of Ru(II)Den layers.
30	of fundamental importance	基本的に重要である	36	9917380	This process is **<of fundamental importance>** for understanding the mechanism of action of toxins and antimicrobial peptides and the stability of membrane proteins.
31	of great importance	たいへん重要である	28	11986668	Given the broad efficacy of minocycline, understanding its mechanisms of action is **<of great importance>.**
32	its importance	それの重要性	89	11698427	Although the role of CD28-B7 interaction in the activation of naive T cells is well established, **<its importance>** in the generation and maintenance of T cell memory is not well understood.
33	its importance in	～におけるそれの重要性	40	11532968	The present study identifies a novel role for RhoA and further suggests **<its importance in>** regulating cardiac cellular function.

	English	Japanese	Frq.	PubM_ID	Sample
34	their importance	それらの重要性	75	10880506	Here we used multiple strategies to map the SF2/ASF binding sites and determine **<their importance>** for ESE function.
35	their importance in	～におけるそれらの重要性	32	11158577	The changes in flexibility occurred in regions involved in substrate binding and turnover, suggesting **<their importance in>** enzyme regulation.

	English	Japanese	Frq.	PubM_ID	Sample
	knowledge*	知識	1,589		
Note	knowledge of の用例が多い。To our knowledge（我々の知る限りでは）は頻出の定型句である。				
1	knowledge of	～に関する知識	659	11792858	
2	knowledge of the	～に関する知識	329	10052770	**<Knowledge of the>** patient's IL-1 genotype and smoking status will improve the clinician's ability to accurately assign prognosis and predict tooth survival.
3	knowledge of the structure	構造に関する知識	21	12476308	Despite extensive **<knowledge of the structure>** and functional domains of BCR-ABL, its precise function in transformation is not known.
4	our knowledge of	～に関する我々の知識	84	9860992	Consequently, the cloning and characterization of the CFA biosynthetic gene cluster will contribute significantly to **<our knowledge of>** polyketide synthesis in Pseudomonas.
5	without knowledge of	～に関する知識なしに	26	11138679	Images were interpreted **<without knowledge of>** clinical information by an experienced reviewer to determine seizure focus and regional metabolic changes in the brain.
6	knowledge about	～に関する知識	92	12181100	Growing **<knowledge about>** gene-disease associations will lead to new opportunities for genetic testing.
7	knowledge on	～に関する知識	20	12482955	These findings generate testable hypotheses when combined with existing **<knowledge on>** signaling pathways and protein-protein interactions.
8	knowledge that	～という知識	41	12576052	The method is based on the **<knowledge that>** protein kinase C (PKC) adds three phosphates to each molecule of its preferred substrate, myelin basic protein (MBP).
9	of knowledge	知識の～	59	12639949	Despite the explosion **<of knowledge>** brought about by recombinant DNA technology, links between classic physiology and molecular biology are often fragmentary and tenuous.
10	to our knowledge	我々の知る限りでは	403	11233916	**<To our knowledge>,** this is the first reported case of ureteral obstruction in a transplant kidney caused by an ovarian tumor.
11	to our knowledge, this is the first	我々の知る限りでは、これは最初の～である	142	12351620	**<To our knowledge, this is the first>** successful expression of a full-length malarial parasite integral membrane protein in yeast.
12	to our knowledge, this is the first report	我々の知る限りでは、これは最初の報告である	45	9771854	**<To our knowledge, this is the first report>** to document a reduction in LDL oxidation in coronary artery disease patients undergoing atherosclerosis-reversal therapy.
13	to our knowledge, this is the first report of	我々の知る限りでは、これは～の最初の報告である	28	10856296	**<To our knowledge, this is the first report of>** control of mdm2 at the post-transcriptional level and in a p53-independent manner.
14	to our knowledge, this is the first demonstration	我々の知る限りでは、これは最初の証明である	18	10524625	**<To our knowledge, this is the first demonstration>** that visual cortical processing is necessary for normal tactile perception.
15	to our knowledge, this is the first example	我々の知る限りでは、これは最初の例である	14	9799609	**<To our knowledge, this is the first example>** of an endogenous gene that shows strain-dependent developmental relaxation of imprinting.
16	to our knowledge, the	我々の知る限りでは	58	12592398	**<To our knowledge, the>** present example represents the first documented case of product-assisted catalysis in an enzyme-catalyzed reaction.
17	to our knowledge of	～について我々の知る限りでは	30	10640782	This is the first report **<to our knowledge of>** a functional mutation in a chemokine gene promoter.

