

Collocational Analysis of Life Science English (1)

– Lists of common collocates of *possibility, probability, implication, involvement, absence, presence, evidence* –

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Introduction

The aim of this paper is to illustrate how certain English words are typically used in the life sciences and in so doing to help Japanese researchers, as learners of English, 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 particular 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).

In this respect, native speakers have a far deeper appreciation than second language learners of the range of meanings a word may have, its typical collocations, and the contexts in which it may be used. On the other hand, since most Japanese learn English as a foreign language, they tend to have little chance to use it in their everyday life. What they singularly lack is sufficient exposure to the target language in natural settings, and what they plainly need to learn is how each word is actually used in particular

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contexts (Kirsner, 1994). Unless learners have been exposed to a significant amount of authentic English, they will have considerable difficulty in distinguishing natural sounding collocations from deviant ones (Pawley & Syder, 1983). This can be a hindrance to clear communication and may cause problems when writing an academic paper (Lennon, 1998). Given the actual conditions under which Japanese learners are studying English, with relatively little exposure to natural English, it is unrealistic to expect them to develop native-like intuition regarding English usage.

In view of this, it is not surprising that Japanese researchers tend to produce erroneous English expressions in their writing such as *high possibility* (e.g., there is a high possibility that the patient will suffer from severe side-effects) and *to study about* (e.g., to study about the functions of the kidney). In many cases, these expressions are not considered problematic by nonnative writers because they are unaware that *high* does not collocate with *possibility* and that *study* is generally used as a transitive verb and should not be followed by a preposition. If they were familiar with common expressions involving *study* or *possibility*, they might refrain from inserting the preposition *about* after the verb *study* or using the adjective *high* to modify the noun *possibility*. The problem is that most Japanese learners of English have insufficient information concerning which lexico-syntactic patterns and expressions are natural and common in particular contexts. There is therefore a need for systematic guidance on how words interact with other words to form particular meanings. Language learners should have more opportunities to encounter the typical linguistic forms and structures of academic discourse and learn to recognize which words frequently co-occur in academic writing.

Collocations

Words are not purely independent entities in that they derive their meaning in association with other words in the co-text (Beheydt, 1987; Leffa, 1998). A sound knowledge of typical lexical patterns and collocations is therefore an essential component of linguistic proficiency. The study of lexical relations, however, has received relatively little attention in English language teaching in Japan, where the focus has been on the rote learning of long lists of English vocabulary with little consideration given to their typical patterns of use. This has had an adverse effect on

nonnative writers in that they tend to make vocabulary selections that are inappropriate in particular contexts. The resulting expressions will sound unnatural to native speakers and may affect intelligibility to a certain extent. Unfortunately, Japanese learners of English are generally unaware of their tendency to use non-standard expressions in their writing. They assume they can produce an English sentence by simply applying the syntactic rules they have been taught and do not realize how certain words have an affinity for each other whereby some words may occur together while others may not. In fact, there are regularities in the way in which words co-occur as a result of certain constraints or preferences that affect language choice in discourse in a systematic way (Sinclair, 1997; Stubbs, 2001). Accordingly, words are not picked at random but are selected in accordance with certain co-occurrence restrictions that greatly reduce the possible lexical choices in any given context. Words therefore depend on their relations with other words to communicate meaning.

Moreover, rather than individual items acting alone, words may be considered as part of a lexical phrase in which the various lexical items work together to produce a single overall meaning. That is to say, words are interdependent and share their meanings with certain other words in the co-text. This type of co-selection means that words are in effect chosen together and, in cases where they are closely dependent, they form, as it were, a single choice (Sinclair, 1991). A word is therefore not an independent unit with a fixed meaning but an item that contributes meaning as part of the realization of the phrase as a whole. In the majority of cases involving restricted collocations, language learners have to know in what contexts and to what extent the individual constituents of a collocation may co-occur with other lexical elements. They have to know how the choice of one word conditions the choice of other words. It is therefore not simply a matter of learning collocations as fixed units, but of knowing how they can recombine with other lexical items in certain contexts (Sinclair, 2004). It is essential, therefore, that Japanese researchers have opportunities to enhance their awareness of the collocational patterns that conventionally appear in academic discourse and to develop greater accuracy and fluency in using them.

Academic Writing

Japanese researchers need to know in what ways certain language patterns and word combinations are actually used by native speakers to realize particular meanings. Such information about use in an academic context is certainly an important resource for language learners in mastering the conventions of academic writing. This is especially true in the case of collocations since research has shown that learners' knowledge of English collocations does not measure up to their knowledge of general vocabulary (Bahns & Eldaw, 1993). In observing the stylistic conventions in academic writing, as well as making appropriate grammatical and lexical choices, language learners also need to know how to use collocations appropriately if they are to communicate in an effective manner. In this regard, the use of non-standard collocations is considered a serious impediment in that it may distract the reader's attention away from the quality of the research being reported (Howarth, 1998). It is therefore necessary to encourage learners to become more sensitive to this crucial aspect of communicative performance.

The selection of appropriate co-occurring items is an essential feature of standard academic discourse. A broad knowledge of its typical lexical patterns and phraseology is necessary to ensure clear and concise language use (Hunston & Francis, 1998). It is therefore important for language learners to be able to manipulate the various collocations that are commonly used in academic writing. They also have to be made aware of the existence of lexical and/or grammatical restrictions on co-occurring items. Such information on which words typically co-occur and the contexts in which they may be used is vitally important if they are to become more proficient writers (Weinert, 1995; Wray & Perkins, 2000). Furthermore, since not all collocational phrases can be successfully paraphrased, a knowledge of collocations is an essential part of academic writing. Attempting to paraphrase a more conventional academic expression may simply produce a labored and awkward version of something that could be expressed much more succinctly and effectively by using a ready-made lexical phrase that is commonly accepted in academic discourse. Although such attempts at paraphrasing may be grammatically well-formed, they may diverge from native speaker norms and result in a loss of clarity and communicative effect (Martin, 1984). 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).

Limitations of Dictionaries

Dictionaries for second language learners have progressed greatly in line with the development of large-scale corpora of authentic English and the corresponding advances made in data-processing software. However, they still suffer from a number of defects. When a dictionary is used as an aid in writing, the information it contains has to be reliable and clear. Language learners have to know which words or expression to select in order to convey a given meaning appropriately and with precision. However, owing to limitations of space, the information contained in a dictionary has to be compressed into a small number of lines that are insufficient to give detailed illustrations of typical usages in various contexts. It may also be difficult for learners to sift through the various discrete meanings listed for a particular word and decide on the appropriate one without the benefit of various samples of actual use. In this respect, a dictionary seldom provides sufficient guidance as to how these meanings may be differentiated from each other. Furthermore, information concerning common syntactic patterns of a word used in a particular sense may be lacking or hard to access (Nesi, 2000; Ohtake & Morren, 2002). Information on the selection restrictions governing a particular word may not be explicit, thereby leading to the use of inappropriate or unacceptable collocations in learner writing. In fact, nonnative writers often lack knowledge of a given word's syntactic patterns or its collocational and stylistic constraints. In particular, they have little information on how each word is normally and typically used in different contexts since they rarely pay attention to lexical relations when learning vocabulary. It is therefore necessary to provide information that will help learners to formulate more precise expressions in speech or writing that accurately convey their intended meanings.

While some modern learner dictionaries contain considerable information on lexical patterns and collocational usage, this is often overlooked by learners who tend to focus on only a small fragment of the definition (Miller & Gildea, 1987; Nesi & Meara, 1994). The dictionary's effectiveness is therefore reduced in that learners are content to consider only the most accessible part of the definition and ignore other potentially

useful information. In particular, learners are inclined to use dictionaries merely as a reference for basic information on spelling and meaning rather than for information on usage and collocation (Harvey & Yuill, 1997). They therefore remain generally unaware of the associative values of words and of how they combine in particular ways to produce a given meaning. Consequently, it is difficult for them to avoid using inappropriate collocations in their writing. In this regard, errors are found to occur more frequently in cases where a particular word has a restricted range of lexical collocations. This results largely from learners neglecting to apply the relevant grammatical and collocational information presented in the dictionary entry. In other cases, however, they are unable to derive the necessary information on collocational patterning when this is lacking in the dictionary entry. For the most part, therefore, they still tend to view words in terms of fixed meanings and continue to study these meanings in isolation. In this respect, it is important for nonnative writers to understand the ways in which words relate to other words in the co-text and how they each work together in particular combinations to produce meaning.

Corpus Linguistics

Advances in corpus linguistics have led to the collection of vast quantities of language data and provided insights into lexical collocations and recurring patterns of usage (Sinclair, 1991; Willis, 1990). As a result, it has become possible to more accurately identify the linguistic conventions and constraints of language on the basis of empirical evidence. This has led to a clearer appreciation of how language is actually used rather than how language is perceived to be used. As such, there is no longer any need to rely on intuition and guesswork in formulating linguistic descriptions in that accounts of language behavior are based on actual samples of language in use.

Extensive information about lexical relations can now be accessed by using various text-retrieval software. Such a focus on lexical relations has shown that words interact with each other not in random clusters but in a clearly principled way. Knowledge relating to the context and frequency of occurrence of lexical items may help increase the linguistic sensitivity of language learners by providing new insights into language structure and use. In this way, 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.

