

Supplementary Material

Section S1 - Glossary

<i>Text / publication corpus</i>	The collection of 228 abstracts representing the subject of our analysis.
<i>Annotation</i>	The association of an ontological concept (in our case from the Human Phenotype Ontology) to a well-defined span of text present within an abstract. The complete information accompanying an annotation consists of: the start and end offsets in the abstract denoting the text span of interest and the identifier of the ontological concept to be associated with the span of text.
<i>Test case</i>	The definition of a structured characteristic of the lexical representations defined by the ontological concepts (e.g., label, synonym) – to be tested for recognition efficiency. For example, the length of the lexical representation.
<i>Test case entry</i>	An instance of a test case in the context of a particular ontological concept. For example, if the test case is Length-1 – i.e., the length of the lexical representation equals – then a test case entry for HP:0000039 is ‘Epispadias’.
<i>Test suite</i>	A collection of test cases.

Section S2

Listing of the 32 manually crafted test cases available to perform standard error analysis in HPO-driven concept recognition. As per the definitions provided in Section S1, a test case captures information about a particular aspect of the lexical representations defined by the ontological concepts, while a test case entry represents an instance of the test case applied to a particular lexical representation.

Test case	Description	Test case entry example
Length-1	Labels with a length in tokens of 1	Epispadias (HP:0000039)
Length-2	Labels with a length in tokens of 2	Cerebral germinoma (HP:0100312)
Length-3	Labels with a length in tokens of 3	Renal artery stenosis (HP:0001920)
Length-4	Labels with a length in tokens of 4	Papillary renal cell carcinoma (HP:0006766)
Length-5	Labels with a length in tokens of 5	Weakness of orbicularis oculi muscle (HP:0012507)
Length-6	Labels with a length in tokens of 6	Abnormal pigmentation of the oral mucosa (HP:0100669)
Length-7	Labels with a length in tokens of 7	Expanded terminal portion of crus of helix (HP:0011259)
Length-8	Labels with a length in tokens of 8	Hypoplasia of the vestibule of the inner ear (HP:0011378)
Length-9	Labels with a length in tokens of 9	Streaks of hyperkeratosis along each finger onto the palm (HP:0007501)
Length-10	Labels with a length in tokens of 10	Contracture of the distal interphalangeal joint of the 2nd toe (HP:0100352)
Length-11	Labels with a length in tokens of 11	Decreased cervical spine flexion due to contractures of posterior cervical muscles (HP:0004631)
Length-12	Labels with a length in tokens of 12	Pyramidal skinfold extending from the base to the top of the nails (HP:0009758)
Length-13	Labels with a length in tokens of 13	Double outlet right ventricle with doubly committed ventricular septal defect and pulmonary stenosis (HP:0011651)
Length-14	Labels with a length in tokens of 14	Hair shafts flattened at irregular intervals and twisted through 180 degrees about their axes (HP:0003329)
Singular	Labels containing only tokens with cardinality: singular	Hemorrhage of the eye (HP:0011885)
Plural	The pair of the 'Singular' test case. The same labels, with one token altered to its plural form	Hemorrhage of the eyes (HP:0011885)
Canonical ordering	Labels re-used as per the original definition of the corresponding concept	Jaw hyporeflexia (HP:0012392)
Canonical ordering (transformed)	The pair of the 'Canonical ordering' test case. Conceptually the same labels, but with the ordering of the tokens altered	Hyporeflexia of the jaw (HP:0012392)
Containing	Labels containing at least one	Abnormal T3/T4 ratio

punctuation	punctuation symbol	(HP:0012558)
Containing stop words (OF)	Labels containing the stop word: OF	Abnormality of thyroid physiology (HP:0002926)
Containing stop words (TO)	Labels containing the stop word: TO	Pituitary resistance to thyroid hormone (HP:0008227)
Containing stop words (WITH)	Labels containing the stop word: WITH	Thyrotoxicosis with diffuse goiter (HP:0011784)
Containing stop words (IN)	Labels containing the stop word: IN	Pubertal developmental failure in females (HP:0008647)
Containing stop words (FROM)	Labels containing the stop word: FROM	Anomalous origin of one pulmonary artery from ascending aorta (HP:0011660)
Containing stop words (BY)	Labels containing the stop word: BY	Yellow subcutaneous tissue covered by thin, scaly skin (HP:0007525)
Numerals isolated (Arabic)	Labels containing isolated Arabic numerals	EEG with generalized slow activity grade 3 (HP:0011208)
Numerals isolated (Roman)	Labels containing isolated Roman numerals	Mobitz II atrioventricular block (HP:0011708)
Synonyms	Alternative lexical groundings defined for the corresponding concept	Premature ventricular contractions (HP:0006682)
Non-English canonical	Labels containing non-English tokens	Patent ductus arteriosus (HP:0001643)
Coordination	Conjunction of multiple concepts	Metacarpal, carpal and scapulohumeral synostosis (HP:0009701, HP:0009702, HP:0006595)
Lexical variation	Labels containing at least a token that has been altered from its original definition	Swollen ankle (HP:0001785)
Metaphoric constructs	Labels consisting of metaphoric constructs	Shoe-shaped sella turcica (HP:0005723)

