

## BIOSIS (BIOSIS Previews/RN Database)

<b>Subject Coverage</b>	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Anatomy</li> <li>• Behaviour</li> <li>• Biochemistry</li> <li>• Bioengineering</li> <li>• Biophysics</li> <li>• Biotechnology</li> <li>• Botany</li> <li>• Cell Biology</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Biology</li> <li>• Experimental Clinical Medicine</li> <li>• Genetics</li> <li>• Immunology</li> <li>• Microbiology</li> <li>• Pathology</li> <li>• Pharmacology</li> <li>• Physiology</li> <li>• Toxicology</li> </ul>
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**File Type** Bibliographic

<b>Features</b>	Thesaurus	Concept Codes (/CC), Controlled Term (/CT), Geographic Term (/GT), Organism (/ORGN)		
	<a href="#">Alerts (SDIs)</a>	Weekly or biweekly (Weekly is the default)		
	<a href="#">CAS Registry Number<sup>®</sup> Identifiers</a>	<input checked="" type="checkbox"/>	Page Images	<input type="checkbox"/> STN <sup>®</sup> AnaVist™ <input type="checkbox"/>
	<a href="#">Keep &amp; Share</a>	<input checked="" type="checkbox"/>	<a href="#">SLART</a>	<input checked="" type="checkbox"/> <a href="#">STN Easy<sup>®</sup></a> <input checked="" type="checkbox"/>
	Learning Database	<input type="checkbox"/>	Structures	<input type="checkbox"/>

**Record Content**

- Worldwide research on all biological and biomedical topics
- Bibliographic data, indexing information, and abstracts for most references.

**File Size** More than 26.8 million records (4/2018)

**Coverage** 1926-present

**Updates** Weekly

**Language** English

**Database Producer**

Clarivate Analytics (UK) Limited  
Friars House, 160 Black Friars Rd.  
London SE1 8EZ  
United Kingdom  
Phone: +44-20-7433-4000  
Helpdesk:+44-20-7433-4999

Clarivate Analytics  
1500 Spring Garden Street  
Philadelphia, PA 19130 USA  
Phone: 800-336-4474  
<https://clarivate.com/contact-us/support/>

Copyright Holder: Clarivate Analytics. For more information on Clarivate Analytics Terms of Business visit <http://clarivate.com/tob/>.

**Sources**

- Journals (more than 5,000)
  - U.S. Patents (1942-1968, 1986-1989, 1994-present)
  - Reports
  - Meetings (Abstracts and Papers)
  - Reviews
  - Books
- 

**User Aids**

- Online Helps (HELP DIRECTORY lists all help messages available)
  - STNGUIDE
- 

**Clusters**

- AGRICULTURE
- AUTHORS
- ALLBIB
- BIOSCIENCE
- CASRNS
- CORPSOURCE
- ENVIRONMENT
- FOOD
- FORMULATIONS
- HEALTH
- MEDICINE
- PHARMACOLOGY
- TOXICOLOGY

[STN Database Clusters](#) information (PDF).

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**Pricing**

Enter HELP COST at an arrow prompt (=>).

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## Search and Display Field Codes

Fields that allow left truncation are indicated by an asterisk (\*)