Computer Concordances

Concordance software allows for the retrieval and arrangement of a vast amount of language data so that patterns are more easily discerned. As such, it is now possible to derive information on language use in a far more meticulous manner than before. Rather than viewing individual words and phrases as discrete units of meaning, we can now examine them in accordance with their various patterns and uses as they appear in concordance lines of typical language contexts. Focusing on multiple instances of a word's phraseological patterning is an efficient and cost-effective way for language learners to find solutions to their linguistic/communicative problems (Cobb, 1997). Such an objective way of examining language behavior is also likely to lead to greater precision in their writing. In particular, it is important for language learners to have a thorough knowledge of the more common English words since these words (rather than the more uncommon ones) often express different senses depending on the particular pattern in which they appear. Moreover, it is these commonly occurring words that often appear in idiomatic expressions which are difficult to paraphrase successfully. They are therefore indispensable items that appear again and again in various contexts and carry the main patterns of the language. If learners are to avoid using stilted and awkward expressions in their writing, they would do well to focus on the various uses of these common words and the contexts in which they are found.

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 examining multiple examples of words that tend to co-occur. Through 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 papers. In this way, we may ensure that the language presented to them will closely correspond to their particular language requirements.

Practical Applications

In general, corpora have been used as a source of descriptive insights concerning the facts of language and have offered more explanatory power than the traditional reliance on intuition and introspection. Language researchers have discovered linguistic facts that have never been recorded before and have been able to refine their understanding of language. At the same time, corpora have also been used for pedagogical purposes and are gradually playing a more active role in the language classroom. Certainly, with access to corpora becoming simpler and the development of easy-to-use concordance software, such technology is having more of an impact on language teaching and learning, as can be seen on our Internet site (<http://lsd.pharm.kyoto-u.ac.jp/ja/service/weblsd/index.html>). In this respect, the quality of linguistic evidence offered by concordances is in some ways superior to that obtained by dictionary consultation. Language learners may use them in various ways to arrive at a better understanding of lexical items, their recurrent features, and their patterns of use.

In particular, learners are encouraged to discover for themselves how the language works, rather than rely solely on teacher explanations or on information extracted from reference books (Johns, 1991). Through the use of concordances, learners can see how words interact with other words to create meaning and how meaning changes according to the phraseological patterns they form. This highlighting of various lexical patterns in a concordance is a radical departure from the rather dry, abstract explanations given in pedagogic grammars. By examining and interpreting the patterns that appear in the concordance lines, learners may become more sensitive to how meanings are formed and be better able to manipulate the particular patterns of language that are of relevance to them. By studying various samples of use, they may come to notice recurrent patterns of language (Schmidt, 1990) and come to recognize the typical contexts where these patterns appear. Furthermore, by discovering patterns of language for themselves, they may be able to retain the information more effectively as a result of more active language processing (Altenberg & Granger, 2001).

A major concern is also how such activities may be integrated into regular classroom routines, and in what ways they may be exploited by teachers and learners respectively ((Thurston & Candlin, 1998; Tribble & Jones, 1990). Certainly, care should be taken to focus on the particular collocations that are relevant to learners' needs and

that may be of some benefit to them. In particular, it is useful to select key words that they tend to find problematic. In this regard, information on frequency may help in determining which particular lexical items should be focused upon in the classroom. Representative samples of frequently used contexts will provide learners with sufficient comprehensible input to help them understand the syntactic and collocational properties of words. In this way, they may be encouraged to self-correct and thereby reduce the number of habitual errors appearing in their academic English writing (Makino, 1993; Todd, 2001). With sufficient attention and subsequent practice, learners may then come to assimilate common patterns found in written academic discourse and use them when writing their own research papers.

Data Collection and Corpus Analysis

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

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

Some of the most frequently used words in the LSD Corpus have been selected for

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

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

How to Read the List

The format is explained by using the following sample list:

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

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

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

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

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

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

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

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

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

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

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

Collocation of *possibility*

| English | Japanese | Frq. | PubM.ID | Sample |
|--|----------------------|-------|----------|--|
| possibility* | 可能性 | 3,154 | | |
| possibility | 可能性 | 2,928 | | |
| possibilities | 可能性 | 226 | | |
| <p>Note raise the possibility (可能性を示唆する)が圧倒的に出現が多い。「可能性を上げる」は、日本語表現から連想されるhigh, great, strongなどは possibility と通常共起しない。同様に日本語表現「可能性を上げる」から連想される increase the possibility, の用例も無い。</p> | | | | |
| 1 possibility that | ～である可能性 | 1,747 | 12189166 | The <possibility that> immune responses to autoantigens may contribute to the development of atopic disease has been largely ignored. |
| 2 the possibility that | ～である可能性 | 1,641 | 12149643 | In this study, we have addressed <the possibility that> matrix metalloproteinases are implicated in ICAM-1 shedding. |
| 3 raise the possibility that | ～である可能性を示唆する | 316 | 10559369 | These results, and our previous studies, <raise the possibility that> KIF-4 may play an important role in retrovirus Gag protein transport. |
| 5 these results raise the possibility that | これらの結果は、～である可能性を示唆する | 51 | 9539807 | <These results raise the possibility that> some forms of synaptic memory may be stored in a digital manner in the brain. |
| 6 our results raise the possibility that | 我々の結果は、～である可能性を示唆する | 24 | 11063736 | <Our results raise the possibility that> there are X- or Y-encoded factors that influence repair or replication of DNA in the embryo. |
| 8 these findings raise the possibility that | これらの発見は、～である可能性を示唆する | 35 | 10899916 | <These findings raise the possibility that> Treg cell function contributes to the immune suppression characteristic of CTLA-4 signaling. |
| 9 data raise the possibility that | データは、～である可能性を示唆する | 31 | 10529423 | These <data raise the possibility that> Egr4 may contribute to some forms of human idiopathic male infertility. |
| 10 raises the possibility that | ～である可能性を示唆する | 191 | 10667515 | This study <raises the possibility that> APACHE II may be useful for long-term mortality prediction in other critically ill populations. |
| 11 this raises the possibility that | これは、～である可能性を示唆する | 35 | 11839761 | <This raises the possibility that> the monophosphorylated ERK2s may have distinct biological roles in vivo. |
| 12 raising the possibility that | ～である可能性を示唆している | 190 | 11606596 | The post-translational modification by tTG reduced the RNA binding activity of the core protein, <raising the possibility that> tTG may regulate the biological functions of the HCV core protein. |
| 13 raised the possibility that | ～である可能性を示唆した | 57 | 10734132 | This result <raised the possibility that> sAbetaPP may bind back to HCSM cell-surface fibrils formed by HCHWA-D Abeta(1-40). |
| 15 we investigated the possibility that | 我々は、～である可能性を調べた | 37 | 9792718 | <We investigated the possibility that> vascular endothelial growth factor (VEGF) treatment could regulate KDR/Fik-1 receptor expression in endothelial cells. |
| 16 we have investigated the possibility that | 我々は、～である可能性を調べた | 18 | 12060230 | <We have investigated the possibility that> Golgi secretion might be involved in marking the preprophase band site. |
| 17 to investigate the possibility that | ～である可能性を調べるために | 24 | 9769329 | <To investigate the possibility that> this cytokine profile results from a difference in the control of IL-6 expression, we examined the 5' flanking region of the IL-6 gene for polymorphisms. |
| 18 we discuss the possibility that | 我々は、～である可能性を議論する | 24 | 9885574 | <We discuss the possibility that> PAF400 may play a role in signaling of DNA damage to p53 by stimulation of p53 acetylation. |
| 20 we examined the possibility that | 我々は、～である可能性を調べた | 28 | 9843571 | Here <we examined the possibility that> Smads function to regulate transcription by directly interacting with p300/CREB-binding protein. |

Collocation of *possibility*

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| English | Japanese | Frg. | PubM_ID | Sample |
|---|------------------|------|----------|--|
| 21 rule out the possibility that | ～である可能性を除外する | 25 | 10361283 | The results show that binding to MecA is critical for ComS function, but do not <rule out the possibility that> ComS possesses other activities. |
| 22 suggest the possibility that | ～である可能性を示唆する | 35 | 9823339 | Preclinical models <suggest the possibility that> these tumors may be resistant to the cytotoxicity induced by certain chemotherapeutic agents. |
| 24 we explored the possibility that | 我々は、～である可能性を探索した | 20 | 10554018 | Using genetically marked prostate cancer cell lines, <we explored the possibility that> genetic information might be transferred from an apoptotic cell to a phagocytic neighbor. |
| 26 to explore the possibility that | ～である可能性を探索するため | 17 | 11427525 | <To explore the possibility that> sex hormones control Kv4.3 expression, we investigated whether its expression changes in the pregnant uterus. |
| 27 exclude the possibility that | ～である可能性を除外する | 24 | 11447224 | In order to <exclude the possibility that> the antioxidant effects of BH(4) are mediated by dopamine and NO, we used fibroblasts in which neither catecholamine nor NO production occurs. |
| 28 consistent with the possibility that | ～である可能性と一致している | 48 | 12193689 | These results are <consistent with the possibility that> CD11b(+) dendritic cells play a central role in the activation of CD4 T cells in response to s.c. Ag. |
| 29 the intriguing possibility that | ～である興味深い可能性 | 32 | 10758160 | The discovery of a large number of divergent EARs suggests <the intriguing possibility that> these proteins have been specifically tailored to fight against distinct rodent pathogens. |
| 30 possibility of | ～の可能性 | 694 | 11283096 | The presence of a vancomycin-resistant, gram-positive coccobacilli on a blood culture should alert clinicians to the <possibility of> bacteremia caused by <i>W. confusa</i> or other small gram-positive rods. |
| 31 the possibility of | ～の可能性 | 655 | 10908368 | Some studies raised <the possibility of> artifacts generated during sample preparation. |
| 32 raises the possibility of | ～の可能性を示唆する | 32 | 10444599 | This observation <raises the possibility of> redundancy in the phyA-signaling pathway, which could account for the incomplete block of phyA signaling observed in the far1 mutant. |
| 33 raise the possibility of | ～の可能性を示唆する | 29 | 11033093 | Differences in the biological activity and binding of human IL-1 in mouse and rat brain <raise the possibility of> species differences in the transport of IL-1 across the BBB and BTB. |
| 34 raising the possibility of | ～の可能性を示唆している | 26 | 10925271 | Expression of the CD81 molecule on T cells increases following activation, <raising the possibility of> a role for this molecule in progression of the activation process. |
| 35 suggesting the possibility of | ～の可能性を示唆している | 32 | 9551943 | Furthermore, they persist in patients with prolonged antibiotic treatment-resistant Lyme arthritis, <suggesting the possibility of> an autoimmune process. |
| 36 suggest the possibility of | ～の可能性を示唆する | 29 | 11099504 | Taken together, these results also <suggest the possibility of> distinct functions for TAP1 and TAP2 NBD during a single translocation cycle. |