Section S3

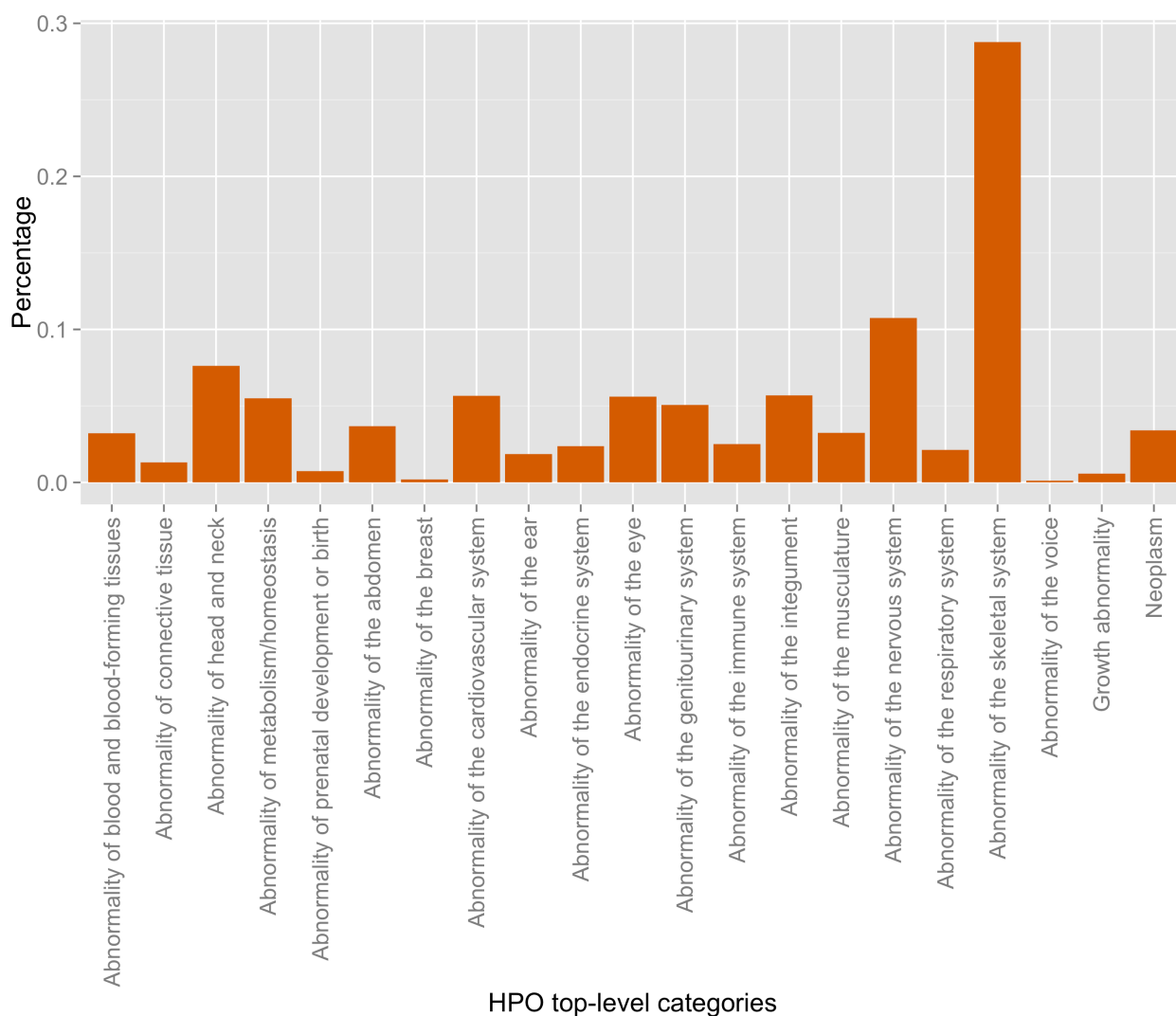


Figure 1. Natural distribution of HPO terms according to the 21 top-level categories.

Section S4

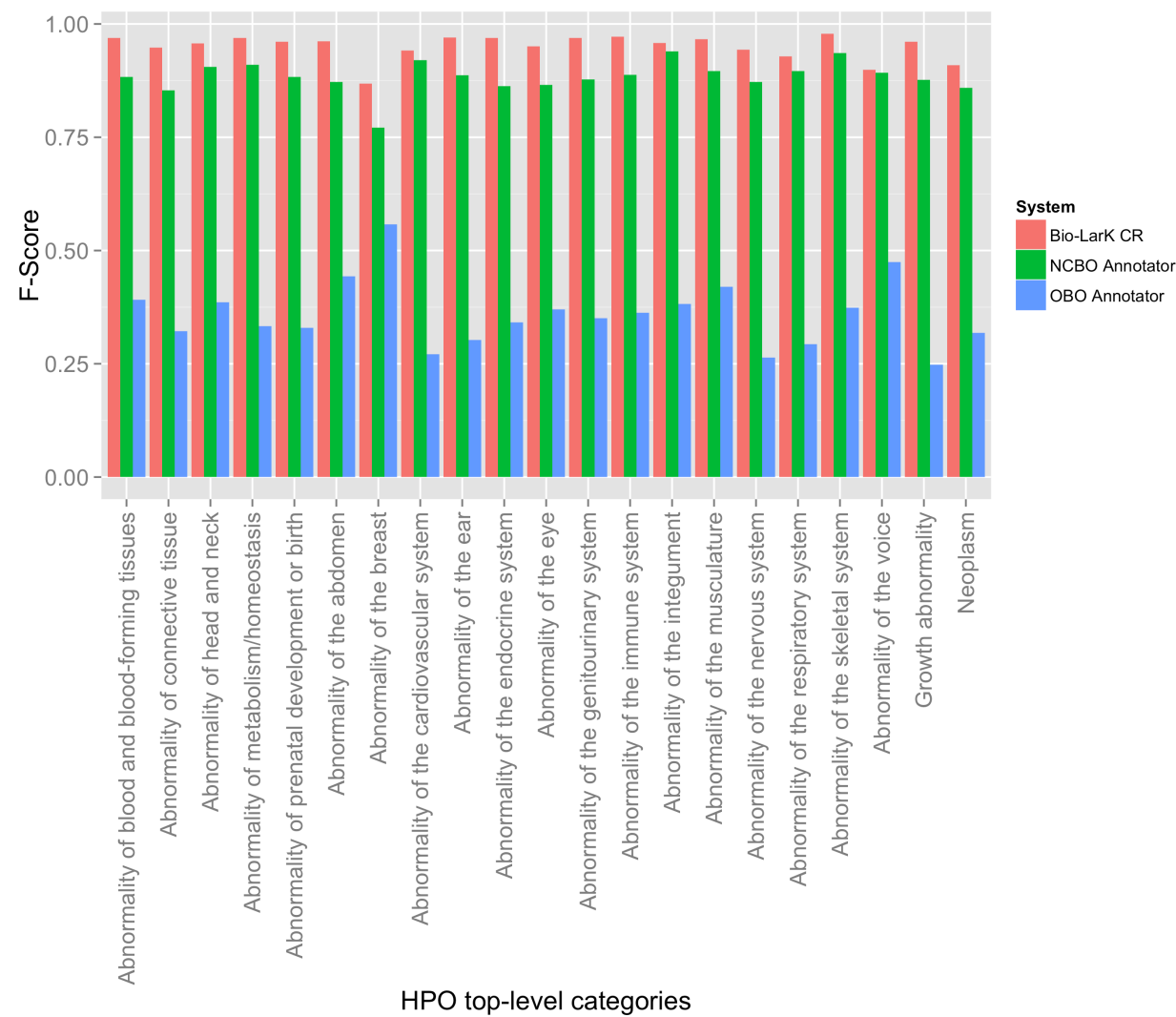


Figure 2. Systems test suite evaluation results according to the 21 HPO top-level categories.