Search Field Name	Search Code	Search Examples	Display Codes
Basic Index* (contains single words from the abstract (AB), biosystematic codes (BC), chemical name (CN), controlled term (CT), gene name (GEN), geographic term (GT), organism (ORGN), supplementary term (ST), and title (TI) fields, as well as CAS Registry Numbers (RN))	None (or /BI)	S PITUITARY S 50-78-2 S ?ASSAY? S C PEPTIDE S L1 AND NONHUMAN VERTEBRATES S A431 CELL LINE S BONE (S) DENSITY S RODENTIA	AB, GT, IT, ORGN, RN, TI
Abstract*	/AB	S (BONE (S) DENSITY)/AB S ?ASSAY?/AB	AB
Accession Number	/AN	S 1992:100137/AN	AN
Author (includes Inventor names)	/AU	S GALLO R?/AU S (SCINTO L? (S) EDITOR)/AU S REPRINT AUTHOR/AU (S) GALLO R?/AU	AU
Biosystematic Code (1) Superterm (2)	/BC	S 75326/BC S *75326/BC S HUMANS/BC AND 57-88-5	ORGN
Biosystematic Code Range (3)	/BCR	S 35100-35200/BCR	ORGN
Chemical Name	/CN	S C PEPTIDE/CN	RN
Classification Code (Concept Code) (1) (includes codes and text)	/CC	S 38506/CC S 385/CC S CHEMOTHERAPY?/CC AND CIS PLATIN S CHEMOTHERAPY - ANTIVIRAL?/CC	CC
Concept Code Range (3)	/CCR	S 25502-25554/CCR	CC
Controlled Term (1, 4)	/CT	S VETERINARY MEDICINE/CT AND HORSE? S CHEMISTRY/CT (L) MAJOR CONCEPTS/FA S MYOCARDIAL INFARCTION/CT S C14.280.647.500./CT	IT
Controlled Word	/CW	S ANTIULCER/CW	IT
Corporate Source (includes Patent Assignee) (5, 6)	/CS	S MONSANTO/CS S MONSANTO UK/CS S A ALLEN PURDUE/CS	CS
Digital Object Identifier	/FTDOI (or /DOI)	S 10.1016/J.FCT.2013?/DOI	DOI, FTDOI
Document Number	/DN	S BA94:18925/DN S PREV199294018025/DN	DN
Document Type (code and text)	/DT (or /TC)	S C/DT AND L7 S CONFERENCE/DT AND L7	DT, TC
E-mail Address	/EML	S A-ALLEN@FNR.PURDUE.EDU/EML	EML, CS
Entry Date (3)	/ED	S L1 AND ED>20030226	ED
Field Availability (7)	/FA	S AB/FA AND 7440-23-5 S RN/FA AND L1 S MALARIA (L) DISEASES/FA S ANALYTICAL METHOD (L) IT.MQ/FA	Not displayed
File Segment	/FS	S BR/FS AND 57-43-2	FS
Gene Name	/GEN	S HUMAN DI GENE/GEN	GEN
Geographic Term (1)	/GT	S TURKEY/GT S (LONDON (S) ONTARIO)/GT	GT
Index Term (8)	/IT	S GENETIC ENGINEERING/IT	IT
International Standard (Document) Number (contains CODEN, ISSN, ISBN)	/ISN	S 983-40069-0-X/ISN S 0090-8258/ISN S JOCDAE/ISN	ISN, SO

## Search and Display Field Codes (cont'd)

Search Field Name	Search Code	Search Examples	Display Codes
Inventor Name <b>(6)</b>	/IN	S ABBOTT S D/IN	AU
Journal Title (contains full and abbreviated title)	/JT	S J ANAT/JT S JOURNAL OF ANATOMY/JT	JT, SO
Language (code and text)	/LA	S EN/LA AND L4 S ENGLISH/LA AND L4	LA
Meeting Date <b>(3)</b>	/MD	S MD>20030507	MD, SO
Meeting Location	/ML	S ORLANDO/ML	ML, SO
Meeting Organizer <b>(5)</b>	/MO	S ONCOLOGISTS/MO	MO, SO
Meeting Title (includes all meeting information)	/MT	S 45TH ANNUAL/MT	MT, SO
Meeting Year <b>(3)</b>	/MY	S MY>=2003	MY, SO
Organism <b>(1)</b>	/ORGN	S RODENTIA/ORGN AND L1 S HUMANS/ORGN AND L1	ORGN
Superterms <b>(2)</b>			
Other Source	/OS	S GENBANK/OS S AJ422244/OS	OS
National Patent Classification <b>(6)</b>	/NCL	S 428571000/NCL	NCL
Patent Country <b>(6)</b>	/PC (or /PCS)	S US/PC AND L1	PC, PI
Patent Number <b>(6,10)</b>	/PN (or /PATS)	S US4543948/PN	PI
Publication Date <b>(3)</b>	/PD	S PD>=20030101	PD, PI, SO
Publication Year <b>(3)</b>	/PY	S 1997/PY	PI, PY, SO
Source (contains CODEN, ISBN, ISSN, publication title and date, book publisher and distributor information, meeting information, and collation)	/SO	S DCTODJ/SO S FED PROC/SO S 0022-3549/SO S 0-931146-19-4/SO	SO
Supplementary Term <b>(5, 9)</b>	/ST	S GENBANK -95567/ST	IT
Title	/TI	S ULCER/TI S LIQUID TRANSPORT?/TI	TI
Uniform Resource Locator	/URL	S "HTTP://WWW.USPTO.GOV/WEB/MENU/PATDATA.HTML"/URL	URL
Update Date <b>(3)</b>	/UP	S UP>20030700	ED

