



Tutorial T20

September 8, 2004



The Unified Medical Language System

What is it and how to use it?



Olivier Bodenreider

Jan Willis

William Hole

Acknowledgements

- ◆ Thanks to NLM Staff and Contractors who contributed to this presentation
 - Kin Wah Fung
 - Betsy Humphreys
 - Rachel Kleinsorge
 - Suresh Srinivasan
 - Karen Thorn
 - Carolyn B. Tilley

Outline

- ◆ What is the UMLS?
- ◆ How to use the UMLS?
 - Obtaining a license
 - Remote access
 - Knowledge Source Server (UMLSKS)
 - UMLSKS Application programming interface (API)
 - Local installation and customization
(MetamorphoSys)
- ◆ Questions



Part I

What is the UMLS?

Outline

- ◆ Part I: *What is the UMLS?*
 - Introduction
 - Overview through an example
 - The three UMLS Knowledge Sources
 - UMLS Metathesaurus
 - UMLS Semantic Network
 - SPECIALIST Lexicon and lexical tools



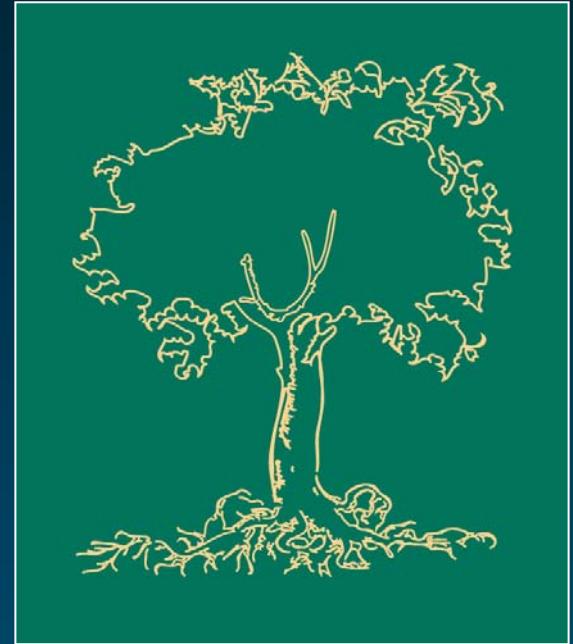
Part I

What is the UMLS?

(1) Introduction

What does UMLS stand for?

- ◆ Unified
- ◆ Medical
- ◆ Language
- ◆ System



UMLS®
Unified Medical Language System®
UMLS Metathesaurus®



Motivation

[Lindberg & al., *Methods*, 1993]
[Humphreys & al., *JAMIA*, 1998]

- ◆ Started in 1986
- ◆ National Library of Medicine
- ◆ “Long-term R&D project”
- ◆ Complementary to IAIMS

(Integrated Academic
Information Management Systems)

«[...] the UMLS project is an effort to overcome two significant barriers to effective retrieval of machine-readable information.

- The first is the variety of ways the same concepts are expressed in different machine-readable sources and by different people.
- The second is the distribution of useful information among many disparate databases and systems.»



The UMLS in practice

- ◆ Database
 - Series of relational files
- ◆ Interfaces
 - Web interface: Knowledge Source Server (UMLSKS)
 - Application programming interfaces
(Java and XML-based)
- ◆ Applications
 - lvg (lexical programs)
 - MetamorphoSys (installation and customization)

The UMLS is *not* an end-user application



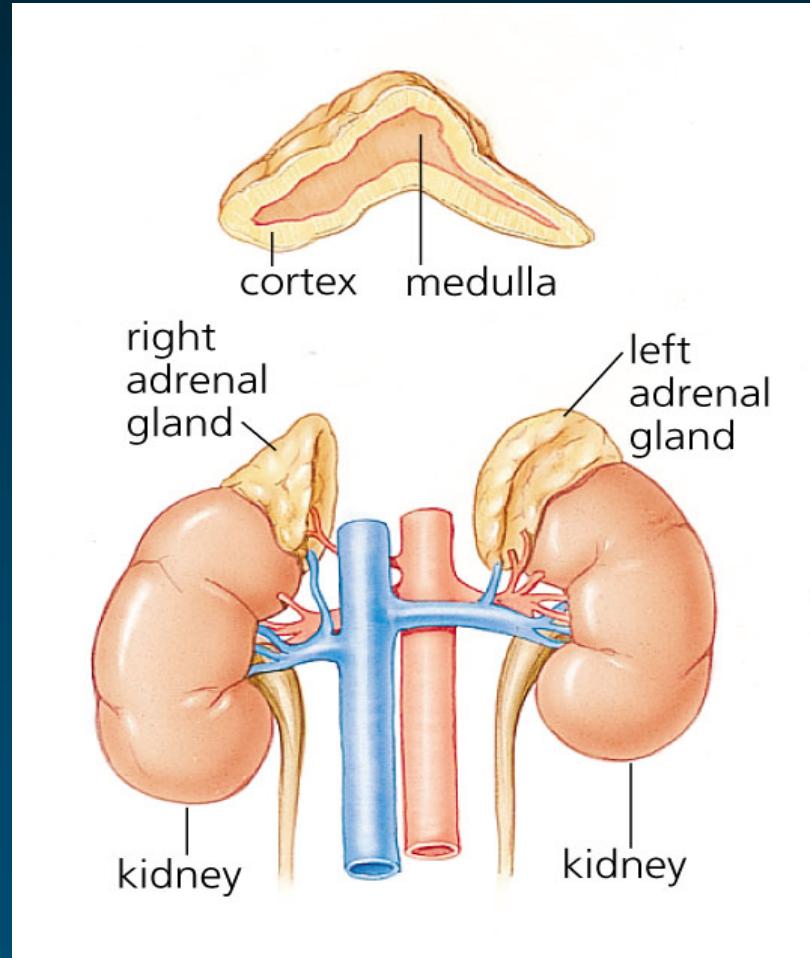
Part I

What is the UMLS?

(2) Overview through an example

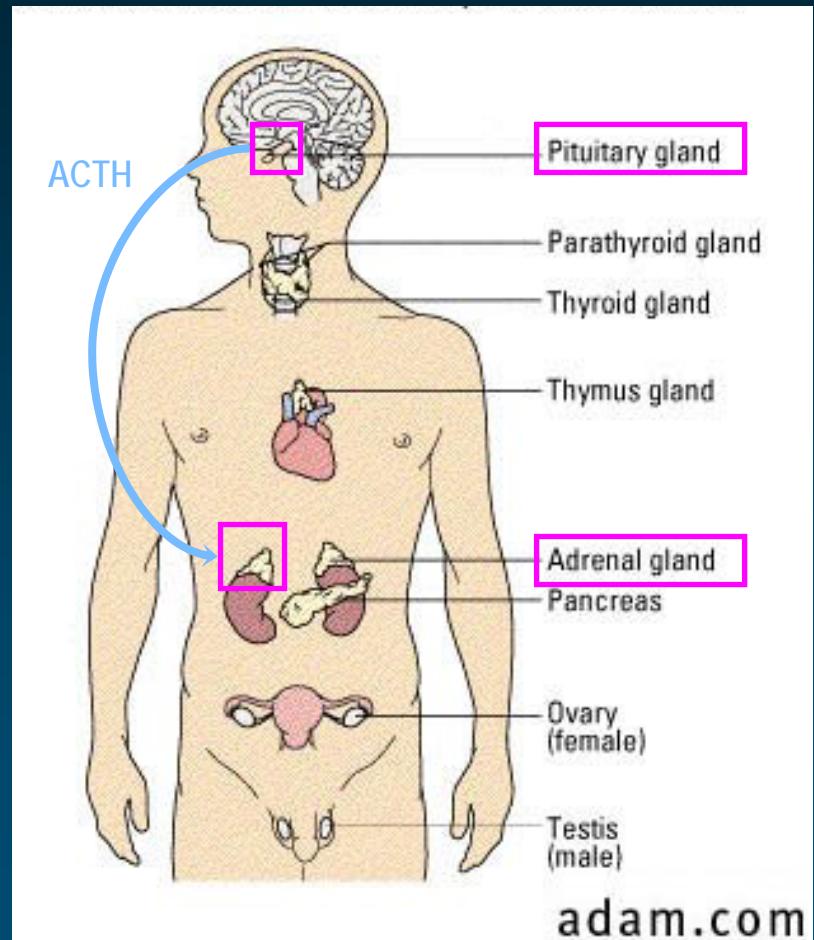
Addison's disease

- ◆ Addison's disease is a rare endocrine disorder
- ◆ Addison's disease occurs when the adrenal glands do not produce enough of the hormone cortisol
- ◆ For this reason, the disease is sometimes called chronic adrenal insufficiency, or hypocortisolism



Adrenal insufficiency Clinical variants

- ◆ Primary / Secondary
 - Primary: lesion of the adrenal glands themselves
 - Secondary: inadequate secretion of ACTH by the pituitary gland
- ◆ Acute / Chronic
- ◆ Isolated / Polyendocrine deficiency syndrome



adam.com

Addison's disease: Symptoms

- ◆ Fatigue
- ◆ Weakness
- ◆ Low blood pressure
- ◆ Pigmentation of the skin (exposed and non-exposed parts of the body)
- ◆ ...



AD in medical vocabularies

◆ Synonyms: different terms

- Addisonian syndrome] eponym
- Bronzed disease] symptoms
- Addison melanoderma]
- Asthenia pigmentosa]
- Primary adrenal deficiency] clinical variants
- Primary adrenal insufficiency]
- Primary adrenocortical insufficiency]
- Chronic adrenocortical insufficiency]

◆ Contexts: different hierarchies



Organize terms

- ◆ Synonymous terms clustered into a concept
- ◆ Preferred term
- ◆ Unique identifier (CUI)

Adrenal gland diseases	MeSH	D000307
Adrenal disorder	AOD	0000005418
Disorder of adrenal gland	Read	C15z.
Diseases of the adrenal glands	SNOMED	DB-70000