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| Collocation of <i>possibility</i> | | Frq. | PubM ID | Sample |
|--|----------------|------|----------|---|
| English | Japanese | | | |
| 38 explore the possibility of | ～の可能性を探索する | 17 | 9583711 | Future studies should <explore the possibility of> a cancer-promoting gastrointestinal milieu, including delayed stool transit and elevated fecal bile acid concentrations, associated with hyperglycemia and diabetic neuropathy. |
| 39 the possibility for | ～の可能性 | 20 | 12505991 | Telomere shortening with age could also contribute to cardiac failure in humans, opening <the possibility for> new therapies. |
| 42 to test this possibility | この可能性をテストするために | 43 | 11689658 | <To test this possibility>, we generated a panel of reassortant viruses that expressed the NA genes of human H2N2 viruses isolated from 1957 to 1968 with all other genes from the avian virus A/duck/Hong Kong/278/78 (H9N2). |
| 43 to investigate this possibility | この可能性を調べるために | 34 | 11070020 | <To investigate this possibility>, we analyzed mutants in which basic residues in the M domain were replaced with asparagines or glutamines. |
| 44 consistent with this possibility | この可能性と一致している | 27 | 11412031 | <Consistent with this possibility>, we show here that overexpression of TRbeta1 promotes precocious oligodendrocyte differentiation, whereas expression of two dominant-negative forms of TRbeta1 greatly delays differentiation. |
| 45 to explore this possibility | この可能性を探索するために | 24 | 11781364 | <To explore this possibility>, we investigated whether cross-linking CD81 on NK cells could alter NK cell function. |
| 46 to examine this possibility | この可能性を調べるために | 24 | 11739565 | <To examine this possibility>, we developed a culture-based assay system to study translational regulation in neurons. |
| 47 to address this possibility | この可能性に取り組むために | 17 | 11466357 | <To address this possibility>, we performed a comprehensive analysis of DC differentiative potential among lymphoid and B lymphoid progenitor populations in adult mouse BM. |
| 48 one possibility is that | ひとつの可能性は、～である | 46 | 10575050 | <One possibility is that> these localized surrounds may provide a substrate for figure-ground segmentation of visual scenes. |
| 49 possibilities | 可能性 | 226 | 11756693 | This technology opens <possibilities> for simultaneous imaging of multiple molecules labeled with scFv:MBD at the molecular resolution within the same sample with electron spectroscopic imaging. |
| 50 possibilities | 可能性 | 75 | 10037810 | The ability to create and control non-linear effects raises a host of <possibilities> for applications of oligonucleotide array hybridization. |
| 51 new possibilities for | ～の新しい可能性 | 26 | 9746538 | This discovery opens <new possibilities for> the design of molecules that can specifically modify the clot structure by targeting the structural domains responsible for C1- binding to fibrin. |
| 52 these possibilities | これらの可能性 | 50 | 12471107 | To distinguish between <these possibilities>, we used a partially phosphorylation-deficient mutant of the FPR that can undergo internalization, but not desensitization. |
| 53 distinguish between these possibilities | これらの可能性を区別する | 20 | 9671743 | To <distinguish between these possibilities>, we have constructed a transcription map composed of at least 23 distinct expressed sequences in an approximately 5.5-megabase region on the human X chromosome spanning Xp11.21-p11.22. |

Collocation of probability

| English | Japanese | Frq. | PubM ID | Sample |
|---|---------------|-------|----------|--|
| probability* | 見込み・蓋然性 | 1,823 | | |
| probability | 見込み・蓋然性 | 1,563 | | |
| probabilities | 見込み・蓋然性 | 260 | | |
| Note 日本語の「可能性」を連想して、possibilityとの混同をしないこと。「高い可能性」は、通常 high probability「高い蓋然性」として英語では表現される。 | | | | |
| 1 probability of | ～の見込み・蓋然性 | 764 | 10666193 | The estimated <probability of> disease-free survival (DFS) at 1 year after CR was 65% (95% CI, 50%-79%) for CML, 23% (95% CI, 9%-38%) for AML, and 30% (95% CI, 6%-54%) for ALL. |
| 2 the probability of | ～の見込み・蓋然性 | 403 | 11015163 | <The probability of> death within 100 days was 11% (95% CI, 8% to 14%). |
| 3 in the probability of | ～の見込み・蓋然性における | 19 | 11463625 | In patch-clamped cardiac myocytes, exposure to caffeine produced only a transient increase <in the probability of> sparks induced by depolarization. |
| 4 high probability of | ～の高い見込み・蓋然性 | 27 | 12176879 | There is a <high probability of> survival in recipients of UCB grafts that are disparate in no more than 2 human leukocyte antigens (HLAs) when the grafts contain at least 1.7 x 10 ⁵ CD34(+) cells per kilogram of recipient's body weight. |
| 5 a high probability of | ～の高い見込み・蓋然性 | 18 | 10393858 | According to a statistical analysis of shared genetic changes in matched tumor pairs, <a high probability of> a common clonal progenitor was found in 11 of 19 patients (58%). |
| 6 higher probability of | ～のより高い見込み・蓋然性 | 19 | 9516151 | They had higher bone marrow PC labeling indices, higher serum soluble interleukin-6 receptor (sIL-6R) levels, and a <higher probability of> ras mutations. |
| 7 probability for | ～の見込み・蓋然性 | 29 | 11481161 | The <probability for> developing a bipolar spectrum disorder increases in linear fashion for patients at risk for polarity conversion during the first 10-15 years after an index depressive episode. |
| 8 probability that | ～という見込み・蓋然性 | 87 | 12399403 | These bottlenecks affect the dynamics of evolution, reducing the <probability that> a beneficial mutation will reach fixation. |
| 9 the probability that | ～という見込み・蓋然性 | 67 | 12446840 | Mutation of CIN genes increases <the probability that> whole chromosomes or large fractions of chromosomes are gained or lost during cell division. |
| 10 open probability | 開確率 | 226 | 10653789 | Unliganded openings have been reported for many channel types, but their low <open probability> can make it difficult to study their kinetics in detail. |
| 11 open probability of | ～の開確率 | 53 | 10766915 | KN-93 and W-7, a calmodulin inhibitor, decreased the <open probability of> SK channels in on-cell patches but not in excised patches. |
| 12 the open probability | 開確率 | 66 | 9555038 | Application of 10 nM CsA significantly increased <the open probability> of KCa channels by 183+/-9%. |
| 13 the open probability of | ～の開確率 | 35 | 11110764 | Specifically, modulation of <the open probability of> the ryanodine receptor produces only transient effects on the Ca(2+) transient as a result of changes of SR content. |
| 14 channel open probability | チャネル開確率 | 48 | 9668070 | We previously showed that sorcin binds to cardiac Ca2+ release channel/ryanodine receptors and decreases <channel open probability> in planar lipid bilayers. |
| 15 release probability | 放出確率 | 64 | 9660900 | We propose that presynaptic depression at CF synapses reflects a slow recovery of <release probability> following release of each quantum of transmitter. |
| 16 high probability | 高い見込み・蓋然性 | 52 | 11526251 | Overall costs in patients with <high probability> of injury exceeded those in patients with low probability of injury by 33%. |

Collocation of *probability*

2/2

| English | Japanese | Frq. | PubM.ID | Sample |
|-----------------------------|-------------|------|----------|--|
| 17 a high probability | 高い見込み・蓋然性 | 23 | 11231891 | Differences in genome size, gene composition, and gene expression are shown with <a high probability> to have changed along the lineage leading to the Allovivivirus through gene expansion. |
| 18 higher probability | より高い見込み・蓋然性 | 23 | 10220567 | In a comparison between cAMP and cGMP, we find that cGMP has clearly higher binding affinity than cAMP, but only modestly <higher probability> of inducing the conformational transition that opens the channel. |
| 19 low probability | 低い見込み・蓋然性 | 22 | 9699705 | The remainder were designated as having <low probability> because presentations were not linked to treatment or failed to meet criteria for the syndrome. |
| 20 probability distribution | 確率分布 | 37 | 11964240 | Some membrane peptides, such as Alamethicin, form barrel-stave aggregates with a broad <probability distribution> of size (number of peptides in the aggregate). |
| 21 probability density | 確率密度 | 21 | 9822560 | The explicit expression of a reduced global turning <probability density> function for motile bacteria was derived and its relevant properties were investigated. |
| 22 the probability | 見込み・蓋然性 | 539 | 9856473 | Both <the probability> and amplitude of dendritic spikes depended on the previous synaptic and firing history of the cell. |
| 23 a probability | 見込み・蓋然性 | 42 | 12581345 | This method provides <a probability> of differential expression for each gene based on experiment-wide false-positive and -negative levels driven by experimental error and biological variance. |