- (1) An online thesaurus is available in this field.
- (2) Enter HELP STERMS at an arrow prompt in the file for a list of superterms.
- (3) Numeric search field that may be searched using numeric operators or ranges.
- (4) The Controlled Term (/CT) search field contains bound phrases from the following IT display subfields: Major Concepts (from 1969); Chemicals & Biochemicals (from 1969); Diseases (from 1998); Parts, Structures, and Systems (from 1998); and Time (from 1993), as well as MeSH terms for diseases, when available. To restrict /CT terms to an IT subfield, link the /CT terms to the subfield heading or the subfield code in /FA, e.g., S CHEMISTRY/CT (L) MAJOR CONCEPTS/FA.
- (5) Search with implied (S) proximity is available in this field.
- (6) Only U.S. patents published between 1946 and 1989 and since 1995 are available.
- (7) Use the FA field to link terms to IT display subfields, e.g., S MALARIA (L) DISEASES/FA. Enter HELP FA at an arrow prompt to see a list of FA terms and examples.
- (8) The /IT search field contains single words from all ORGN display subfields and their headings as well as single words from the CN, RN, CT, GT, and ST fields, and MeSH terms for diseases, when available.
- (9) The /ST search field contains single words and bound phrases from the following IT display subfields: Methods and Equipment; Sequence Data; and Miscellaneous Descriptors.
- (10) Either STN or Derwent format may be used.

## Limiting Search Codes

Only an answer set created in BIOSIS may be limited.

Search Field Name	Search Code (1)	Search Examples
Animal Subject English-Language Records Female Subject Human Subject Male Subject	/ANIMAL /ENGLISH /FEMALE /HUMAN /MALE	S L4/ANIMAL S L1/HUMAN,ENG (2) S L3/FEMALE S L1/HUMAN S L2/MALE

(1) Field codes may be abbreviated to the first three letters.

(2) Answer sets may be limited to more than one area.

## Thesaurus Fields

### Concept Codes (/CC) Field

All Relationship Codes can be used with both the SEARCH and EXPAND command in the Concept Codes (/CC) thesaurus.

Code	Content	Example
ALL AUTO (1) KT	All associated terms (SELF, NOTE, UF, USE) Automatic Relationship Code (SELF, USE) Keyword Terms (multiword phrases containing the term) (SELF, KT)	E 38504+ALL/CC E GENETICS - ANIMAL/CC E FOOD+KT/CC
NOTE PFT UF USE	Scope Notes (SELF, NOTE) Preferred and Forbidden Terms (SELF, UF, USE) Used for Terms (Forbidden Terms) (SELF, UF) Used Terms (Preferred Terms) (SELF, USE)	E 13506+NOTE/CC E LABORATORY ANIMALS+PFT/CC E 13508+UF/CC E FOOD TECHNOLOGY - SUGAR+USE/CC

(1) By default, automatic relationship is SET OFF. When SET REL is ON, the result of EXPAND without any relationship code is the same as described for AUTO.

### Field Descriptors for the /CC Thesaurus

Code	Description
→	Self
KT	Keyword Term
NOTE	Scope Note
UF	Used For Term
USE	Used Term

**BIOSIS****Controlled Term (/CT) Field**

All Relationship Codes can be used with both the SEARCH and EXPAND command in the Controlled Term (/CT) thesaurus.

Code	Content	Example
ALL	All associated terms (BT, SELF, NOTE, NT, RT)	E ANIMAL HUSBANDRY+ALL/CT
BT	Broader Terms (BT, SELF)	E ALLERGY+BT/CT
HIE	Hierarchy (Broader and Narrower Terms) (BT, SELF, NT)	E HUMAN MEDICINE+HIE/CT
KT	Keyword Terms (multiword phrases containing the term) (SELF, KT)	E DENTAL+KT/CT
NOTE	Scope Notes (SELF, NOTE)	E DENTAL MEDICINE+NOTE/CT
NT	Narrower Terms (SELF, NT)	E AGRICULTURE+NT/CT
RT	Related Terms (SELF, RT)	E TOXICOLOGY+RT/CT
STD	Standard (Broader, Narrower, and Related Terms) (BT, SELF, NT, RT)	E CLINICAL IMMUNOLOGY+STD/CT

**Field Descriptors for the /CT Thesaurus**

Code	Description
→	Self
BT	Broader Term
KT	Keyword Term
NOTE	Scope Note
NT	Narrower Term
RT	Related Term

**Geographic Term (/GT) thesaurus**

All Relationship Codes can be used with both the SEARCH and EXPAND command in the Geographic Term (/GT) thesaurus.

