Supplementary Material

Section S1 - Glossary

analysis.

Annotation 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.

Test case 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.

Test case entry

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'.

Test suite A collection of test cases.

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 originial defition 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	Labels containing the stop word: OF	Abnormality of thyroid physiology
words (OF)		(HP:0002926)
Containing stop	Labels containing the stop word: TO	Pituitary resistance to thyroid
words (TO)		hormone (HP:0008227)
Containing stop	Labels containing the stop word:	Thyrotoxicosis with diffuse goiter
words (WITH)	WITH	(HP:0011784)
Containing stop	Labels containing the stop word: IN	Pubertal developmental failure in
words (IN)	Labela containing the step words	females (HP:0008647) Anomalous origin of one
Containing stop words (FROM)	Labels containing the stop word: FROM	Anomalous origin of one pulmonary artery from ascending
WOIUS (FROIVI)	FROIVI	aorta (HP:0011660)
Containing stop	Labels containing the stop word: BY	Yellow subcutaneous tissue
words (BY)	Labele containing the stop word. B1	covered by thin, scaly skin
		(HP:0007525)
Numerals	Labels containing isolated Arabic	EEG with generalized slow
isolated (Arabic)	numerals	activity grade 3 (HP:0011208)
Numerals	Labels containing isolated Roman	Mobitz II atrioventricular block
isolated (Roman)	numerals	(HP:0011708)
Synomyms	Alternative lexical groundings defined	Premature ventricular
	for the corresponding concept	contractions (HP:0006682)
Non-English	Labels containing non-English tokens	Patent ductus arteriosus
canonical	0 : 1: 1	(HP:0001643)
Coordination	Conjuction of multiple concepts	Metacarpal, carpal and
		scapulohumeral synostosis
		(HP:0009701, HP:0009702, HP:0006595)
Lexical variation	Labels containing at least a token that	Swollen ankle (HP:0001785)
Lexical variation	has been altered from its original	Swollen ankle (111 .0001703)
	definition	
Metaphoric	Labels consisting of metaphoric	Shoe-shaped sella turcica
constructs	constructs	(HP:0005723)

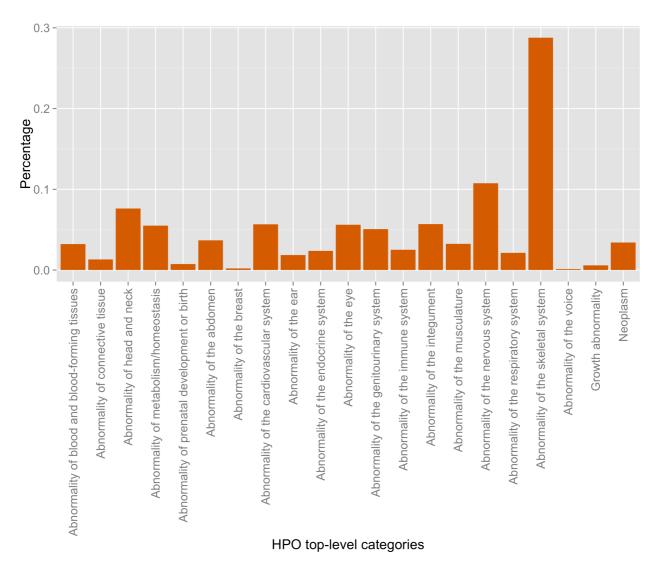


Figure 1. Natural distribution of HPO terms according to the 21 top-level categories.

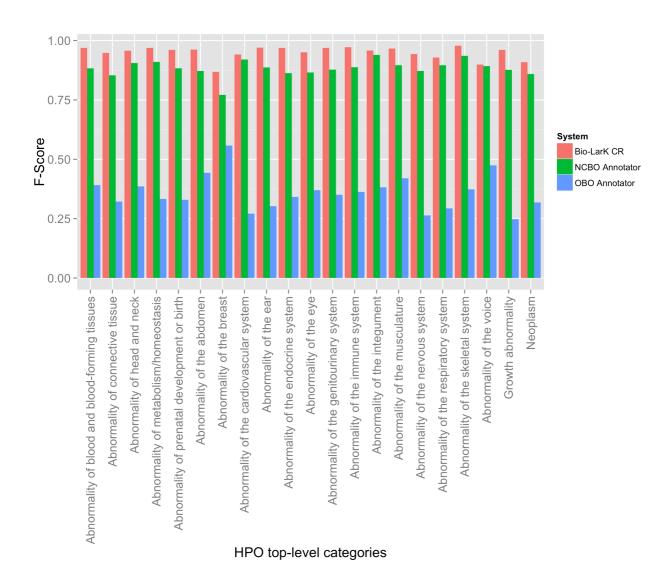


Figure 2. Systems test suite evaluation results according to the 21 HPO top-level categories.