Section S5

Listing of the data used to generate Figure 1.

Branch	Criterion	Count
Abnormality of blood and blood-forming tissues	Length-1	7
Abnormality of blood and blood-forming tissues	Length-2	8
Abnormality of blood and blood-forming tissues	Length-3	8
Abnormality of blood and blood-forming tissues	Length-4	9
Abnormality of blood and blood-forming tissues	Length-5	6
Abnormality of blood and blood-forming tissues	Length-6	6
Abnormality of blood and blood-forming tissues	Length-7	5
Abnormality of blood and blood-forming tissues	Length-8	1
Abnormality of blood and blood-forming tissues	Length-9	4
Abnormality of blood and blood-forming tissues	Length-10	1
Abnormality of blood and blood-forming tissues	Length-11	0
Abnormality of blood and blood-forming tissues	Length-12	0
Abnormality of blood and blood-forming tissues	Length-13	0
Abnormality of blood and blood-forming tissues	Length-14	0
Abnormality of blood and blood-forming tissues	Singular	6
Abnormality of blood and blood-forming tissues	Plural	6
Abnormality of blood and blood-forming tissues	Non-english canonical	2
Abnormality of blood and blood-forming tissues	Canonical ordering	5
Abnormality of blood and blood-forming tissues	Canonical ordering (transformed)	5
Abnormality of blood and blood-forming tissues	Numerals isolated (Roman)	3
Abnormality of blood and blood-forming tissues	Numerals isolated (Arabic)	0
Abnormality of blood and blood-forming tissues	Containing punctuation	6
Abnormality of blood and blood-forming tissues	Containing stop words (FROM)	0
Abnormality of blood and blood-forming tissues	Containing stop words (OF)	6
Abnormality of blood and blood-forming tissues	Containing stop words (IN)	4
Abnormality of blood and blood-forming tissues	Containing stop words (TO)	2

forming tissues		
Abnormality of blood and blood-forming tissues	Containing stop words (BY)	1
Abnormality of blood and blood-forming tissues	Containing stop words (WITH)	3
Abnormality of blood and blood-forming tissues	Coordination	5
Abnormality of blood and blood-forming tissues	Lexical variation	4
Abnormality of blood and blood-forming tissues	Metaphoric constructs	1
Abnormality of blood and blood-forming tissues	Synonyms	11
Abnormality of connective tissue	Length-1	8
Abnormality of connective tissue	Length-2	10
Abnormality of connective tissue	Length-3	8
Abnormality of connective tissue	Length-4	6
Abnormality of connective tissue	Length-5	5
Abnormality of connective tissue	Length-6	5
Abnormality of connective tissue	Length-7	2
Abnormality of connective tissue	Length-8	4
Abnormality of connective tissue	Length-9	4
Abnormality of connective tissue	Length-10	4
Abnormality of connective tissue	Length-11	2
Abnormality of connective tissue	Length-12	1
Abnormality of connective tissue	Length-13	0
Abnormality of connective tissue	Length-14	0
Abnormality of connective tissue	Singular	5
Abnormality of connective tissue	Plural	5
Abnormality of connective tissue	Non-english canonical	3
Abnormality of connective tissue	Canonical ordering	3
Abnormality of connective tissue	Canonical ordering (transformed)	3
Abnormality of connective tissue	Numerals isolated (Roman)	0
Abnormality of connective tissue	Numerals isolated (Arabic)	4
Abnormality of connective tissue	Containing punctuation	4
Abnormality of connective tissue	Containing stop words (FROM)	1
Abnormality of connective tissue	Containing stop words (OF)	7
Abnormality of connective tissue	Containing stop words (IN)	1
Abnormality of connective tissue	Containing stop words (TO)	3
Abnormality of connective tissue	Containing stop words (BY)	1
Abnormality of connective tissue	Containing stop words (WITH)	0
Abnormality of connective tissue	Coordination	4
Abnormality of connective tissue	Lexical variation	6
Abnormality of connective tissue	Metaphoric constructs	1
Abnormality of connective tissue	Synonyms	5
Abnormality of head and neck	Length-1	3
Abnormality of head and neck	Length-2	3
Abnormality of head and neck	Length-3	3

Abnormality of head and neck	Length-4	3
Abnormality of head and neck	Length-5	3
Abnormality of head and neck	Length-6	3
Abnormality of head and neck	Length-7	0
Abnormality of head and neck	Length-8	1
Abnormality of head and neck	Length-9	1
Abnormality of head and neck	Length-10	0
Abnormality of head and neck	Length-11	0
Abnormality of head and neck	Length-12	0
Abnormality of head and neck	Length-13	0
Abnormality of head and neck	Length-14	0
Abnormality of head and neck	Singular	3
Abnormality of head and neck	Plural	3
Abnormality of head and neck	Non-english canonical	7
Abnormality of head and neck	Canonical ordering	3
Abnormality of head and neck	Canonical ordering (transformed)	3
Abnormality of head and neck	Numerals isolated (Roman)	0
Abnormality of head and neck	Numerals isolated (Arabic)	1
Abnormality of head and neck	Containing punctuation	5
Abnormality of head and neck	Containing stop words (FROM)	0
Abnormality of head and neck	Containing stop words (OF)	3
Abnormality of head and neck	Containing stop words (IN)	3
Abnormality of head and neck	Containing stop words (TO)	3
Abnormality of head and neck	Containing stop words (BY)	0
Abnormality of head and neck	Containing stop words (WITH)	3
Abnormality of head and neck	Coordination	3
Abnormality of head and neck	Lexical variation	3
Abnormality of head and neck	Metaphoric constructs	4
Abnormality of head and neck	Synonyms	2
Abnormality of metabolism/homeostasis	Length-1	16
Abnormality of metabolism/homeostasis	Length-2	14
Abnormality of metabolism/homeostasis	Length-3	8
Abnormality of metabolism/homeostasis	Length-4	11
Abnormality of metabolism/homeostasis	Length-5	7
Abnormality of metabolism/homeostasis	Length-6	6
Abnormality of metabolism/homeostasis	Length-7	8
Abnormality of metabolism/homeostasis	Length-8	5
Abnormality of metabolism/homeostasis	Length-9	1
Abnormality of metabolism/homeostasis	Length-10	0
Abnormality of	Length-11	0