Code	Content	Example
ALL	All associated terms (BT, SELF, UF, USE, NT)	E TANZANIA+ALL/GT
AUTO (1)	Automatic Relationship Code (SELF, USE)	E GOLD COAST+AUTO/GT
BT	Broader Terms (BT, SELF)	E POLAND+BT/GT
KT	Keyword Terms (multiword phrases containing the term) (SELF, KT)	E GERMANY+KT/GT
NT	Narrower Terms (SELF, NT)	E AFRICA+NT/GT
PFT	Preferred and Forbidden Terms (SELF, UF, USE)	E GOLD COAST+PFT/GT
STD	Standard (Broader and Narrower Terms) (BT, SELF, NT)	E TANZANIA+STD/GT
UF	Used For Terms (Forbidden Terms) (SELF, UF)	E IVORY COAST+UF/GT
USE	Used Terms (Preferred Terms) (SELF, USE)	E GOLD COAST+USE/GT

(1) Automatic relationship is SET OFF. When SET REL is ON, the result of EXPAND without any relationship code is the same as described for AUTO.

## Field Descriptors for the /GT Thesaurus

Code	Description
→	Self
BT	Broader Term
KT	Keyword Term
NT	Narrower Term
UF	Used For Term
USE	Used Term

## Organism (/ORGN) thesaurus

All Relationship Codes can be used with both the SEARCH and EXPAND command in the Organism (/ORGN) thesaurus (1).

Code	Content	Example
ALL	All associated terms (BT, SELF, UF, USE, NT, RT)	E RODENTIA+ALL/ORGN
AUTO (2)	Automatic Relationship Code (SELF, USE)	E 86265/ORGN
BT	Broader Terms (BT, SELF)	E BOVIDAE+BT/ORGN
HIE	Hierarchy (BT, SELF, NT)	E PISCES+HIE/ORGN
KT	Keyword Terms (multiword phrases containing the term) (SELF, KT)	E BACTERIA+KT/ORGN
NT	Narrower Terms (SELF, NT)	E AMPHIBIA+NT/ORGN
PFT	Preferred and Forbidden Terms (SELF, UF, USE)	E 85306+USE/ORGN
RT	Related Terms (SELF, RT)	E RODENTS+RT/ORGN
STD	Standard (Broader, Narrower, and Related Terms) (BT, SELF, NT, RT)	E AVES+STD/ORGN
UF	Used For Terms (Forbidden Terms) (SELF, UF)	E SALIENTIA+UF/ORGN
USE	Used Terms (Preferred Terms) (SELF, USE)	E BC85201+USE/ORGN

(1) Either the /ORGN or the /BC (Biosystematic Code) field code may be used in this thesaurus.

(2) Automatic relationship is SET OFF. When SET REL is ON, the result of EXPAND without any relationship code is the same as described for AUTO.

## Field Descriptors for the /ORGN Thesaurus

Code	Description
→	Self
BT	Broader Term
KT	Keyword Term
NT	Narrower Term
RT	Related Term
UF	Used For Term
USE	Used Term

**BIOSIS****DISPLAY and PRINT Formats**

Any combination of formats may be used to display or print answers. Multiple codes must be separated by spaces or commas, e.g., D L1 1-5 BIB ABS; D L1 TI, AB. The fields are displayed or printed in the order specified.

Hit-term highlighting is available in all fields except MY and PY. Highlighting must be ON during search to use the HIT, HITIND, KWIC, and OCC formats.