Collocation of *implication*

| | English | Japanese | Frg. | PubM ID | Sample |
|----|---|---|--------------|----------|---|
| | implication* | 含意、潜在的な重要性、意味合い、影響 | 2,854 | | |
| | implication implications | 意味 意味 | 152 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」を使用した。訳語は「含意、(将来の)影響」などの意味合いで理解することが望ましい。 | | | |
| 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 strategies, particularly against viral infections. |
| 5 | implications for the design of | ～の設計のための意味 | 29 | 10646869 | The lack of cell surface expression on tumor cell lines has clear <implications for the design of> therapeutic strategies which target this molecule. |
| 6 | implications for the mechanism of | ～の機構のための意味 | 38 | 9886295 | These results provide a basis for the agonistic activity of NK1 and have <implications for the mechanism of> receptor binding of HGF/SF. |
| 7 | implications for the use of | ～の使用のための意味 | 25 | 9728562 | These findings have <implications for the use of> meningococcal polysaccharide vaccine when the risk of disease is low. |
| 8 | implications for the role of | ～の役割のための意味 | 25 | 9788942 | The results also have <implications for the role of> protein interactions in biological self-organization. |
| 9 | implications for the understanding of | ～の理解のための意味 | 20 | | |
| 10 | implications for our understanding of | われわれの～理解のための意味 | 36 | 10636901 | The effects of these inhibitors on secretion have interesting <implications for our understanding of> the quality control apparatus of the ER. |
| 11 | important implications for our understanding of | われわれの～理解のための重要な意味 | 19 | | |
| 12 | implications for understanding | ～を理解するための意味 | 105 | 12394831 | These data have <implications for understanding> the fundamental link between I/R injury and alloimmunity. |
| 13 | important implications for | ～のための重要な意味 | 482 | 12368211 | This observation has <important implications for> therapeutic strategies designed to attenuate long-term chronic lung disease after oxidant injury. |
| 14 | significant implications for | ～のための重要な意味 | 66 | 12391211 | These data have <significant implications for> vaccines designed to promote cellular immunity at mucosal sites such as the lung. |
| 15 | broad implications for | ～のための広範な意味(影響) | 26 | 11491302 | These results have <broad implications for> the mechanism by which monomeric type II endonucleases achieve high fidelity. |
| 16 | potential implications for | ～のための可能性のある意味 | 25 | 11830498 | This information has <potential implications for> manipulation of immune responses after allogeneic HCT. |
| 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 improved and more cost-effective therapy for IDDM. |
| 18 | have implications for | ～のための意味を持つ | 394 | | |
| 19 | have important implications for | ～のための重要な意味を持つ | 322 | 9596080 | These data <have important implications for> the pathogenesis and treatment of diabetic glomerulosclerosis. |

Collocation of *implication*

| English | Japanese | Frq. | PubM.ID | Sample |
|---|-------------------|------|----------|--|
| 20 have significant implications for | ～のための重要な意味を持つ | 50 | 11884405 | These findings <have significant implications for> understanding GNAT catalysis and the design of potent and selective inhibitors. |
| 21 these results have implications for | これらの結果は～のための意味を持つ | 49 | | |
| 22 these findings have implications for | これらの知見は～のための意味を持つ | 48 | 12540628 | <These findings have implications for> how to evaluate the role of the polyol pathway in diabetic retinopathy. |
| 23 implications of | ～の意味 | 739 | 12146959 | The <implications of> these results are discussed within the framework of developing a glycosylated second-generation MUC1 glycopeptide vaccine. |
| 24 the implications of | ～の意味 | 338 | 9820548 | <The implications of> a role for IL-7 in this disease model with respect to human inflammatory bowel disease are discussed. |
| 25 implications of these findings | これらの知見の意味 | 110 | 11260465 | The <implications of these findings> for cell type-specific gene expression during the early stages of spore formation in <i>B. subtilis</i> are discussed. |
| 26 implications of these results | これらの結果の意味 | 100 | 11169472 | The <implications of these results> for visual recovery after retinal reattachment are discussed. |
| 27 functional implications of | ～の機能的な意味 | 28 | | |
| 28 possible implications of | ～の可能な意味 | 25 | | |
| 29 biological implications of | ～の生物学的な意味 | 22 | | |
| 30 clinical implications of | ～の臨床的な意味 | 22 | 9806058 | However, the <clinical implications of> these findings need to be further investigated. |
| 31 discuss the implications of | ～の意味を議論する | 46 | 10828050 | We <discuss the implications of> these findings for current models of beta-globin regulation. |
| 32 implications of @3 are discussed | ～意味が議論される | 94 | 11320091 | The biological <implications of these oxidative processes are discussed>. |
| 33 implications in | ～における意味 | 149 | 11714772 | The existence of this novel mechanism of B cell activation has important <implications in> innate immunity, B cell-mediated autoimmunity, and B cell neoplasia. |
| 34 important implications in | ～における重要な意味 | 49 | 9851965 | The effects are independent of aldosterone and blood pressure and have <important implications in> renin-dependent hypertension and chronic cardiac failure when circulating Ang II is elevated. |
| 35 have implications in | ～における意味を持つ | 27 | 10228040 | These observations therefore <have implications in> the APC-based tumor vaccine protocol design. |
| 36 have important implications in | ～における重要な意味を持つ | 28 | 10640769 | These findings may <have important implications in> understanding the physiological function of CRP. |

Collocation of *involvement*

1/2

| English | Japanese | Freq. | PubM_ID | Sample |
|--|-------------|-------|----------|---|
| involvement* | 関与 | 2,681 | | |
| involvement | 関与 | 2,674 | | |
| involvements | 関与 | 7 | | |
| Not 定冠詞が使われる場合が多い。共起する動詞は、suggest, indicate が多い。 | | | | |
| 1 the involvement | 関与 | 1,097 | | |
| 2 an involvement | 関与 | 66 | | |
| 3 involvement of | ～の関与 | 1,770 | 11585813 | In this paper, the <involvement of> IRF-7 in monocyte differentiation was examined in U937, HL60, and human primary macrophages. |
| 4 involvement of this | この～の関与 | 47 | 12444159 | Piceatannol inhibited NF-kappaB in cells with deleted Syk, indicating the lack of <involvement of this> kinase. |
| 5 involvement of these | これらの～の関与 | 41 | 10557359 | Transgenic plants containing aequorin have been used to dissect the <involvement of these> three receptors in the regulation of intracellular Ca2+. |
| 6 the involvement of | ～の関与 | 1,083 | 11733572 | <The involvement of> several other parasite proteins during invasion have been proposed, but no direct evidence links them with a specific invasion pathway. |
| 7 suggesting the involvement of | ～の関与を示唆している | 92 | 10766189 | Procaspases-9, -3, and -7 were processed in onconase-treated cells, <suggesting the involvement of> the mitochondrial apoptotic machinery in onconase-induced apoptosis. |
| 8 suggesting involvement of | ～の関与を示唆している | 35 | 10915808 | Combined drug application suppressed the increase in 5-HT-induced IPSC frequency almost completely, <suggesting involvement of> both 5-HT(2A) and 5-HT(2C) |
| 9 indicating the involvement of | ～の関与を示している | 47 | 12646616 | Pretreatment of Jurkat and primary T cells with pertussis toxin (PTX) prevented CD47-mediated death, <indicating the involvement of> G(alpha). |
| 10 possible involvement of | ～の可能な関与 | 96 | 11481475 | Here, we have examined the <possible involvement of> the caffeine-sensitive ATM and ATR protein kinases in this checkpoint. |
| 11 the possible involvement of | ～の可能な関与 | 64 | 12153992 | However, the efficiency of transposition varies significantly among cell lines, <suggesting the possible involvement of> host factors in SB transposition. |
| 12 potential involvement of | ～の潜在的な関与 | 46 | 11934868 | We discuss the <potential involvement of> connexin43 in human cardiovascular anomalies involving the coronary arteries. |
| 13 the potential involvement of | ～の潜在的な関与 | 37 | 12235001 | To assess <the potential involvement of> the Gli2 repressor domain in skin tumor development, we overexpressed the Gli2DeltaN2 mutant in transgenic mice by use of the K5 promoter. |
| 14 direct involvement of | ～の直接の関与 | 46 | 11015220 | These data provide additional evidence for the <direct involvement of> a metal-coordinated sulfur nucleophile in catalysis. |
| 15 an involvement of | ～の関与 | 66 | 11490019 | In this study, we examined <an involvement of> the mitochondria in oligodendrocyte apoptosis and the role of C5b-9 on this process. |
| 16 evidence for the involvement of | ～の関与の証拠 | 86 | 12409320 | There is growing <evidence for the involvement of> nitric oxide (NO) -mediated nitrosation in cell signaling and pathology. |