metabolism/homeostasis		
Abnormality of metabolism/homeostasis	Length-12	0
Abnormality of metabolism/homeostasis	Length-13	0
Abnormality of metabolism/homeostasis	Length-14	0
Abnormality of metabolism/homeostasis	Singular	5
Abnormality of metabolism/homeostasis	Plural	5
Abnormality of metabolism/homeostasis	Non-english canonical	5
Abnormality of metabolism/homeostasis	Canonical ordering	6
Abnormality of metabolism/homeostasis	Canonical ordering (transformed)	6
Abnormality of metabolism/homeostasis	Numerals isolated (Roman)	3
Abnormality of metabolism/homeostasis	Numerals isolated (Arabic)	1
Abnormality of metabolism/homeostasis	Containing punctuation	12
Abnormality of metabolism/homeostasis	Containing stop words (FROM)	0
Abnormality of metabolism/homeostasis	Containing stop words (OF)	6
Abnormality of metabolism/homeostasis	Containing stop words (IN)	8
Abnormality of metabolism/homeostasis	Containing stop words (TO)	5
Abnormality of metabolism/homeostasis	Containing stop words (BY)	2
Abnormality of metabolism/homeostasis	Containing stop words (WITH)	0
Abnormality of metabolism/homeostasis	Coordination	4
Abnormality of metabolism/homeostasis	Lexical variation	6
Abnormality of metabolism/homeostasis	Metaphoric constructs	1
Abnormality of metabolism/homeostasis	Synonyms	8
Abnormality of prenatal development or birth	Length-1	4
Abnormality of prenatal development or birth	Length-2	4
Abnormality of prenatal development or birth	Length-3	5
Abnormality of prenatal development or birth	Length-4	5
Abnormality of prenatal development or birth	Length-5	5
Abnormality of prenatal development or birth	Length-6	2
Abnormality of prenatal development	Length-7	1

or birth		
Abnormality of prenatal development or birth	Length-8	1
Abnormality of prenatal development or birth	Length-9	1
Abnormality of prenatal development or birth	Length-10	0
Abnormality of prenatal development or birth	Length-11	0
Abnormality of prenatal development or birth	Length-12	0
Abnormality of prenatal development or birth	Length-13	0
Abnormality of prenatal development or birth	Length-14	0
Abnormality of prenatal development or birth	Singular	2
Abnormality of prenatal development or birth	Plural	2
Abnormality of prenatal development or birth	Non-english canonical	5
Abnormality of prenatal development or birth	Canonical ordering	4
Abnormality of prenatal development or birth	Canonical ordering (transformed)	4
Abnormality of prenatal development or birth	Numerals isolated (Roman)	0
Abnormality of prenatal development or birth	Numerals isolated (Arabic)	0
Abnormality of prenatal development or birth	Containing punctuation	3
Abnormality of prenatal development or birth	Containing stop words (FROM)	0
Abnormality of prenatal development or birth	Containing stop words (OF)	4
Abnormality of prenatal development or birth	Containing stop words (IN)	1
Abnormality of prenatal development or birth	Containing stop words (TO)	0
Abnormality of prenatal development or birth	Containing stop words (BY)	0
Abnormality of prenatal development or birth	Containing stop words (WITH)	0
Abnormality of prenatal development or birth	Coordination	3
Abnormality of prenatal development or birth	Lexical variation	4
Abnormality of prenatal development or birth	Metaphoric constructs	0
Abnormality of prenatal development or birth	Synonyms	3
Abnormality of the abdomen	Length-1	5
Abnormality of the abdomen	Length-2	7
Abnormality of the abdomen	Length-3	6
Abnormality of the abdomen	Length-4	5

Abnormality of the abdomen	Length-5	5
Abnormality of the abdomen	Length-6	5
Abnormality of the abdomen	Length-7	0
Abnormality of the abdomen	Length-8	1
Abnormality of the abdomen	Length-9	0
Abnormality of the abdomen	Length-10	0
Abnormality of the abdomen	Length-11	0
Abnormality of the abdomen	Length-12	0
Abnormality of the abdomen	Length-13	0
Abnormality of the abdomen	Length-14	0
Abnormality of the abdomen	Singular	5
Abnormality of the abdomen	Plural	5
Abnormality of the abdomen	Non-english canonical	5
Abnormality of the abdomen	Canonical ordering	5
Abnormality of the abdomen	Canonical ordering (transformed)	5
Abnormality of the abdomen	Numerals isolated (Roman)	1
Abnormality of the abdomen	Numerals isolated (Arabic)	0
Abnormality of the abdomen	Containing punctuation	1
Abnormality of the abdomen	Containing stop words (FROM)	0
Abnormality of the abdomen	Containing stop words (OF)	4
Abnormality of the abdomen	Containing stop words (IN)	4
Abnormality of the abdomen	Containing stop words (TO)	2
Abnormality of the abdomen	Containing stop words (BY)	0
Abnormality of the abdomen	Containing stop words (WITH)	1
Abnormality of the abdomen	Coordination	4
Abnormality of the abdomen	Lexical variation	6
Abnormality of the abdomen	Metaphoric constructs	1
Abnormality of the abdomen	Synonyms	8
Abnormality of the breast	Length-1	2
Abnormality of the breast	Length-2	3
Abnormality of the breast	Length-3	3
Abnormality of the breast	Length-4	4
Abnormality of the breast	Length-5	0
Abnormality of the breast	Length-6	0
Abnormality of the breast	Length-7	0
Abnormality of the breast	Length-8	0
Abnormality of the breast	Length-9	0
Abnormality of the breast	Length-10	0
Abnormality of the breast	Length-11	0
Abnormality of the breast	Length-12	0
Abnormality of the breast	Length-13	0
Abnormality of the breast	Length-14	0
Abnormality of the breast	Singular	2
Abnormality of the breast	Plural	2
Abnormality of the breast	Non-english canonical	2
Abnormality of the breast	Canonical ordering	3