<b>Format</b>	<b>Content</b>	<b>Examples</b>
AB	Abstract	D AB L4 1-5
AN	Accession Number	D AN 1-15
AU	Author (includes Inventor)	D AU 5 6 8-10
CC	Classification Code (Concept Code)	D CC L45 2-8
CS	Corporate Source (includes Patent Assignee)	D CS L11
CT (1)	Controlled Term	D CT
DN	Document Number	D DN 1-100 L33
DOI (FTDOI)	Digital Object Identifier	D DOI, D FTDOI
DT (TC)	Document Type	D DT 4-18 L3
ED (UP)	Entry Date and Update Date	D ED
EML	E-mail address	D EML
FS	File Segment	D FS
GEN	Gene Name	D GEN
GT	Geographic Term	D GT 2-3
IN	Inventor	D IN
ISN (2)	International Standard (Document) Number	D ISN
IT (3)	Index Term	D IT 1-5
JT (2)	Journal Title	D JT
JTA (2)	Journal Title, Abbreviated	D JTA
JTF (2)	Journal Title, Full	D JTF
LA	Language	D LA 4 6 9 10
MD (2)	Meeting Date	D MD
ML (2)	Meeting Location	D ML
MO (2)	Meeting Organizer	D MO
MT (2)	Meeting Title	D MT L3
MY (2)	Meeting Year	D MY
NCL (2)	Patent Classification	D NCL 1-7
ORGN (BC)	Organism Information	D ORGN
OS	Other Source	D OS
PC (2)	Patent Country	D PC
PD (2)	Publication Date	D PD
PI (PN) (7)	Patent Information	D PI L1
PY (2)	Publication Year	D PY
RN (CN)	CAS Registry Number and Chemical Name	D RN 1-15 L2
SO	Source	D 5 13 SO
ST (4,5)	Supplementary Term	D ST 1-17
TI (5)	Title	D TI TOTAL
URL (2)	Uniform Resource Locator	D URL



**DISPLAY and PRINT Formats (cont'd)**

Format	Content	Examples
ABS ALL	AB AN, DN, TI, AU, CS, PI, SO, DOI, DT, FS, LA, OS, ED, AB, NCL, CC, IT, GT, ORGN, RN, GEN	D ABS 1-10 D ALL 5-10
BIB	AN, DN, TI, AU, CS, PI, SO, DOI, DT, FS, LA, OS, ED, (BIB is the default)	D BIB 3 L7 D
CBIB	AN, compressed bibliographic information	D CBIB
DALL	ALL, delimited for post-processing	D ALL
IABS	ABS, indented with text label	D IABS
IALL	ALL, indented with text labels	D IALL
IBIB	BIB, indented with text labels	D IBIB
IND	NCL, CC, IT (CT, ST), GT, ORGN, RN, CN, GEN	D IND
SCAN (5,6)	TI, ST (random display without answer numbers)	D SCAN
HIT HITIND KWIC OCC (5)	Fields containing hit search terms Displays same data as the IND format Hit terms plus 20 words on either side (Key-Word-In-Context) Number of occurrences of hit terms and fields in which they occur	D HIT 5-10 D HITIND D KWIC 5-10 NOH D OCC 5-10

- (1) The CT field displays the following IT subfields: Major Concepts; Chemicals & Biochemicals; Diseases; Parts, Structures, and Systems; and Time.
- (2) Custom display only.
- (3) The IT field displays all of the IT subfields as well as ORGN, GEN, GT, and RN fields.
- (4) The ST field displays the following IT subfields: Methods and Equipment; Sequence Data; and Miscellaneous Descriptors.
- (5) No online display fee for this format.
- (6) SCAN must be entered on the DISPLAY command line, i.e., D SCAN or DISPLAY SCAN
- (7) Patent numbers are available in STN and Derwent format. The format for DISPLAY, PRINT, SELECT, and SORT is set using the SET PATENT command. STN is the default format. Enter SET PAT DERWENT to change to the Derwent format. To reset to the STN format, enter SET PAT STN.

**SELECT, ANALYZE, and SORT Fields**

The SELECT command is used to create E-numbers or an L-number containing terms taken from the specified field in an answer set.

The ANALYZE command is used to create an L-number containing terms taken from the specified field in an answer set.

The SORT command is used to rearrange the search results in either alphabetic or numeric order of the specified field(s).

Field Name	Field Code	ANALYZE SELECT (1)	SORT
Abstract	AB	Y	N
Accession Number	AN	Y	N
Author	AU	Y	Y
Biosystematic Code	BC	Y	N
CAS Registry Number	RN	Y (2)	N
Chemical Names	CN	Y (3)	N
	NAME	Y (3,4)	N
Chemical Names and Registry Numbers	CHEM	Y (5)	N
Citation	CIT	Y (3,6)	N
CODEN	CODEN	N	Y
Classification Code (Concept Code)	CC	Y	N
Controlled Term	CT	Y	N
Corporate Source (Patent Assignee)	CS	Y	Y
Document Number	DN	Y	Y
Document Type	DT	Y	Y
E-mail Address	EML	Y	Y
File Segment	FS	Y	Y