2/2

Collocation of *involvement*

| English | Japanese | Frq. | PubM ID | Sample |
|--------------------------|-----------|------|----------|---|
| 17 for involvement | 関与にとつて | 37 | 10613861 | The results also provide the first biochemical evidence for an enzyme with the potential <for involvement> in cysteine biosynthesis in the Archaea. |
| 18 of the involvement of | ～の関与の | 38 | 9847341 | This is the first example <of the involvement of> a member of the STAT family of transcription factors in the control of tissue-specific expression. |
| 19 of involvement | 関与の～ | 48 | 11564173 | In lymph node specimens, the percentage of cells expressing CD7 and other T cell markers did not correlate with histologic evidence <of involvement>. |
| 20 of involvement of | ～の関与の～ | 30 | 10841890 | The data from these studies provide further evidence <of involvement of> NPY in energy balance, anxiety, and possibly nociception. |
| 21 involvement of @4 in | ～への～の関与 | 933 | 9525879 | The results provide direct evidence for the <involvement of unknown cellular factors in> the membrane integration process of connexins. |
| 22 involvement in | ～への関与 | 430 | 11368948 | Recent evidence suggests it has a pathological role in cerebral insults, but its <involvement in> intracerebral hemorrhage (ICH) is unknown. |
| 23 its involvement in | ～へのその関与 | 76 | 12631327 | Expression of AtmBAC1 in seedlings is consistent with <its involvement in> Arg breakdown in early seedling development, i.e. delivery of Arg to mitochondrial |
| 24 their involvement in | ～へのそれらの関与 | 70 | 11500381 | The biochemical functions of PML bodies are unknown, despite <their involvement in> several human disorders. |
| 25 involvement by | ～による関与 | 29 | 12035042 | Hepatic vein <involvement by> hepatic malignancy does not necessarily preclude resection. |

Collocation of *absence*

| English | Japanese | Frg. | PubM.ID | Sample |
|--|------------------|--------|----------|---|
| absence* | 存在しないこと | 11,130 | | |
| absences | 存在しないこと | 8 | | |
| <p>Note 定冠詞が直前に来る場合が圧倒的に多い。in the absence of という表現の出現が極めて多い。また、日本語の「有無」に相当する表現は、presence or/and absence に相当するが、逆の語順も確認され、語順は必ずしも固定的ではない。</p> | | | | |
| 1 the absence | 存在しないこと | 8,743 | | |
| 2 an absence | 存在しないこと | 144 | | |
| 3 absence of | ～の存在しないこと | 10,427 | | |
| 4 the absence of | ～の存在しないこと | 8,360 | 12574288 | No AdV was detected by culture or PCR in throat swabs from healthy recruits, suggesting <the absence of> latency or asymptomatic shedding. |
| 5 in the absence of | ～が存在しない場合 | 6,628 | 11782359 | <In the absence of> stromal cells, primary epithelial cells were unable to proliferate. |
| 6 in absence of | ～が存在しない場合 | 35 | | |
| 7 even in the absence of | たとえ～の存在がなくても | 362 | 9765401 | In cells infected with these mutants, protein synthesis continues <even in the absence of> the gamma134.5 gene. |
| 8 that in the absence of | ～の存在なしに～であること | 247 | 11359829 | These results suggest <that in the absence of> iNOS activity, TNF-alpha stimulates macrophages to control the growth of intracellular BCG. |
| 9 suggest that in the absence of | ～の存在なしに～であることを示唆 | 32 | | |
| 10 show that in the absence of | ～の存在なしに～であることを示す | 31 | | |
| 11 occur in the absence of | ～の存在なしに起こる | 96 | 9686563 | Interestingly, in contrast to native STAT6, activation of STAT6:ER* <occurs in the absence of> detectable tyrosine phosphorylation of the fusion protein. |
| 12 observed in the absence of | ～が存在しない場合に観察された | 79 | 10066792 | Different patterns of DNA cleavage were also <observed in the absence of> drug and in the presence of calcium. |
| 13 activity in the absence of | ～なしでの活性 | 75 | | |
| 14 expression in the absence of | ～なしでの発現 | 42 | | |
| 15 by the absence of | ～が存在しないことよって～ | 177 | 9603883 | The expression of dorC::lacZ was strongly induced <by the absence of> oxygen and presence of DMSO. |
| 16 despite the absence of | ～が存在しないにもかかわらず | 105 | 11356027 | We find that extensive neural structures with cyclopic eyes and brain tissue are formed <despite the absence of> mesoderm. |
| 17 to the absence of | ～の存在しないことに～ | 101 | 10951589 | The greatest enhancement of apoptosis attributable <to the absence of> bcl-w (up to sixfold) occurred in the small intestine. |
| 18 due to the absence of | ～が存在しないゆえに | 53 | 11292288 | Without manipulation, these fully mismatched allografts would survive indefinitely <due to the absence of> mature T and B cells. |
| 19 with the absence of | ～の存在しないこと～ | 75 | 10892837 | Surprisingly, opsin immunoreactivity extended throughout the margin cell, which is consistent <with the absence of> a discernible outer segment. |
| 20 for the absence of | ～の存在しないことに対して | 69 | 11023861 | Furthermore, the presence of the non-mutant ns1 gene outside the narrow sheath domain cannot compensate <for the absence of> the non-mutant gene within the narrow sheath domain. |

| Collocation of <i>absence</i> | | Frq. | PubM ID | Sample |
|--|------------------|------|----------|---|
| English | Japanese | | | |
| 21 of the absence of | ～の存在しないこと～ | 52 | | |
| 22 the presence or absence of | ～の存在あるいは非存在 | 705 | 12595313 | <The presence or absence of> somatic mutations in the expressed immunoglobulin heavy chain variable regions (IgVH) of chronic lymphocytic leukemia (CLL) cells provides prognostic information. |
| 23 in the presence or absence of | ～の存在あるいは非存在下において | 370 | 11466623 | Tumour development was compared in Lmo2 transgenic mice <in the presence or absence of> the Rag1 gene. |
| 24 of the presence or absence of | ～の存在あるいは非存在の～ | 46 | | |
| 25 by the presence or absence of | ～の存在あるいは非存在によって～ | 45 | 12072502 | In all assays, reporter gene expression was unaffected <by the presence or absence of> either oriS or oriL. |
| 26 on the presence or absence of | ～の存在あるいは非存在において | 30 | 9712568 | PET data were analyzed blindly and graded as positive or negative, depending <on the presence or absence of> axillary nodal metastases. |
| 27 the presence and absence of | ～の存在および非存在 | 374 | | |
| 28 in the presence and absence of | ～の存在および非存在下において | 324 | 9927753 | Cells were treated with specific (psoAG30) or control (psoSCR30) psoralen-conjugated TFOs <in the presence and absence of> UVA irradiation. |
| 29 in both the presence and absence of | ～の存在下でも非存在下でも～ | 36 | | |
| 30 the absence and presence of | ～の非存在および存在 | 149 | | |
| 31 in the absence and presence of | ～の非存在および存在下において | 126 | 11380263 | Similar anisotropies and positions of the NBD emission maxima were also found <in the absence and presence of> activators. |
| 32 the absence or presence of | ～の非存在あるいは存在 | 122 | | |
| 33 in the absence or presence of | ～の非存在あるいは存在下において | 111 | 10456882 | Expression of costimulatory molecules was then studied in mice immunized with OVA/alum <in the absence or presence of> B. abortus. |
| 34 its absence | その非存在 | 143 | | |
| 35 in its absence | その非存在下において～ | 79 | 9789002 | This myosin is specifically cross-linked at SH1-SH2 by a chemical cross-linker in the presence of ADP, but not <in its absence>. |
| 36 complete absence of | ～の完全な非存在 | 120 | | |
| 37 the complete absence of | ～の完全な非存在 | 59 | | |
| 38 in the complete absence of | ～の完全な非存在において～ | 38 | 11073950 | MtsA and cob(I)alamin mediate dimethylsulfide:coenzyme M methyl transfer <in the complete absence of> MtsB. |
| 39 a complete absence of | ～の完全な非存在 | 38 | | |
| 40 an absence of | ～の非存在 | 140 | 12506051 | PCR of the chimeric EAU retinas showed <an absence of> the Y chromosome-amplified product on day 10, but the presence of this product was detected on day 12. |
| 41 that the absence of | ～の非存在が～であること | 121 | 11106478 | We conclude, therefore, <that the absence of> a negatively charged aspartate at 177 accounts for the decrease in catalytic activity at pH 7.8. |
| 42 absence in | ～における非存在 | 41 | | |