	English	Japanese	Frq.	PubM_ID	Sample
18	to the best of our knowledge	我々の最も良く知る限りでは	37	11005730	**<To the best of our knowledge>,** this pattern of non-syndromic, familial tooth agenesis has not been previously described in the literature.
19	current knowledge	現在の知識	69	10799402	This article reviews **<current knowledge>** of the effects of maternal anemia and iron deficiency on pregnancy outcome.
20	current knowledge of	～に関する現在の知識	45	10839724	**<Current knowledge of>** the relation of C. pneumoniae and atherosclerosis comes from observational (e.g., seroepidemiology and tissue studies) and experimental studies.
21	prior knowledge	事前の知識	35	10733990	These algorithms exploit the **<prior knowledge>** that only a limited number of fluorescent molecule species whose lifetimes do not vary spatially are present in the sample.
22	prior knowledge of	～に関する事前の知識	31	12218152	The facile enrichment of tumor-reactive TDLN T cells, based on the CD62L(low) phenotype, circumvents the need for **<prior knowledge of>** the relevant tumor Ags.

	English	Japanese	Frq.	PubM_ID	Sample
	observation*	観察	6,897		
	observations	観察	4,618		
	observation	観察	2,279		
Note	複数形での利用が多く、observations suggest that は頻出の文型である。				
1	observations suggest that	観察が、〜であることを示唆する	679	11679403	These **<observations suggest that>** SB203580-mediated protection depends on the inhibition of p38alpha MAPK.
2	these observations suggest that	これらの観察が、〜であることを示唆する	553	12134262	**<These observations suggest that>** the Inaba antigen should be maximized in cholera vaccine designs.
3	our observations suggest that	我々の観察が、〜であることを示唆する	59	9832515	**<Our observations suggest that>** these gene products affect different aspects of the signal transduction pathway for PHO5 repression.
4	observations indicate that	観察が、〜であることを示す	302	10601311	These **<observations indicate that>** PDK1 regulates the activation of p70 S6 kinase and provides evidence that PDK1 mediates the phosphorylation of p70 S6 kinase at Thr-412.
5	these observations indicate that	これらの観察が、〜であることを示す	225	11461935	**<These observations indicate that>** the early stage of diabetes mellitus provokes accelerated renal cortical superoxide anion production in a setting of normal or increased NO production.
6	our observations indicate that	我々の観察が、〜であることを示す	44	9748453	**<Our observations indicate that>** an exoY mutant, which does not produce succinoglycan, is symbiotically defective because it cannot initiate the formation of infection threads.
7	these observations provide	これらの観察が、〜を提供する	128	9485447	**<These observations provide>** significant new insights to the molecular mechanism of allosteric regulation in the pyruvate kinase system.
8	these observations provide evidence	これらの観察が、証拠を提供する	31	10500209	**<These observations provide evidence>** for a possible association of JCV with human medulloblastomas.
9	these observations demonstrate that	これらの観察が、〜であることを実証する	77	11226304	**<These observations demonstrate that>** heritable factors markedly influence iron homeostasis in response to Hfe disruption.
10	these observations support	これらの観察が、〜を支持する	98	12057983	**<These observations support>** the current emphasis on controlling obesity to prevent adult coronary heart disease.
11	these observations are consistent with	これらの観察が、〜と一致している	79	10066762	**<These observations are consistent with>** the hypothesis that elevated [Mg2+]i is required for apoptosis.
12	these observations show that	これらの観察が、〜であることを示す	36	10208740	**<These observations show that>** testosterone-dependent Shh expression in the urogenital sinus is necessary for the initiation of prostate development.
13	observations of	〜の観察	285	11705969	These dynamic **<observations of>** the parasite begin to reveal how giardia swim and divide.
14	observations in	〜における観察	121	12454285	We report **<observations in>** patients with visual extinction demonstrating that detection of visual events is gated by attention at the level of processing at which a stimulus is selected for action.
15	observations on	〜に関する観察	59	11886863	Together with earlier **<observations on>** the structure and expression of this molecule, our data support the hypothesis that pigpen helps regulate endothelial cell differentiation state.