Listing of the data used to generate Figure 1.

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

forming tissues		
Abnormality of blood and blood-	Containing stop words (BY)	1
forming tissues	3 3 3 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	
Abnormality of blood and blood-	Containing stop words (WITH)	3
forming tissues		
Abnormality of blood and blood- forming tissues	Coordination	5
Abnormality of blood and blood-	Lexical variation	4
forming tissues	Lexical variation	-
Abnormality of blood and blood-	Metaphoric constructs	1
forming tissues		
Abnormality of blood and blood-	Synonyms	11
forming tissues	Longth 1	0
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
		0
Abnormality of head and neck	Length-12	
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 (BT) Containing stop words (WITH)	3
Abnormality of head and neck	Coordination	3
	Lexical variation	3
Abnormality of head and neck		
Abnormality of head and neck	Metaphoric constructs	4
Abnormality of head and neck	Synonyms	2
Abnormality of	Length-1	16
metabolism/homeostasis Abnormality of	Length-2	14
metabolism/homeostasis	Lengui-2	14
Abnormality of	Length-3	8
metabolism/homeostasis		
Abnormality of	Length-4	11
metabolism/homeostasis	1	
Abnormality of	Length-5	7
metabolism/homeostasis Abnormality of	Length-6	6
metabolism/homeostasis	Longui-0	U
Abnormality of	Length-7	8
metabolism/homeostasis		
Abnormality of	Length-8	5
metabolism/homeostasis		
Abnormality of	Length-9	1
metabolism/homeostasis Abnormality of	Length-10	0
metabolism/homeostasis	Lengui-10	U
Abnormality of	Length-11	0
		-

metabolism/homeostasis		
Abnormality of	Length-12	0
metabolism/homeostasis		-
Abnormality of	Length-13	0
metabolism/homeostasis		
Abnormality of	Length-14	0
metabolism/homeostasis		
Abnormality of	Singular	5
metabolism/homeostasis		
Abnormality of	Plural	5
metabolism/homeostasis	1 13.3.	
Abnormality of	Non-english canonical	5
metabolism/homeostasis	Tron onghen canomical	
Abnormality of	Canonical ordering	6
metabolism/homeostasis	Sanomour ordening	· ·
Abnormality of	Canonical ordering (transformed)	6
metabolism/homeostasis	Canonical ordening (transformed)	O
Abnormality of	Numerals isolated (Roman)	3
metabolism/homeostasis	ivalliciais isolateu (IVIIIaII)	J
Abnormality of	Numerals isolated (Arabic)	1
metabolism/homeostasis	inumerals isolated (Alabic)	'
	Containing numetuation	10
Abnormality of	Containing punctuation	12
metabolism/homeostasis	Ocatainin a stan assaula (FDOM)	
Abnormality of	Containing stop words (FROM)	0
metabolism/homeostasis		
Abnormality of	Containing stop words (OF)	6
metabolism/homeostasis		
Abnormality of	Containing stop words (IN)	8
metabolism/homeostasis		
Abnormality of	Containing stop words (TO)	5
metabolism/homeostasis		
Abnormality of	Containing stop words (BY)	2
metabolism/homeostasis		
Abnormality of	Containing stop words (WITH)	0
metabolism/homeostasis		
Abnormality of	Coordination	4
metabolism/homeostasis		
Abnormality of	Lexical variation	6
metabolism/homeostasis		-
Abnormality of	Metaphoric constructs	1
metabolism/homeostasis	stap	•
Abnormality of	Synonyms	8
metabolism/homeostasis		5
Abnormality of prenatal development	Length-1	4
or birth	Longui-1	7
Abnormality of prenatal development	Length 2	4
or birth	Length-2	4
Abnormality of prenatal development	Length 3	5
or birth	Length-3	ິວ
	Longth 4	-
Abnormality of prenatal development	Length-4	5
or birth	1	
Abnormality of prenatal development	Length-5	5
or birth		
Abnormality of prenatal development	Length-6	2
or birth		
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	1	
	Non-english canonical	2