Collocation of *presence*

| English | Japanese | Frq. | PubM_ID | Sample |
|--|-----------------|--------|----------|---|
| presence | 存在 | 20,160 | | |
| Note 直前には定冠詞が通常来る。in the absence of と対応して、in the presence of の出現が突出して多い。また「有無」について言及する表現 in the presence and/or absence の出現も多い。 | | | | |
| 1 the presence | 存在 | 18,709 | | |
| 2 presence of | ～の存在 | 18,221 | | |
| 3 the presence of | ～の存在 | 17,222 | | |
| 4 in the presence of | ～の存在下で | 8,143 | 12091401 | In contrast to lipofuscin, photoexcited melanosomes did not substantially increase the rate of oxidative reactions <in the presence of> polyunsaturated lipids or albumin. |
| 5 even in the presence of | ～の存在下でさえ | 278 | 12209527 | It is suggested that this mechanism might protect cartilage from extensive degradation <even in the presence of> acute inflammation. |
| 6 only in the presence of | ～の存在下においてのみ | 205 | 11272142 | As a result, neutral lipid mass was increased upon prolonged incubation with elevated palmitate <only in the presence of> high glucose. |
| 7 observed in the presence of | ～の存在下で観察された | 124 | 12650984 | An opposite effect was <observed in the presence of> the nACh receptor antagonist d-tubocurarine. |
| 8 grown in the presence of | ～の存在下で成長した | 98 | 9811880 | The YGL001c (ERG26) disruption also was viable in a hem 1Delta strain <grown in the presence of> ergosterol. |
| 9 cultured in the presence of | ～の存在下で培養された | 89 | 12538657 | In addition, our studies show that the level of catL activity is significantly decreased in Mphis <cultured in the presence of> IFN-gamma whereas catS activity increases. |
| 10 reduced in the presence of | ～の存在下で減ぜられる | 80 | 12124880 | The intensity of images of affected tissues was greatly <reduced in the presence of> excess competing folic acid. |
| 11 increased in the presence of | ～の存在下で上昇される | 71 | 9990049 | Moreover, the level of AtNHX1 mRNA in Arabidopsis is <increased in the presence of> NaCl. |
| 12 inhibited in the presence of | ～の存在下で抑制される | 66 | 10373548 | Finally, proliferation induced by both IL-2- and IL-3 was significantly <inhibited in the presence of> SOCS-3. |
| 13 enhanced in the presence of | ～の存在下で促進される | 59 | 12517753 | Hydroxyapatite binding is <enhanced in the presence of> calcium. |
| 14 activity in the presence of | ～の存在下における活性 | 91 | 9545297 | The purified protein exhibits an ATPase <activity in the presence of> single- or double-stranded DNA. |
| 15 by the presence of | ～の存在によって | 728 | 12663783 | The A436T mutation in the original cDNA is partially compensated <by the presence of> the T541A variation. |
| 16 characterized by the presence of | ～の存在によって特徴づけられる | 92 | 10049578 | In the eye, the mutant phenotype is <characterized by the presence of> retinal colobomas, a paucity of retinal ganglion cells, and axon misrouting. |
| 17 affected by the presence of | ～の存在によって影響される | 34 | | |
| 18 enhanced by the presence of | ～の存在によって増強される | 32 | | |
| 19 for the presence of | ～の存在に対する | 477 | 10438760 | Two Pgm-associated phenotypes (Crb(+)) and pestacin sensitivity [Pst(s)] were used as markers <for the presence of> the pgm locus in the RecA(+)/KIM10+ and RecA(-) YPRA strains. |
| 20 evidence for the presence of | ～の存在の証拠 | 52 | 9884279 | All allografts also expressed T-cell receptor Cbeta gene, providing <evidence for the presence of> T-cell infiltrates in the grafts. |
| 21 examined for the presence of | ～の存在について調べられる | 28 | | |

Collocation of *presence*

| English | Japanese | Frq. | PubM_ID | Sample |
|------------------------------------|---------------|------|----------|---|
| 22 analyzed for the presence of | ～の存在について分析される | 27 | | |
| 23 on the presence of | ～の存在に～ | 459 | 11371626 | Resistance to maturation depended <on the presence of> the α .25(OH)(2)D(3) receptor (VDR). |
| 24 dependent on the presence of | ～の存在に依存して | 254 | 10799509 | The plasma membrane localization is <dependent on the presence of> an amino-terminal pleckstrin homology domain. |
| 25 dependent upon the presence of | ～の存在に依存して | 45 | | |
| 26 depends on the presence of | ～の存在に依存する | 65 | | |
| 27 with the presence of | ～の存在に～ | 375 | | |
| 28 consistent with the presence of | ～の存在に一致している | 120 | 10198097 | These results are <consistent with the presence of> an active Ca^{2+}/H^{+} antiport in the thylakoid membrane. |
| 29 associated with the presence of | ～の存在に関係する | 99 | 10024589 | Survival of SA100 after UV irradiation was <associated with the presence of> the 220-kb virulence plasmid, pVP. |
| 30 correlated with the presence of | ～の存在に相関する | 47 | | |
| 31 to the presence of | ～の存在に～ | 371 | 11027325 | Most importantly, we show that catalytic release of p-nitrophenol is sensitive <to the presence of> a single base-pair mismatch. |
| 32 due to the presence of | ～の存在が原因で | 144 | 12068012 | These receptors have a unique structural composition <due to the presence of> multiple C-type lectin-like domains within a single polypeptide backbone. |
| 33 sensitive to the presence of | ～の存在に感受性のある | 28 | | |
| 34 related to the presence of | ～の存在に関連した | 32 | | |
| 35 of the presence of | ～の存在の～ | 239 | 10203471 | Combinations <of the presence of> any two of the low-molecular-mass bands (19, 25, 30, 32, and 37 kDa) or the high-molecular-mass bands (86 and 94 kDa) were found almost solely in samples from infected dogs ($P < 0.0001$). |
| 36 because of the presence of | ～の存在ゆえに | 43 | | |
| 37 independent of the presence of | ～の存在とは無関係に | 33 | | |
| 38 regardless of the presence of | ～の存在に関わらず | 19 | | |
| 39 despite the presence of | ～の存在にも関わらず | 192 | 11591797 | Herein we show that mice with targeted deletion of IL-13 failed to develop allergen-induced AHR, <despite the presence of> vigorous Th2-biased, eosinophilic pulmonary inflammation. |
| 40 revealed the presence of | ～の存在を明らかにした | 351 | 10473624 | Western blot analysis <revealed the presence of> C/EBPalpha and C/EBPbeta in human granulosa-lutein cell nuclear extracts. |
| 41 demonstrated the presence of | ～の存在を実証した | 156 | 11230112 | We previously <demonstrated the presence of> estrogen receptor (ER) beta in cells of the megakaryocytic lineage. |
| 42 confirmed the presence of | ～の存在を確認した | 155 | 12663654 | Antibody supershift assay <confirmed the presence of> MEF-2A in this protein-DNA complex. |
| 43 requires the presence of | ～の存在を必要とする | 150 | 11689689 | Activation of HRI by these stresses is independent of heme and <requires the presence of> intact cells. |
| 44 showed the presence of | ～の存在を示した | 94 | 10781606 | Northern blot analysis of multiple human tissues <showed the presence of> a major band corresponding to a size of 3.5 kilobase. |
| 45 indicated the presence of | ～の存在を示した | 90 | 10026227 | Antibody supershift assays <indicated the presence of> c-Fos and JunB in the AP-1 complex formed in response to all three agonists. |
| 46 suggests the presence of | ～の存在を示唆する | 68 | 11665968 | TdT expression <suggests the presence of> immature B cells in RA synovia. |
| 47 detect the presence of | ～の存在を検出する | 52 | 10790112 | The FP assay was optimized to <detect the presence of> EIAV-specific antibodies by a change in the FP of a fluorescein-labeled immunoreactive peptide diagnostic antigen. |

Collocation of *presence*

| English | Japanese | Frq. | PubM_ID | Sample |
|--|---------------|------|----------|--|
| 48 suggesting the presence of | への存在を示唆している | 133 | 11118052 | Of these, the 11q22-24 region exhibits frequent allelic deletions in a variety of solid tumor types, <suggesting the presence of> critical genes for tumor suppression in this region. |
| 49 indicating the presence of | への存在を示している | 101 | 9554964 | Saturability of influx was suggested by self-inhibition studies for NT3 in vivo, and for NGF in an in situ brain perfusion system, <indicating the presence of> saturable transport systems. |
| 50 is the presence of | へは、への存在である | 82 | | |
| 51 that the presence of | への存在がへであること | 362 | 10455135 | In addition to elucidating a second wortmannin-sensitive pathway in 3T3-L1 adipocytes, these studies suggest <that the presence of> GLUT4 on the plasma membrane is not sufficient for activation of glucose uptake. |
| 52 in the presence of ATP | ATP存在下で | 167 | | |
| 53 the presence of high | 高いへの存在 | 132 | 10684655 | Similar to mutations in cbb(3) and rdx, suitably constructed prrC deletion mutations lead to PS gene expression in <the presence of high> oxygen. |
| 54 the presence of high levels of | 高いレベルのへの存在 | 23 | 11004182 | Under these conditions, <the presence of high levels of> nitrate suppressed nrfA gene expression. |
| 55 in the presence of high concentrations of | 高濃度のへの存在下で | 21 | 10338488 | We hypothesized that <in the presence of high concentrations of> proinflammatory cytokines, bacteria may adapt and utilize cytokines to their growth advantage. |
| 56 the presence of a single | ひとつのへの存在 | 47 | 10639452 | The T. pallidum genome sequence reported <the presence of a single> copy of the trpK gene in the Nichols strain. |
| 57 the presence of a functional | 機能的なへの存在 | 43 | 10194440 | In conclusion, our data confirm <the presence of a functional> GPIb complex expressed on HUVECs in low density. |
| 58 the presence of a large | 大きなへの存在 | 39 | 11983713 | However, in <the presence of a large> excess of Hsc70, refolding of pmAAT is still arrested, but the enzyme remains in solution. |
| 59 the presence of a novel | 新奇なへの存在 | 36 | 10673275 | In particular, sequence analysis detected <the presence of a novel> gene (CARKL) residing within the most common cystinosis-causing deletion. |
| 60 the presence of an additional | さらなるへの存在 | 33 | 11493711 | Cells possessing a deletion of the gene encoding Topo I (topA) are only viable in <the presence of an additional> compensatory mutation. |
| 61 the presence of an intact | 無傷のへの存在 | 29 | 12011061 | A number of tumor cells expressing activated Akt were responsive to TGF-beta addition, indicating <the presence of an intact> TGF-beta-signaling pathway. |
| 62 the presence of at least | 少なくともへの存在 | 64 | 9692547 | Loss-of-heterozygosity studies in melanoma have suggested <the presence of at least> one chromosome 10q locus lost early in tumor progression. |
| 63 the presence of at least two | 少なくとも2つのへの存在 | 24 | | |
| 64 the presence of at least one | 少なくともひとつのへの存在 | 21 | | |
| 65 the presence of exogenous | 内在性のへの存在 | 47 | 10551646 | The fact that Ca1.41 binding was modified in <the presence of exogenous> invariant chain-derived peptide suggests that both binding and signaling are peptide dependent. |
| 66 the presence of wild type | 野生型のへの存在 | 47 | | |
| 67 in the presence of wild type | 野生型のへの存在下で | 35 | 10931842 | Results from co-transfection studies indicated superactivation of LTR by Tat and cyclin T1/CDK9 <in the presence of wild type> Vpr. |
| 68 the presence of serum | 血清の存在 | 46 | | |