	English	Japanese	Frq.	PubM_ID	Sample
16	observations to	～に対する観察	42	11711589	However, there is a paucity of data supporting the relevance of these **<observations to>** the in vivo situation.
17	observations that	～という観察	193	9869609	These are the first reported **<observations that>** CaR is expressed in different epithelial cells of mammalian gastric mucosa and its enteric nerve regions.
18	previous observations that	～という以前の観察	39	12483219	These findings are consistent with **<previous observations that>** phosphorylation of vimentin affects its intracellular localization and that vimentin is a substrate for protein kinase C (PKC).
19	these observations	これらの観察	2,555	11034381	**<These observations>** indicated the presence of a Ly-6 ligand(s) on the surface of lymphoid cells.
20	of these observations	これらの観察の～	129	10330170	In view **<of these observations>,** we set out to investigate further the nature of the signaling pathway linking GPCRs to the c-jun promoter.
21	basis of these observations	これらの観察の基礎	37	11560491	On the **<basis of these observations>,** we conclude that the growth inhibitory activity exhibited by MT-3 is a result of a combination of local structural differences and global dynamics in the beta-domain.
22	based on these observations	これらの観察に基づいて	78	10982360	**<Based on these observations>,** a number of single-stranded RNA templates were synthesized and tested along with short RNA primers ranging from two to five nucleotides.
23	based on these observations, we	これらの観察に基づいて、我々は～	54	10078548	**<Based on these observations, we>** hypothesized that h-IAPP cytotoxicity is mediated by membrane damage induced by early h-IAPP aggregates.
24	with these observations	これらの観察と	61	11572868	Consistent **<with these observations>,** we have demonstrated that purified TFIIH directly inhibits CDK9 autophosphorylation.
25	consistent with these observations	これらの観察と一致している	51	11601987	A model is presented that is **<consistent with these observations>,** and implications for targeted regulation of gene transcription are discussed.
26	for these observations	これらの観察にとって	31	11114304	To understand the molecular basis **<for these observations>,** we characterized a transcriptional regulatory region of the murine CD45 gene containing exons 1a, 1b, and 2.
27	from these observations	これらの観察から	29	12509472	**<From these observations>,** we propose the existence of a recombination-independent and mutagenic repair pathway for the removal of ICLs in mammalian cells.
28	taken together, these observations	まとめると、これらの観察	71	10477606	**<Taken together, these observations>** suggest that alpha-MSH may exert an inhibitory effect on the mast cell-dependent component of a specific inflammatory response.
29	taken together, these observations suggest	まとめると、これらの観察は、～を示唆する	28	10330182	**<Taken together, these observations suggest>** that the nuclear bodies within a cell may be heterogeneous with respect to both composition and function.
30	previous observations	以前の観察	146	12584567	These studies, and our **<previous observations>,** provide supportive evidence that deregulated expression of C/EBPbeta-2 contributes to malignant conversion of the human breast.

	English	Japanese	Frq.	PubM_ID	Sample
31	previous observations that	～である以前の観察	39	11312334	This is consistent with **<previous observations that>** the CD2 LCR contains a T-cell-specific enhancer.
32	with previous observations	以前の観察と	31	9560200	When combined **<with previous observations>,** these results suggest that RNA pol II may terminate by a mechanism closely related to the rho-dependent mechanism of prokaryotes.
33	our previous observations	我々の以前の観察	28	12019173	On the basis of **<our previous observations>** obtained from serial analysis of gene expression, we have constructed a specialized cDNA array for the study of ovarian cancer.
34	experimental observations	実験上の観察	87	9660904	The predictions of the model are compatible with many of the **<experimental observations>.**
35	recent observations	最近の観察	76	10747054	**<Recent observations>** suggest that these genes are likely to control cell cycle checkpoint responses to DNA damage and incomplete replication.
36	with observations	観察と	44	10995241	These data identify Trp510 as the primary AST in skeletal S1 in agreement **<with observations>** from Dictyostelium and smooth muscle
37	observation that	～である観察	742	10692102	Our findings with the NIKS cells support the **<observation that>** spontaneous immortalization is not linked to alterations in squamous differentiation or the ability to undergo apoptosis.
38	the observation that	～である観察	527	11799188	These results are consistent with **<the observation that>** empirically derived vaccines developed by mouse brain passage of dengue and YF viruses have increased neurovirulence for mice but reduced viscerotropism for humans.
39	observation of	～の観察	393	11103785	The **<observation of>** beta-catenin mutations in Wilms tumors suggests that abrogation of the Wnt signaling pathway also plays a role in some Wilms tumors.
40	the observation of	～の観察	174	10625465	**<The observation of>** a burst provides evidence that the release of the product is most likely the rate-limiting step in the overall kinetic pathway for the enzymatic reaction during a single deoxynucleotide incorporation event.
41	direct observation of	～の直接の観察	45	9867826	This is the first **<direct observation of>** a ligand binding to beta-Lg.
42	this observation suggests	この観察が、～であることを示唆する	69	10526095	**<This observation suggests>** that drinking induced by systemic ANG II does not require an intact metabolic cascade within the brain for the formation of ANG II (or ANG II-like effector peptide) from ANG I.
43	this observation suggests that	この観察は、～であることを示唆する	60	10231518	**<This observation suggests that>** small molecules interfering with this recognition process may prevent entry of the toxins into intestinal cells, thereby averting their devastating effects.
44	observation period	観察期間	68	9808590	GVHD target tissues were assessed histologically during a 38-day post-BMT **<observation period>.**
45	the observation	観察	766	11357124	Here we report **<the observation>** of the ideal Josephson effect in 4He.
46	the observation of	～の観察	174	11103785	**<The observation of>** beta-catenin mutations in Wilms tumors suggests that abrogation of the Wnt signaling pathway also plays a role in some Wilms tumors.