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)	
-	9 ,	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	Length-4	7
Abnormality of the cardiovascular	Length-5	8
system	1 0	
Abnormality of the cardiovascular	Length-6	7
system Abnormality of the cardiovascular	Length-7	6
system	Lengui-7	O
Abnormality of the cardiovascular	Length-8	7
system	201.9.11 0	•
Abnormality of the cardiovascular system	Length-9	5
Abnormality of the cardiovascular	Length-10	4
system	Longui 10	7
Abnormality of the cardiovascular	Length-11	4
system		-
Abnormality of the cardiovascular	Length-12	7
system		
Abnormality of the cardiovascular system	Length-13	2
Abnormality of the cardiovascular	Length-14	1
system	59	•
Abnormality of the cardiovascular	Singular	5
system		
Abnormality of the cardiovascular	Plural	5
system		
Abnormality of the cardiovascular	Non-english canonical	4
system		
Abnormality of the cardiovascular	Canonical ordering	5
system Absorption of the cordinates and a	Canonical and sing /has a farmer - 1)	
Abnormality of the cardiovascular system	Canonical ordering (transformed)	5
Abnormality of the cardiovascular	Numerals isolated (Roman)	3
l .	1	

system		
Abnormality of the cardiovascular	Numerals isolated (Arabic)	3
system		
Abnormality of the cardiovascular	Containing punctuation	6
system		
Abnormality of the cardiovascular	Containing stop words (FROM)	6
system	Containing standards (OF)	
Abnormality of the cardiovascular system	Containing stop words (OF)	6
Abnormality of the cardiovascular	Containing stop words (IN)	5
system	Containing stop words (iiv)	3
Abnormality of the cardiovascular	Containing stop words (TO)	5
system	gomaning stop words (10)	· ·
Abnormality of the cardiovascular	Containing stop words (BY)	0
system	5 1 ()	
Abnormality of the cardiovascular	Containing stop words (WITH)	5
system	, ,	
Abnormality of the cardiovascular	Coordination	4
system		
Abnormality of the cardiovascular	Lexical variation	6
system		
Abnormality of the cardiovascular	Metaphoric constructs	1
system	Company and a	
Abnormality of the cardiovascular	Synonyms	7
system Abnormality of the ear	Length-1	3
	-	3
Abnormality of the ear	Length-2	
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 (BT) Containing stop words (WITH)	1
Abnormality of the eye	Coordination	3
Abnormality of the eye	Lexical variation	4
Abnormality of the eye	Metaphoric constructs	<u>1</u>
Abnormality of the eye	Synonyms	5
Abnormality of the genitourinary system	Length-1	3
Abnormality of the genitourinary	Length-2	3
system		
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	Length-10	0
Abnormality of the genitourinary system	Length-11	0
Abnormality of the genitourinary system	Length-12	0
Abnormality of the genitourinary	Length-13	0
System Abnormality of the genitourinary	Length-14	0
Abridinality of the genilounnary	Longui-14	<u> </u>

system		
Abnormality of the genitourinary	Singular	3
system	Siligulai	3
Abnormality of the genitourinary	Plural	3
system	1 larai	J
Abnormality of the genitourinary	Non-english canonical	3
system	Tron englien canonical	Ü
Abnormality of the genitourinary	Canonical ordering	3
system	Sanomean ordering	· ·
Abnormality of the genitourinary	Canonical ordering (transformed)	3
system	carreng (automata)	_
Abnormality of the genitourinary	Numerals isolated (Roman)	0
system	, ,	
Abnormality of the genitourinary	Numerals isolated (Arabic)	3
system	, ,	
Abnormality of the genitourinary	Containing punctuation	5
system		
Abnormality of the genitourinary	Containing stop words (FROM)	0
system		
Abnormality of the genitourinary	Containing stop words (OF)	3
system		
Abnormality of the genitourinary	Containing stop words (IN)	3
system		
Abnormality of the genitourinary	Containing stop words (TO)	1
system		
Abnormality of the genitourinary	Containing stop words (BY)	0
system		
Abnormality of the genitourinary	Containing stop words (WITH)	3
system		
Abnormality of the genitourinary	Coordination	2
system		
Abnormality of the genitourinary	Lexical variation	4
system		
Abnormality of the genitourinary	Metaphoric constructs	1
system		
Abnormality of the genitourinary	Synonyms	2
system	I amountly 4	40
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
, and many or the miniane bystem		-1

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
harmonia and a second a second and a second		
Abnormality of the integument	Containing stop words (WITH)	5
Abnormality of the integument Abnormality of the integument	Containing stop words (WITH) Coordination	5 4

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 (PROW) Containing stop words (OF)	7
Abnormality of the respiratory system 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