C0001621

Adrenal Gland Diseases



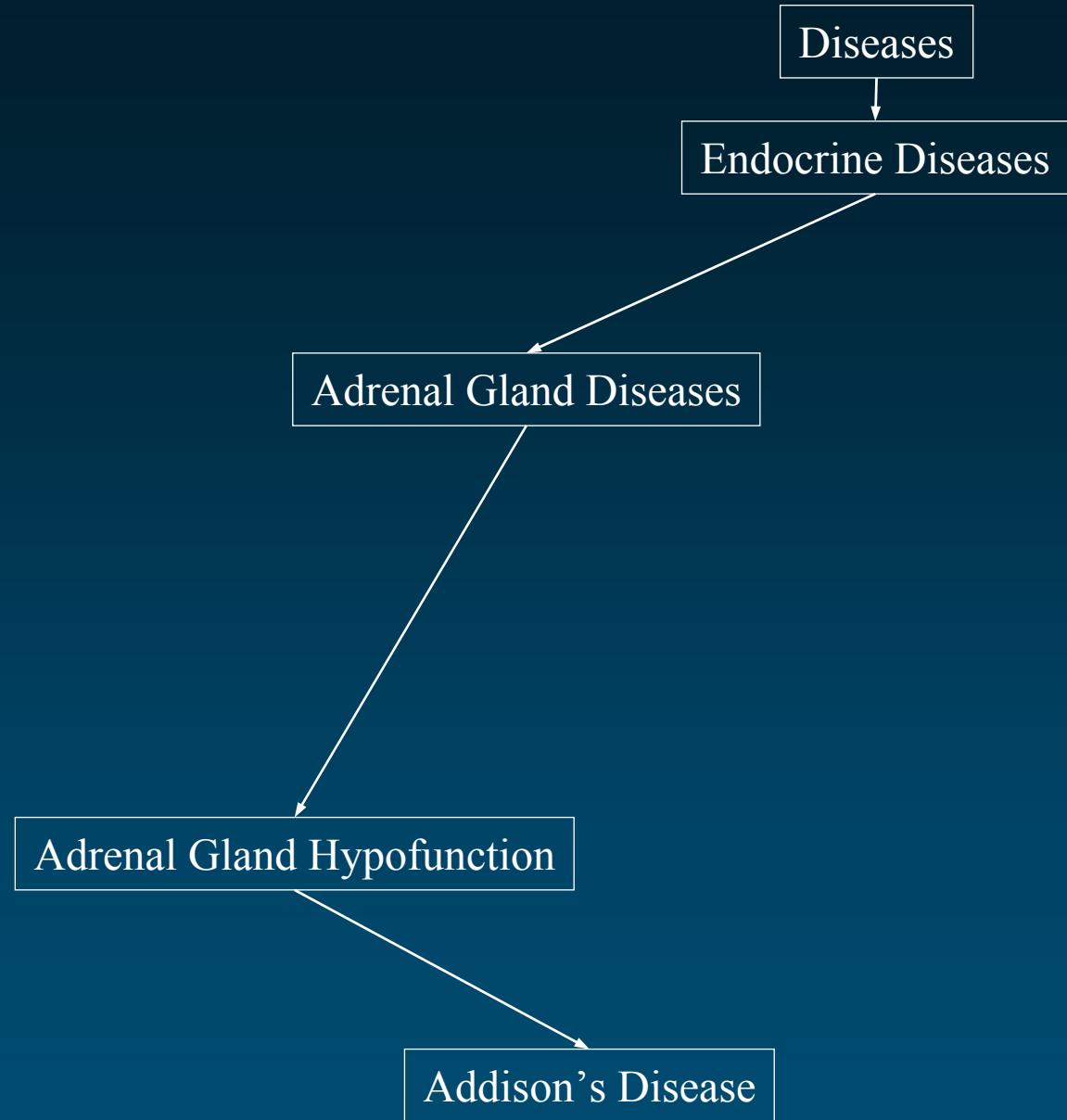
SNOMED International

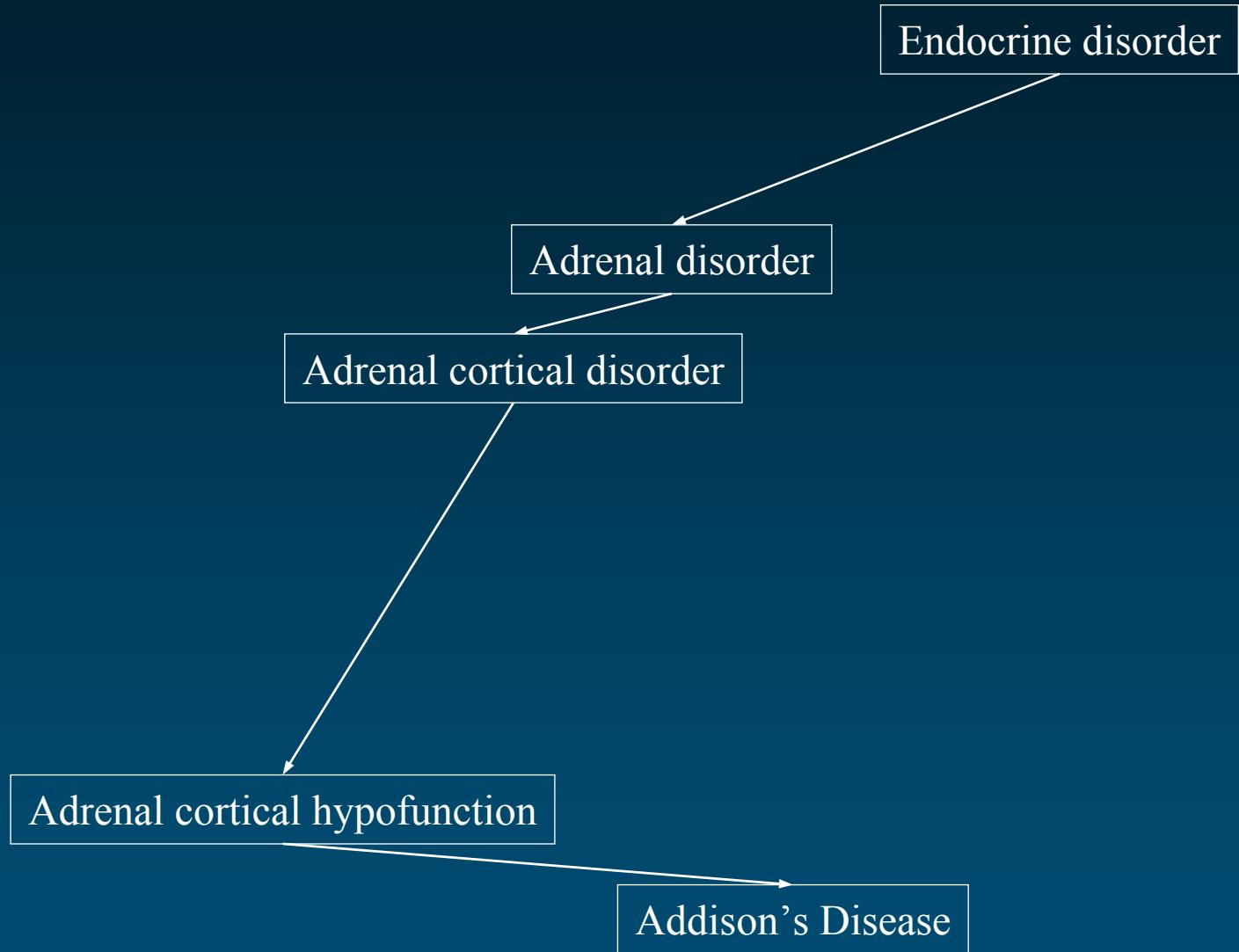
Diseases/Diagnoses

Diseases of the endocrine system

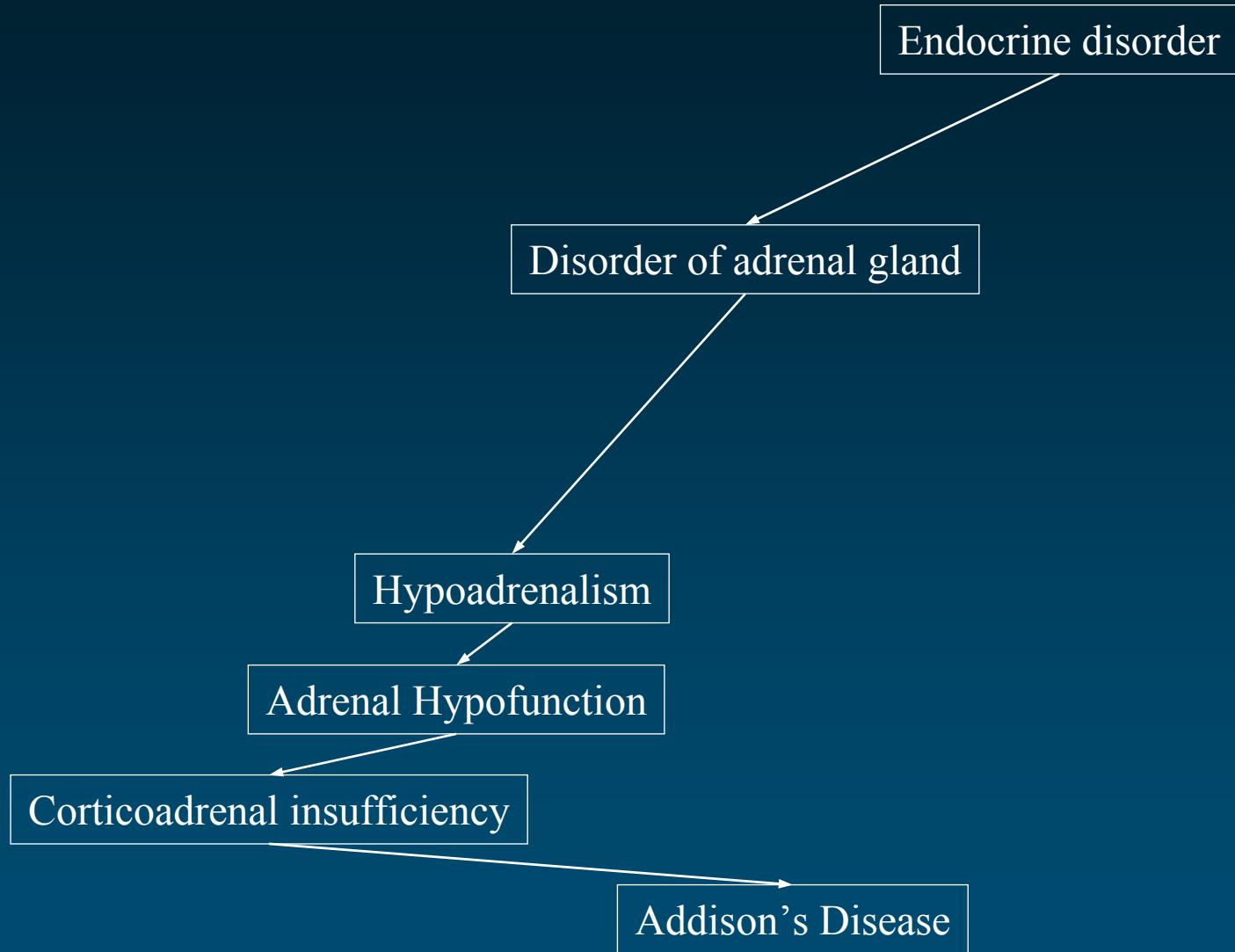
Diseases of the Adrenal Glands

Addison's Disease

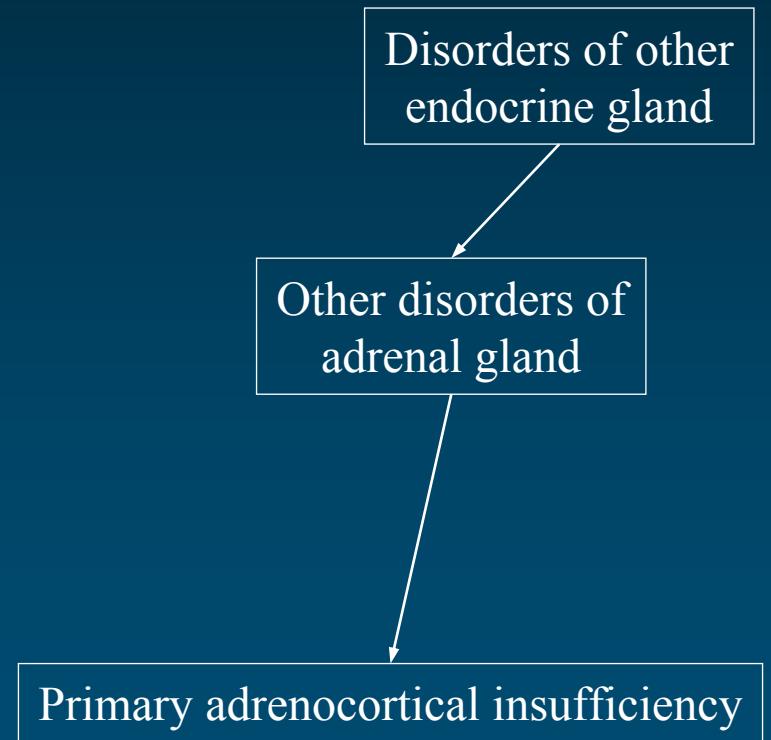




Read Codes

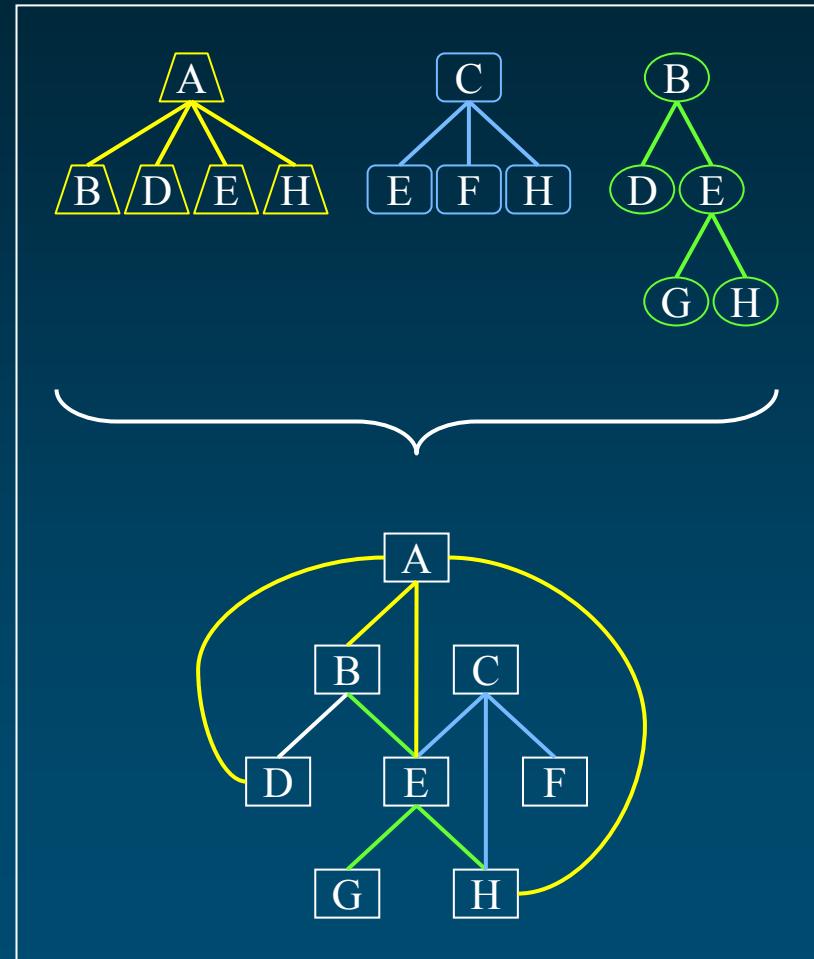


ICD-10



Organize concepts

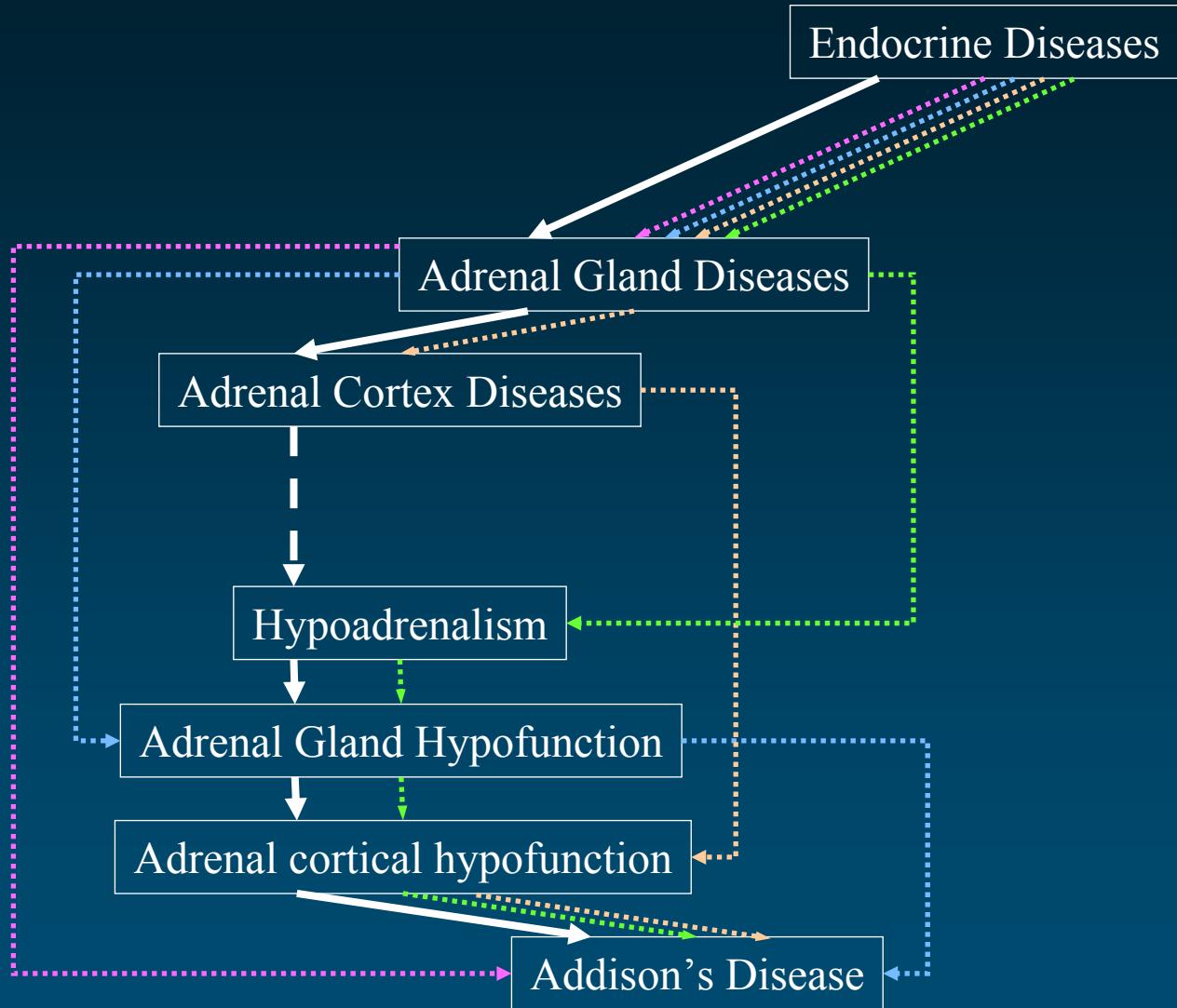
- ◆ Inter-concept relationships: hierarchies from the source vocabularies
- ◆ Redundancy: multiple paths
- ◆ One graph instead of multiple trees (multiple inheritance)



organize concepts

SNOMED
MeSH
AOD
Read Codes

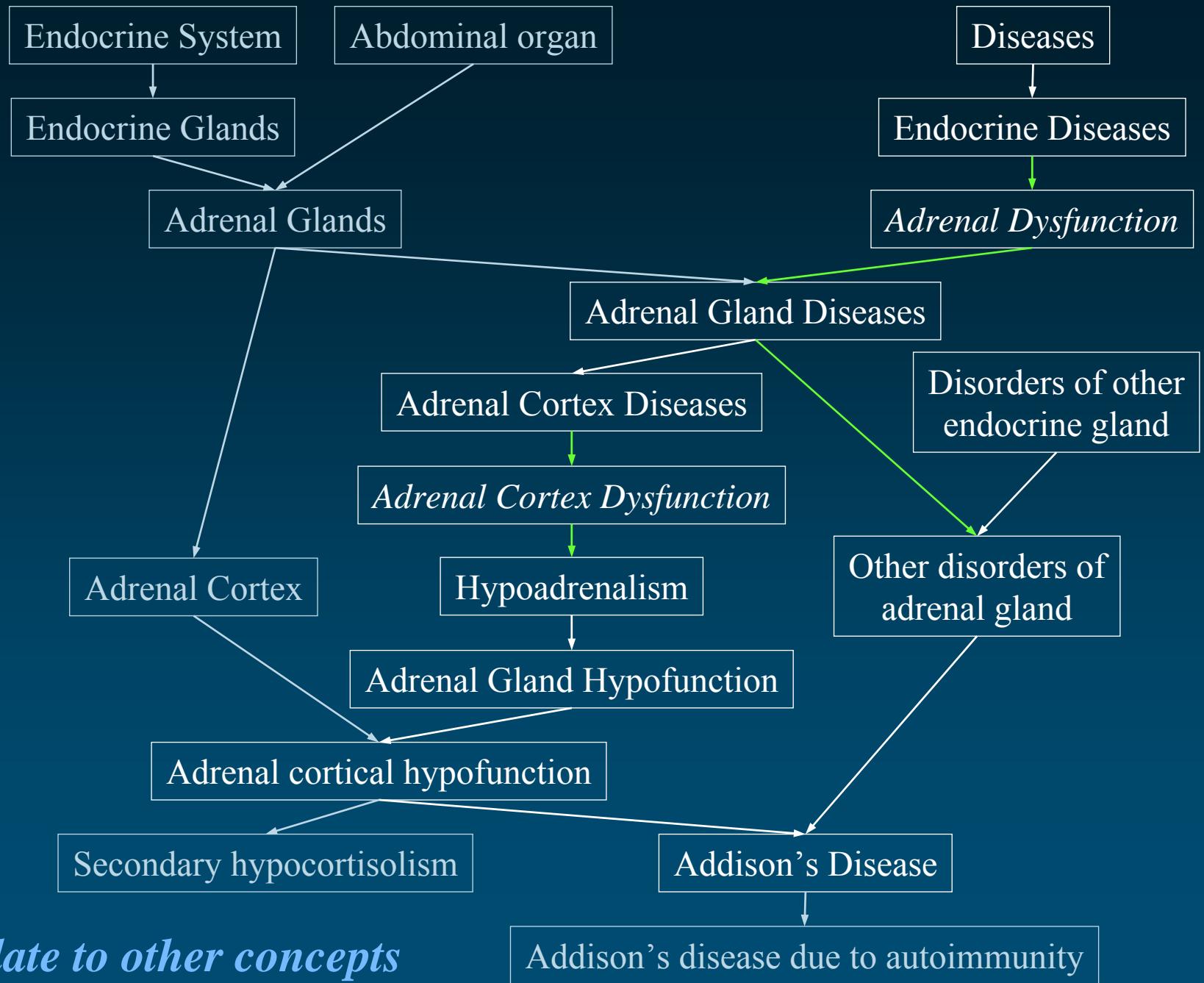
UMLS



Relate to other concepts

- ◆ Additional hierarchical relationships
 - link to other trees
 - make relationships explicit
- ◆ Non-hierarchical relationships
- ◆ Co-occurring concepts
- ◆ Mapping relationships

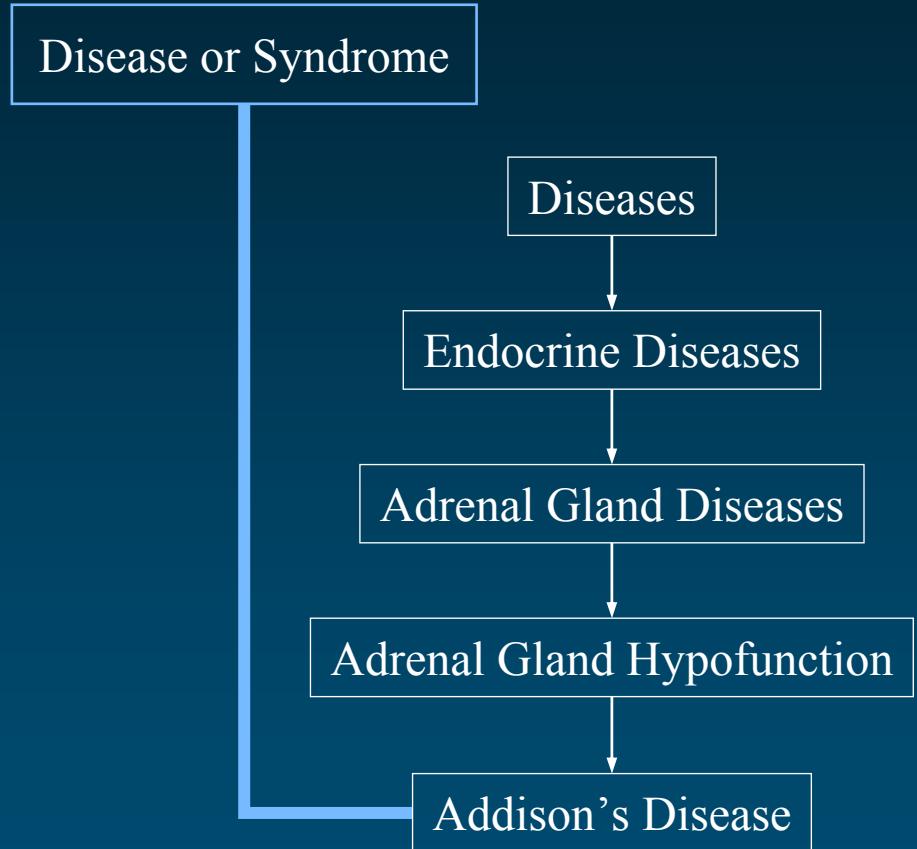




relate to other concepts

Categorize concepts

- ◆ High-level categories (semantic types)
- ◆ Assigned by the Metathesaurus editors
- ◆ Independently of the hierarchies in which these concepts are located



How do they do that?

- ◆ Lexical knowledge
- ◆ Semantic pre-processing
- ◆ UMLS editors



Lexical knowledge

Adrenal gland diseases

Adrenal disorder

Disorder of adrenal gland

Diseases of the adrenal glands

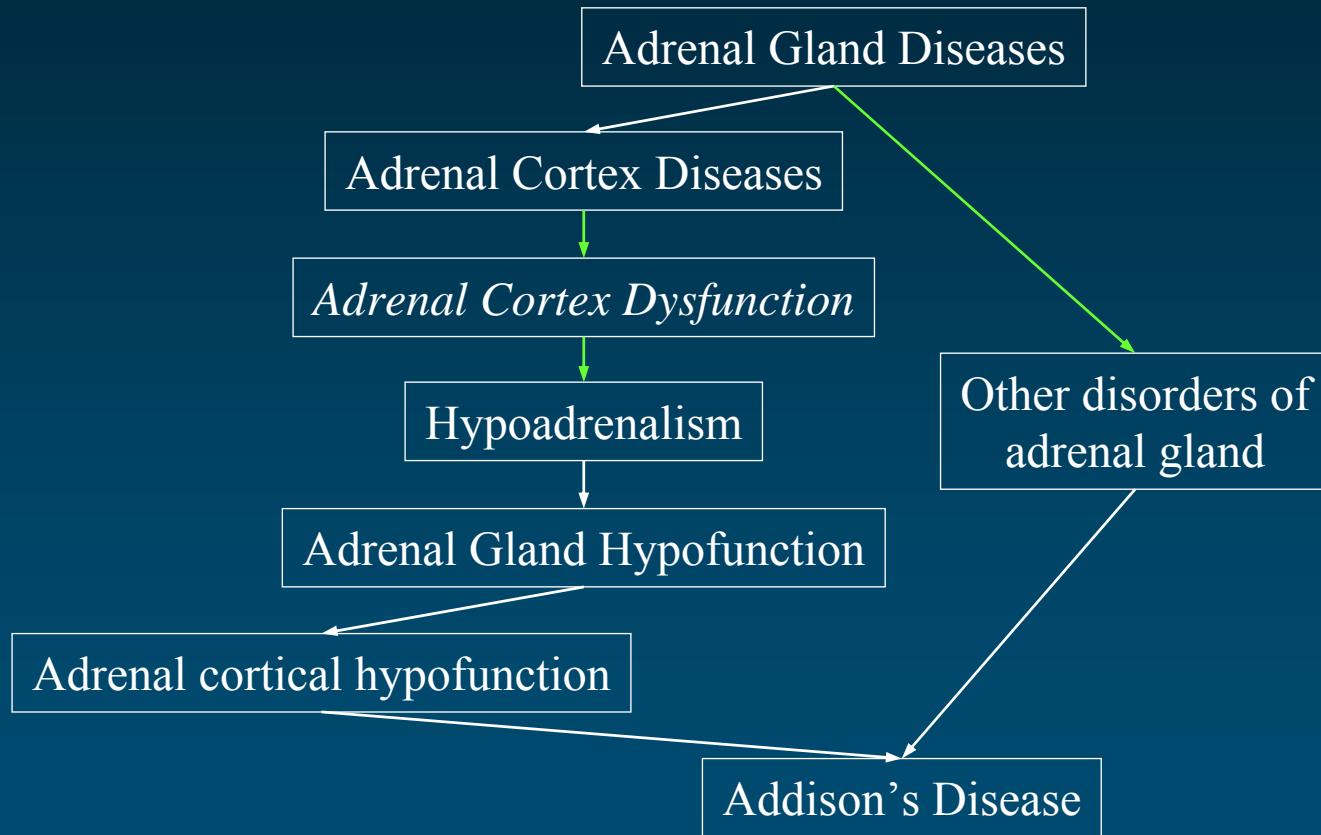
C0001621



Semantic pre-processing

- ◆ Metadata in the source vocabularies
- ◆ Tentative categorization
- ◆ Positive (or negative) evidence for tentative synonymy relations based on lexical features

Additional knowledge: UMLS editors



UMLS Summary

- ◆ Synonymous terms clustered into concepts
 - ◆ Unique identifier
-
- ◆ Finer granularity
 - ◆ Broader scope
 - ◆ Additional hierarchical relationships
 - ◆ Semantic categorization



Part I

What is the UMLS?

(3) UMLS Knowledge Sources

UMLS 3 components

- ◆ Metathesaurus
 - Concepts
 - Inter-concept relationships
- ◆ Semantic Network
 - Semantic types
 - Semantic network relationships
- ◆ Lexical resources
 - SPECIALIST Lexicon
 - Lexical tools



UMLS Metathesaurus

Metathesaurus Basic organization

◆ Concepts

- Synonymous terms are clustered into a concept
- Properties are attached to concepts, e.g.,
 - Unique identifier
 - Definition

◆ Relations

- Concepts are related to other concepts
- Properties are attached to relations, e.g.,
 - Type of relationship
 - Source



Source Vocabularies

(2004AB)

- ◆ 134 source vocabularies
 - 126 contributing concept names
- ◆ 73 families of vocabularies
 - multiple translations (e.g., MeSH, ICPC, ICD-10)
 - variants (American-English equivalents, Australian extension/adaptation)
 - subsequent editions usually considered distinct families (ICD: 9-10; DSM: IIIR-IV)
- ◆ Broad coverage of biomedicine
- ◆ Common presentation



Biomedical terminologies

◆ General vocabularies

- anatomy (UWDA, Neuronames)
- drugs (RxNorm, First DataBank, Micromedex)
- medical devices (UMD, SPN)

◆ Several perspectives

- clinical terms (SNOMED CT)
- information sciences (MeSH, CRISP)
- administrative terminologies (ICD-9-CM, CPT-4)
- data exchange terminologies (HL7, LOINC)



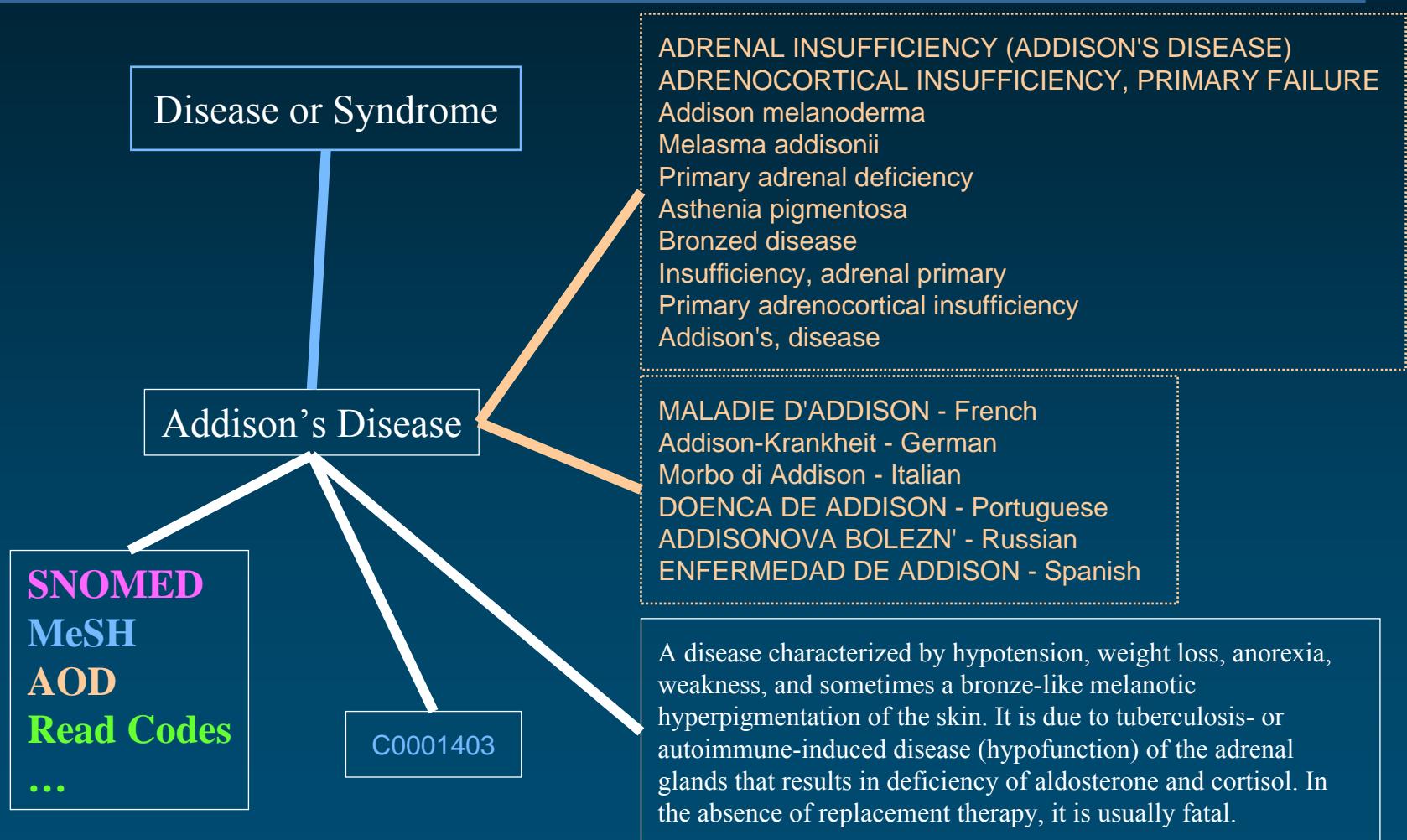
Biomedical terminologies (cont'd)

- ◆ Specialized vocabularies
 - nursing (NIC, NOC, NANDA, Omaha, PCDS)
 - dentistry (CDT)
 - oncology (PDQ)
 - psychiatry (DSM, APA)
 - adverse reactions (COSTART, WHO ART)
 - primary care (ICPC)
- ◆ Terminology of knowledge bases (AI/Rheum, DXplain, QMR)

The UMLS serves as a vehicle for the regulatory standards
(HIPAA, CHI)



Addison's Disease: Concept



Metathesaurus Concepts

(2004AB)

- ◆ Concept (> 1M) CUI
 - Set of synonymous concept names
- ◆ Term (> 3.8 M) LUI
 - Set of normalized names
- ◆ String (> 4.3M) SUI
 - Distinct concept name
- ◆ Atom (> 5.1M) AUI
 - Concept name in a given source

A0000001	headache	(source 1)
A0000002	headache	(source 2)
S0000001		
A0000003	Headache	(source 1)
A0000004	Headache	(source 2)
S0000002		
L0000001		
A0000005	Cephalgia	(source 1)
S0000003		
L0000002		
C0000001		



Cluster of synonymous terms

Concept
C0001621

Term L0001621	<p>S0011232 Adrenal Gland Diseases S0011231 Adrenal Gland Disease S0000441 Disease of adrenal gland S0481705 Disease of adrenal gland, NOS S0220090 Disease, adrenal gland S0044801 Gland Disease, Adrenal</p> <p>[...]</p>
Term L0041793	<p>S0860744 Disorder of adrenal gland, unspecified S0217833 Unspecified disorder of adrenal glands</p>
Term L0161347	<p>S0225481 ADRENAL DISORDER S0627685 DISORDER ADRENAL (NOS)</p> <p>[...]</p>
Term L0181041	<p>S0632950 Disorder of adrenal gland S0354509 Adrenal Gland Disorders</p> <p>[...]</p>
Term L0368399	<p>S0586222 Adrenal disease S0466921 ADRENAL DISEASE, NOS</p> <p>[...]</p>
Term L1279026	<p>S1520972 Nebennierenkrankheiten</p> <p>GER</p>
Term L0162317	<p>S0226798 SURRENALE, MALADIES</p> <p>FRE</p> <p>[...]</p>



Metathesaurus Evolution over time

- ◆ Concepts never die (in principle)
 - CUIs are permanent identifiers
- ◆ What happens when they do die (in reality)?
 - Concepts can merge or split
 - Resulting in new concepts and deletions



Metathesaurus Relationships

- ◆ Symbolic relations: ~9 M pairs of concepts
 - ◆ Statistical relations : ~7 M pairs of concepts
(co-occurring concepts)
 - ◆ Mapping relations: 100,000 pairs of concepts
-
- ◆ Categorization: Relationships between concepts and semantic types from the Semantic Network

Symbolic relations

- ◆ Relation
 - Pair of “atom” identifiers
 - Type
 - Attribute (if any)
 - List of sources (for type and attribute)
- ◆ Semantics of the relationship:
defined by its type [and attribute]

Source transparency: the information
is recorded at the “atom” level



Symbolic relationships Type

- ◆ Hierarchical
 - Parent / Child
 - Broader / Narrower than
- ◆ Derived from hierarchies
 - Siblings (children of parents)
- ◆ Associative
 - Other
- ◆ Various flavors of near-synonymy
 - Similar
 - Source asserted synonymy
 - Possible synonymy