	English	Japanese	Frq.	PubM_ID	Sample
47	the observation that	～である観察	527	12471108	The functional outcome of these antagonistic associations is revealed further by **<the observation that>** Tax and p53 induce apoptosis in activated T cells through separate and mutually exclusive pathways.
48	by the observation	観察によって	156	10908576	A role for p38 MAP kinase was further substantiated **<by the observation>** that SB203580 blocked translocation of the cell death activator, Bax, from the cytosol to the mitochondria after treatment with SNP.
49	with the observation	観察と	83	12146955	This is consistent **<with the observation>** that the minor groove of A-tract DNA narrows in the 5' to 3' direction, apparently becoming too narrow after two base pairs for the entry of a fully hydrated divalent
50	on the observation	観察に対して	43	11035030	This technique relies **<on the observation>** that the degree of physical intimacy of molecules can be assessed by the tendency of proximal fluorophores to exchange energy.
51	this observation	この観察	637	12571363	**<This observation>** may bring to light a mechanism for aging brain injury that may have substantial medical impact, given the large number of elderly individuals with impaired glucose metabolism.
52	this observation suggests	この観察が、～を示唆する	69	10446057	**<This observation suggests>** a mechanism by which asymmetrically disposed cis DNA elements could influence the expression of the primordial transposon and thereby capture RAGs for vertebrate
53	with this observation	この観察と	79	11719504	Consistent **<with this observation>,** the inhibitory effects of IL-4 on RANKL-induced NF-kappa B and mitogen-activated protein kinase activation are STAT6-dependent.
54	consistent with this observation	この観察と一致している	68	10713083	**<Consistent with this observation>,** in gel retardation assays, purified TraM abolished the DNA binding activity of TraR in a concentration-dependent manner.
55	of this observation	この観察の～	39	9554878	On the basis **<of this observation>,** cyclic cyanoguanidines have been designed, synthesized, and evaluated as HIV-1 protease (PR) inhibitors.
56	of observation	観察の～	68	12054793	Three types **<of observation>** suggest how changes in the functional status of eIF4F modulate mRNA stability in vivo.
57	our observation that	～である我々の観察	50	11416129	**<Our observation that>** S phase occurs more slowly for cdc20(DeltaN-term) cells suggests that DNA damage might result from defects in DNA synthesis.