Abnormality of the breast	Canonical ordering (transformed)	3
Abnormality of the breast	Numerals isolated (Roman)	0
Abnormality of the breast	Numerals isolated (Arabic)	0
Abnormality of the breast	Containing punctuation	1
Abnormality of the breast	Containing stop words (FROM)	0
Abnormality of the breast	Containing stop words (OF)	3
Abnormality of the breast	Containing stop words (IN)	0
Abnormality of the breast	Containing stop words (TO)	0
Abnormality of the breast	Containing stop words (BY)	0
Abnormality of the breast	Containing stop words (WITH)	0
Abnormality of the breast	Coordination	3
Abnormality of the breast	Lexical variation	2
Abnormality of the breast	Metaphoric constructs	0
Abnormality of the breast	Synonyms	2
Abnormality of the cardiovascular system	Length-1	13
Abnormality of the cardiovascular system	Length-2	10
Abnormality of the cardiovascular system	Length-3	8
Abnormality of the cardiovascular system	Length-4	7
Abnormality of the cardiovascular system	Length-5	8
Abnormality of the cardiovascular system	Length-6	7
Abnormality of the cardiovascular system	Length-7	6
Abnormality of the cardiovascular system	Length-8	7
Abnormality of the cardiovascular system	Length-9	5
Abnormality of the cardiovascular system	Length-10	4
Abnormality of the cardiovascular system	Length-11	4
Abnormality of the cardiovascular system	Length-12	7
Abnormality of the cardiovascular system	Length-13	2
Abnormality of the cardiovascular system	Length-14	1
Abnormality of the cardiovascular system	Singular	5
Abnormality of the cardiovascular system	Plural	5
Abnormality of the cardiovascular system	Non-english canonical	4
Abnormality of the cardiovascular system	Canonical ordering	5
Abnormality of the cardiovascular system	Canonical ordering (transformed)	5
Abnormality of the cardiovascular system	Numerals isolated (Roman)	3

system		
Abnormality of the cardiovascular system	Numerals isolated (Arabic)	3
Abnormality of the cardiovascular system	Containing punctuation	6
Abnormality of the cardiovascular system	Containing stop words (FROM)	6
Abnormality of the cardiovascular system	Containing stop words (OF)	6
Abnormality of the cardiovascular system	Containing stop words (IN)	5
Abnormality of the cardiovascular system	Containing stop words (TO)	5
Abnormality of the cardiovascular system	Containing stop words (BY)	0
Abnormality of the cardiovascular system	Containing stop words (WITH)	5
Abnormality of the cardiovascular system	Coordination	4
Abnormality of the cardiovascular system	Lexical variation	6
Abnormality of the cardiovascular system	Metaphoric constructs	1
Abnormality of the cardiovascular system	Synonyms	7
Abnormality of the ear	Length-1	3
Abnormality of the ear	Length-2	3
Abnormality of the ear	Length-3	3
Abnormality of the ear	Length-4	3
Abnormality of the ear	Length-5	3
Abnormality of the ear	Length-6	3
Abnormality of the ear	Length-7	3
Abnormality of the ear	Length-8	2
Abnormality of the ear	Length-9	2
Abnormality of the ear	Length-10	0
Abnormality of the ear	Length-11	0
Abnormality of the ear	Length-12	0
Abnormality of the ear	Length-13	0
Abnormality of the ear	Length-14	0
Abnormality of the ear	Singular	5
Abnormality of the ear	Plural	5
Abnormality of the ear	Non-english canonical	3
Abnormality of the ear	Canonical ordering	3
Abnormality of the ear	Canonical ordering (transformed)	3
Abnormality of the ear	Numerals isolated (Roman)	3
Abnormality of the ear	Numerals isolated (Arabic)	0
Abnormality of the ear	Containing punctuation	3
Abnormality of the ear	Containing stop words (FROM)	1
Abnormality of the ear	Containing stop words (OF)	3
Abnormality of the ear	Containing stop words (IN)	0
Abnormality of the ear	Containing stop words (TO)	1

Abnormality of the ear	Containing stop words (BY)	0
Abnormality of the ear	Containing stop words (WITH)	0
Abnormality of the ear	Coordination	3
Abnormality of the ear	Lexical variation	2
Abnormality of the ear	Metaphoric constructs	0
Abnormality of the ear	Synonyms	5
Abnormality of the endocrine system	Length-1	4
Abnormality of the endocrine system	Length-2	4
Abnormality of the endocrine system	Length-3	5
Abnormality of the endocrine system	Length-4	4
Abnormality of the endocrine system	Length-5	4
Abnormality of the endocrine system	Length-6	3
Abnormality of the endocrine system	Length-7	0
Abnormality of the endocrine system	Length-8	3
Abnormality of the endocrine system	Length-9	0
Abnormality of the endocrine system	Length-10	0
Abnormality of the endocrine system	Length-11	0
Abnormality of the endocrine system	Length-12	0
Abnormality of the endocrine system	Length-13	0
Abnormality of the endocrine system	Length-14	0
Abnormality of the endocrine system	Singular	4
Abnormality of the endocrine system	Plural	4
Abnormality of the endocrine system	Non-english canonical	3
Abnormality of the endocrine system	Canonical ordering	3
Abnormality of the endocrine system	Canonical ordering (transformed)	3
Abnormality of the endocrine system	Numerals isolated (Roman)	2
Abnormality of the endocrine system	Numerals isolated (Arabic)	1
Abnormality of the endocrine system	Containing punctuation	3
Abnormality of the endocrine system	Containing stop words (FROM)	1
Abnormality of the endocrine system	Containing stop words (OF)	4
Abnormality of the endocrine system	Containing stop words (IN)	5
Abnormality of the endocrine system	Containing stop words (TO)	3
Abnormality of the endocrine system	Containing stop words (BY)	0
Abnormality of the endocrine system	Containing stop words (WITH)	4
Abnormality of the endocrine system	Coordination	4
Abnormality of the endocrine system	Lexical variation	5
Abnormality of the endocrine system	Metaphoric constructs	0
Abnormality of the endocrine system	Synonyms	4
Abnormality of the eye	Length-1	3
Abnormality of the eye	Length-2	3
Abnormality of the eye	Length-3	3
Abnormality of the eye	Length-4	3
Abnormality of the eye	Length-5	3
Abnormality of the eye	Length-6	3
Abnormality of the eye	Length-7	3
Abnormality of the eye	Length-8	3