PAR/CHD

RB/RN

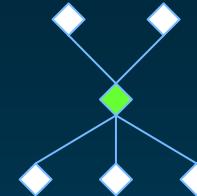
SIB

RO

RL

SY

RQ

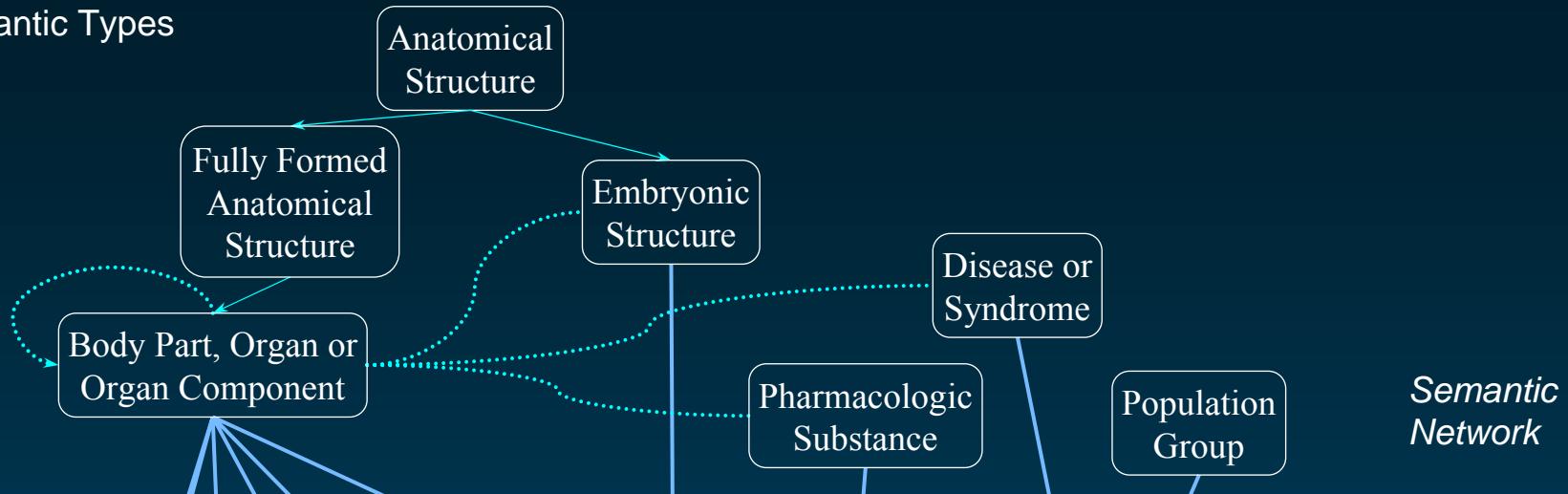


Symbolic relationships Attribute

- ◆ Hierarchical
 - isa (is-a-kind-of)
 - part-of
- ◆ Associative
 - location-of
 - caused-by
 - treats
 - ...
- ◆ Cross-references (mapping)



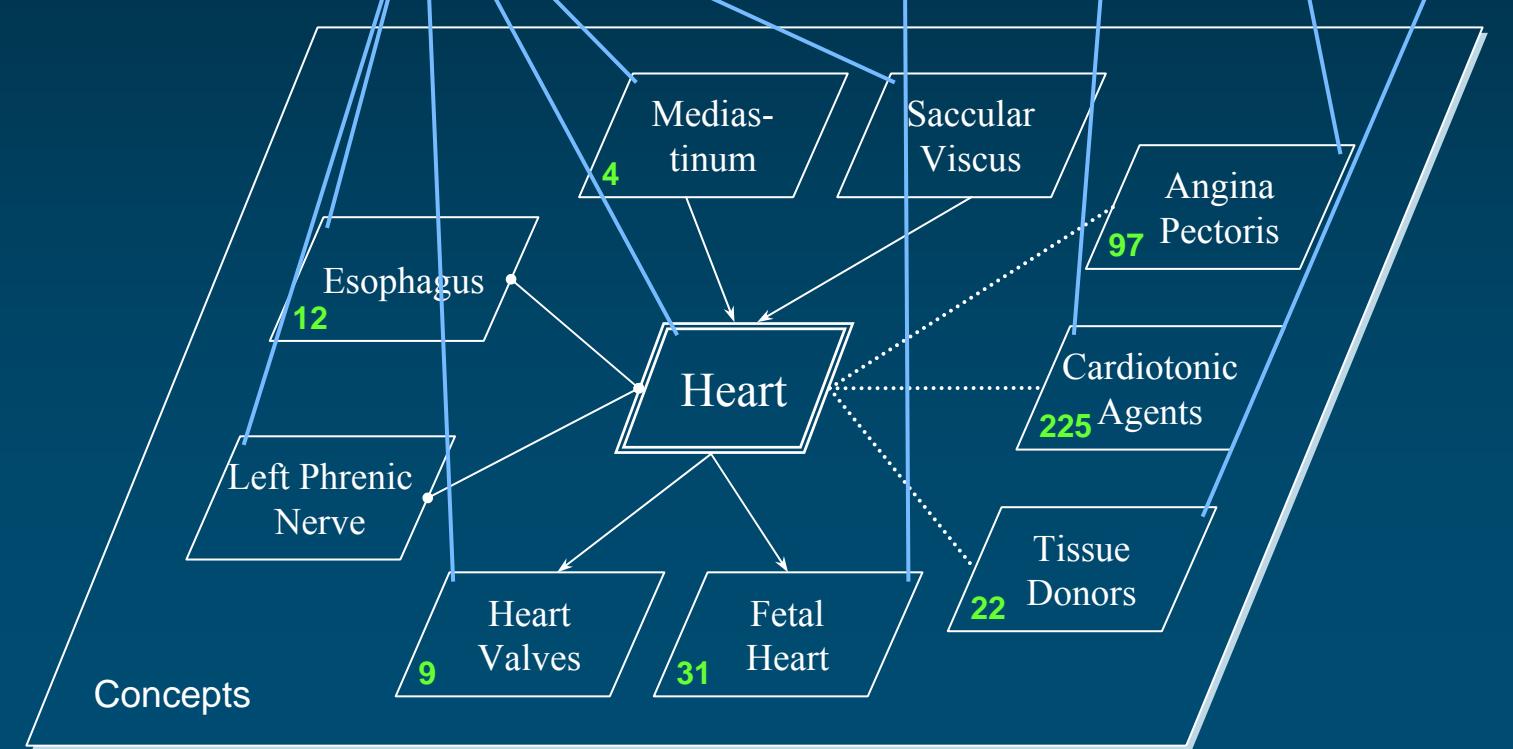
Semantic Types



Semantic Network

Metathesaurus

Concepts



UMLS Semantic Network

Semantic Network

- ◆ Semantic types (135)

- tree structure
- 2 major hierarchies
 - Entity
 - Physical Object
 - Conceptual Entity
 - Event
 - Activity
 - Phenomenon or Process

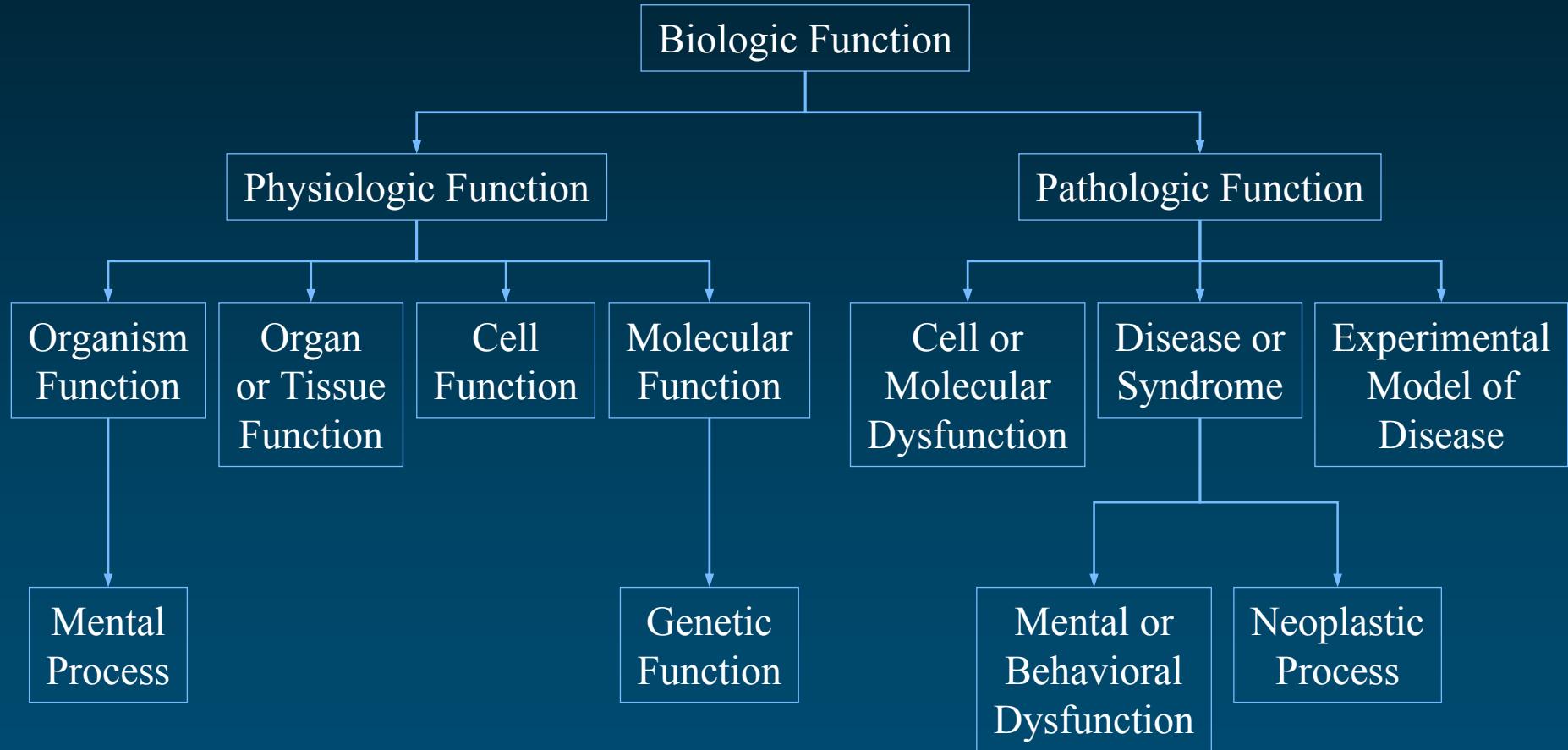


Semantic Network

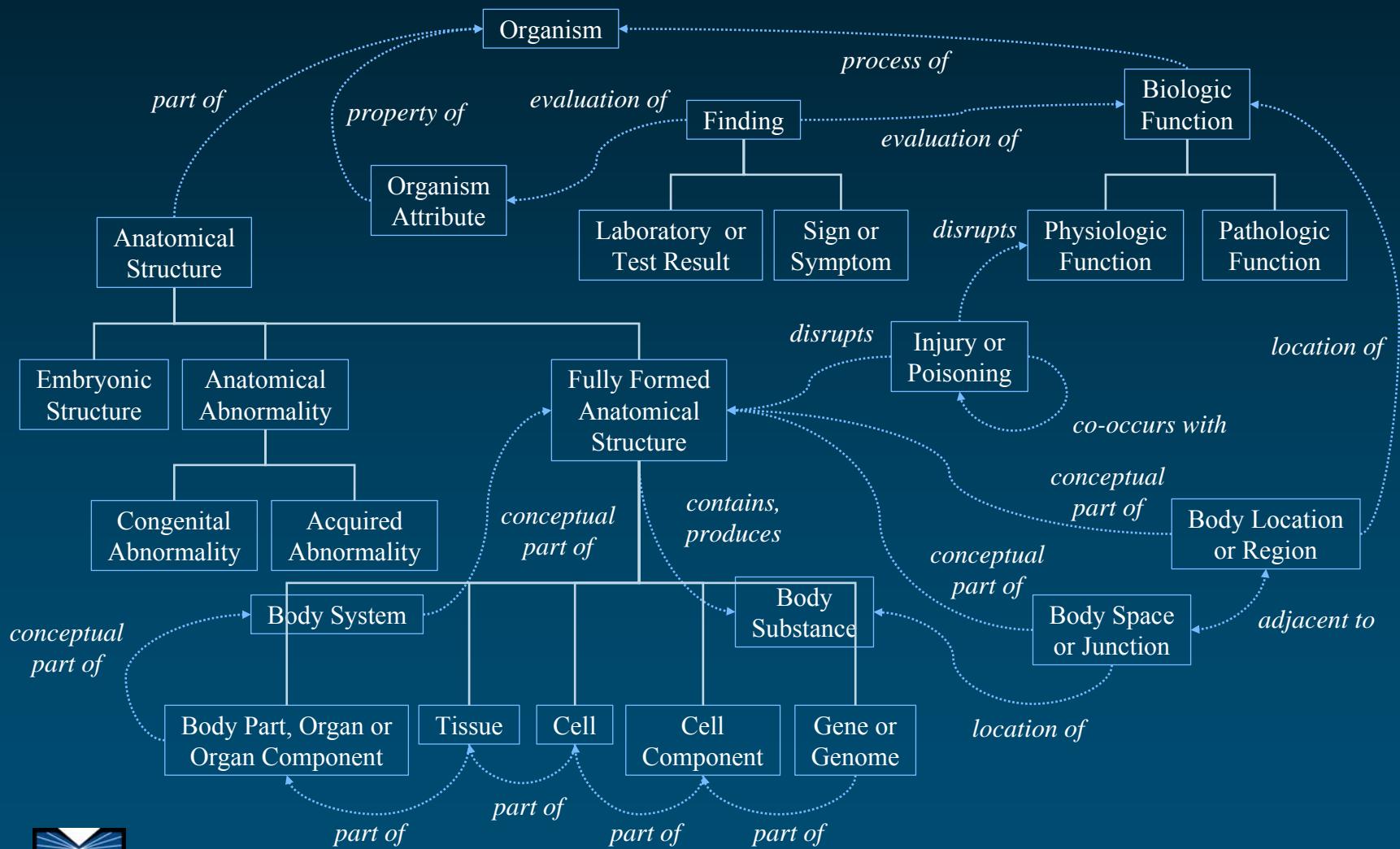
- ◆ Semantic network relationships (54)
 - hierarchical (*isa* = is a kind of)
 - among types
 - Animal *isa* Organism
 - Enzyme *isa* Biologically Active Substance
 - among relations
 - treats *isa* affects
 - non-hierarchical
 - Sign or Symptom *diagnoses* Pathologic Function
 - Pharmacologic Substance *treats* Pathologic Function



“Biologic Function” hierarchy (isa)



Associative (non-isa) relationships



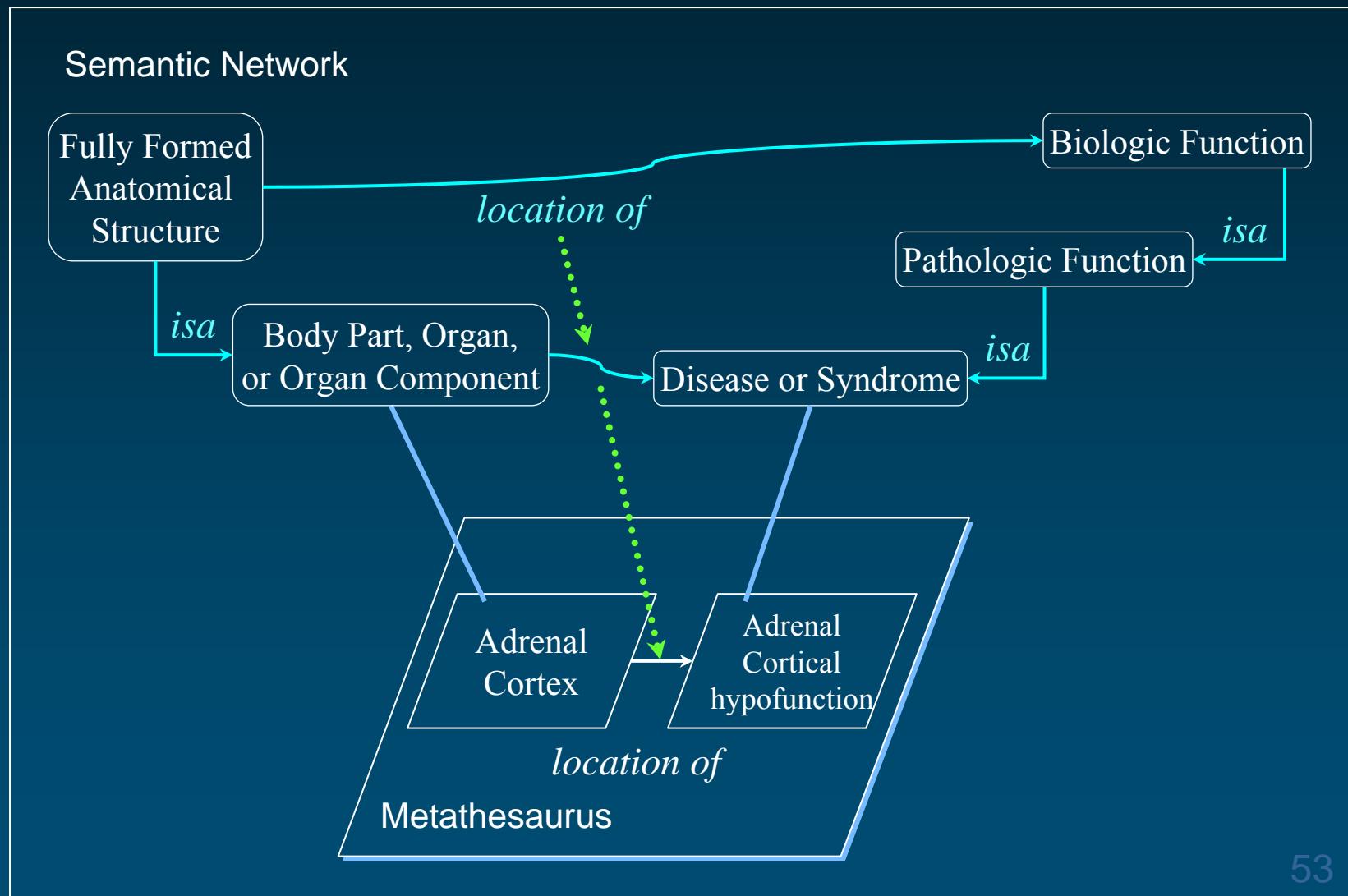
Why a semantic network?

- ◆ Semantic Types serve as high level categories assigned to Metathesaurus concepts, *independently of their position in a hierarchy*

- ◆ A relationship between 2 Semantic Types (ST) is a possible link between 2 concepts that have been assigned to those STs
 - The relationship may or may not hold at the concept level
 - Other relationships may apply at the concept level



Relationships can inherit semantics



SPECIALIST Lexicon and lexical tools

SPECIALIST Lexicon

- ◆ Content
 - English lexicon
 - Many words from the biomedical domain
- ◆ 200,000+ lexical items
- ◆ Word properties
 - morphology
 - orthography
 - syntax
- ◆ Used by the lexical tools



Morphology

◆ Inflection

- noun nucleus, nuclei
- verb cauterize, cauterizes, cauterized, cauterizing
- adjective red, redder, reddest

◆ Derivation

- verb \leftrightarrow noun cauterize -- cauterization
- adjective \leftrightarrow noun red -- redness

Orthography

◆ Spelling variants



Syntax

◆ Complementation

- verbs

- intransitive
- transitive
- ditransitive

I'll treat.

He treated the patient.

He treated the patient with a drug.

- nouns

- prepositional phrase

Valve of coronary sinus

◆ Position for adjectives

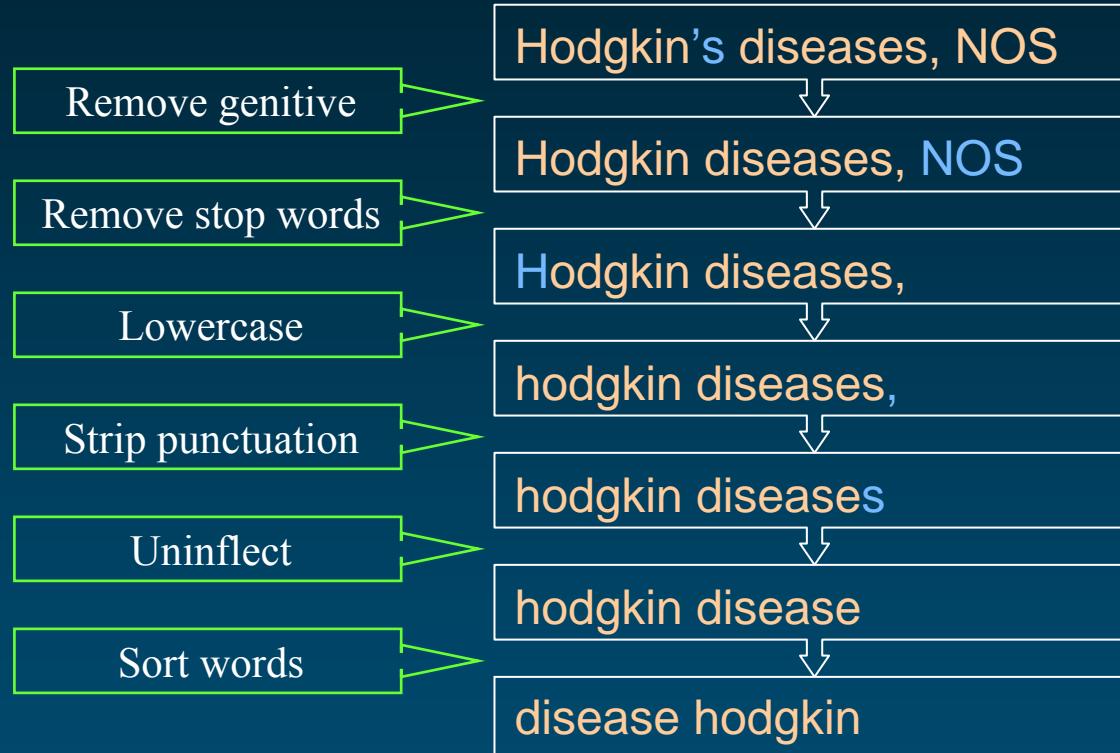


Lexical tools

- ◆ To manage lexical variation in biomedical terminologies
- ◆ Major tools
 - Normalization
 - Indexes
 - Lexical Variant Generation program (lvg)
- ◆ Based on the SPECIALIST Lexicon
- ◆ Used by noun phrase extractors, search engines



Normalization



Normalization: Example

Hodgkin Disease
HODGKINS DISEASE
Hodgkin's Disease
Disease, Hodgkin's
Hodgkin's, disease
HODGKIN'S DISEASE
Hodgkin's disease
Hodgkins Disease
Hodgkin's disease NOS
Hodgkin's disease, NOS
Disease, Hodgkins
Diseases, Hodgkins
Hodgkins Diseases
Hodgkins disease
hodgkin's disease
Disease, Hodgkin

normalize

disease hodgkin



Normalization Applications

- ◆ Model for lexical resemblance
- ◆ Help find lexical variants for a term
 - Terms that normalize the same usually share the same LUI
- ◆ Help find candidates to synonymy among terms
- ◆ Help map input terms to UMLS concepts



Indexes

- ◆ Word index

- word to Metathesaurus strings
- one word index per language

- ◆ Normalized word index

- normalized word to Metathesaurus strings
- English only

- ◆ Normalized string index

- normalized term to Metathesaurus strings
- English only



Lexical Variant Generation program

- ◆ Tool for specialists (linguists)
- ◆ Performs atomic lexical transformations
 - generating inflectional variants
 - lowercase
 - ...
- ◆ Performs sequences of atomic transformations
 - a specialized sequence of transformations provides the normalized form of a term (the *norm* program)

Part II

How to use the UMLS?

Outline

◆ Part II: *How to use the UMLS?*

- Obtaining a license
- Remote access
 - Knowledge Source Server (UMLSKS)
 - UMLSKS Application programming interface (API)
- Local installation and customization
(MetamorphoSys)



Part II

How to use the UMLS?

(1) Obtaining a license

First step License agreement

◆ Online Web-based license:

<http://www.nlm.nih.gov/research/umls/license.html>

- Read license
- Read appendix
- Print a copy for your records
- Complete the Web form

[Accept and continue](#)

[Accept](#)

[Printer-friendly Version](#)

[Submit](#)

- Verify:
 - receive e-mail from NLM; go to Web site within 72 hours and enter first and last name
- NLM official will countersign (turn-around time of a few days)
- Receive 2nd e-mail from NLM with new license number



<http://www.nlm.nih.gov/research/umls/license.html>

 United States
National Library of Medicine
National Institutes of Health

Search NLM Web Site
 NLM Home | Contact NLM | Site Map | FAQs

Unified Medical Language System

[UMLS Home](#)

[Home](#) > Biomedical Research & Informatics > UMLS

[!\[\]\(7bd4a587ec06429114bbc976b29a75db_img.jpg\) Printer-friendly Version](#)

License Agreement for Use of the UMLS® Metathesaurus®

This Agreement is made by and between the National Library of Medicine, Department of Health and Human Services (hereinafter referred to as "NLM") and the LICENSEE.