## BIOSIS

**SELECT, ANALYZE, and SORT Fields (cont'd)**

Field Name	Field Code	ANALYZE SELECT (1)	SORT
GenBank Number	GENBANK	Y (2)	N
Gene Name	GEN	Y	N
Geographic Term	GT	Y	Y
Index Term	IT	Y	N
International Standard Book Number	ISBN	N	Y
International Standard (Document) Number	ISN	Y (7)	N
International Standard Serial Number	ISSN	N	Y
Inventor	IN	Y	Y
Journal Title	JT	Y	Y
Journal Title, Abbreviated	JTA	Y (12)	Y
Journal Title, Full	JTF	Y (12)	Y
Language	LA	Y	Y
Meeting Date	MD	Y	Y
Meeting Location	ML	Y	Y
Meeting Organizer	MO	Y	Y
Meeting Title	MT	Y	Y
Meeting Year	MY	Y (3)	Y
National Patent Classification	NCL	Y	Y
Occurrence Count of Hit Search Terms	OCC	N	Y
Organism	ORGN	Y	N
Other Source	OS	Y	Y
Patent Country	PC	Y	Y
Patent Countries	PCS	Y (8)	Y
Patent Information	PI	Y (3,9)	Y
Patent Number	PN	Y (3)	Y
Patent Numbers	PATS	Y (3,10)	Y
Publication Date	PD	Y	Y
Publication Year	PY	Y (3)	Y
Source	SO	Y (3,11)	N
Supplementary Term	ST	Y	N
Title	TI	Y (default)	Y
Treatment Code	TC	Y (13)	Y
Uniform Resource Locator	URL	Y	Y

- (1) HIT may be used to restrict terms extracted to terms that match the search expression used to create the answer set, e.g., SEL HIT TI.
- (2) Appends /BI to the terms created by SELECT.
- (3) SELECT HIT and ANALYZE HIT are not valid with this field.
- (4) Selects or analyzes chemical name and appends /BI to the terms created by SELECT.
- (5) Selects or analyzes chemical name and CAS Registry Number and appends /BI to the terms created by SELECT.
- (6) Selects first author, publication year, volume, and first page with a truncation symbol appended and with /RE appended to the terms created by SELECT.
- (7) Selects or analyzes CODEN, ISBN, and ISSN and appends /ISN to the terms created by SELECT.
- (8) Selects or analyzes Patent Country and appends /PCS to the terms created by SELECT.
- (9) Selects or analyzes Patent Number and appends /PN to the terms created by SELECT.
- (10) Selects or analyzes Patent Number and appends /PATS to the terms created by SELECT.
- (11) Selects or analyzes CODEN and ISSN and appends /SO to the terms created by SELECT.
- (12) Appends /JT to the terms created by SELECT.
- (13) Appends /DT to the terms created by SELECT.