Abnormality of the eye	Length-9	0
Abnormality of the eye	Length-10	0
Abnormality of the eye	Length-11	0
Abnormality of the eye	Length-12	0
Abnormality of the eye	Length-13	0
Abnormality of the eye	Length-14	0
Abnormality of the eye	Singular	4
Abnormality of the eye	Plural	4
Abnormality of the eye	Non-english canonical	3
Abnormality of the eye	Canonical ordering	5
Abnormality of the eye	Canonical ordering (transformed)	5
Abnormality of the eye	Numerals isolated (Roman)	0
Abnormality of the eye	Numerals isolated (Arabic)	0
Abnormality of the eye	Containing punctuation	3
Abnormality of the eye	Containing stop words (FROM)	1
Abnormality of the eye	Containing stop words (OF)	3
Abnormality of the eye	Containing stop words (IN)	4
Abnormality of the eye	Containing stop words (TO)	0
Abnormality of the eye	Containing stop words (BY)	0
Abnormality of the eye	Containing stop words (WITH)	1
Abnormality of the eye	Coordination	3
Abnormality of the eye	Lexical variation	4
Abnormality of the eye	Metaphoric constructs	1
Abnormality of the eye	Synonyms	5
Abnormality of the genitourinary system	Length-1	3
Abnormality of the genitourinary system	Length-2	3
Abnormality of the genitourinary system	Length-3	3
Abnormality of the genitourinary system	Length-4	3
Abnormality of the genitourinary system	Length-5	3
Abnormality of the genitourinary system	Length-6	3
Abnormality of the genitourinary system	Length-7	0
Abnormality of the genitourinary system	Length-8	1
Abnormality of the genitourinary system	Length-9	2
Abnormality of the genitourinary system	Length-10	0
Abnormality of the genitourinary system	Length-11	0
Abnormality of the genitourinary system	Length-12	0
Abnormality of the genitourinary system	Length-13	0
Abnormality of the genitourinary system	Length-14	0

system		
Abnormality of the genitourinary system	Singular	3
Abnormality of the genitourinary system	Plural	3
Abnormality of the genitourinary system	Non-english canonical	3
Abnormality of the genitourinary system	Canonical ordering	3
Abnormality of the genitourinary system	Canonical ordering (transformed)	3
Abnormality of the genitourinary system	Numerals isolated (Roman)	0
Abnormality of the genitourinary system	Numerals isolated (Arabic)	3
Abnormality of the genitourinary system	Containing punctuation	5
Abnormality of the genitourinary system	Containing stop words (FROM)	0
Abnormality of the genitourinary system	Containing stop words (OF)	3
Abnormality of the genitourinary system	Containing stop words (IN)	3
Abnormality of the genitourinary system	Containing stop words (TO)	1
Abnormality of the genitourinary system	Containing stop words (BY)	0
Abnormality of the genitourinary system	Containing stop words (WITH)	3
Abnormality of the genitourinary system	Coordination	2
Abnormality of the genitourinary system	Lexical variation	4
Abnormality of the genitourinary system	Metaphoric constructs	1
Abnormality of the genitourinary system	Synonyms	2
Abnormality of the immune system	Length-1	10
Abnormality of the immune system	Length-2	10
Abnormality of the immune system	Length-3	8
Abnormality of the immune system	Length-4	8
Abnormality of the immune system	Length-5	6
Abnormality of the immune system	Length-6	7
Abnormality of the immune system	Length-7	5
Abnormality of the immune system	Length-8	2
Abnormality of the immune system	Length-9	2
Abnormality of the immune system	Length-10	1
Abnormality of the immune system	Length-11	0
Abnormality of the immune system	Length-12	0
Abnormality of the immune system	Length-13	0
Abnormality of the immune system	Length-14	0
Abnormality of the immune system	Singular	4
Abnormality of the immune system	Plural	4

Abnormality of the immune system	Non-english canonical	2
Abnormality of the immune system	Canonical ordering	6
Abnormality of the immune system	Canonical ordering (transformed)	6
Abnormality of the immune system	Numerals isolated (Roman)	0
Abnormality of the immune system	Numerals isolated (Arabic)	0
Abnormality of the immune system	Containing punctuation	7
Abnormality of the immune system	Containing stop words (FROM)	0
Abnormality of the immune system	Containing stop words (OF)	5
Abnormality of the immune system	Containing stop words (IN)	3
Abnormality of the immune system	Containing stop words (TO)	6
Abnormality of the immune system	Containing stop words (BY)	0
Abnormality of the immune system	Containing stop words (WITH)	1
Abnormality of the immune system	Coordination	5
Abnormality of the immune system	Lexical variation	6
Abnormality of the immune system	Metaphoric constructs	0
Abnormality of the immune system	Synonyms	9
Abnormality of the integument	Length-1	31
Abnormality of the integument	Length-2	12
Abnormality of the integument	Length-3	5
Abnormality of the integument	Length-4	6
Abnormality of the integument	Length-5	6
Abnormality of the integument	Length-6	11
Abnormality of the integument	Length-7	7
Abnormality of the integument	Length-8	6
Abnormality of the integument	Length-9	5
Abnormality of the integument	Length-10	0
Abnormality of the integument	Length-11	2
Abnormality of the integument	Length-12	1
Abnormality of the integument	Length-13	0
Abnormality of the integument	Length-14	1
Abnormality of the integument	Singular	6
Abnormality of the integument	Plural	6
Abnormality of the integument	Non-english canonical	5
Abnormality of the integument	Canonical ordering	4
Abnormality of the integument	Canonical ordering (transformed)	4
Abnormality of the integument	Numerals isolated (Roman)	0
Abnormality of the integument	Numerals isolated (Arabic)	2
Abnormality of the integument	Containing punctuation	12
Abnormality of the integument	Containing stop words (FROM)	1
Abnormality of the integument	Containing stop words (OF)	5
Abnormality of the integument	Containing stop words (IN)	7
Abnormality of the integument	Containing stop words (TO)	5
Abnormality of the integument	Containing stop words (BY)	1
Abnormality of the integument	Containing stop words (WITH)	5
Abnormality of the integument	Coordination	4
Abnormality of the integument	Lexical variation	5