WHEREAS, the NLM was established by statute in order to assist the advancement of medical and related sciences, and to aid the dissemination and exchange of scientific and other information important to the progress of medicine and to the public health, (section 465 of the Public Health Service Act, as amended (42 U.S.C. section 286) and to carry out this purpose has been authorized to develop the Unified Medical Language System® (UMLS) to facilitate the retrieval and integration of machine-readable biomedical information from disparate sources;

WHEREAS, the NLM's UMLS project has produced the UMLS Metathesaurus, a machine-readable vocabulary knowledge source, that is useful in a variety of settings;

WHEREAS, the LICENSEE is willing to use the UMLS Metathesaurus at its sole risk and at no expense to NLM, which will result in information useful to NLM, may provide immediate improvements in biomedical information transfer to segments of the biomedical community, and is consistent with NLM's statutory functions,

NOW THEREFORE, it is mutually agreed as follows:

1. The NLM hereby grants a nonexclusive, non-transferable right to LICENSEE to use the UMLS Metathesaurus and incorporate its content in any computer applications or systems designed to improve access to biomedical information of any type subject to the restrictions in

2. No charges, usage fees or royalties will be paid to NLM.

free from NLM

3. LICENSEE is prohibited from distributing the UMLS Metathesaurus or subsets of it, including individual vocabulary sources within the Metathesaurus, except (a) as an integral part of computer applications developed by LICENSEE for a purpose other than redistribution of vocabulary sources contained in the UMLS Metathesaurus and (b) if permitted by paragraph 12 of this agreement.

4. LICENSEE agrees to inform NLM prior to distributing any application(s) in which it is using the UMLS Metathesaurus and is encouraged to inform NLM of any difficulties encountered in using the UMLS Metathesaurus, and changes or enhancements to the UMLS Metathesaurus that would make it more useful to LICENSEE and its user groups.

5. Within 30 days of the end of any calendar year in which LICENSEE makes use of the UMLS Metathesaurus, LICENSEE agrees to provide NLM with a brief report on the usefulness of the UMLS Metathesaurus in general and, if applicable, on the usefulness of CPT in the UMLS format in particular. LICENSEE is strongly encouraged to submit to NLM locally developed extensions to the UMLS Metathesaurus that are potentially useful to other UMLS users for consideration for potential inclusion in the UMLS Metathesaurus.

annual
report

6. NLM represents that the data provided under this Agreement were formatted with a reasonable standard of care, but makes no warranties express or implied, including no warranty of merchantability or fitness for particular purpose, regarding the accuracy or completeness of the data or that the machine-readable copy is error free. Therefore, LICENSEE agrees to hold NLM, the Government, and any organization contributing a vocabulary source to the UMLS Metathesaurus free from any liability resulting from errors in terminology or other data or on the machine-readable copy. NLM and such other organizations disclaim any liability for any consequences due to use, misuse, or interpretation of information contained or not contained in the UMLS Metathesaurus.

7. NLM represents that its ability to continue to include certain vocabulary sources within the UMLS Metathesaurus is dependent on continuing contractual relations or agreements with the copyright holders for these vocabulary sources. Therefore, LICENSEE agrees to hold NLM and the individual copyright holder free from any liability resulting from the removal of any vocabulary source from future editions of the UMLS Metathesaurus.

8. NLM reserves the right to change the type and format of its machine-readable data. NLM agrees to inform LICENSEE of any changes to the format of the UMLS Metathesaurus, EXCEPT the addition of entirely new data elements to the Metathesaurus, at least 90 days before the data are distributed.

9. The presence in the UMLS Metathesaurus of vocabulary or data produced by organizations other than NLM does not imply any endorsement of the UMLS Metathesaurus by these organizations.

10. LICENSEE shall acknowledge NLM as its source of the UMLS Metathesaurus, citing the year and version number, in a suitable and customary manner but may not in any way indicate or imply that NLM or any of the organizations whose vocabulary sources are included in the UMLS has endorsed LICENSEE or its products.

11. Some of the Material in the UMLS Metathesaurus is from copyrighted sources. If LICENSEE uses any material from copyrighted sources from the UMLS Metathesaurus:

a) the LICENSEE is required to display in full, prior to providing user access to the Metathesaurus or any of the vocabulary sources within the UMLS, the following wording in order that its users be made aware of these copyright constraints:

"Some material in the UMLS Metathesaurus is from copyrighted sources of the respective copyright holders. Users of the UMLS Metathesaurus are solely responsible for compliance with any copyright, patent or trademark restrictions and are referred to the copyright, patent or trademark notices appearing in the original sources, all of which are hereby incorporated by reference.";

to display a list of all of the vocabularies contained within the UMLS Metathesaurus that are used in the LICENSEE's application; and to indicate for each vocabulary any appropriate copyright notice and whether the entire contents is present or only a portion of it.

b) the LICENSEE is prohibited from altering UMLS and other vocabulary source content contained within the UMLS Metathesaurus, but may include content from other sources in applications that also contain content from the UMLS Metathesaurus. The LICENSEE may not imply in any way that data from other sources is part of the UMLS Metathesaurus or of any of its vocabulary sources.

c) the LICENSEE is required to include in its applications identifiers from the UMLS Metathesaurus such that the original source vocabularies for any data obtained from the UMLS Metathesaurus can be determined by reference to a complete version of the UMLS Metathesaurus.

need to retain identifiers

12. For material in the UMLS Metathesaurus obtained from some sources additional restrictions on LICENSEE's use may apply. The categories of additional restrictions are described below. The list of UMLS Metathesaurus Vocabulary Sources, which is part of this Agreement and is updated when each version of the Metathesaurus is released, indicates the category of additional restrictions, if any, that apply to each vocabulary source.

additional licenses may be necessary

LICENSEE should contact the copyright holder directly to discuss uses of a source vocabulary beyond those allowed under this license agreement. If LICENSEE or LICENSEE's end user has a separate agreement with the copyright holder for use of a UMLS Metathesaurus source vocabulary, LICENSEE or LICENSEE's end user may use vocabulary source content obtained from the UMLS Metathesaurus in accordance with the terms of the separate agreement.

12. 1. Category 1:

LICENSEE is prohibited from translating the vocabulary source into another language or from producing other derivative works based on this single vocabulary source.

12. 2. Category 2:

12. 2. Category 2:

All category 1 restrictions AND

LICENSEE is prohibited from using the vocabulary source in operational applications that create records or information containing data from the vocabulary source. Use for data creation research or product development is allowed.

12. 3. Category 3:

LICENSEE's right to use material from the source vocabulary is restricted to internal use at the LICENSEE's site(s) for research, product development, and statistical analysis only. Internal use includes use by employees, faculty, and students of a single institution at multiple sites. Notwithstanding the foregoing, use by students is limited to doing research under the direct supervision of faculty. Internal research, product development, and statistical analysis use expressly excludes: use of material from these copyrighted sources in routine patient data creation; incorporation of material from these copyrighted sources in any publicly accessible computer-based information system or public electronic bulletin board including the Internet; publishing or translating or creating derivative works from material from these copyrighted sources; selling, leasing, licensing, or otherwise making available material from these copyrighted works to any unauthorized party; and copying for any purpose except for back up or archival purposes.

LICENSEE may be required to display special copyright, patent and/or trademark notices before displaying content from the vocabulary source. Applicable notices are included in the list of UMLS Metathesaurus Vocabulary sources, that is part of this Agreement.

12. 4. Category 4:

new SNOMED category

12.4.1. LICENSEE is prohibited from translating the vocabulary source into another language or from altering the vocabulary source content.

12.4.2. LICENSEE's right to use the vocabulary source is restricted to use in the U.S. by LICENSEE's employees, contractors, faculty, students, clients, patients, or constituents within electronic systems or devices built, purchased, licensed, or used by LICENSEE for U.S. governmental purposes or for any health care, public health, research, educational, or statistical use in the U.S. Use by students is limited to research or educational activities under the direct supervision of faculty.

12.4.3. LICENSEE has the right to distribute the vocabulary source in the U.S., but only in combination with other UMLS Metathesaurus content. Further, LICENSEE's right to distribute is restricted to:

- a. Electronic distribution to LICENSEE's direct U.S. affiliates, or to other U.S. entities that have signed the UMLS license, in order to facilitate use of the vocabulary for health care, public health, research, educational or statistical purposes in the U.S.

U.S. only.

- i. LICENSEE must take reasonable precautions to prevent distribution of the vocabulary source to non-US entities.
 - ii. LICENSEE must include in its annual report a list of all U.S. affiliates or other U.S. entities to whom it has distributed content from the vocabulary source.
- b. Distribution of encoded patient level data sets or knowledge encoded in the vocabulary source by LICENSEE to any U.S. entity for use in the U.S. only.
 - c. Inclusion of encoded records or content from the vocabulary source in: (1) free publicly accessible retrieval systems or (2) fee-based retrieval systems that are accessible within the U.S. only, provided that these systems do not permit users to copy or extract any significant portion of the vocabulary source.

12.4.4. DEFINITIONS

- a. U.S. is defined as all U.S. states, territories, and the District of Columbia; any U.S. government facility or office, whether permanent or temporary, wherever located; and access to a system in any of these locations by U.S. government employees, designated representatives or contractors, wherever located, for U.S. government purposes.
 - b. U.S. entity is defined as (i) for government entities, an agency or department of the U.S. Government, (ii) for corporations, as a corporation incorporated and operating in the U.S.; and (iii) for other entities as an entity organized under the laws of the U.S.
13. LICENSEE shall take reasonable steps to ensure that anyone who has authorized access to data or vocabulary sources from the UMLS Metathesaurus under this Agreement complies with its provisions.
 14. LICENSEE and/or its end users shall be solely responsible for compliance with any copyright or other restrictions on vocabulary sources in the UMLS Metathesaurus; NLM assumes no responsibility or liability associated with the LICENSEE's (or any of the LICENSEE's users) use and/or reproduction of copyrighted material, patent or trademark violations. Anyone contemplating reproduction of all or any portion of the UMLS Metathesaurus or any of its vocabulary sources should consult legal counsel.

The holder of a copyright in any vocabulary source shall be a third party beneficiary to this agreement and shall have a right to enforce the agreement against any LICENSEE that violates any provision pertaining to that copyright holder.

15. This Agreement shall be effective until terminated by one of the parties upon 30 days written notice to the other party. LICENSEE's failure to abide by the terms of the Agreement shall be grounds for its termination. Neither the Government, its employees, or any

- b. U.S. entity is defined as (i) for government entities, an agency or department of the U.S. Government, (ii) for corporations, as a corporation incorporated and operating in the U.S.; and (iii) for other entities as an entity organized under the laws of the U.S.
- 13. LICENSEE shall take reasonable steps to ensure that anyone who has authorized access to data or vocabulary sources from the UMLS Metathesaurus under this Agreement complies with its provisions.
- 14. LICENSEE and/or its end users shall be solely responsible for compliance with any copyright or other restrictions on vocabulary sources in the UMLS Metathesaurus; NLM assumes no responsibility or liability associated with the LICENSEE's (or any of the LICENSEE's users) use and/or reproduction of copyrighted material, patent or trademark violations. Anyone contemplating reproduction of all or any portion of the UMLS Metathesaurus or any of its vocabulary sources should consult legal counsel.

The holder of a copyright in any vocabulary source shall be a third party beneficiary to this agreement and shall have a right to enforce the agreement against any LICENSEE that violates any provision pertaining to that copyright holder.

- 15. This Agreement shall be effective until terminated by one of the parties upon 30 days written notice to the other party. LICENSEE's failure to abide by the terms of the Agreement shall be grounds for its termination. Neither the Government, its employees, or any vocabulary sources contained in the UMLS Metathesaurus shall be liable or responsible to LICENSEE in any manner whatsoever for damages of any nature whatsoever arising from the termination of this Agreement.
- 16. In the event that any provision of this Agreement is determined to violate any law or is unenforceable, the remainder of the Agreement shall remain in full force and effect.

Accept & continue

Accept and continue

Not accept

Last updated: 26 March 2004

First published: 01 January 1997

Permanence level: Permanence Not Guaranteed

[Previous version](#)

[Copyright](#), [Privacy](#), [Accessibility](#)

U.S. National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894

[National Institutes of Health](#), [Health & Human Services](#)

APPENDIX A.1

Appendix to the License Agreement for Use of the UMLS® Metathesaurus

UMLS METATHESAURUS® SOURCE VOCABULARIES -- 2004AB Edition

Sources are listed in order according to the abbreviations used in the UMLS Metathesaurus files. If additional restrictions and notices apply, the category of restrictions and the special notices appear under the name of the source. See the license agreement for an explanation of the categories of restrictions. Many sources publish printed editions and/or other explanatory information that may be essential to understanding the purpose and application of particular sources in data creation and retrieval. Contact information is provided for each source. Please address questions about permissions or license agreements for additional uses not covered by this Agreement, or other inquiries about individual sources, to the appropriate contacts.

NLM is working toward inclusion in the UMLS Metathesaurus of the complete, current edition of most of these vocabulary sources.

AIR93 AI/RHEUM. Bethesda, (MD): National Library of Medicine, Lister Hill Center, 1993.

Contact: May Cheh, Lister Hill Center, National Library of Medicine, Bethesda MD; e-mail: cheh@nlm.nih.gov

ALT2003 Alternative Billing Concepts (AltLink). Albuquerque (NM): Alternative Link LLC, 2003.

CATEGORY 3 RESTRICTIONS APPLY

Contact: Alternative Link LLC; 6121 Indian School Road NE, Suite 131; Albuquerque, NM 87110; phone: 877-621-5465;
<http://www.alternativelink.com>; e-mail: mail@alternativelink.com

VANDF03 U.S. Department of Veterans Affairs, Veterans Health Administration National Drug File. Department of Veterans Affairs, Washington, DC. Release Date: March 13, 2003.

*NOTE: Now a CATEGORY 0

Contact: Steven Brown; CPEP Office; 1310 24th Avenue S; Nashville, TN 37215; e-mail: Steven.Brown@msd.va.gov

WHO97 WHO Adverse Drug Reaction Terminology (WHOART). Uppsala (Sweden): WHO Collaborating Centre for International Drug Monitoring, 1997.

CATEGORY 2 RESTRICTIONS APPLY

The Metathesaurus includes translations of WHO97 in French (WHOFRE_1997), German (WHOGER_1997), Portuguese (WHOPOR_1997), and Spanish (WHOSPA_1997).

Contact: WHO Collaborating Centre for International Drug Monitoring, Stora Target 3, S-753 20
Uppsala, Sweden; fax: 18-656080

Last updated: 20 July 2004

First published: 26 March 2004

Permanence level: Permanence Not Guaranteed

[Copyright](#), [Privacy](#), [Accessibility](#)

U.S. National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894

[National Institutes of Health](#), [Health & Human Services](#)

License Restriction Levels 0-4

◆ Level 0 (28.2%)

- *unrestricted*

◆ Level 1 (1.6%)

- *negotiate to translate*

◆ Level 2 (0.4%)

- *negotiate to use in health data creation*

◆ Level 3 (30.6%)

- *negotiate to use in production*
- *Explicitly prohibited to provide Internet access*

◆ Level 4 (39.2%)

- *unrestricted for U.S. use and distribution*

There may be additional restrictions, or separate license fees, associated with usage of specific vocabularies. Read the UMLS License, including the Appendix!

67%



Part II

How to use the UMLS?

(2) Remote access

Remote Access

- ◆ UMLS Knowledge Source Server:
<http://umlsks.nlm.nih.gov>
- ◆ Web search interface
- ◆ Application Programming Interface (API)



Knowledge Source Server

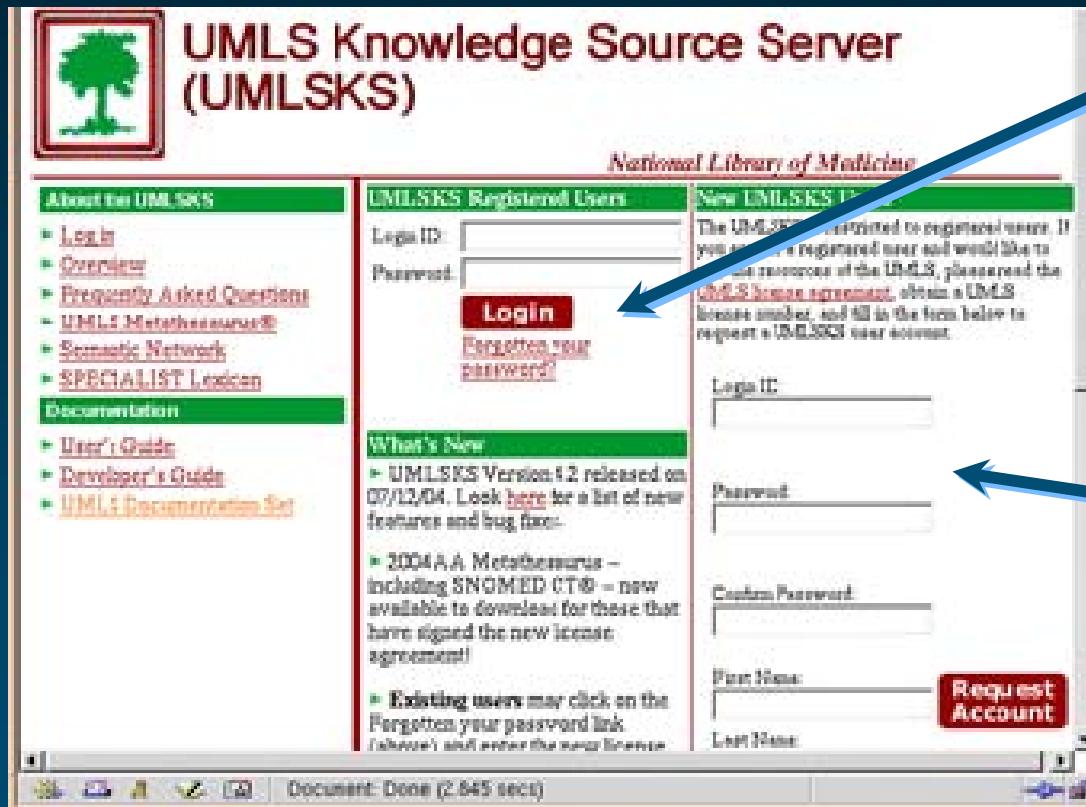
Web search interface

UMLSKS Web search interface

- ◆ Logging in
- ◆ Basic searching
- ◆ Advanced searching



UMLSKS Web search interface log in



Returning
users log in

New users
create account

UMLS Knowledge Source Server Home Page

- ◆ Tabs across top access basic searching of 3 Knowledge Sources
- ◆ Advanced searching options on right-hand side

The screenshot shows the UMLS Knowledge Source Server (UMLSKS) home page as it would appear in a vintage web browser like Netscape Communicator. The interface includes a standard menu bar (File, Edit, View, Go, Communicator, Help) and a toolbar with icons for Back, Forward, Reload, Home, Search, Netscape, Print, Security, Shop, and Stop. Below the toolbar is a bookmarks bar with links to Members, WebMail, Connections, BizJournal, SmartUpdate, and Mktplace. The main content area features a logo of a tree and the title "UMLS Knowledge Source Server (UMLSKS)". It also displays the version (4.2.2), release dates (2002-2004AB), and a "Logout" link. The page is divided into several sections:

- About the UMLSKS**: Includes links to Home, Overview, Frequently Asked Questions, and Edit Views/Profile.
- Downloads**: Includes links to UMLS Knowledge Sources and Developer's API.
- Documentation**: Includes links to User's Guide, Developer's Guide, Developer's API Javadocs, and UMLS Documentation Set.
- Resources**: Includes links to NLP & Lexical Resources, Semantic Network Resources, and Metathesaurus Resources.
- Quick Search**: A search form where users can select a UMLS Release (2004AB) and enter a search value (e.g., "Addison's disease"). It also includes three search buttons: Metathesaurus Concept Search, Semantic Network Search, and SPECIALIST Lexicon Search, each with a corresponding icon.
- Advanced Searches**: A section titled "Metathesaurus Advanced Search" which facilitates advanced searching of the UMLS Metathesaurus, including restricting vocabularies, performing batch searches, performing XML queries, and using a command-line type interface.
- What's New**: A section listing recent updates:
 - 2004AB Metathesaurus now available to download and searching for those that have signed the new license agreement!
 - UMLS KS Version 4.3 released on August 30, 2004 for 2004AB download access and searching.
- Semantic Network Browser**: A section describing the Semantic Network Browser, which allows browsing of the hierarchies for the Semantic Network.



UMLS Knowledge Source Server Home Page

 **UMLS Knowledge Source Server (UMLSKS)**
UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB

[Metathesaurus](#) [Semantic Network](#) [SPECIALIST Lexicon](#) [Logout](#)

About the UMLSKS

- ▶ [Home](#)
- ▶ [Overview](#)
- ▶ [Frequently Asked Questions](#)
- ▶ [Edit Views/Profile](#)

Downloads

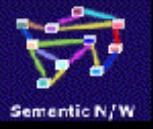
- ▶ [UMLS Knowledge Sources](#)
- ▶ [Developer's API](#)

Documentation

- ▶ [User's Guide](#)
- ▶ [Developer's Guide](#)
- ▶ [Developer's API Javadocs](#)
- ▶ [UMLS Documentation Set](#)

Resources

- ▶ [NLP & Lexical Resources](#)
- ▶ [Semantic Network Resources](#)
- ▶ [Metathesaurus Resources](#)

Quick Search

Select UMLS Release:

Enter search value:

[Metathesaurus Concept Search](#) [Semantic Network Search](#) [SPECIALIST Lexicon Search](#)

[Search Tips...](#) [Search Tips...](#) [Search Tips...](#)

What's New

- ▶ 2004AB Metathesaurus now available to download and searching for those that have signed the new license agreement!
- ▶ UMLSKS Version 4.3 released on August 30, 2004 for 2004AB download access and searching.

Advanced Searches

Metathesaurus Advanced Search

Facilitates advanced searching of the UMLS Metathesaurus, including restricting vocabularies, performing batch searches, performing XML queries, and using a command-line type interface.

Semantic Network Browser

Allows browsing of the hierarchies for the Semantic Network.

Metathesaurus Basic Search

Addison's disease

UMLS Knowledge Source Server (UMLSKS)

UMLSKS Version 4.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003 AA 2003AB 2003AC 2004AA

Metathesaurus Semantic Network SPECIALIST Lexicon Logout

About the UMLSKS

- Home
- Overview
- Frequently Asked Questions
- Edit Views/Profile

Downloads

- UMLS Knowledge Sources
- Developer's API

Documentation

- User's Guide
- Developer's Guide
- Developer's API Javadocs
- UMLS Documentation Set

Resources

- NLP & Lexical Resources
- Semantic Network Resources
- Metathesaurus Resources

What's New

- IMI 07/12/04 feature
- 2004 SNOMED download new links

Document: Done

Quick Search

Select UMLS Release: 2004AA

Enter search value: Addison's disease

Advanced Searches

Metathesaurus Advanced Search

Facilitates advanced searching of the UMLS Metathesaurus including negation.

Metathesaurus Concept Search Semantic Network Search SPECIALIST Lexicon Search

Search Tips... Search Tips... Search Tips...

- ◆ UMLS Release
- ◆ Search Term
- ◆ UMLS Knowledge Source

Concept Report *Addison's disease*

 **UMLS Knowledge Source Server (UMLSKS)**
UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB
Metathesaurus Semantic Network SPECIALIST London Logout
Home Advanced Search

Metathesaurus Search for: addison's disease in UMLS Release 2004AB

Display **Display All**

Concept

Definition
 Synonyms
 Other Languages
 Suppressible Synonyms
 Sources

Context

Ancestors
 Parents
 Siblings
 Children

Relations

Narrower
 Broader
 Similar
 Other
 Related and possibly synonymous

Concept: Addison's disease
CUI: C0001403
Semantic Type: Disease or Syndrome

Definition:
A disease characterized by hypotension, weight loss, anorexia, weakness, and sometimes a bronze-like melanotic hyperpigmentation of the skin. It is due to tuberculosis- or autoimmune-induced disease (hypofunction) of the adrenal glands that results in deficiency of aldosterone and cortisol. In the absence of replacement therapy, it is usually fatal. (MeSH)

disease characterized by hypotension, weight loss, anorexia, weakness, and sometimes a bronze-like melanotic hyperpigmentation of the skin, due to tuberculosis or autoimmune induced disease (hypofunction) of the adrenal glands that results in deficiency of aldosterone and cortisol. (CRISP Thesaurus)

Synonyms:

Addison's disease
Addison's disease (disorder)
ADRENAL INSUFFICIENCY (ADDISON'S DISEASE)
ADRENOCORTICAL INSUFFICIENCY, PRIMARILY FAILURE
Asthenia pigmentosa
Bronzed disease

◆ Concept Name /CUI

◆ Semantic Type(s)

◆ Definition(s)

◆ Synonyms

Display All

The screenshot shows the UMLS Knowledge Source Server (UMLS SKS) Metathesaurus search results for 'addison's disease' in UMLS Release 2004AB. The search bar at the top indicates the query. Below it, there are two main buttons: 'Display' and 'Display All'. A large callout box highlights the 'Display All' button, which is also highlighted with a red border. To the left of the main content area, there is a sidebar with various filter options under 'Concept' (e.g., Definition, Synonyms checked), 'Context' (e.g., Ancestors, Parents, Siblings, Children), 'Relations' (e.g., Narrower, Broader, Similar, Other), and 'Context' (e.g., Related and possibly synonymous). The main content area displays the concept details: Concept: Addison's disease, CUI: C0001403, Semantic Type: Disease or Syndrome. It also shows the definition and synonyms sections. At the bottom, related terms like ADRENAL INSUFFICIENCY (ADDISON'S DISEASE), ADRENOCORTICAL INSUFFICIENCY, PRIMARY FAILURE, Asthenia pigmentosa, and Bronzed disease are listed.