## Sample Records

### DISPLAY IALL

ACCESSION NUMBER: 2014:314727 BIOSIS [Full-text](#)  
 DOCUMENT NUMBER: PREV201400314727  
 TITLE: House dust mite (Der p 10) and crustacean allergic patients may react to food containing Yellow mealworm proteins.  
 AUTHOR(S): Verhoeckx, Kitty C. M. [Reprint Author]; van Broekhoven, Sarah; den Hartog-Jager, Constance F.; Gaspari, Marco; de Jong, Govardus A. H.; Wichers, Harry J.; van Hoffen, Els; Houben, Geert F.; Knulst, Andre C.  
 CORPORATE SOURCE: TNO, Utrechtseweg 48, NL-3704 HE Zeist, Netherlands  
 kitty.verhoeckx@tno.nl  
 SOURCE: Food and Chemical Toxicology, (MAR 2014) Vol. 65, pp. 364-373.  
 CODEN: FCTOD7. ISSN: 0278-6915. E-ISSN: 1873-6351.  
 DIGITAL OBJECT ID: 10.1016/j.fct.2013.12.049  
 DOCUMENT TYPE: Article  
 LANGUAGE: English  
 ENTRY DATE: Entered STN: 16 Apr 2014  
 Last Updated on STN: 16 Apr 2014  
 ABSTRACT: Scope: Due to the imminent growth of the world population, shortage of protein sources for human consumption will arise in the near future. Alternative and sustainable protein sources (e.g. insects) are being explored for the production of food and feed. In this project, the safety of Yellow mealworms (*Tenebrio molitor* L) for human consumption was tested using approaches as advised by the European Food Safety Authority for allergenicity risk assessment. Methods and results: Different Yellow mealworm protein fractions were prepared, characterised, and tested for cross-reactivity using sera from patients with an inhalation or food allergy to biologically related species (House dust mite (HDM) and crustaceans) by immunoblotting and basophil activation. Furthermore, the stability was investigated using an in vitro pepsin digestion test. IgE from HDM- and crustacean allergic patients cross-reacted with Yellow mealworm proteins. This cross-reactivity was functional, as shown by the induction of basophil activation. The major cross-reactive proteins were identified as tropomyosin and arginine kinase, which are well known allergens in arthropods. These proteins were moderately stable in the pepsin stability test. Conclusion: Based on these cross-reactivity studies, there is a realistic possibility that HDM- and crustacean allergic patients may react to food containing Yellow mealworm proteins. (C) 2014 Elsevier Ltd. All rights reserved.  
 CONCEPT CODE: Cytology - Animal 02506  
 Cytology - Human 02508  
 Biochemistry studies - General 10060  
 Biochemistry studies - Proteins, peptides and amino acids 10064  
 Enzymes - General and comparative studies: coenzymes 10802  
 Blood - Blood and lymph studies 15002  
 Blood - Blood cell studies 15004  
 Development and Embryology - General and descriptive 25502  
 Immunology - General and methods 34502  
 Immunology - Immunopathology, tissue immunology 34508  
 Allergy 35500  
 Invertebrata: comparative, experimental morphology, physiology and pathology - Insecta: physiology 64076  
 INDEX TERMS: Major Concepts  
 Clinical Immunology (Human Medicine, Medical Sciences);  
 Biochemistry and Molecular Biophysics; Allergy (Clinical Immunology, Human Medicine, Medical Sciences)  
 INDEX TERMS: Parts, Structures, & Systems of Organisms  
 basophil: immune system, blood and lymphatics; sera:  
 blood and lymphatics  
 INDEX TERMS: Chemicals & Biochemicals

**BIOSIS**

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immunoglobulin E [IgE]; tropomyosin; arginine kinase [EC
2.7.3.3]; house dust mite allergen: allergen
INDEX TERMS: Methods & Equipment
immunoblotting: laboratory techniques, immunologic
techniques; pepsin digestion test: clinical techniques
ORGANISM: Classifier
Coleoptera 75304
Super Taxa
Insecta; Arthropoda; Invertebrata; Animalia
Organism Name
Tenebrio molitor (species) [yellow mealworm (common)]:
larva, allergen
Taxa Notes
Animals, Arthropods, Insects, Invertebrates
ORGANISM: Classifier
Hominidae 86215
Super Taxa
Primates; Mammalia; Vertebrata; Chordata; Animalia
Organism Name
human (common)
Taxa Notes
Animals, Chordates, Humans, Mammals, Primates,
Vertebrates
REGISTRY NUMBER: 9026-70-4 (arginine kinase)
9026-70-4 (EC 2.7.3.3)

```

**EXPAND in /CT Thesaurus**=> **E TOXICOLOGY+ALL/CT**

```

E1          0   BT2 Major Concepts/CT
E2          0   BT1 Major Concept Terms/CT
E3  1413767   --> Toxicology/CT
                NOTE Studies of the chemistry, synthesis, physical
                properties, and distribution of identified toxins,
                and the undesired harmful actions of these
                chemicals on biological tissues or systems.
                NOTE For studies of environmental distribution of
                chemicals identified as toxins, see Pollution
                Assessment, Control, and Management.
E4  1298107   RT   Ecology/CT
E5  406591    RT   Pollution Assessment Control and Management/CT
E6  123934    RT   Waste Management/CT
***** END *****

```

**EXPAND in /ORGN Thesaurus**=> **E GRAMINEAE+ALL/ORGN**

```

E1          0   BT6 Super Taxa/ORGN
E2          0   BT5 Super Taxa Terms/ORGN
E3  3506449   BT4 Plantae/ORGN
E4  2502646   BT3 Spermatophyta/ORGN
E5  2351120   BT2 Angiospermae/ORGN
E6  765439    BT1 Monocotyledones/ORGN
E7  586202    --> Gramineae/ORGN
E8  586201    UF   25305/ORGN
E9          0    UF   BC25305/ORGN
***** END *****

```

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