Abnormality of the integument	Metaphoric constructs	1
Abnormality of the integument	Synonyms	9
Abnormality of the musculature	Length-1	9
Abnormality of the musculature	Length-2	8
Abnormality of the musculature	Length-3	8
Abnormality of the musculature	Length-4	8
Abnormality of the musculature	Length-5	6
Abnormality of the musculature	Length-6	6
Abnormality of the musculature	Length-7	5
Abnormality of the musculature	Length-8	6
Abnormality of the musculature	Length-9	5
Abnormality of the musculature	Length-10	4
Abnormality of the musculature	Length-11	1
Abnormality of the musculature	Length-12	0
Abnormality of the musculature	Length-13	1
Abnormality of the musculature	Length-14	0
Abnormality of the musculature	Singular	5
Abnormality of the musculature	Plural	5
Abnormality of the musculature	Non-english canonical	4
Abnormality of the musculature	Canonical ordering	5
Abnormality of the musculature	Canonical ordering (transformed)	5
Abnormality of the musculature	Numerals isolated (Roman)	1
Abnormality of the musculature	Numerals isolated (Arabic)	7
Abnormality of the musculature	Containing punctuation	6
Abnormality of the musculature	Containing stop words (FROM)	1
Abnormality of the musculature	Containing stop words (OF)	7
Abnormality of the musculature	Containing stop words (IN)	6
Abnormality of the musculature	Containing stop words (TO)	5
Abnormality of the musculature	Containing stop words (BY)	0
Abnormality of the musculature	Containing stop words (WITH)	1
Abnormality of the musculature	Coordination	5
Abnormality of the musculature	Lexical variation	6
Abnormality of the musculature	Metaphoric constructs	2
Abnormality of the musculature	Synonyms	9
Abnormality of the nervous system	Length-1	4
Abnormality of the nervous system	Length-2	5
Abnormality of the nervous system	Length-3	5
Abnormality of the nervous system	Length-4	4
Abnormality of the nervous system	Length-5	5
Abnormality of the nervous system	Length-6	5
Abnormality of the nervous system	Length-7	0
Abnormality of the nervous system	Length-8	4
Abnormality of the nervous system	Length-9	6
Abnormality of the nervous system	Length-10	0
Abnormality of the nervous system	Length-11	0
Abnormality of the nervous system	Length-12	0

Abnormality of the nervous system	Length-13	0
Abnormality of the nervous system	Length-14	0
Abnormality of the nervous system	Singular	4
Abnormality of the nervous system	Plural	4
Abnormality of the nervous system	Non-english canonical	3
Abnormality of the nervous system	Canonical ordering	6
Abnormality of the nervous system	Canonical ordering (transformed)	6
Abnormality of the nervous system	Numerals isolated (Roman)	2
Abnormality of the nervous system	Numerals isolated (Arabic)	2
Abnormality of the nervous system	Containing punctuation	3
Abnormality of the nervous system	Containing stop words (FROM)	0
Abnormality of the nervous system	Containing stop words (OF)	4
Abnormality of the nervous system	Containing stop words (IN)	0
Abnormality of the nervous system	Containing stop words (TO)	4
Abnormality of the nervous system	Containing stop words (BY)	0
Abnormality of the nervous system	Containing stop words (WITH)	4
Abnormality of the nervous system	Coordination	3
Abnormality of the nervous system	Lexical variation	3
Abnormality of the nervous system	Metaphoric constructs	3
Abnormality of the nervous system	Synonyms	5
Abnormality of the respiratory system	Length-1	19
Abnormality of the respiratory system	Length-2	9
Abnormality of the respiratory system	Length-3	8
Abnormality of the respiratory system	Length-4	6
Abnormality of the respiratory system	Length-5	12
Abnormality of the respiratory system	Length-6	8
Abnormality of the respiratory system	Length-7	3
Abnormality of the respiratory system	Length-8	2
Abnormality of the respiratory system	Length-9	1
Abnormality of the respiratory system	Length-10	0
Abnormality of the respiratory system	Length-11	0
Abnormality of the respiratory system	Length-12	0
Abnormality of the respiratory system	Length-13	0
Abnormality of the respiratory system	Length-14	0
Abnormality of the respiratory system	Singular	5
Abnormality of the respiratory system	Plural	5
Abnormality of the respiratory system	Non-english canonical	2
Abnormality of the respiratory system	Canonical ordering	6
Abnormality of the respiratory system	Canonical ordering (transformed)	6
Abnormality of the respiratory system	Numerals isolated (Roman)	0
Abnormality of the respiratory system	Numerals isolated (Arabic)	0
Abnormality of the respiratory system	Containing punctuation	5
Abnormality of the respiratory system	Containing stop words (FROM)	1
Abnormality of the respiratory system	Containing stop words (OF)	7
Abnormality of the respiratory system	Containing stop words (IN)	2
Abnormality of the respiratory system	Containing stop words (TO)	6