“Display”
shows results
for selected
options

“Display All”
shows results
for all available
options

Metathesaurus Basic Search

Adrenal gland insufficiency

UMLS Knowledge Source Server (UMLSKS)
UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB
Metathesaurus Semantic Network SPECIALIST Lexicon Logout

About the UMLSKS

- Home
- Overview
- Frequently Asked Questions
- Edit Views/Profile
- Downloads
- UMLS Knowledge Sources
- Developer API
- Document
- User's Guide
- Developers
- Developers
- UMLS Dictionaries
- Resources
- NLP & Lexical Resources
- Semantic Network Resources
- Metathesaurus Resources

Metathesaurus Search

Select UMLS Release: 2004AB

Enter a term or a concept unique identifier (CUI): Adrenal gland insufficiency

Perform Concept Search

Basic searching allows users to search for a concept by entering a term name or a

Select UMLS Release: 2004AB

Enter a term or a concept unique identifier (CUI): Adrenal gland insufficiency

Perform Concept Search

1. The normalized string index is searched for the input string (English only).
2. If not found, then the normalized word index is searched for the input string (English only).
3. If not found, then a spelling check is performed on the input string.

NOTE: The basic searching algorithm is used primarily to locate English terms. To search for non-English terms, used the advanced search option [Focused Search](#) and select the "Word Index" and language.

- ◆ Specify:
 - UMLS Release
 - Search term
- ◆ Algorithm:
 - Search Normalized String
 - Search Normalized Word
 - Suggest Spelling



Basic Concept Report

Adrenal gland insufficiency

 **UMLS Knowledge Source Server (UMLSKS)**
UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB

Metathesaurus **Semantic Network** **SPECIALIST Lexicon**

Home Advanced Search Logout

Metathesaurus Search for: Adrenal Gland Insufficiency in UMLS Release 2004AB

Display **Display All**

Concept

Definition
 Synonyms
 Other Languages
 Suppressible Synonyms
 Sources

Context

Ancestors
 Parents
 Siblings
 Children

Relations

Narrower
 Broader
 Similar
 Other
 Related and possibly synonymous

Concept: Adrenal gland hypofunction
CUI: C0001623
Semantic Type: Disease or Syndrome

Definition:
Adrenocortical hormone secretion may be divided into two general categories: (1) the inability of the adrenal to elaborate sufficient quantities of steroid hormones associated with a primary failure due to a primary defect in the adrenocorticotropin (ACTH) system; (2) the inability of the adrenal to elaborate sufficient quantities of steroid hormones associated with a secondary failure due to a primary defect in the pituitary gland's production of adrenocorticotropin. (Harrison's Principles of Internal Medicine, 14th ed., p 1820)
(MeSH)

Synonyms:
[Adrenal gland hypofunction](#)
[Adrenal failure](#)
[Adrenal Gland Insufficiency](#)
[Adrenal hypofunction](#)
[Adrenal insufficiency](#)
[Hypofunctions, Adrenal](#)

Concept: Adrenal gland hypofunction
CUI: C0001623
Semantic Type: Disease or Syndrome

Definition:
Adrenocortical hypofunction includes all conditions in which the level of circulating steroid hormones falls below the requirements of the body. It may be divided into two general categories: (1) the inability of the adrenal to elaborate sufficient quantities of steroid hormones associated with a primary failure due to a primary defect in the adrenocorticotropin (ACTH) system; (2) the inability of the adrenal to elaborate sufficient quantities of steroid hormones associated with a secondary failure due to a primary defect in the pituitary gland's production of adrenocorticotropin. (Harrison's Principles of Internal Medicine, 14th ed., p 1820)
(MeSH)

Synonyms:
[Adrenal gland hypofunction](#)



Concept Report Display All *Adrenal Gland Insufficiency*

 **UMLS Knowledge Source Server (UMLSKS)**
UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB

Metathesaurus Semantic Network SPECIALIST Lexicon Home Advanced Search Logout

Metathesaurus Search for: adrenal gland insufficiency in UMLS Release 2004AB

Display **Display All**

Concept

- Definition
- Synonyms
- Other Languages
- Suppressible Synonyms
- Sources

Context

- Ancestors
- Parents
- Siblings
- Children

Relations

- Narrower
- Broader
- Similier
- Other
- Related and possibly synonymous
- Source asserted synonymy
- Allowable Subheadings
- Associated Expressions

Co-occurring Concepts

- Co-occurring MeSH
- Co-occurring MeSH By Semantic Group

Concept: Adrenal gland hypofunction
CUI: C0001623
Semantic Type: Disease or Syndrome

Definition:
Adrenocortical hypofunction includes all conditions in which adrenal steroid hormone secretion falls below the requirements of the body. Adrenal insufficiency may be divided into two general categories: (1) those associated with primary inability of the adrenal to elaborate sufficient quantities of hormone and (2) those associated with a secondary failure due to a primary failure in the elaboration of adrenocorticotropin. (Harrison's Principles of Internal Medicine, 13th ed, p1970) (MeSH)

Synonyms:
[Adrenal gland hypofunction](#)
[Adrenal failure](#)
[Adrenal Gland Insufficiency](#)
[Adrenal hypofunction](#)
[Adrenal hypofunction \(disorder\)](#)
[Adrenal insufficiency](#)
[Hypofunctions, Adrenal Gland](#)

Other languages:
Czech [NADLEDVINY – HYPOFUNKCE](#)
Dutch [bijnerhypofunctie](#)
[Bijnierhypofunctie](#)
[bijnerinsufficiëtie](#)

- ◆ Concept Name/CUI
- ◆ Semantic Type(s)
- ◆ Definition(s)
- ◆ Synonyms, including foreign languages
- ◆ Relations (broader, narrower, etc.)
- ◆ Co-occurrence data



Concept Report Display All (continued)

Synonyms

The screenshot shows a concept report interface with a sidebar on the left containing two sections: 'Synonyms' and 'Sources'. The 'Synonyms' section is highlighted with a yellow bracket. The main content area displays a grid of language pairs and their corresponding terms. A large black diagonal slash is drawn across the entire grid. The visible text includes:

Language	Term
Japanese	副腎機能低下 副腎機能低下症
Portuguese	Hipofunção das Glândulas Supra-Renais HIPOFUNCAO SUPRA-RENAL Hipofunção supra-renal INSUFICIENCIA SUPRA-RENAL Insuficiência supra-renal Insuficiência supra-ren
Japanese	副腎機能低下 副腎機能低下症
Portuguese	Hipofunção das Glândulas Supra-Renais HIPOFUNCAO SUPRA-RENAL Hipofunção supra-renal INSUFICIENCIA SUPRA-RENAL Insuficiência supra-renal Insuficiência supra-renal NE
Russian	НАДПОЧЕЧНИКОВ ГИПОФУНКЦИЯ
Spanish	hipofuncion adrenal hipofunción adrenal Hipofunción de las Glán hipofuncion suprarrenal Hipofuncion suprarrena hipofunción suprarrenal Hipofuncion suprarrenal hipofuncion suprarrenal hipofunción suprarrenal Insuficiencia adrenal Insuficiencia suprarrena INSUFICIENCIA SUP Insuficiencia suprarrena SUPRARRENAL HIPOFUND
Swedish	Binjurehypofunktion
Suppressible Synonyms: <u>adrenal insufficiency <2></u>	
Sources: <u>Beth Israel Problem List</u> <u>Clinical Problem Statements</u> <u>COSTAR</u> <u>CRISP Thesaurus</u> <u>COSTART</u>	



Sources

Concept Report Display All (continued)

Hierarchies

The screenshot displays a concept report interface with three main sections: MeSH, MedDRA, and NCI Thesaurus. A yellow bracket on the left groups the first two sections under the heading 'Hierarchies'. A black bracket on the right groups the last two sections under the heading 'Hierarchies'.

Ancestors:

MeSH

- [MeSH Descriptors](#) []
- [Index Medicus Descriptor](#) []
- [Diseases \(MeSH Category\) \[C\]](#)
- [Endocrine Diseases \[C19\]](#)
- [Adrenal Gland Diseases \[C19.053\]](#)
- [Adrenal Gland Hypofunction \[C19.053.264\]](#)

MedDRA

- [Endocrine dis](#)
- [Adrenal gland](#)
- [Adrenal co](#)
- [Adrenal in](#)

MeSH

- [MeSH Descriptors](#) []
- [Index Medicus Descriptor](#) []
- [Diseases \(MeSH Category\) \[C\]](#)
- [Endocrine Diseases \[C19\]](#)
- [Adrenal Gland Diseases \[C19.053\]](#)
- [Adrenal Gland Hypofunction \[C19.053.264\]](#)

MedDRA

- [Metabolism a](#)
- [Metabolism](#)
- [Metabolic e](#)
- [Adrena](#)

NCI Thesaurus

- [Diseases, Disorders and Findings](#) []
- [Diseases and Disorders](#) []
- [Disorder by Site](#) []
- [Endocrine Disorder](#) []
- [Adrenal Gland Disorder](#) []
- [Non-Neoplastic Adrenal Gland Disorder](#) []
- [Adrenal Gland Insufficiency](#) []

NCI Thesaurus

- [Diseases, Disorders and Findings](#) []
- [Diseases and Disorders](#) []
- [Disorder by Site](#) []

Concept Report Display All (continued)

Relations

The diagram illustrates the inheritance of narrower concepts. A yellow bracket on the left groups the three specific concepts under the heading "Relations". Three black arrows point from the "Narrower Concepts" section of the top concept to the "Narrower Concepts" sections of the three specific concepts below it.

Top Concept Narrower Concepts:

- THYROIDITIS [0420]
- THYROXINE DECREASED [1349]
- TSH DECREASED [1690]
- TSH INCREASED [1831]
- VIRILISM [0421]

Specific Concept 1 Narrower Concepts:

- Addison's disease (National Drug File – Reference Terminology) [Relation: isa]
- Addison's disease (Metathesaurus Names) [Relation:]
- Hypoaldosteronism (National Drug File – Reference Terminology) [Relation: isa]
- Other adrenal hypofunction NOS (Metathesaurus Names) [Relation:]
- Adrenoleukodystrophy (National Drug File – Reference Terminology) [Relation: isa]

Specific Concept 2 Narrower Concepts:

- Addison's disease (National Drug File – Reference Terminology) [Relation: isa]
- Addison's disease (Metathesaurus Names) [Relation:]
- Hypoaldosteronism (National Drug File – Reference Terminology) [Relation: isa]

Specific Concept 3 Narrower Concepts:

- Adrenal Gland Diseases (National Drug File – Reference Terminology) [Relation: inverse_isa]
- Adrenal Gland Diseases (Metathesaurus Names) [Relation:]
- Endocrine Diseases (Metathesaurus Names) [Relation:]
- Endocrine Diseases (WHO Adverse Reaction Terms) [Relation:]
- Adrenal cortical hypofunction (SNOMED Clinical Terms)



Concept Report Display All (continued)

Co-occurrence data

Associated Expressions: None found.

Co-occurring MeSH Terms:

[64] [Corticotropin](#)
[57] [Hydrocortisone](#)
[38] [Glucocorticoids](#)
[31] [Esophageal achalasia](#)
[30] [Dog Diseases](#)
[28] [Adrenal Glands](#)
[27] [Anti-Inflammatory Agents](#)
[26] [DNA-Binding Proteins](#)
[25] [Repressor Proteins](#)
[25] [TRANSCRIPTION FACTORS](#)
[24] [Retinoic Acid Receptors](#)
[23] [Pituitary Adenoma](#)
[21] [Lacrimal Apparatus](#)
[20] [Hypothalamo-Hypophyseal Axis](#)
[19] [Postoperative Care](#)
[18] [Adrenal Gland Neoplasms](#)

[64] [Corticotropin](#)
[57] [Hydrocortisone](#)
[38] [Glucocorticoids](#)
[31] [Esophageal achalasia](#)
[30] [Dog Diseases](#)
[28] [Adrenal Glands](#)

Metathesaurus Advanced Search Options

- ◆ Focused Search
- ◆ Raw Relational Records

The screenshot shows the UMLS Knowledge Source Server (UMLSKS) interface. At the top, there is a logo of a tree inside a square frame, followed by the text "UMLS Knowledge Source Server (UMLSKS)" and "UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB". Below this is a navigation bar with links for "Metathesaurus", "Semantic Network", "SPECIALIST Lexicon", and "Logout". On the left, there is a sidebar with a green header "About the UMLSKS" containing links to "Home", "Overview", "Frequently Asked Questions", and "Edit Views/Profile"; a "Downloads" section with links to "UMLS Knowledge Sources" and "Developer's API"; a "Documentation" section with links to "User's Guide", "Developer's Guide", "Developer's API Javadocs", and "UMLS Documentation Set"; and a "Resources" section with links to "NLP & Lexical Resources", "Semantic Network Resources", and "Metathesaurus Resources". The main content area has a green header "Metathesaurus Advanced Search Options" with a link to "Perform Focused Search". It contains a detailed description of focused searching and a link to "Perform XML Query". Another green header "Request Relational Records" is present with a description of the XML query facility and a link to "The data tables used to populate the backend Oracle database can be returned to the user that match a user's input term or concept unique identifier."

Metathesaurus Advanced Search Feature

Focused Search

The screenshot shows the UMLS Knowledge Source Server (UMLSKS) interface. At the top, there's a logo of a tree and the text "UMLS Knowledge Source Server (UMLSKS)". Below it, a banner displays "UMLSKS Version 4.2.2 UMLS Releases: 2003 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB". The main menu includes "Metathesaurus", "Semantic Network", and "SPECIALIST Lexicon" with a "Logout" link. On the left, a sidebar has sections for "About the UMLSKS" (Home, Overview, FAQ, Edit Views/Profile), "Downloads" (UMLS Knowledge Sources, Developer's API), "Documentation" (User's Guide, Developer's Guide, Developer's API Javadocs, UMLS Documentation Set), and "Resources" (NLP & Lexical Resources, Semantic Network Resources, Metathesaurus Resources). The central area is titled "Metathesaurus Focused Search:" and contains the following fields:

- 1) Select UMLS Release:
- 2) Enter a term or a concept unique identifier (CUI):
- 3) Restrict source vocabulary to:
 Exclude suppressible synonyms
 Include suppressible synonyms
 All Source Vocabularies
 Restrict to selected sources:
 - All/RHEUM
 - Alcohol and Other Drug Thesaurus
 - Alternative Billing Concepts
 - Beth Israel Problem List
 - COSTAR
 - COSTART
 - CPT
- 4) String Matching Criteria:
Check if you want results ordered by Semantic Group
- 5) Language:

At the bottom, there are two red buttons: "Perform Concept Search" and "Perform Term Search". A note at the bottom states: "Focused searching allows users to search for a concept that contains either a user entered term name or a concept unique identifier (CUI). The term name/CUI (e.g. C0001175) is".

- ◆ UMLS Release
- ◆ Search Term
- ◆ Source Vocabularies
- ◆ String Criteria
 - Exact Match
 - Normalized string & word
 - Word
 - Truncation (left/right)
 - Approximate Match
- ◆ Language

Restricted Source Concept Report

Addison's Disease

The screenshot shows the UMLS Knowledge Source Server (UMLS SKS) interface. At the top, there is a logo of a tree and the text "UMLS Knowledge Source Server (UMLS SKS)". Below it, the version information "UMLS SKS Version 4.2.2" and release dates from 2002 to 2004 are listed. The main navigation menu includes "Metathesaurus", "Semantic Network", "SPECIALIST Lexicon", "Home", "Advanced Search", and "Logout". The search term "addison's disease" is entered in the search bar. The results show the following details:

- Concept:** Addison's disease
- CUI:** C0001403
- Semantic Type:** Disease or Syndrome
- Definition:** None found.
- Synonyms:**
 - Addison's disease
 - Addison's disease (disorder)
 - Primary adrenocortical insufficiency
 - Primary adrenocortical insufficiency (disorder)
 - Primary hypoadrenalinism
- Sources:** SNOMED Clinical Terms

On the left side, there is a sidebar with checkboxes for various filters under categories like "Concept", "Context", "Relations", and "Sources".

- ◆ UMLS Release:
2004AB
- ◆ Search Term:
addison's disease
- ◆ Source Vocabulary:
SNOMED CT
- ◆ String Criteria:
Normalized string
- ◆ Language:
English



Addison's disease in SNOMED CT

Preferred Term and Code

The screenshot shows the UMLS Knowledge Source Server (UMLSKS) interface. At the top, there is a logo of a tree in a red-bordered square, followed by the text "UMLS Knowledge Source Server (UMLSKS)" in large red letters. Below this, it says "UMLSKS Version 4.2.2" and "UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB". There are three main navigation links: "Metathesaurus", "Semantic Network", and "SPECIALIST Lexicon". Below these are links for "Home", "Advanced Search", and "Logout". The main content area displays a search result for "Addison's disease" from the "Metathesaurus" section of UMLS Release 2004AB. The result includes the term name, CUI, and Term UI. It also provides source information (SNOMED Clinical Terms), TTY (PT), and ID (363732003). On the left, there is a sidebar with checkboxes for "Term Variants" (checked), "MeSH Entry Terms" (unchecked), and "MeSH Attributes" (unchecked). A note at the bottom states: "Users are responsible for compliance with [UMLS copyright restrictions](#)".

UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB

Metathesaurus **Semantic Network** **SPECIALIST Lexicon**

[Home](#) [Advanced Search](#) [Logout](#)

Metathesaurus Search for: **Addison's disease** in UMLS Release 2004AB

Display

Terms

Term Variants MeSH Entry Terms MeSH Attributes

Term Name: Addison's disease
CUI: [C0001403](#)
Term UI: L0001403

Source: SNOMED Clinical Terms
TTY: PT
ID: 363732003

Users are responsible for compliance with [UMLS copyright restrictions](#)

- ◆ TTY: Term Type
- ◆ ID: Source Code Descriptor



Metathesaurus Advanced Search Feature Relational Record Request

- ◆ UMLS Release
- ◆ Search Term
- ◆ UMLS Relational Table

 **UMLS Knowledge Source Server (UMLSKS)**
UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB
[Metathesaurus](#) [Semantic Network](#) [SPECIALIST Lexicon](#)
[Logout](#)

About the UMLSKS

- ▶ [Home](#)
- ▶ [Overview](#)
- ▶ [Frequently Asked Questions](#)
- ▶ [Edit Views/Profile](#)

Downloads

- ▶ [UMLS Knowledge Sources](#)
- ▶ [Developer's API](#)

Documentation

- ▶ [User's Guide](#)
- ▶ [Developer's Guide](#)
- ▶ [Developer's API Javadocs](#)
- ▶ [UMLS Documentation Set](#)

Resources

- ▶ [NLP & Lexical Resources](#)
- ▶ [Semantic Network Resources](#)
- ▶ [Metathesaurus Resources](#)

Metathesaurus Relational Records Request:

Select UMLS Release:

1) Enter a term or concept unique identifier (CUI):

2) Select the UMLS table whose raw records are to be returned.
 
Perform Concept Search

Raw record return allows users to search for a concept using either a user entered concept unique identifier (CUI) or a term name which is entered into the text entry box below. Any of the UMLS tables listed in the drop down menu may be selected for return.

Pressing the *Perform Concept Search* button will update the display to show the raw records from the selected table based on the concept information found.



Relational Records MRCONSO.RRF

CUI LAT TS LUI STT SUI ISPREF AUI SAUI SCUI SDUI SAB TTY CODE STR SUPPRESS CVF
C0001403 CZE P L3180742 PF S3708232 Y A3910108 D000224 MSHCZE MH D000224 ADDISONOVA NEMOC
C0001403 DUT P L2048638 PF S2386860 N A6566810 10001130 MDRDUT LT 10001130 Addison, ziekte
C0001403 DUT P L2048638 PF S2386860 Y A3931189 D000224 MSHDUT MH D000224 Addison, ziekte v
C0001403 DUT S L2048637 PF S2386859 Y A3931188 D000224 MSHDUT SY D000224 Addison, syndroom
C0001403 DUT S L2528364 PF S2985131 Y A3966882 D000224 MSHDUT SY D000224 Ziekte van Addiso
C0001403 DUT S L3205108 PF S3732602 N A5146733 E27.1 ICD10DUT PT E27.1 Primaire bijniersch
C0001403 DUT S L3205108 PF S3732602 Y A3970882 D000224 MSHDUT SY D000224 Primaire bijniers
C0001403 DUT S L4999233 PF S5686738 Y A6627443 10036696 MDRDUT LT 10036696 primair hypoadr
C0001403 DUT S L4999270 PF S5686775 N A6627493 10052381 MDRDUT LT 10052381 primaire bijnies
C0001403 DUT S L4999270 PF S5686775 Y A6627494 10052381 MDRDUT PT 10052381 primaire bijnies
C0001403 DUT S L5012413 PF S5699917 Y A6645695 10013096 MDRDUT LT 10013096 ziekte van Addi
C0001403 ENG P L0001403 PF S0354372 N A0388276 AOD DE 0000006012 Addison's disease 0
C0001403 ENG P L0001403 PF S0354372 N A0388277 0060-3321 CSP PT 0060-3321 Addison's diseas
C0001403 ENG P L0001403 PF S0354372 N A0388279 LCH PT U000061 Addison's disease 0
C0001403 ENG P L0001403 PF S0354372 N A0388280 10001390 MDR LT 10001130 Addison's disease
C0001403 ENG P L0001403 PF S0354372 N A0388281 RCD PT C1541 Addison's disease 3

Semantic Network Searching

- ◆ Select Tab along top
- ◆ Quick search
- ◆ Advanced Search on right-hand side

The screenshot shows the UMLS Knowledge Source Server (UMLSKS) homepage within a Netscape Communicator window. The title bar reads "Netscape: UMLS Knowledge Source Server (UMLSKS)". The menu bar includes File, Edit, View, Go, Communicator, Help, Back, Forward, Reload, Home, Search, Netscape, Print, Security, Shop, Stop, Bookmarks, Location (<http://umlsks.nlm.nih.gov/kss/servlet/Turbine/act/>), What's Related, Members, WebMail, Connections, BizJournal, SmartUpdate, and Marketplace.

The main content area features a logo of a tree in a red-bordered box. The header text reads "UMLS Knowledge Source Server (UMLSKS)" and "UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB". Below the header are three navigation tabs: Metathesaurus, Semantic Network, and SPECIALIST Lexicon. A "Logout" link is also present.

The left sidebar contains several sections with links:

- About the UMLSKS
 - Home
 - Overview
 - Frequently Asked Questions
 - Edit Views/Profile
- Downloads
 - UMLS Knowledge Sources
 - Developer's API
- Documentation
 - User's Guide
 - Developer's Guide
 - Developer's API Javadocs
 - UMLS Documentation Set
- Resources
 - NLP & Lexical Resources
 - Semantic Network Resources
 - Metathesaurus Resources

The right sidebar includes a "Quick Search" section with a dropdown menu for "Select UMLS Release: 2004AB" and an input field for "Enter search value: Jaddison's disease". It also features three search buttons: Metathesaurus Concept Search, Semantic Network Search, and SPECIALIST Lexicon Search, each with a "Search Tips..." link. A "Advanced Searches" section titled "Metathesaurus Advanced Search" provides a detailed description of the advanced search capabilities.

The bottom right sidebar contains a "Semantic Network Browser" section with a brief description: "Allows browsing of the hierarchies for the Semantic Network".

The footer of the page includes a "What's New" section with two bullet points about recent releases and a "100%" zoom indicator at the bottom center.



Semantic Network Search

The screenshot shows the UMLS Knowledge Source Server (UMLSKS) Semantic Network search interface. At the top, there is a logo of a tree in a red-bordered square, followed by the text "UMLS Knowledge Source Server (UMLSKS)" in large red letters. Below this, it says "UMLSKS Version 4.2.2" and "UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB". A navigation bar at the top includes links for "Metathesaurus", "Semantic Network", "SPECIALIST Lexicon", and "Logout". On the left, there is a "Home" link and a note: "Click [here](#) to view the Java SWING based version of the Semantic Network browser. This is best viewed with Netscape 6.x and above or IE 5.x and above." The main search area has a text input field containing "I", labeled "Semantic Types: Entity, Event". It also has dropdown menus for "Semantic Types" (selected item: "Acquired Abnormality") and "Semantic Relations" (selected item: "adjacent_to"). A red "Find" button is located below these fields.

- ◆ Enter search string
 - Or-
- ◆ Select semantic type
 - Or-
- ◆ Select semantic relation



Semantic Type Clinical Drug

The screenshot shows the Semantic Network browser interface. At the top, there are three tabs: Metathesaurus, Semantic Network, and SPECIALIST Lexicon. Below the tabs, there is a message: "Click [here](#) to view the Java SWING based version of the Semantic Network browser. This is best viewed with Netscape 6.x and above or IE." On the left, there is a sidebar with a tree structure under the heading "Entity". The tree includes categories like Physical Object, Organism, Animal, Invertebrate, Vertebrate, Amphibian, Bird, Fish, Reptile, and Mammal. On the right, there are two main sections. The top section is titled "Semantic Type: Clinical Drug" and contains the TUI: T200 and a definition: "A pharmaceutical preparation as produced by the manufacturer. The name usually includes the substance, its strength, and the form, but may include the substance and only one of the other two items." The bottom section is identical and is overlaid by a large black arrow pointing from the top section towards the bottom section.