Collocation of *presence*

4/4

| English | Japanese | Frq. | PubMID | Sample |
|--|----------------------------|------|----------|---|
| 69 in the presence of serum | 血清の存在下で | 33 | 10411946 | High levels of phosphorylation and activity of Akt-1 were detected in cerebellar neurons cultured <in the presence of serum>. |
| 70 the continued presence of | ～の持続的存在 | 46 | 10400633 | Thrombin activation of cells expressing P/S or Y397Z resulted in persistent signaling independent of <the continued presence of> thrombin. |
| 71 the continuous presence of | ～の持続的存在 | 26 | | |
| 72 the presence or absence of | ～の存在あるいは非存在 | 705 | 12595313 | <The presence or absence of> somatic mutations in the expressed immunoglobulin heavy chain variable regions (IgVH) of chronic lymphocytic leukemia (CLL) cells provides prognostic information. |
| 73 in the presence or absence of | ～の存在下あるいは非存在下 | 370 | 9922304 | This study examined peptic ulcer development <in the presence or absence of> gastric neutrophils in patients requiring long-term use of NSAIDs. |
| 74 of the presence or absence of | ～の存在あるいは非存在の | 46 | | |
| 75 by the presence or absence of | ～の存在あるいは非存在によって | 45 | | |
| 76 on the presence or absence of | ～の存在あるいは非存在に～ | 30 | | |
| 77 to the presence or absence of | ～の存在あるいは非存在に～ | 27 | | |
| 78 in the presence and absence of | ～の存在下でも非存在下でも | 324 | 12511490 | To identify the AdnA regulon, we used a promoterless Tn5-lacZ element to study the phenotypes of insertion mutants <in the presence and absence of> AdnA. |
| 79 in both the presence and absence of | ～の存在下および非存在下の両方で | 36 | | |
| 80 in the presence but not in the absence of | ～の存在下では～であるが、～の非存在下では、～でない | 13 | | |
| 81 in the presence but not the absence of | ～の存在下では～であるが、～の非存在下では、～でない | 10 | | |
| 82 in the absence and presence of | ～の非存在下でも存在下でも | 126 | 11380263 | Similar anisotropies and positions of the NBD emission maxima were also found <in the absence and presence of> activators. |
| 83 in both the absence and presence of | ～の非存在下および存在下の両方で | 22 | | |
| 84 in the absence or presence of | ～の非存在下あるいは存在下で | 111 | 11245650 | Growth-arrested VSMCs were incubated with different concentrations of oxLDL, LPC, H(2)O(2), or LPC with H(2)O(2) <in the absence or presence of> 5HT. |

Collocation of *evidence*

| English | Japanese | Frg. | PubM ID | Sample |
|---|--------------|--------|----------|---|
| evidence* | 証拠 | 16,252 | | |
| evidences | 証拠 | 11 | | |
| evidenced | 立証される | 685 | | |
| evidencing | 立証する | 5 | | |
| <p>Note 無冠詞の用例が多い。頻度高く共起する動詞は provide, show である。動詞として使われることが多く、as evidenced by ~ (〜によって立証されたように) に、としての出現が多い。[evidence + that 節]の用例が非常に多い。直後に来る前置詞は、for が一番多い。複数の「証拠」は、複数の lines of evidence のように表現される。</p> | | | | |
| 1 evidence that | 〜であるという証拠 | 4,962 | 11390382 | Results of these studies provide <evidence that> the inhibitory effect of KLF4 on cell proliferation is mainly exerted at the G1/S boundary of the cell cycle. |
| 2 direct evidence that | 〜であるという直接の証拠 | 351 | 9685331 | These data provide <direct evidence that> calcium influx through P2X2 receptors results in the activation of the MAP kinase cascade. |
| 3 no evidence that | 〜であるという証拠はな | 153 | 10913185 | Furthermore, there is <no evidence that> the same cellular enzyme is involved in the synthesis of both RNA species. |
| 4 evidence for | 〜の(を)支持する)証拠 | 3,507 | | |
| 5 evidence for the involvement of | 〜の関与の証拠 | 86 | 9525879 | The results provide direct <evidence for the involvement of> unknown cellular factors in the membrane integration process of connexins. |
| 6 evidence for the existence of | 〜の存在の証拠 | 84 | 9537394 | The data presented provide the first direct <evidence for the involvement of> a membrane-bound protein in mRNA decay in <i>E. coli</i> . |
| 7 evidence for the presence of | 〜の存在の証拠 | 52 | 10086343 | These data provide an <evidence for the involvement of> pRb-E2F/DP machinery in PDT-mediated cell cycle arrest leading to apoptosis. |
| 8 evidence for the role of | 〜の役割の証拠 | 47 | 10891501 | Taken together, these results provide in vivo <evidence for the role of> Fil11 in the regulation of hematopoiesis and hemostasis. |
| 9 evidence for a role of | 〜の役割の証拠 | 40 | 9614220 | These results provide <evidence for a role of> K+ uptake via IIR into astrocytes. |
| 10 evidence for a role for | 〜の役割の証拠 | 22 | | |
| 11 evidence for a novel | 新奇な〜の証拠 | 46 | 10946304 | These data provide the first <evidence for a novel> role for Bcl-xL as an anti-inflammatory mediator in macrophages. |
| 12 evidence for linkage | 連鎖の証拠 | 202 | 11118028 | We did not find any <evidence for linkage> between type 2 diabetes and any other region on chromosome 20. |
| 13 evidence for linkage to | 〜の連鎖の証拠 | 50 | 10788333 | Parametric analysis of a genomewide screen again failed to identify significant <evidence for linkage to> a single autosomal locus. |
| 14 evidence for linkage of | 〜の連鎖の証拠 | 20 | 11872689 | We also found strong <evidence for linkage of> factor 3 to a genetic location on chromosome 7 between markers D7S479 and D7S471 (LOD = 3.2). |
| 15 significant evidence for linkage | 連鎖の有意な証拠(形跡) | 20 | | |
| 16 evidence for an interaction between | 〜の間の相互作用の証拠 | 15 | | |
| 17 no evidence for | 〜の証拠はない | 313 | 11244060 | The studies described here found <no evidence for> extrachromosomal plasmid DNA in any of the strains examined. |
| 18 direct evidence for | 〜の直接の証拠 | 231 | 9525879 | The results provide <direct evidence for> the involvement of unknown cellular factors in the membrane integration process of connexins. |

| Collocation of evidence | | | |
|---------------------------------|-----------------|-------|----------|
| English | Japanese | Frq. | PubM ID |
| | | | Sample |
| 19 strong evidence for | ~の強力な証拠(形跡) | 113 | 11544519 |
| 20 the evidence for | ~の証拠 | 92 | 11675602 |
| 21 evidence of | ~の証拠 | 3,116 | 10859364 |
| 22 evidence of a role for | ~の役割の証拠 | 21 | |
| 23 evidence of linkage | 連鎖の証拠 | 99 | 9973299 |
| 24 evidence of linkage to | ~との連鎖の証拠 | 35 | |
| 25 no evidence of | ~の証拠はない | 642 | 9647236 |
| 26 direct evidence of | ~の直接の証拠 | 80 | 12370399 |
| 27 the first direct evidence of | ~の最初の直接の証拠(形跡) | 24 | |
| 28 the first evidence of | ~の最初の証拠 | 72 | 10985859 |
| 29 further evidence of | ~のさらなる証拠 | 54 | |
| 30 clinical evidence of | ~の臨床的証拠 | 52 | 9792869 |
| 31 experimental evidence for | ~の実験による証拠 | 51 | 10673499 |
| 32 histologic evidence of | ~の組織学的証拠(形跡) | 50 | 11093733 |
| 33 little evidence of | ~の証拠(形跡)はほとんどない | 41 | 12558356 |
| 34 any evidence of | ~のどんな証拠 | 31 | |
| 35 for evidence of | ~の証拠(形跡)を求めて | 108 | 12397357 |
| 36 without evidence of | ~の証拠(形跡)のない | 99 | 12020525 |
| 37 with evidence of | ~の証拠(形跡)を持つ | 82 | 10556116 |

| Collocation of evidence | | Sample | |
|---|-------------------|--------|----------|
| English | Japanese | Frq. | PubM ID |
| 38 with no evidence of | ～の証拠(形跡)のない | 84 | 12189146 |
| 39 evidence on | ～に関する証拠 | 45 | 10757778 |
| 40 evidence from | ～からの証拠 | 288 | 10767308 |
| 41 evidence to | ～する証拠/～への証拠 | 288 | 10961874 |
| 42 evidence to support | ～を支持する証拠 | 97 | 11687661 |
| 43 evidence to suggest that | ～であることを示唆する証拠 | 59 | |
| 44 evidence to date | 現在までの証拠 | 24 | 10611351 |
| 45 evidence in | ～における証拠 | 169 | |
| 46 evidence in support of | ～を支持する証拠 | 50 | 10850432 |
| 47 evidence against | ～に反する証拠 | 37 | 12096051 |
| 48 provide evidence that | ～である証拠を提供する | 1,158 | 11207320 |
| 49 provide direct evidence that | ～である直接の証拠を提供する | 155 | 9685331 |
| 50 provide the first evidence that | ～である最初の証拠を提供する | 155 | 11463820 |
| 51 provide the first direct evidence that | ～である最初の直接の証拠を提供する | 52 | |
| 52 provide strong evidence that | ～である強力な証拠を提供する | 107 | 10330413 |
| 53 provide further evidence that | ～であるさらなる証拠を提供する | 60 | 10228062 |
| 54 we provide evidence that | 我々は、～である証拠を提供する | 489 | 12598628 |
| 55 results provide evidence that | 結果は、～である証拠を提供する | 193 | 9602057 |
| 56 data provide evidence that | データは、～である証拠を提供する | 134 | 12595495 |