Abnormality of the respiratory system	Containing stop words (BY)	2
Abnormality of the respiratory system	Containing stop words (WITH)	2
Abnormality of the respiratory system	Coordination	4
Abnormality of the respiratory system	Lexical variation	6
Abnormality of the respiratory system	Metaphoric constructs	0
Abnormality of the respiratory system	Synonyms	5
Abnormality of the skeletal system	Length-1	5
Abnormality of the skeletal system	Length-2	7
Abnormality of the skeletal system	Length-3	6
Abnormality of the skeletal system	Length-4	6
Abnormality of the skeletal system	Length-5	7
Abnormality of the skeletal system	Length-6	7
Abnormality of the skeletal system	Length-7	5
Abnormality of the skeletal system	Length-8	6
Abnormality of the skeletal system	Length-9	0
Abnormality of the skeletal system	Length-10	5
Abnormality of the skeletal system	Length-11	5
Abnormality of the skeletal system	Length-12	4
Abnormality of the skeletal system	Length-13	4
Abnormality of the skeletal system	Length-14	0
Abnormality of the skeletal system	Singular	4
Abnormality of the skeletal system	Plural	4
Abnormality of the skeletal system	Non-english canonical	5
Abnormality of the skeletal system	Canonical ordering	5
Abnormality of the skeletal system	Canonical ordering (transformed)	5
Abnormality of the skeletal system	Numerals isolated (Roman)	0
Abnormality of the skeletal system	Numerals isolated (Arabic)	6
Abnormality of the skeletal system	Containing punctuation	11
Abnormality of the skeletal system	Containing stop words (FROM)	0
Abnormality of the skeletal system	Containing stop words (OF)	8
Abnormality of the skeletal system	Containing stop words (IN)	5
Abnormality of the skeletal system	Containing stop words (TO)	5
Abnormality of the skeletal system	Containing stop words (BY)	0
Abnormality of the skeletal system	Containing stop words (WITH)	5
Abnormality of the skeletal system	Coordination	4
Abnormality of the skeletal system	Lexical variation	6
Abnormality of the skeletal system	Metaphoric constructs	7
Abnormality of the skeletal system	Synonyms	11
Abnormality of the voice	Length-1	1
Abnormality of the voice	Length-2	8
Abnormality of the voice	Length-3	4
Abnormality of the voice	Length-4	0
Abnormality of the voice	Length-5	0
Abnormality of the voice	Length-6	1
Abnormality of the voice	Length-7	0
Abnormality of the voice	Length-8	0

Abnormality of the voice	Length-9	0
Abnormality of the voice	Length-10	0
Abnormality of the voice	Length-11	0
Abnormality of the voice	Length-12	0
Abnormality of the voice	Length-13	0
Abnormality of the voice	Length-14	0
Abnormality of the voice	Singular	1
Abnormality of the voice	Plural	1
Abnormality of the voice	Non-english canonical	0
Abnormality of the voice	Canonical ordering	2
Abnormality of the voice	Canonical ordering (transformed)	2
Abnormality of the voice	Numerals isolated (Roman)	0
Abnormality of the voice	Numerals isolated (Arabic)	0
Abnormality of the voice	Containing punctuation	2
Abnormality of the voice	Containing stop words (FROM)	0
Abnormality of the voice	Containing stop words (OF)	1
Abnormality of the voice	Containing stop words (IN)	0
Abnormality of the voice	Containing stop words (TO)	0
Abnormality of the voice	Containing stop words (BY)	1
Abnormality of the voice	Containing stop words (WITH)	0
Abnormality of the voice	Coordination	2
Abnormality of the voice	Lexical variation	1
Abnormality of the voice	Metaphoric constructs	1
Abnormality of the voice	Synonyms	5
Growth abnormality	Length-1	4
Growth abnormality	Length-2	6
Growth abnormality	Length-3	10
Growth abnormality	Length-4	8
Growth abnormality	Length-5	3
Growth abnormality	Length-6	3
Growth abnormality	Length-7	0
Growth abnormality	Length-8	0
Growth abnormality	Length-9	0
Growth abnormality	Length-10	0
Growth abnormality	Length-11	0
Growth abnormality	Length-12	0
Growth abnormality	Length-13	0
Growth abnormality	Length-14	0
Growth abnormality	Singular	2
Growth abnormality	Plural	2
Growth abnormality	Non-english canonical	2
Growth abnormality	Canonical ordering	3
Growth abnormality	Canonical ordering (transformed)	3
Growth abnormality	Numerals isolated (Roman)	0
Growth abnormality	Numerals isolated (Arabic)	2
Growth abnormality	Containing punctuation	6

Growth abnormality	Containing stop words (FROM)	0
Growth abnormality	Containing stop words (OF)	4
Growth abnormality	Containing stop words (IN)	1
Growth abnormality	Containing stop words (TO)	3
Growth abnormality	Containing stop words (BY)	0
Growth abnormality	Containing stop words (WITH)	0
Growth abnormality	Coordination	3
Growth abnormality	Lexical variation	4
Growth abnormality	Metaphoric constructs	0
Growth abnormality	Synonyms	5
Neoplasm	Length-1	12
Neoplasm	Length-2	20
Neoplasm	Length-3	7
Neoplasm	Length-4	9
Neoplasm	Length-5	10
Neoplasm	Length-6	8
Neoplasm	Length-7	2
Neoplasm	Length-8	0
Neoplasm	Length-9	0
Neoplasm	Length-10	0
Neoplasm	Length-11	0
Neoplasm	Length-12	0
Neoplasm	Length-13	0
Neoplasm	Length-14	0
Neoplasm	Singular	5
Neoplasm	Plural	5
Neoplasm	Non-english canonical	2
Neoplasm	Canonical ordering	5
Neoplasm	Canonical ordering (transformed)	5
Neoplasm	Numerals isolated (Roman)	0
Neoplasm	Numerals isolated (Arabic)	1
Neoplasm	Containing punctuation	7
Neoplasm	Containing stop words (FROM)	0
Neoplasm	Containing stop words (OF)	4
Neoplasm	Containing stop words (IN)	0
Neoplasm	Containing stop words (TO)	0
Neoplasm	Containing stop words (BY)	2
Neoplasm	Containing stop words (WITH)	2
Neoplasm	Coordination	4
Neoplasm	Lexical variation	4
Neoplasm	Metaphoric constructs	1
Neoplasm	Synonyms	8