- ◆ Browse ST hierarchy
- ◆ View Concepts with ST
- ◆ View Relations valid for the ST
- ◆ View Raw Relational Records

Show Relations Between Types

 **UMLS Knowledge Source Server (UMLSKS)**
UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB

[Metathesaurus](#) [Semantic Network](#) [SPECIALIST Lexicon](#) [Logout](#)

Home

Select an element from each list below and click the *Submit Query* button.

Type 1:	Relation(s):	Type 2:
Acquired Abnormality Activity Age Group Alga Amino Acid Sequence	adjacent_to affects analyzes assesses_effect_of associated_with	Acquired Abnormality Activity Age Group Alga Amino Acid Sequence

Submit Query **Reset**

- ◆ Validates whether a selected Semantic Relationship (SR) holds between two selected Semantic Types (ST)



SPECIALIST Lexicon Searching

- ◆ Select Tab along top
- ◆ Quick search

The screenshot shows the UMLS Knowledge Source Server (UMLSKS) homepage within a Netscape Communicator window. The title bar reads "Netscape: UMLS Knowledge Source Server (UMLSKS)". The menu bar includes File, Edit, View, Go, Communicator, Help, Back, Forward, Reload, Home, Search, Netscape, Print, Security, Shop, Stop, Bookmarks, Location (<http://umlsks.nlm.nih.gov/kss/servlet/Turbine/act/>), What's Related, Members, WebMail, Connections, BizJournal, SmartUpdate, and Marketplace.

The main content area features the UMLSKS logo (a tree icon) and the text "UMLS Knowledge Source Server (UMLSKS) UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB". Below this are three tabs: Metathesaurus, Semantic Network, and SPECIALIST Lexicon. A "Logout" link is also present.

The left sidebar contains links under "About the UMLSKS", "Downloads", "Documentation", and "Resources".

The right sidebar contains sections for "Quick Search" (with a dropdown for "Select UMLS Release: 2004AB" and an input field for "Enter search value: Jaddison's disease"), "Advanced Searches" (with a link to "Metathesaurus Advanced Search" and a description of its features), and "Semantic Network Browser" (with a link to "Allows browsing of the hierarchies for the Semantic Network").

The bottom of the page shows a toolbar with icons for Back, Forward, Stop, Home, Search, and Print, along with a status bar showing "100%".



SPECIALIST Lexicon Search



UMLS Knowledge Source Server (UMLSKS)

UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB

[Metathesaurus](#) [Semantic Network](#) [SPECIALIST Lexicon](#) [Logout](#)

About the UMLSKS

- ▶ [Home](#)
- ▶ [Overview](#)
- ▶ [Frequently Asked Questions](#)
- ▶ [Edit Views/Profile](#)

Downloads

- ▶ [UMLS Knowledge Sources](#)
- ▶ [Developer's API](#)

Documentation

- ▶ [User's Guide](#)
- ▶ [Developer's Guide](#)
- ▶ [Developer's API Javadocs](#)

SPECIALIST Lexicon

The [SPECIALIST Lexicon](#) is an English language lexicon containing many biomedical terms. The lexicon entry for each word or term records syntactic, morphological, and orthographic information.

Lexical entries may be single or multi-word terms.

View Lexical Records for:



SPECIALIST Lexical Record



UMLS Knowledge Source Server (UMLSKS)

UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB

[Metathesaurus](#) [Semantic Network](#) [SPECIALIST Lexicon](#) [Logout](#)

[About the UMLSKS](#)

- ▶ [Home](#)
- ▶ [Overview](#)
- ▶ [Frequently Asked Questions](#)
- ▶ [Edit Views/Profile](#)

[Downloads](#)

- ▶ [UMLS Knowledge Sources](#)
- ▶ [Developer's API](#)

[Documentation](#)

- ▶ [User's Guide](#)
- ▶ [Developer's Guide](#)
- ▶ [Developer's API Javadocs](#)

Specialist Lexical Record

```
{base=Addison's disease
entry=E0000160
cat=noun
variants=uncount
variants=reg}
```

+

View "[Addison's disease](#)" in relational format.



UMLS Resources

◆ NLP & Lexical Resources

- MetaMap Transfer (MMTx)
- Word Sense Disambiguation (WSD) Test Collection

◆ Semantic Network

- Semantic Navigator
- Semantic Groups

◆ Metathesaurus

- String Properties



Resources

- ▶ [NLP & Lexical Resources](#)
- ▶ [Semantic Network Resources](#)
- ▶ [Metathesaurus Resources](#)

Netscape: UMLS Knowledge Source Server (UMLSks)

File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Location: <http://umlsks.nlm.nih.gov/kss/servlet/Turbine/act:> What's Related

Members WebMail Connections BizJournal SmartUpdate Mkplace

UMLS Knowledge Source Server (UMLSks)
UMLSks Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB
Metathesaurus Semantic Network SPECIALIST Lexicon Logout

About the UMLSks

- ▶ [Home](#)
- ▶ [Overview](#)
- ▶ [Frequently Asked Questions](#)
- ▶ [Edit Views/Profile](#)

Downloads

- ▶ [UMLS Knowledge Sources](#)
- ▶ [Developer's API](#)

Documentation

- ▶ [User's Guide](#)
- ▶ [Developer's Guide](#)
- ▶ [Developer's API Javadocs](#)
- ▶ [UMLS Documentation Set](#)

Resources

- ▶ [NLP & Lexical Resources](#)
- ▶ [Semantic Network Resources](#)
- ▶ [Metathesaurus Resources](#)

Quick Search

Select UMLS Release: [2004AB](#)

Enter search value:

[Metathesaurus Concept Search](#) [Semantic Network Search](#) [SPECIALIST Lexicon Search](#)

[Search Tips...](#) [Search Tips...](#) [Search Tips...](#)

What's New

- ▶ 2004AB Metathesaurus now available to download and searching for those that have signed the new license agreement!
- ▶ UMLSks Version 4.3 released on August 30, 2004 for 2004AB download access and searching.

100%

Semantic Network Browser
Allows browsing of the hierarchies for the Semantic Network.

Siblings

Hypoadrenalinism

Collagen Diseases

DISEASES OF THE IMMUNE SYSTEM:
GENERAL TERMS

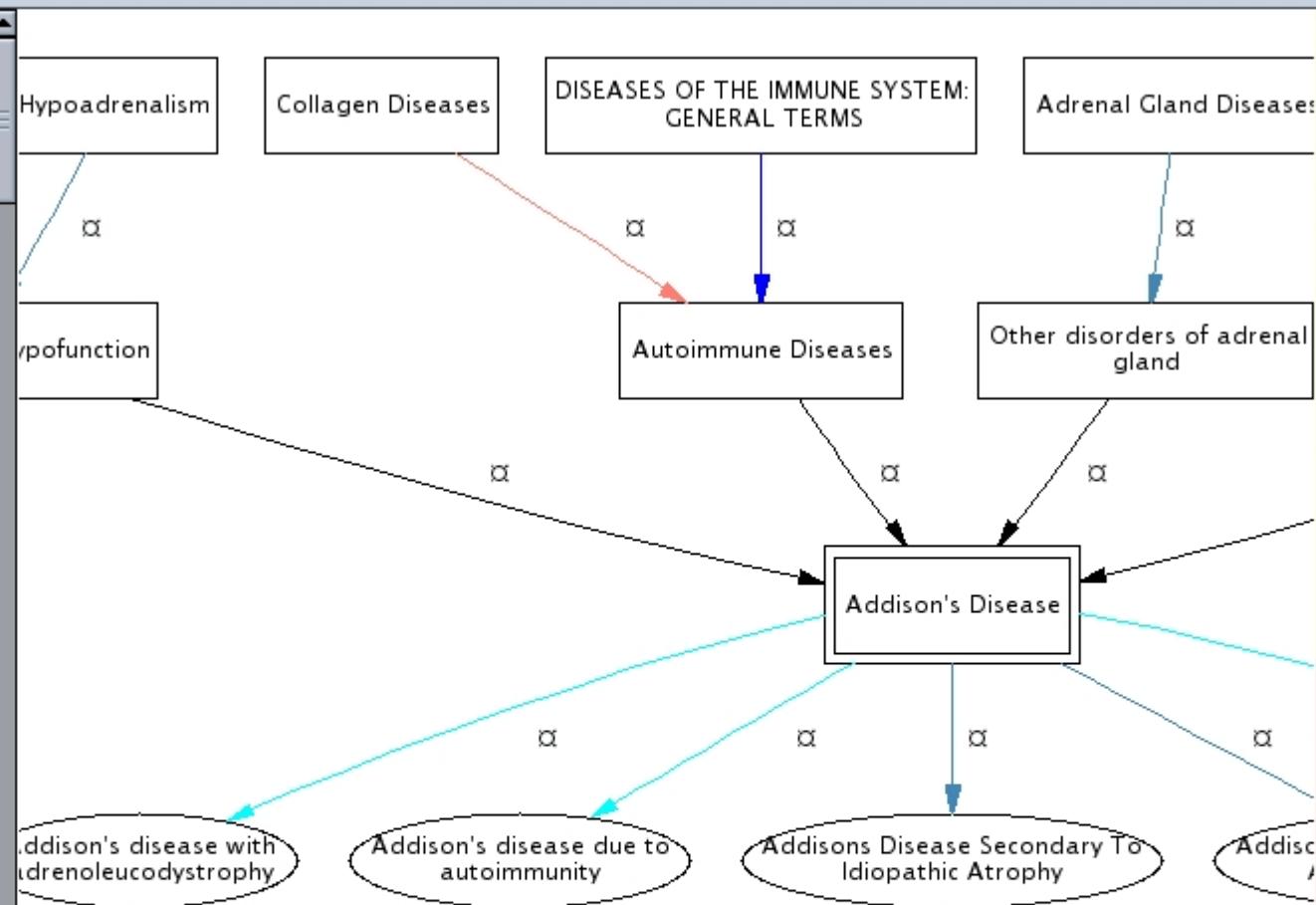
Adrenal Gland Disease:

Concepts & Ideas

- Clinical Syndromes

Disorders

- Acquired Immunodeficiency Syndrome
- Acute adrenal insufficiency
- Addisonian crisis
- Adrenal atrophy
- Adrenal calcification
- Adrenal hemorrhage
- Adrenal infarction
- Adrenal insufficiency due to adrenal metastasis
- Adrenogenital Syndrome
- Allergic arthritis
- Angelman Syndrome
- Asperger syndrome
- Autoerythrocyte sensitivity



BCI

Addison's Disease

LEGEND *

Similar Concepts

- Adrenal cortical hypofunction

(1 concept)

Closest MeSH Terms

Main Headings

- Addison's Disease

Restrict to vocabulary: Show all

Highlight vocabulary: Nothing

UMLS data: UMLS_2002

Type of hierarchical: All Parent/Child only

Other Related Concepts**Disorders**

- Addisonian crisis
- Autoimmune Syndrome Type II, Polyglandular
- Tuberculosis
- Tuberculosis of adrenal glands
- Tuberculous Addison's disease

(5 other related)

Co-occurring Concepts**Anatomy**

- Adrenal Cortex [14]
- Adrenal Glands [17]
- Liver [2]
- Tears body substance [2]
- X Chromosome [3]

Chemicals & Drugs

Knowledge Source Server

Application Programming Interface

UMLSKS API basics

- ◆ Remote server at NLM
- ◆ Local application connected through

Java RMI

- ◆ Java-based applications
- ◆ Developer's Guide:
Chapter 3
- ◆ Set of Java classes
(part of the UMLSKS API
download)
- ◆ Detailed *Javadoc*
documentation online and with
API download

TCP/IP socket

- ◆ XML-based queries
- ◆ Developer's Guide: Chapter 5
- ◆ XML schema
- ◆ Socket server
 - Host: umlsks.nlm.nih.gov
 - Port: 8042



Developer's Guide

The screenshot shows the homepage of the UMLS Knowledge Source. At the top, there is a logo of a tree inside a red-bordered frame, followed by the text "UMLS Knowledge Source". Below the logo, it says "UMLSKS Version 4.2.2" and "UMLS Releases: 2002 2002AB 2002AC 2002". There is also a link to "Lister". The main content area has a green header bar with the text "About the UMLSKS", "Downloads", "Documentation", and "Resources". A blue rounded rectangle highlights the "Developer's Guide" section under "Documentation". This section contains links to "1. Introduction", "2. Installing the UMLSKS", "3. Building UMLSKS Software Applications", "4. Using the XML Query Facility", and "5. Using the UMLSKS Socket Server". Below this, there is a "Print/Text Version Table of Contents" link. The main body of the page starts with a paragraph about the guide's purpose: "This guide describes the installation and configuration of the UMLS Knowledge Source Server (UMLSKS)". It then defines the "Audience" as developers of UMLSKS applications using the UMLSKS API. It also includes "Release Notes" and "How to Use This Guide".

UMLS Knowledge Source

UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002
Lister

About the UMLSKS

▶ [Home](#)
▶ [Overview](#)
▶ [Frequently Asked Questions](#)
▶ [Edit Views/Profile](#)

Downloads

▶ [UMLS Knowledge Sources](#)
▶ [Developer's API](#)

Documentation

▶ [User's Guide](#)
▶ [Developer's Guide](#)
1. [Introduction](#)
2. [Installing the UMLSKS](#)
3. [Building UMLSKS Software Applications](#)
4. [Using the XML Query Facility](#)
5. [Using the UMLSKS Socket Server](#)

▶ [UMLS Documentation Set](#)

Resources

▶ [NLP & Lexical Resources](#)
▶ [Semantic Network Resources](#)

Print/Text Version Table of Contents

This guide describes the installation and configuration of the UMLS Knowledge Source Server (UMLSKS).
Audience
The audience for this guide is developers of UMLSKS applications using the UMLSKS API.
Release Notes
Please refer to the [Release Bulletin](#) for a detailed list of features, bug fixes, and known problems with this version of the UMLSKS.
How to Use This Guide
This manual contains the following chapters:

- [Chapter 1 - Introduction](#) describes the basic features and architecture of the UMLSKS.
- [Chapter 2 - Installing the UMLSKS](#) provides administrators instructions on installing and tailoring a UMLSKS installation.
- [Chapter 3 - Building UMLSKS Software Applications](#) describes the functions available to developers wanting to interface to the UMLSKS through another Java program.
- [Chapter 4 - Using the XML Query Facility](#) describes how to use the querying facility of the UMLSKS wherein users build XML queries to be executed.
- [Chapter 5 - Using the UMLSKS Socket Server](#) describes how to use the socket server to pass XML formatted commands or command-line type queries (e.g. ks -meta -c aids) that are to be

Documentation

- ▶ [User's Guide](#)
 - ▶ [Developer's Guide](#)
 - 1. [Introduction](#)
 - 2. [Installing the UMLSKS](#)
 - 3. [Building UMLSKS Software Applications](#)
 - 4. [Using the XML Query Facility](#)
 - 5. [Using the UMLSKS Socket Server](#)
- ▶ [UMLS Documentation Set](#)

Documentation Java API

 **UMLS Knowledge Source Server (UMLSKS)**

UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AB
U.S. National Library of Medicine
Lister Hill National Center for Biomedical Communications (LHNBC)

About the UMLSKS

- ▶ [Home](#)
- ▶ [Overview](#)
- ▶ [Frequently Asked Questions](#)
- ▶ [Edit Views/Profile](#)

Downloads

- ▶ [UMLS Knowledge Sources](#)
- ▶ [Developer's API](#)

Documentation

- ▶ [User's Guide](#)
- ▶ [Developer's Guide](#)
 - 1. Introduction
 - 2. Installing the UMLSKS
 - 3. Building UMLSKS Software
 - Applications
 - 4. Using the XML Query Facility
 - 5. Using the UMLSKS Socket Server

Developer's Guide

[Print/Text Version](#) [Table of Contents](#) [About This Guide](#)

UMLSKS API Download

The following instructions describe the procedures for downloading and installing the UMLSKS API. The sections include

- [Downloading the UMLSKS API](#)
- [Building the Example .java Files](#)
- [Running the Client](#)
- [Running the ExpertClient](#)
- [Running the SocketClient](#)
- [Running the StandardQueryClient](#)
- [Available Documentation](#)
- [Sample Output and XML Query Examples](#)

Downloading the UMLSKS API



Documentation Javadocs

The image shows two side-by-side Java documentation windows, likely from a Javadoc tool. The left window displays the 'All Classes' and 'Packages' sections. The right window displays the 'Overview' section with tabs for Package, Class, Use, Tree, Deprecated, Index, Help, PREV, NEXT, FRAMES, and NO FRAMES. Both windows list various package names and class names.

All Classes

Packages

- [gov.nih.nlm.kss.api](#)
- [gov.nih.nlm.kss.example](#)
- [gov.nih.nlm.kss.models](#)
- [gov.nih.nlm.kss.models.lex](#)
- [gov.nih.nlm.kss.models.meta](#)
- [gov.nih.nlm.kss.models.meta.ass](#)
- [gov.nih.nlm.kss.models.meta.attr](#)
- [gov.nih.nlm.kss.models.meta.con](#)
- [gov.nih.nlm.kss.models.meta.con](#)
- [gov.nih.nlm.kss.models.meta.cod](#)
- [gov.nih.nlm.kss.models.meta.del](#)
- [gov.nih.nlm.kss.models.meta.loc](#)

All Classes

- [AdjEntry](#)
- [AdvEntry](#)
- [AssocExprsExecutor](#)
- [AssociatedExp](#)
- [AssociatedExpVector](#)
- [AssociativeRelation](#)
- [AssociativeRelationVector](#)
- [AssociativeRelExistence](#)
- [Attr](#)
- [AttributeContext](#)
- [AttributeValue](#)
- [AttrVector](#)
- [AuxEntry](#)
- [BasicConceptPropsExecutor](#)
- [CatEntry](#)
- [Client](#)
- [ClientV2_1](#)
- [ClientV3_0](#)

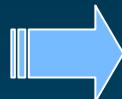
Overview Package Class Use **Tree** Deprecated Index Help
PREV NEXT FRAMES NO FRAMES

Packages

- [gov.nih.nlm.kss.api](#)
- [gov.nih.nlm.kss.example](#)
- [gov.nih.nlm.kss.models](#)
- [gov.nih.nlm.kss.models.lex](#)
- [gov.nih.nlm.kss.models.meta](#)
- [gov.nih.nlm.kss.models.meta.assocExp](#)
- [gov.nih.nlm.kss.models.meta.attribute](#)
- [gov.nih.nlm.kss.models.meta.concept](#)
- [gov.nih.nlm.kss.models.meta.context](#)
- [gov.nih.nlm.kss.models.meta.cooccurrence](#)
- [gov.nih.nlm.kss.models.meta.deltas](#)
- [gov.nih.nlm.kss.models.meta_locator](#)
- [gov.nih.nlm.kss.models.meta_meshentry](#)
- [gov.nih.nlm.kss.models.meta_relation](#)
- [gov.nih.nlm.kss.models.meta_source](#)
- [gov.nih.nlm.kss.models.sem](#)
- [gov.nih.nlm.kss.models.sem.rels](#)
- [gov.nih.nlm.kss.models.sem.units](#)
- [gov.nih.nlm.kss.query](#)
- [gov.nih.nlm.kss_query_lex](#)

Sample XML query (1) Current version

```
<?xml version="1.0"?>  
<getCurrentUMLSVersion version="1.0"/>
```



```
<?xml version="1.0"?>  
<CurrentUMLSYear version="1.0">  
  2004AB  
</CurrentUMLSYear>
```

Sample XML query (2) Concepts by string

```
<?xml version="1.0"?>
<findCUI version="1.0">
<conceptName>appendectomy</conceptName>
<language>ENG</language>
<exact/>
<noSuppressibles/>
</findCUI>
```

```
<?xml version="1.0"?>
<ConceptIdCollection version="1.0">
  <release>2004AB</release>
  <conceptId>
    <cui>C0003611</cui>
    <cn>Appendectomy</cn>
  </conceptId>
</ConceptIdCollection>
```



Sample XML query (3) Concepts properties

```
<?xml version="1.0"?>
<getSemanticType version="1.0">
<cui>C0033572</cui>
</getSemanticType>
```

```
<?xml version="1.0"?>
<SemanticTypeCollection version="1.0">
<release>2004AB</release>
<cui>C0033572</cui>
<cn>Prostate</cn>
  <semanticType>
    <tui>T023</tui>
    <sty>Body Part, Organ,
      or Organ Component</sty>
  </semanticType>
</SemanticTypeCollection>
```



Sample XML query (4) Relationships

```
<?xml version="1.0"?>
<getRelations version="1.0">
<cui>C0033572</cui>
<rel>RO</rel>
</getRelations>
```

```
<?xml version="1.0"?>
<RelationCollection version="1.0">
[...]
    <relation>
        <rel>RO</rel>
        <cui2>C0005001</cui2>
        <cn2>Benign prostatic hyperplasia</cn2>
        <rela>has_finding_site</rela>
        <sab>SNOMEDCT</sab>
        <sl>SNOMEDCT</sl>
    </relation>
[...]
```



Sample XML query (5) All semantic type IDs

```
<?xml version="1.0"?>
<listSemTypeIds version="1.0">
</listSemTypeIds>
```

```
<?xml version="1.0"?>
<SemNetIdCollection version="1.0">
    <release>2004AB</release>
    <semnetId>
        <name>Acquired Abnormality</name>
        <ui>T020</ui>
        <semtype/>
    </semnetId>
    <semnetId>
        <name>Activity </name>
        <ui>T052</ui>
        <semtype/>
    </semnetId>
    [...]
```



Performing XML queries from UMLSks

 **UMLS Knowledge Source Server (UMLSks)**
UMLS SKS Version 4.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA

[Metathesaurus](#) [Semantic Network](#) [SPECIALIST Lexicon](#) [Logout](#)

About the UMLSks

- ▶ [Home](#)
- ▶ [Overview](#)
- ▶ [Frequently Asked Questions](#)
- ▶ [Edit Views/Profile](#)

Downloads

- ▶ [UMLS Knowledge Sources](#)
- ▶ [Developer's API](#)

Documentation

- ▶ [User's Guide](#)
- ▶ [Developer's Guide](#)
- ▶ [Developer's API Javadocs](#)
- ▶ [UMLS Documentation Set](#)

Resources

- ▶ [NLP & Lexical Resources](#)
- ▶ [Semantic Network Resources](#)
- ▶ [Metathesaurus Resources](#)

Metathesaurus Advanced Search Options

[Perform Focused Search](#)

Focused searching allows users to search for a concept that contains either a user entered term name or a concept unique identifier (CUI). The advanced searching option allows user to restrict the results to a set of source vocabularies and may specify the method of matching the entered term name. When searching for a term name, the user may also specify the criteria to be used in matching the entered string to the UMLS contents.

[Perform XML Query](#)

The XML query facility allows users to specify a query using the eXtensible Markup Language (XML) dialect created for the UMLSks. User's of this searching feature must be familiar with the internal database structures and how table data are related to each other.

[Request ASCII Relational Records](#)

The data tables used to populate the backend Oracle database can be returned to the user that match a user's input term or concept unique identifier.

Users are responsible for compliance with [UMLS copyright restrictions](#)

[Lister Hill National Center for Biomedical Communications](#)
[U.S. National Library of Medicine \(NLM\)](#), 8600 Rockville Pike, Bethesda, MD 20894
[National Institutes of Health \(NIH\)](#)
[Department of Health & Human Services](#)

 Error on page. Local intranet



Performing XML queries from UMLSKS

 **UMLS Knowledge Source Server (UMLSKS)**
UMLSKS Version 4.2.2 UMLS Releases: 2002 2002AB 2002AC 2002AD 2003AA 2003AB 2003AC 2004AA 2004AE

Metathesaurus Semantic Network SPECIALIST Lexicon Logout

About the UMLSKS

- ▶ [Home](#)
- ▶ [Overview](#)
- ▶ [Frequently Asked Questions](#)
- ▶ [Edit Views/Profile](#)

Downloads

- ▶ [UMLS Knowledge Sources](#)
- ▶ [Developer's API](#)

Documentation

- ▶ [User's Guide](#)
- ▶ [Developer's Guide](#)
- ▶ [Developer's API Javadoc](#)
- ▶ [UMLS Documentation Set](#)

Resources

- ▶ [NLP & Lexical Resources](#)
- ▶ [Semantic Network Resources](#)
- ▶ [Metathesaurus Resources](#)

Metathesaurus XML Query
The UMLSKS provides a facility for interpreting two forms of XML:

- Standard API commands
- Specialized requests

"Standard" API commands are a set of XML documents in which each of the standard API commands (all but the query) are represented in the XML. For examples on the structure of this type of document, see the [examples](#).