	English	Japanese	Frq.	PubM_ID	Sample
	understanding*	理解	4,512		
	understanding	理解	4,509		
	understandings	理解	3		
Note	understanding of の形で使う場合が、非常に多い。				
1	understanding of	～に対する理解	2,428	10097108	Much of our current **<understanding of>** checkpoints comes from genetic studies conducted in yeast.
2	the understanding of	～に対する理解	223	12482943	The GPR-4 line of transgenic rats provides a genetic model for **<the understanding of>** the role of pulsatile gonadotropin release in follicular development.
3	an understanding of	～に対する理解	229	10469837	Animal models, in particular the mouse, have also contributed greatly to **<an understanding of>** these disorders.
4	further our understanding of	～に対する我々の理解を発展させる	63	11278726	To **<further our understanding of>** the regulatory role played by CcrM, we sought to investigate its biophysical properties.
5	improve our understanding of	～に対する我々の理解を改善する	42	12194847	Lessons learned from C. elegans should **<improve our understanding of>** how cells become polarized and divide asymmetrically during development.
6	enhance our understanding of	～に対する我々の理解を強化する	32	11744623	These data **<enhance our understanding of>** the complex molecular mechanisms controlling skeletal muscle mass in response to increased physical activity.
7	increase our understanding of	～に対する我々の理解を増加させる	29	11777960	These results **<increase our understanding of>** the mechanisms by which NKG2D activates immune effector cells and may have implications for immune surveillance against pathogens and tumors.
8	extend our understanding of	～に対する我々の理解を広げる	28	11462053	These results **<extend our understanding of>** the structure-function relationships in the E glycoprotein of DEN virus and provide the first direct evidence that domain III encodes the primary flavivirus receptor-binding motif.
9	contribute to our understanding of	～に対する我々の理解に寄与する	25	11086294	Analysis of the function of IDA-1 should **<contribute to our understanding of>** the function of these proteins in signal transduction, vesicle locomotion, and exocytosis.
10	contribute to the understanding of	～の理解に寄与する	19	12119097	Functional analysis of set-1 may **<contribute to the understanding of>** the molecular role of the SET domain.
11	a better understanding of	～に対するよりよい理解	279	11325817	Improved therapeutics will require **<a better understanding of>** the molecular nature of these tumors.
12	to gain a better understanding of	～に対するよりよい理解を得るために	54	12231965	**<To gain a better understanding of>** the role of these genes during stress, their expression has been studied in the drought-resistant relative of tomato, Lycopersicon pennellii.
13	lead to a better understanding of	～に対するよりよい理解につながる	27	11092763	Studies of structure-function relationships in SMN protein may **<lead to a better understanding of>** SMA pathogenesis.
14	provide a better understanding of	～に対するよりよい理解を提供する	23	10366890	Therefore, the study of proteomes under well-defined conditions can **<provide a better understanding of>** complex biological processes and inference of protein function.
15	our current understanding of	～に対する我々の現在の理解	39	11931755	This article reviews these latest advances and presents **<our current understanding of>** caspase regulation during apoptosis.

	English	Japanese	Frq.	PubM_ID	Sample
16	the current understanding of	～に対する現在の理解	23	11133948	Genes the expression of which was detected by this method were enumerated, and results were compared with **<the current understanding of>** E. coli physiology.
17	a detailed understanding of	～に対する詳細な理解	36	10518486	An experimental analysis of neurogenesis requires **<a detailed understanding of>** wild-type neural development.
18	a complete understanding of	～に対する完全な理解	45	10409428	**<A complete understanding of>** human erythropoiesis will require a robust description of transcriptional activity in hematopoietic cells that proliferate and differentiate in response to erythropoietin (EPO).
19	a more complete understanding of	～に対するより完全な理解	45	11896169	The development of chronoamperometric techniques in Aplysia now paves the way for **<a more complete understanding of>** the contribution of the serotonergic modulatory pathway to memory processing in this system.
20	further understanding of	～に対するいっそうの理解	42	10395807	**<Further understanding of>** the structure and function of these mutant genes will be beneficial in explaining the molecular pathogenesis of DCC.
21	advances in our understanding of	～に対する我々の理解における進歩	38	12140314	Successful investigation of common diseases requires **<advances in our understanding of>** the organization of the genome.
22	advances in the understanding of	～の理解についての進歩	17	10841566	Despite marked **<advances in the understanding of>** allergic responses, the mechanisms regulating gastrointestinal allergy are not very well understood.
23	implications for our understanding of	～に対する我々の理解の意味	36	12130481	Although there is much debate regarding these observations, the **<implications for our understanding of>** clot formation and therapeutic intervention may be of major importance.
24	implications for the understanding of	～ついての理解の意味	36		

Note

1. As the number (4) in the title "Collocational Analysis of Life Science English (4)" indicates, this paper is the fourth report of the series. In order to avoid redundancy, the introductory part of the current article is a much more concise version of the one appearing in the first report in this series. To obtain more detailed information on pedagogical aspects and practical applications, 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, understand.*
4. In the third report (Ohtake et al., 2006), the list includes *addition, analysis, hypothesis, identification, level, production, risk.*

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