| Collocation of evidence | | | |
|--|-------------------|------|--|
| English | Japanese | Frq. | PubM ID |
| | | | Sample |
| 57 findings provide evidence that | 知見は、～である証拠を提供する | 56 | |
| 58 study provide evidence that | 研究は、～である証拠を提供する | 51 | |
| 59 we present evidence that | 我々は、～である証拠を示す | 442 | 11349132 Here, <we present evidence that> P2Y(6) regulates chemokine production and release in monocytes. |
| 60 we found no evidence that | 我々は、～である証拠を見つけた | 32 | |
| 61 there is no evidence that | ～である証拠はない | 37 | |
| 62 there is evidence that | ～である証拠がある | 100 | 10693874 <There is evidence that> different intervals affect particular aspects of the SLE phenotype. |
| 63 provide evidence for | ～の証拠を提供する | 470 | 10037772 These data <provide evidence for> the involvement of Pyk2 in the CD28 signaling cascade and suggest that neither Fak nor paxillin is involved in the signaling pathways of CD28. |
| 64 results provide evidence for | 結果は、～の証拠を提供する | 102 | 9614220 These <results provide evidence for> a role of K ⁺ uptake via IIR into astrocytes. |
| 65 we provide evidence for | 我々は、～の証拠を提供する | 88 | 10611337 Here, <we provide evidence for> an additional antigen-processing pathway in immature dendritic cells (DC). |
| 66 data provide evidence for | データは、～の証拠を提供する | 70 | 11313929 These <data provide evidence for> the existence of a novel signalling pathway that links RalA to the activation of uPAR transcription via a c-Src intermediate and activation of AP1. |
| 67 findings provide evidence for | 知見は、～の証拠を提供する | 40 | 10206647 Our <findings provide evidence for> the existence of distinct processing sites or modifications in the extracellular domain of Notch. |
| 68 provide direct evidence for | ～の直接の証拠を提供する | 64 | 12040087 These results <provide direct evidence for> CA3 NMDA receptor involvement in associative memory recall. |
| 69 provide the first evidence for | ～の最初の証拠を提供する | 55 | 10564277 We <provide the first evidence for> a functional role of a type 2 PAP, PAP2b, in the metabolism of PLD-generated PA. |
| 70 provide the first direct evidence for | ～の最初の直接の証拠を提供する | 25 | 10412911 The results of the present study <provide the first direct evidence for> EBR-induced expression of HSPs. |
| 71 provide further evidence for | ～のさらなる証拠を提供する | 55 | 11147789 In summary, our data <provide further evidence for> the existence of a type 2 diabetes locus on chromosome 12q15. |
| 72 , providing evidence for | そのことは、～の証拠を提供する | 72 | |
| 73 we present evidence for | 我々は、～の証拠を提供する | 62 | 9624158 <We present evidence for> the pharmacological manipulation of PN with decomposition catalysts capable of converting it to nitrate. |
| 74 we found no evidence for | 我々は、～の証拠を見いださなかった | 33 | 11929793 <We found no evidence for> HbF dominant populations or switching during differentiation in adult cells. |
| 75 there was no evidence for | ～の証拠はなかった | 60 | 10931181 <There was no evidence for> substantial competition for the processing enzymes when the combined substrates proinsulin and proAPP were incubated with both PC2 and PC3. |

| Collocation of evidence | | Frq. | PubM ID | Sample |
|---|-------------------------|------|----------|--|
| English | Japanese | | | |
| 76 provide evidence of | ～の証拠を提供する | 106 | 11376266 | The study results did not <provide evidence of> a distinctive pattern of resting rCBF abnormalities associated with CFS. |
| 77 results provide evidence of | 結果は、～の証拠を提供する | 26 | | |
| 78 provide the first evidence of | ～の最初の証拠を提供する | 33 | | |
| 79 provide further evidence of | ～のさらなる証拠を提供する | 18 | | |
| 80 showed evidence of | ～の証拠を示した | 111 | 11294813 | At 3 and 6 weeks after cell therapy, 92% (13 of 14) of M1+cell hearts <showed evidence of> myoblast graft survival. |
| 81 showed no evidence of | ～の証拠は示さなかった | 70 | 11865066 | Even the most extensively damaged glomeruli <showed no evidence of> inflammation or necrosis. |
| 82 we found no evidence of | 我々は、～の証拠を見つけた | 30 | | |
| 83 had evidence of | ～の形跡を持っていた | 97 | 9696724 | Fifty-seven percent of patients <had evidence of> infection on admission. |
| 84 patients had evidence of | 患者は、～の形跡を持っていた | 19 | | |
| 85 there was evidence of | ～の証拠があった | 49 | 11803463 | <There was no evidence of> mammary dysplasia or neoplasia during the lifespan of multiparous transgenic mice. |
| 86 there was no evidence of | ～の証拠はなかった | 173 | 11803463 | <There was no evidence of> mammary dysplasia or neoplasia during the lifespan of multiparous transgenic mice. |
| 87 provide evidence to | ～する証拠を提供する | 29 | | |
| 88 evidence suggests that | 証拠は、～であることを示唆する | 867 | 10653787 | New lines of <evidence suggest that> volatile anesthetics interact specifically with proteins. |
| 89 the evidence suggests that | 証拠は、～であることを示唆する | 23 | 11711534 | <The evidence suggests that> Srcasm may help promote Src family kinase signaling in cells. |
| 90 recent evidence suggests that | 最近の証拠は、～であることを示唆する | 129 | 11266547 | <Recent evidence suggests that> specific short sequences within exons help in defining these boundaries. |
| 91 genetic evidence suggests that | 遺伝的証拠は、～であることを示唆する | 39 | 11102357 | <Genetic evidence suggests that> the xprF and xprG genes are involved in the same regulatory pathway. |
| 92 current evidence suggests that | 現在の証拠は、～であることを示唆する | 23 | 10860719 | <Current evidence suggests that> IF1 is an RNA-binding protein that sits in the A site of the decoding region of 16 S rRNA. |
| 93 several lines of evidence suggest that | いくつかの一連の証拠は、～であることを示唆する | 69 | 10866040 | <Several lines of evidence suggest that> the insulin-mimetic effects of AICAR are mediated by activation of AMPK. |
| 94 growing body of evidence suggests that | 増加する多数の証拠は、～であることを示唆する | 17 | 11023973 | A <growing body of evidence suggests that> the cellular response to oxidative and nitrosative stress is primarily regulated at the level of transcription. |
| 95 accumulating evidence suggests that | 蓄積する証拠は、～であることを示唆する | 31 | | |
| 96 increasing evidence suggest that | 増加する証拠は、～であることを示唆する | 25 | | |

| Collocation of <i>evidence</i> | | | | |
|---|----------------------|-------|----------|---|
| English | Japanese | Freq. | PubM ID | Sample |
| 97 evidence indicates that | 証拠は、～であることを示す | 286 | 10407038 | Mounting <evidence indicates that> extracellular factors exert proliferative effects on neurogenetic precursors in vivo. |
| 98 recent evidence indicates that | 最近の証拠は、～であることを示す | 52 | | |
| 99 evidence supports | 証拠は、～を支持する | 97 | 10353889 | Accumulating <evidence supports> an association between Chlamydia pneumoniae infection and atherosclerosis. |
| 100 evidence shows that | 証拠は、～を示す | 35 | | |
| 101 evidence implicates | 証拠は、～を意味する | 33 | | |
| 102 evidence points to | 証拠は、～を示す | 30 | | |
| 103 evidence exists for | ～を支持する証拠が存在する | 19 | | |
| 104 evidence exists that | ～だという証拠が存在する | 19 | | |
| 105 evidence is presented that | ～である証拠が示される | 84 | 11917127 | <Evidence is presented that> this inhibitor is derived from chloroplastic fructose 1,6-bisphosphate. |
| 106 evidence is presented for | ～の証拠が示される | 24 | 11587856 | <Evidence is presented for> immune protection by recombinant antigens in a mouse model of <i>C. ruminantium</i> infection. |
| 107 evidence is provided that | ～である証拠が提供される | 42 | 10477763 | <Evidence is provided that> actin-myosin assembly and membrane ruffling are regulated by distinct signaling pathways in the migratory cell. |
| 108 evidence supporting | ～を支持する証拠 | 128 | 10364348 | However, there is no physical <evidence supporting> the association of any of these products with viral RNA synthesis. |
| 109 evidence suggesting that | ～であることを示唆する証拠 | 95 | 9575215 | We now show <evidence suggesting that> this IRP2 degradation may be mediated by heme. |
| 110 we present evidence suggesting that | 我々は、～であることを示唆する証拠を示す | 19 | | |
| 111 evidence indicating that | ～であることを示す証拠 | 67 | 10618007 | This article reviews <evidence indicating that> acetylcholinesterase inhibitors have psychotropic properties. |
| 112 evidence implicating | ～を意味している証拠 | 39 | | |
| 113 evidence demonstrating | ～を裏証する証拠 | 36 | | |
| 114 evidence showing | ～を示している証拠 | 35 | | |
| 115 evidence linking | ～とリンクする証拠 | 35 | | |
| 116 evidence-based | 証拠に基づいた | 88 | 11397947 | <Evidence-based> medicine forms the basis for medical decision-making about accepting the patient as a transplant candidate. |

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