"Specialized" requests are those XML documents that are structured for use with the `kssRetriever.query` method. These types of queries are described in [Chapter 4](#) of the UMLSKS User's Guide. Users of this type of query must be familiar with the internal database structures and how table data are related to each other.

Either type/paste the XML query into the text entry area or browse your local file system to locate an XML query file to upload to the UMLSKS. Once the query is entered, click the *Find* button to execute the query.

Enter the XML query:

Find

```
<?xml version="1.0"?>
<getRelations>
<cui>C0033572</cui>
<rel>RO</rel>
</getRelations>
```

Part II

How to use the UMLS?

*(3) Installing the UMLS locally and
Customizing the Metathesaurus
using MetamorphoSys*

What is MetamorphoSys?

- ◆ Tool distributed with the UMLS
- ◆ Multi-platform Java software
- ◆ The UMLS installation and customization wizard
 - Installs Knowledge Sources to local storage
 - Subsets and customizes a local Metathesaurus



Using MetamorphoSys

- ◆ Simple to use
- ◆ Screens and tabs lead you through process
- ◆ Installs NLM data format files to local storage



Why use MetamorphoSys?

Customize the Metathesaurus

- ◆ To remove terminology that is unhelpful, or even harmful, to your needs and purposes
- ◆ To comply with terms of license agreement



Why use MetamorphoSys?

Changing Default Settings

- ◆ To alter the preferred name
- ◆ To alter suppressibility of specific source term types



Customization is Critical

- ◆ Requires a clear understanding of:
 - Characteristics of source vocabularies
 - License arrangements
 - User's functional requirements
 - User's purpose and perspective
- ◆ Technical expertise

**... and requires a
multidisciplinary technical team**



Machine Requirements

- ◆ A fast CPU – 1 GHz or higher
 - ◆ 1 GB RAM recommended (512 MB min.)
 - ◆ 6x (or better) DVD drive
 - ◆ 22 GB minimum free disk space
-
- ◆ Runs on Sun Solaris 8 & 9, Windows XP, NT, and 2000, Linux, and Mac
 - ◆ 1-10 hours run time on platforms tested



Download from UMLSKS ...

- ◆ High speed Internet connection required
- ◆ Read the README file for the release
- ◆ 2004AB UMLS Files

2004AB.CHK

2004AB.MD5

2004ab-1-meta.nlm

2004ab-2-meta.nlm

2004ab-3-meta.nlm

mmsys.zip

Copyright_Note.txt

README.txt

Please README!



...or DVD?

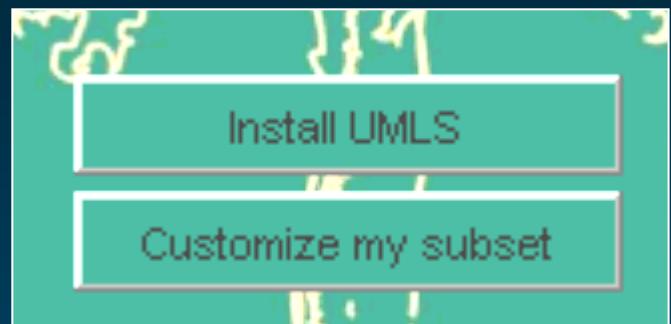
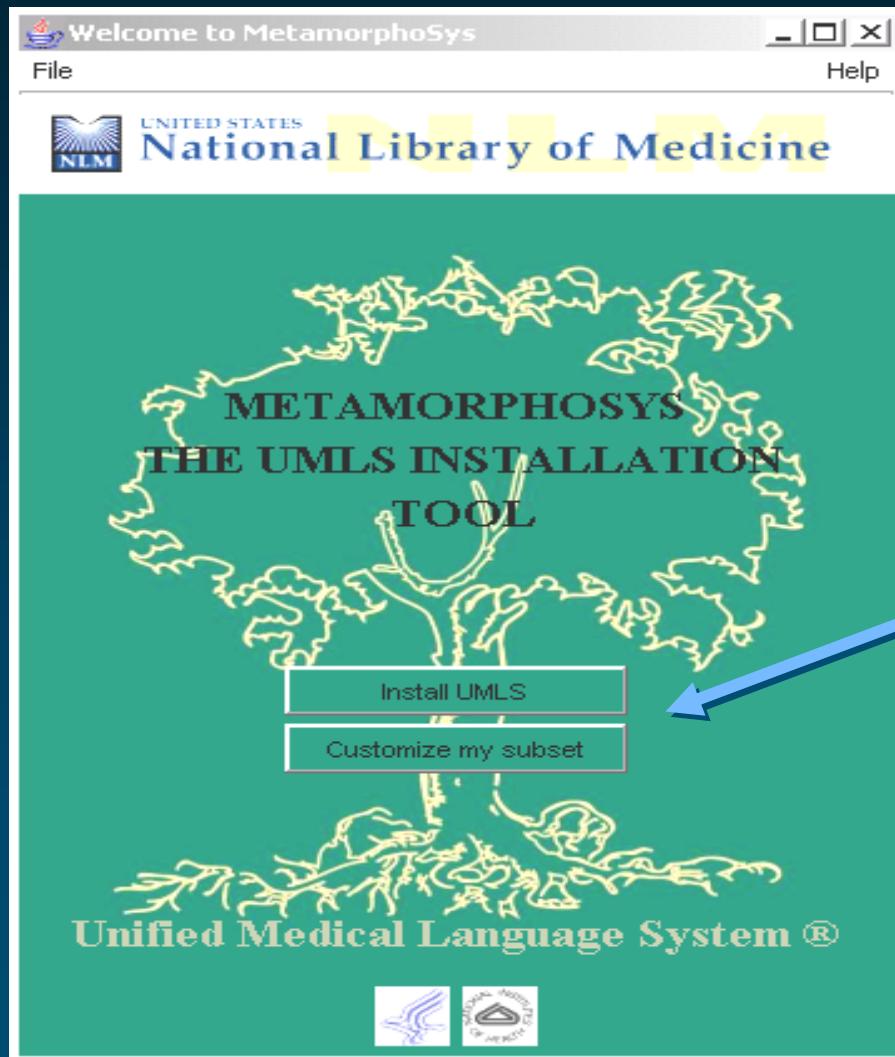
- ◆ Order at: umls_support@nlm.nih.gov
- ◆ **Include your license number**
- ◆ Run MetamorphoSys from DVD
 - Windows
 - Autorun; or go to root directory and click on “windows_mmsys.bat”
 - Linux, Solaris, Macintosh
 - open a terminal window, change to the root directory and type appropriate command: `./linux_mmsys.sh`, `./solaris_mmsys.sh`, `./macintosh_mmsys.sh`



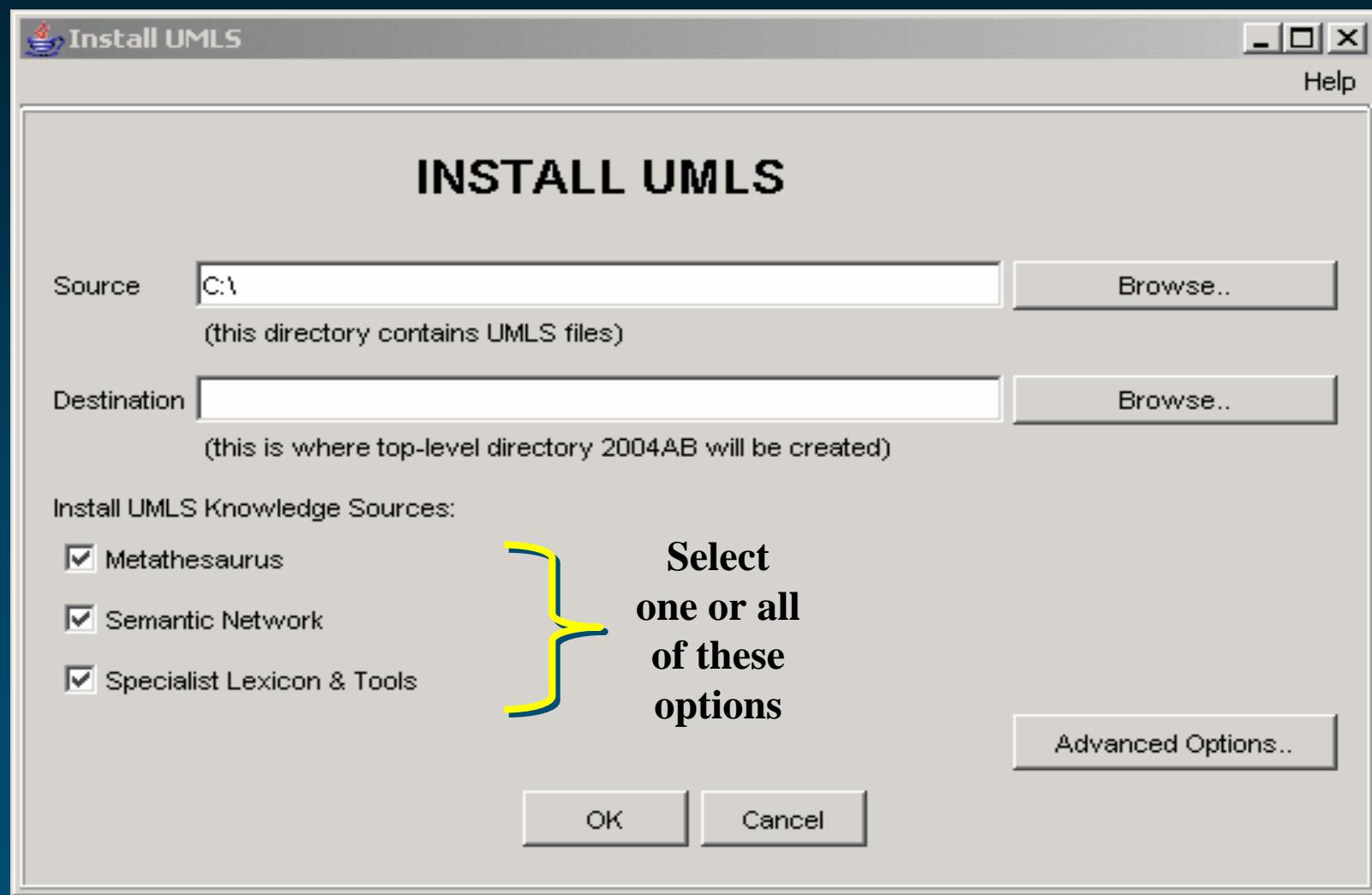
Be patient! A lot of software must load.

```
C:\WINNT\system32\cmd.exe
C:\Documents and Settings\tilleyc\Desktop\MINIIMAGE>echo off
Loading Metamorphosys ...
[Pleas...e be patient and wait for MetamorphoSys to begin]
```

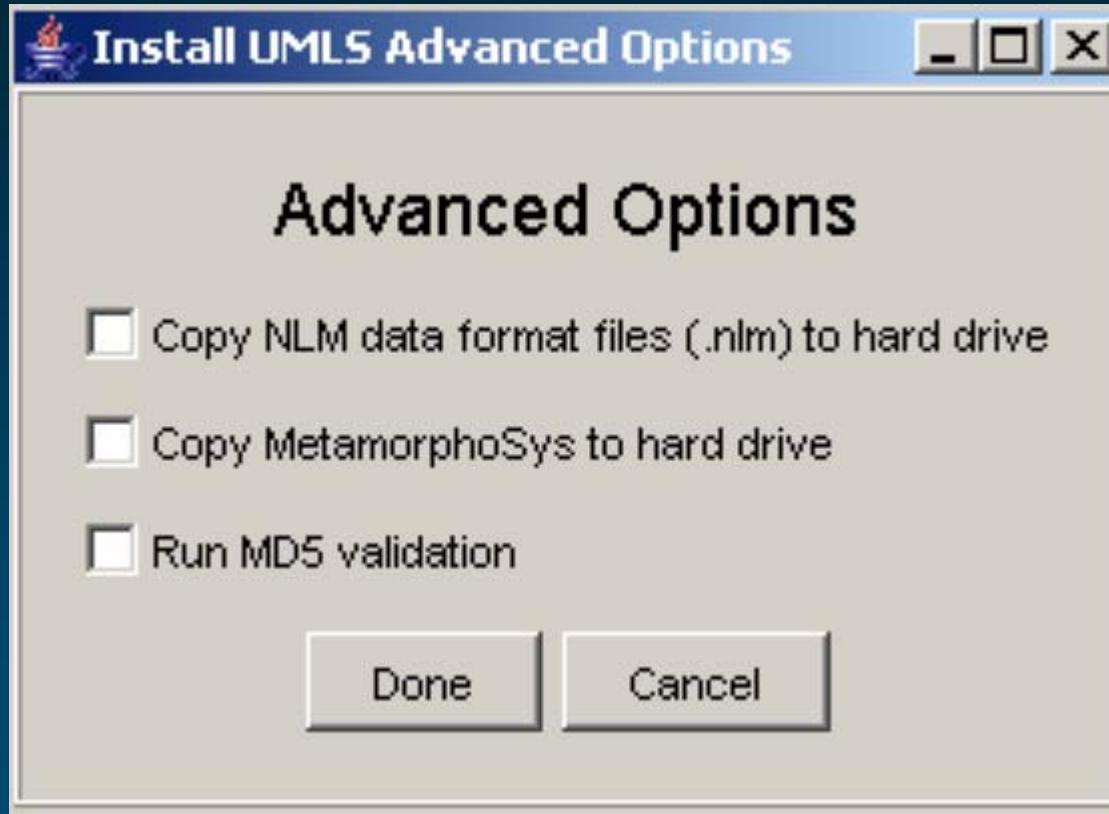
Welcome Screen



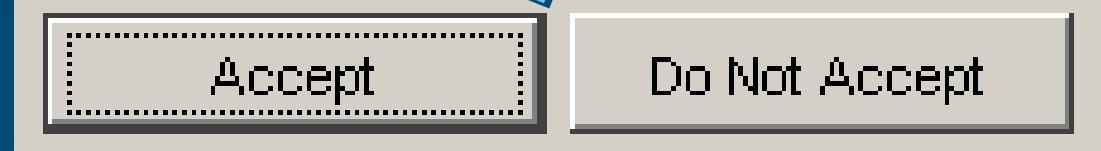
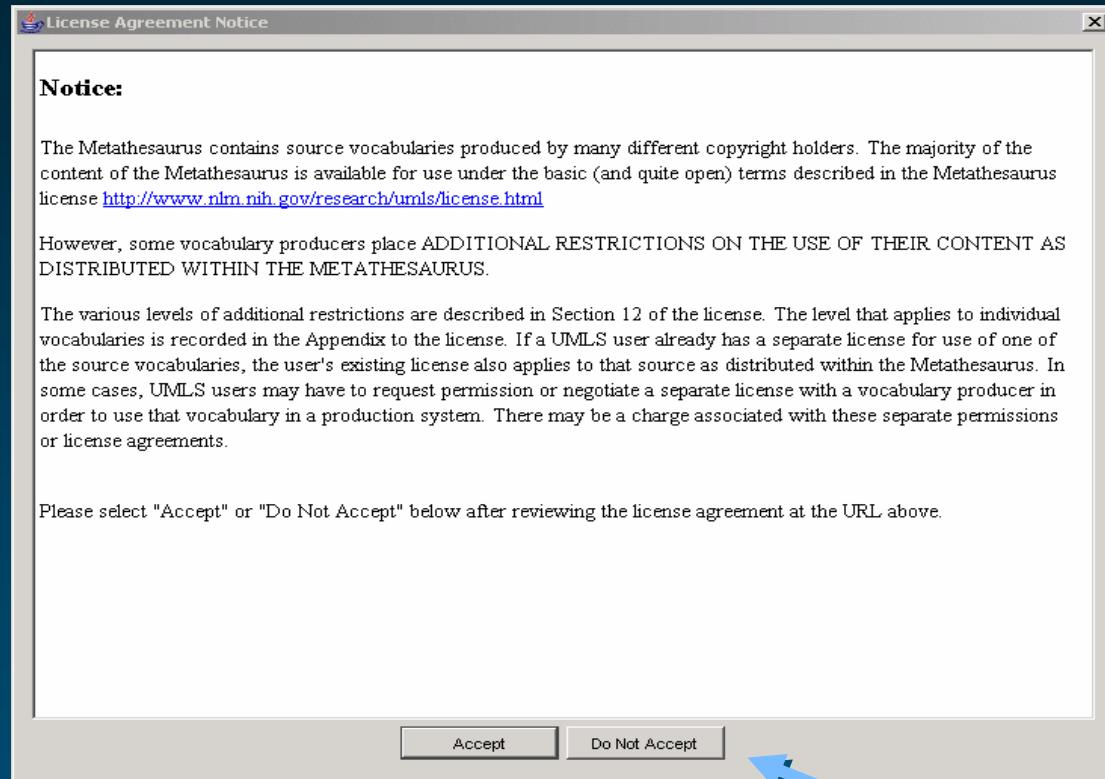
Install UMLS



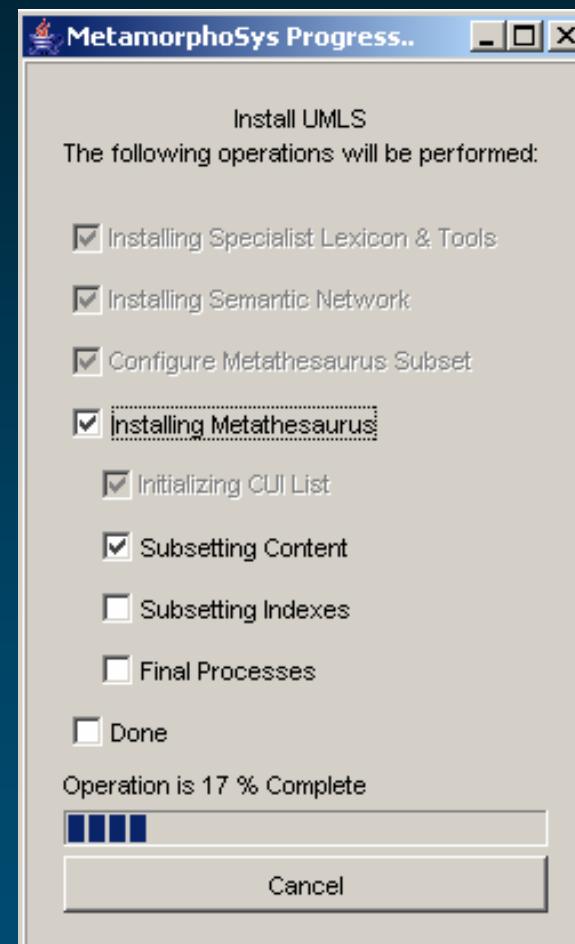
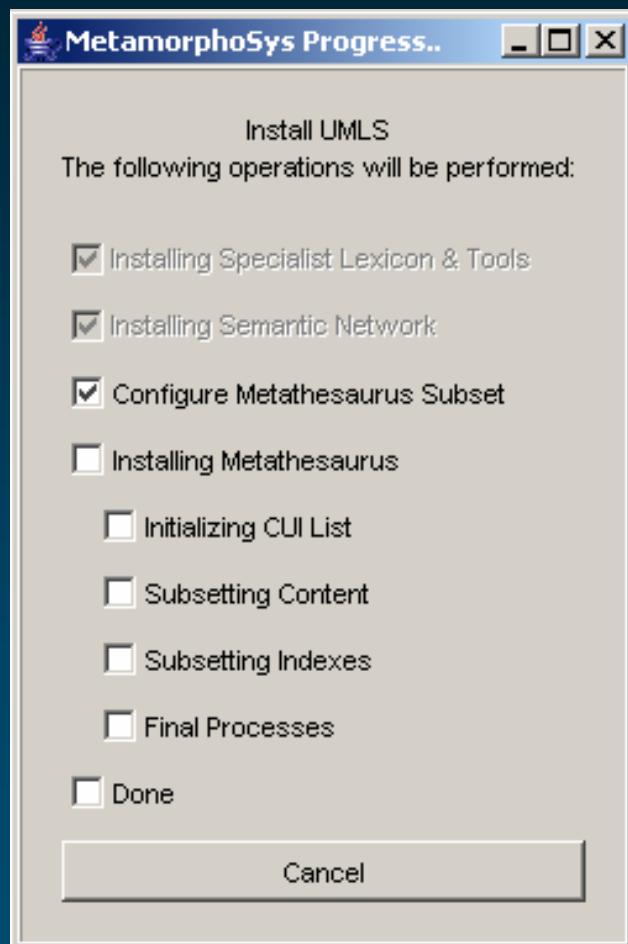
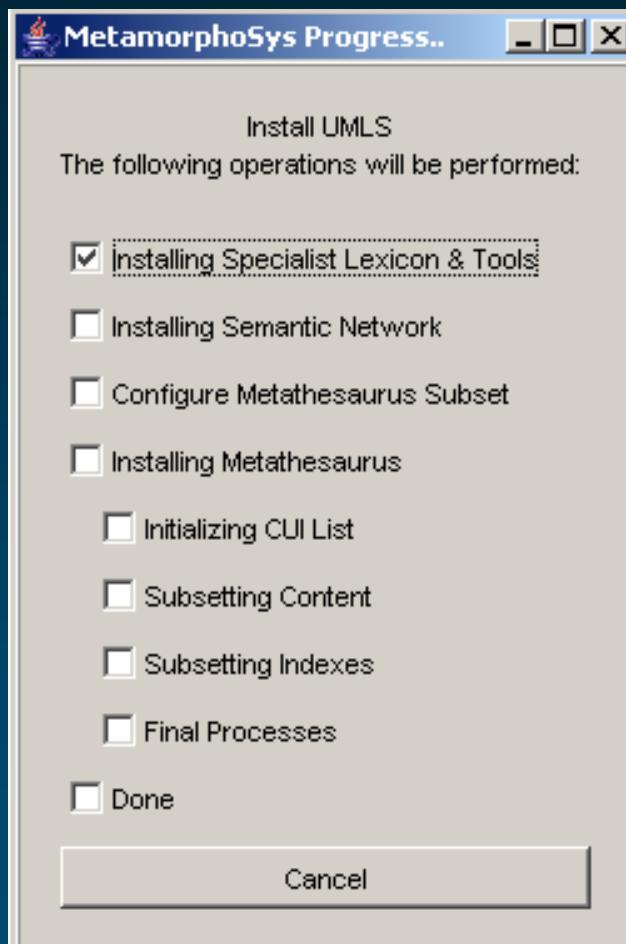
Install UMLS Advanced Options



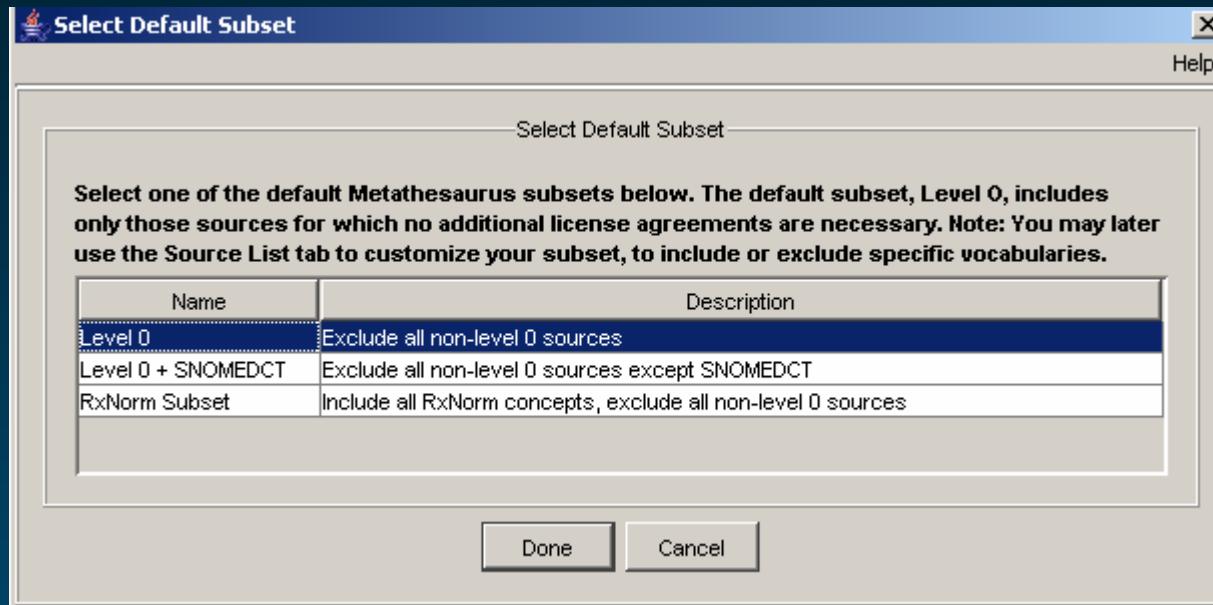
UMLS License Notice



Installation progress monitor



Select a default subset

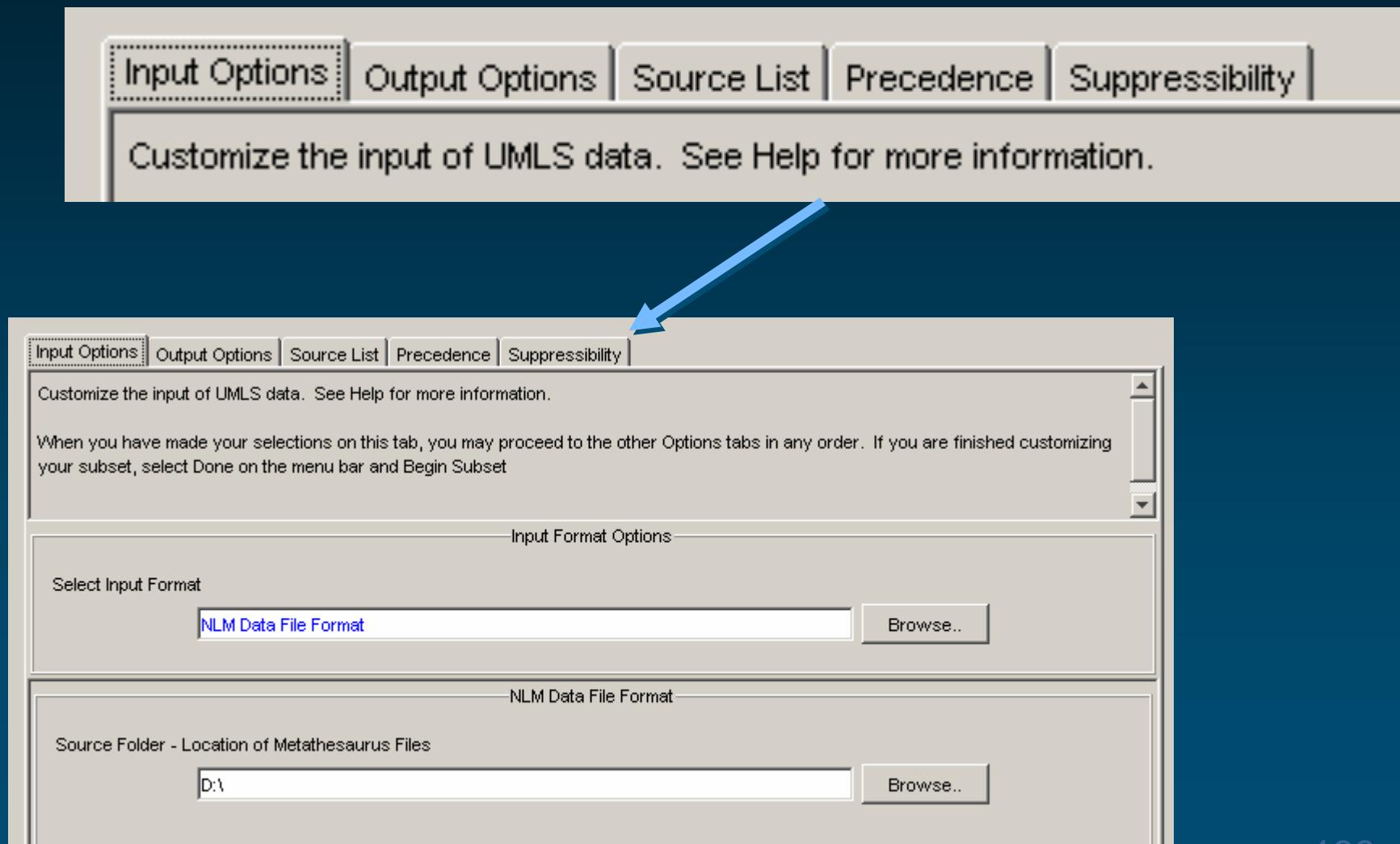


Level 0 → no separate additional license agreements

Level 0 + SNOMEDCT → Non-U.S. users must have separate license agreements

RxNorm → no separate additional license agreements

Input Options Tab



Output Options Tab

Input Options Output Options Source List Precedence Suppressibility

Select data output options for your local application. See Help for more information.

- Select Output Format
- Subset Folder - Location of Subset Files
- Remove records containing extended UTF-8 characters.
- Truncate long fields to characters.
- Output versioned source abbreviations rather than versionless source abbreviations.
- Exclude MRCXT.RRF from the subset.
- Write Oracle load script.
- Write MySql load script.

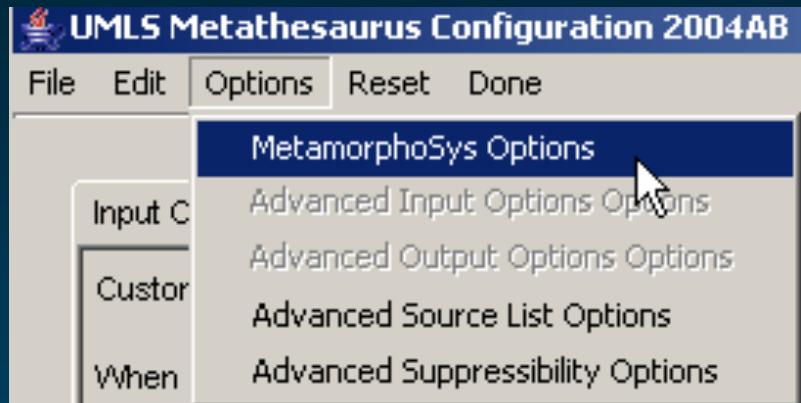
Source List Tab

The screenshot shows the 'Source List' tab selected in a software interface. A blue arrow points from the top navigation bar to the 'Source List' tab. Another blue arrow points from the top of the table area to the 'Source List' tab in the main content area. The main content area contains a message: 'Include or exclude source vocabularies for your Metathesaurus subset. See Help'. Below this is another message: 'Hold down the <Ctrl> key to select multiple rows.' and 'To reset to the default Source List, click on Reset on the menu bar, and select Reset Source List.' The table has columns: Full Source Name, Source Abbreviation, Source Family, Language, and Level. The rows are: AIR/RHEUM, 1993 (Level 0), Alternative Billing Concepts (Level 3), Alcohol and Other Drug Thesaurus, 2000 (Level 0), Beth Israel Vocabulary, 1.0 (Level 2), Canonical Clinical Problem Statement System, 1999 (Level 3), Clinical Classifications Software, 2003 (Level 0), and Current Dental Terminology (CDT), 4 (Level 3). Yellow arrows point to the last four rows, indicating they are excluded from the subset.

Sources to Exclude				
Full Source Name	Source Abbreviation	Source Family	Language	Level
AIR/RHEUM, 1993	AIR93	AIR	ENG	0
Alternative Billing Concepts	ALT2003	ALT	ENG	3
Alcohol and Other Drug Thesaurus, 2000	AOD2000	AOD	ENG	0
Beth Israel Vocabulary, 1.0	BI98	BI	ENG	2
Canonical Clinical Problem Statement System, 1999	CCPSS99	CCPSS	ENG	3
Clinical Classifications Software, 2003	CCS2003	CCS	ENG	0
Current Dental Terminology (CDT), 4	CDT4	CDT	ENG	3

Highlighted rows are excluded from the subset.

MetamorphoSys Option Tab

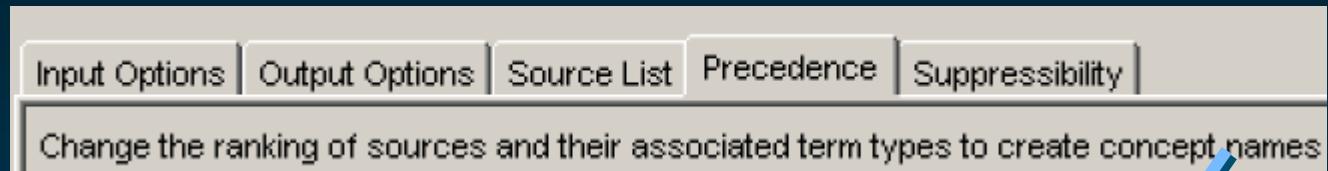


Source list behavior can be changed using the MetamorphoSys Option Tab

If you wish to Auto Select Related Items check this box



Precedence Tab



- Ranks names by types of terms within sources
- Highest ranking name determines the Preferred Name

Input Options | Output Options | Source List | Precedence | Suppressibility

Change the ranking of sources and their associated term types to create concept names that are more useful in your local application.
Concept names are determined by the term with highest ranking source/term type.

To move rows, either cut and paste rows, or drag and drop.

When you have made your selections on this tab, you may proceed to the other Options tabs in any order. If you are finished customizing

Precedence

Full Source Name	Source Abbreviation	Term Type
UMLS Metathesaurus	MTH	PN
Medical Subject Headings, MSH2004_2003_12_12	MSH2004_2003_12_12	MH
Medical Subject Headings, MSH2004_2003_12_12	MSH2004_2003_12_12	TQ
Medical Subject Headings, MSH2004_2003_12_12	MSH2004_2003_12_12	EP
Medical Subject Headings, MSH2004_2003_12_12	MSH2004_2003_12_12	EN
Medical Subject Headings, MSH2004_2003_12_12	MSH2004_2003_12_12	XQ
Medical Subject Headings, MSH2004_2003_12_12	MSH2004_2003_12_12	NM
RXNORM Project, META2004AB	RXNORM_04AB	SCD

Cut and
paste rows
to alter the
preferred
name

Suppressibility Tab

Input Options | Output Options | Source List | Precedence | **Suppressibility**

See Help for more information.



Input Options | Output Options | Source List | Precedence | **Suppressibility**

See Help for more information.

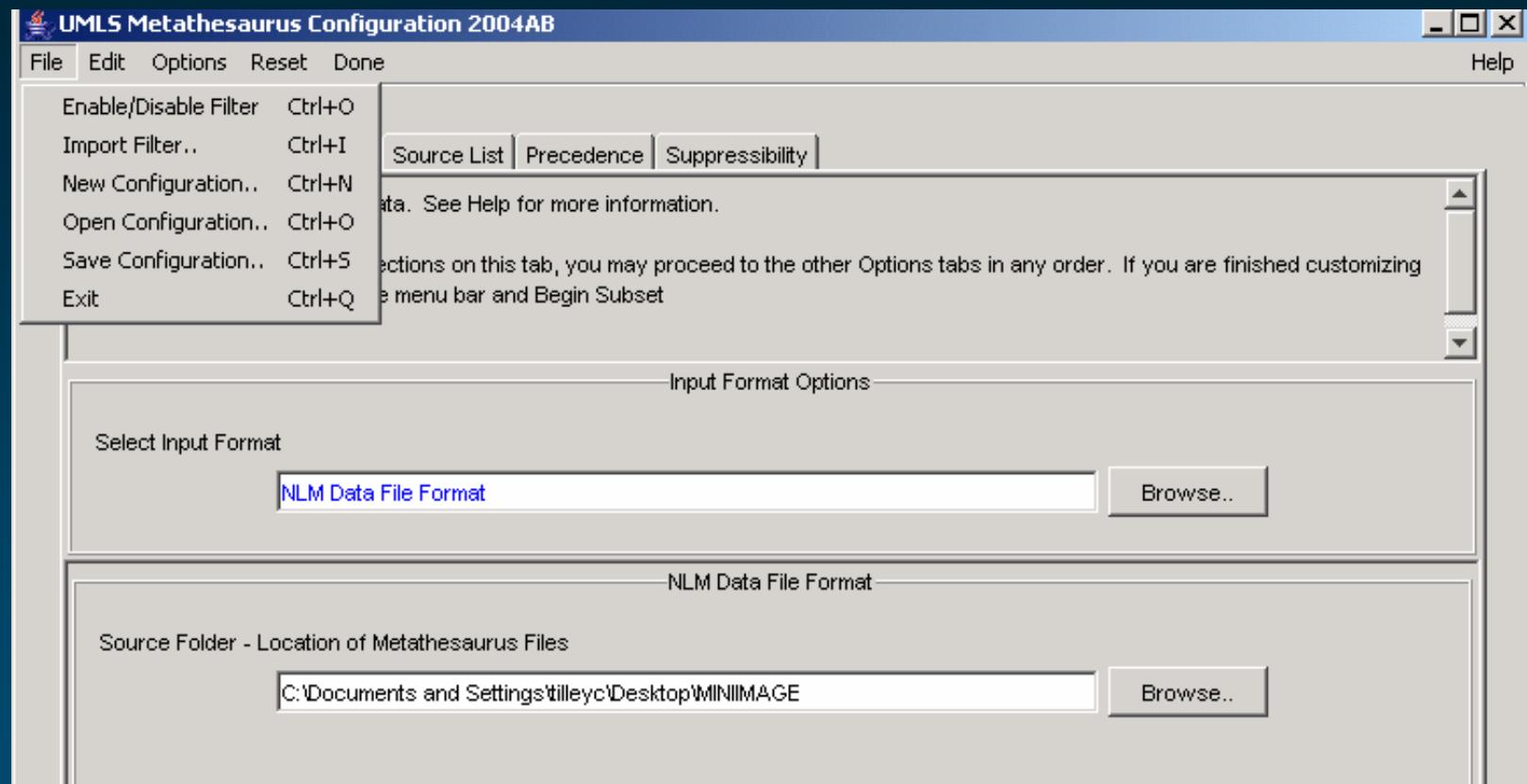
When you have made your selections on this tab, you may proceed to the other Options tabs in any order. If you are finished customizing your subset, select Done on the menu bar and Begin Subset.

International Classification of Primary Care, 1993	ICPC93	CP
International Classification of Primary Care, 1993	ICPC93	CS
International Classification of Primary Care, 1993	ICPC93	CX
International Classification of Primary Care, 1993	ICPC93	HT
International Classification of Primary Care, 1993	ICPC93	PC
International Classification of Primary Care, 1993	ICPC93	PS
International Classification of Primary Care, 1993	ICPC93	PT
International Classification of Primary Care, 1993	ICPC93	PX
ICPC, Basque Translation, 1993	ICPCBAQ_1993	CP

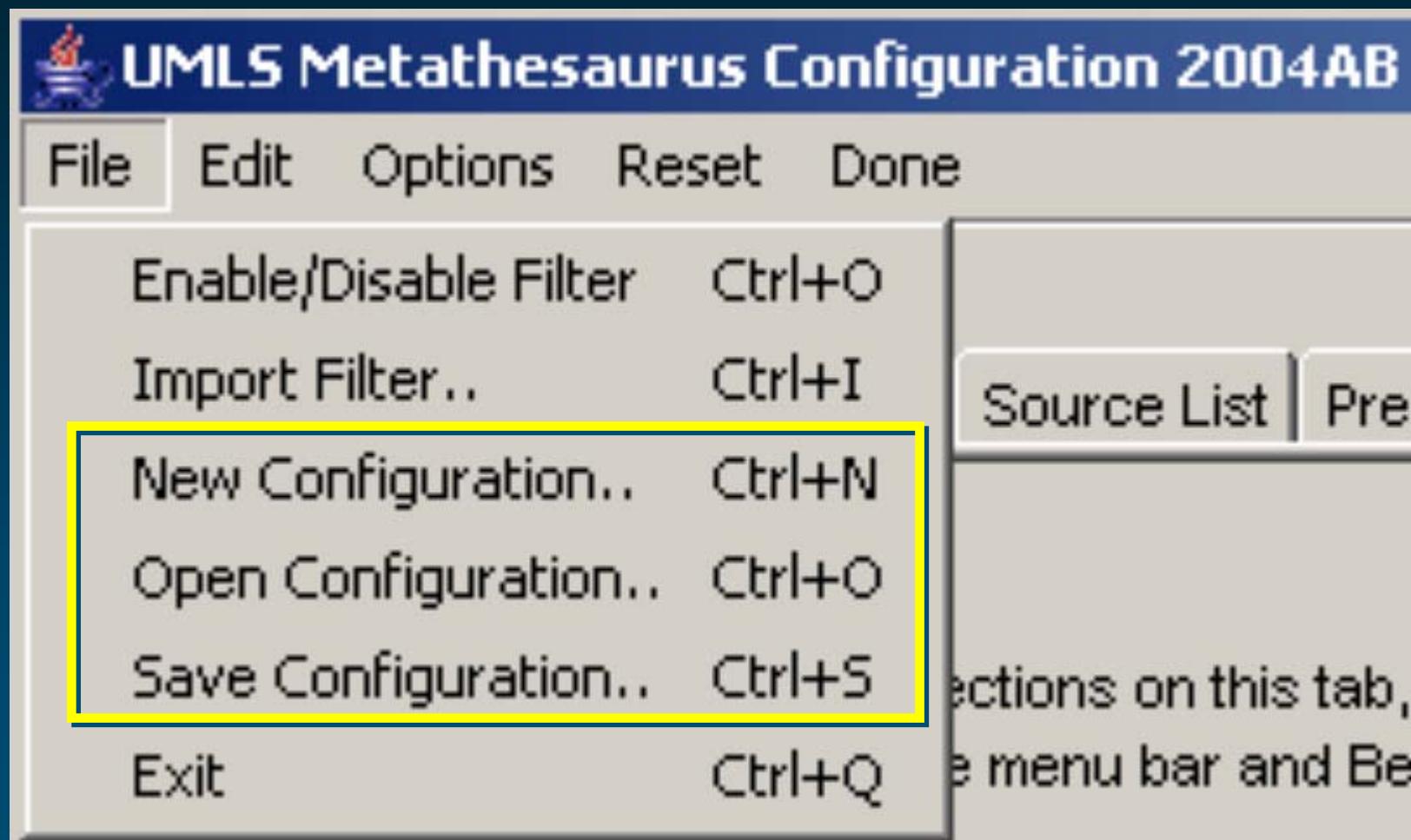
Highlighted source term types will be marked as suppressible



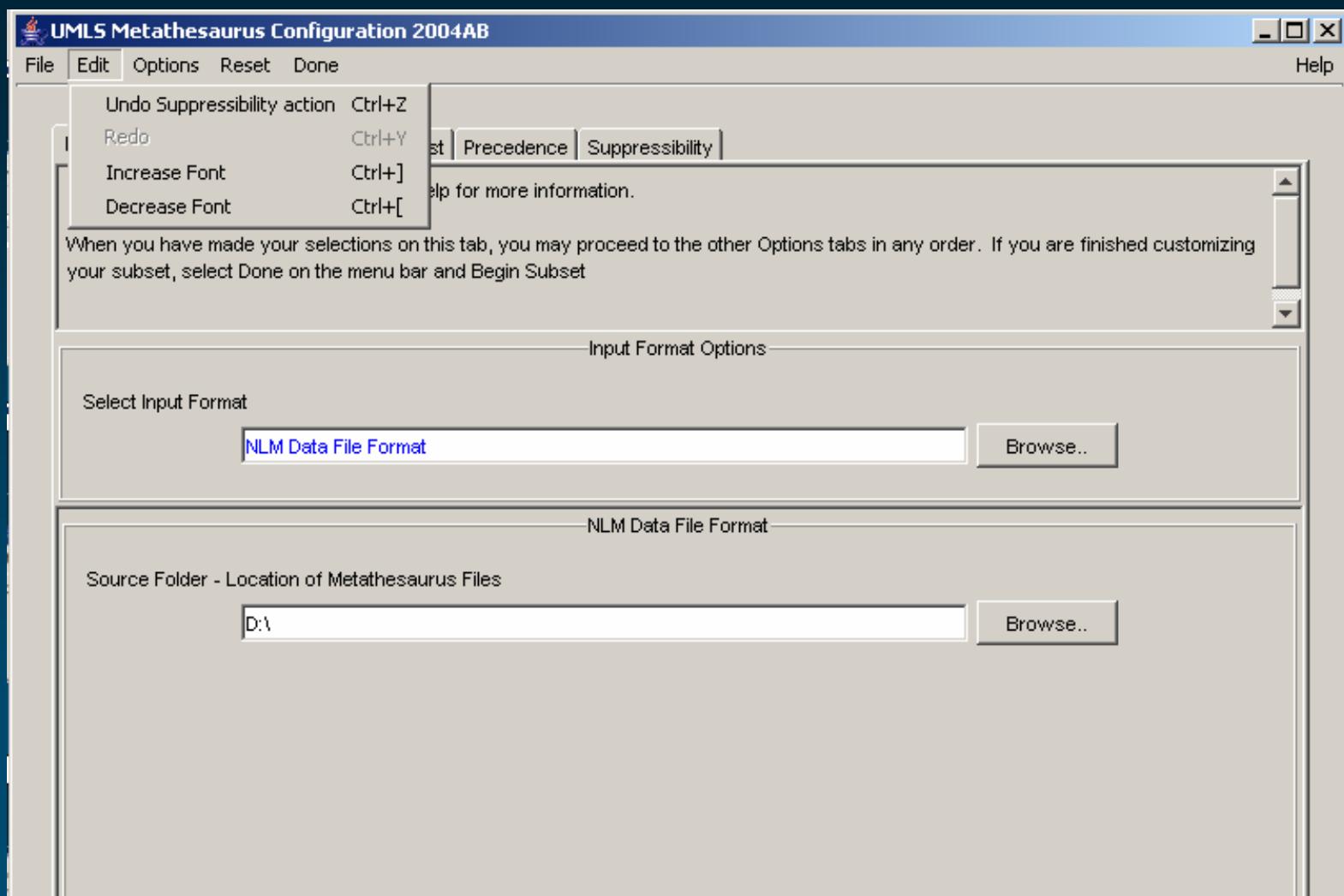
File menu



File menu



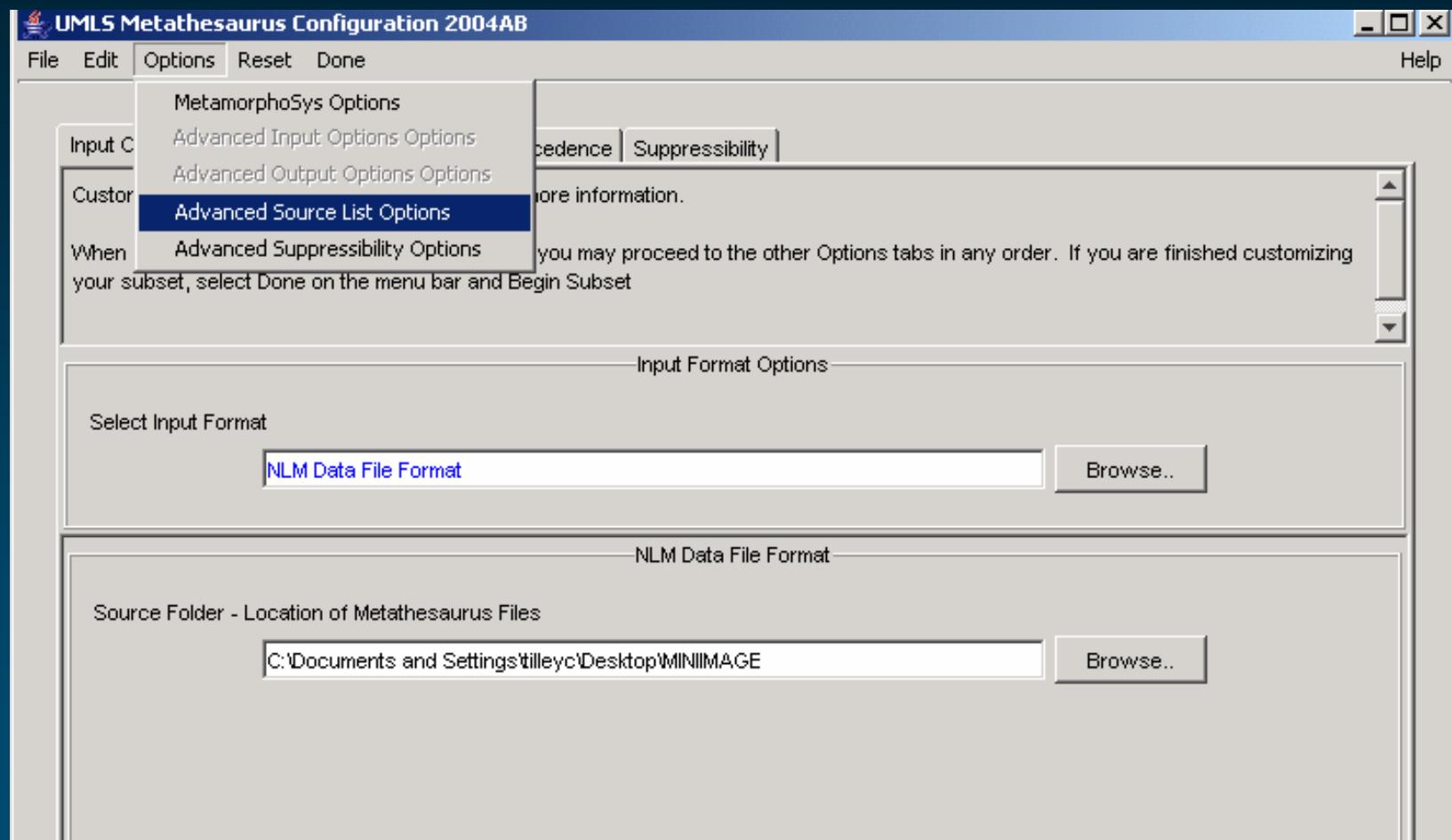
Edit menu



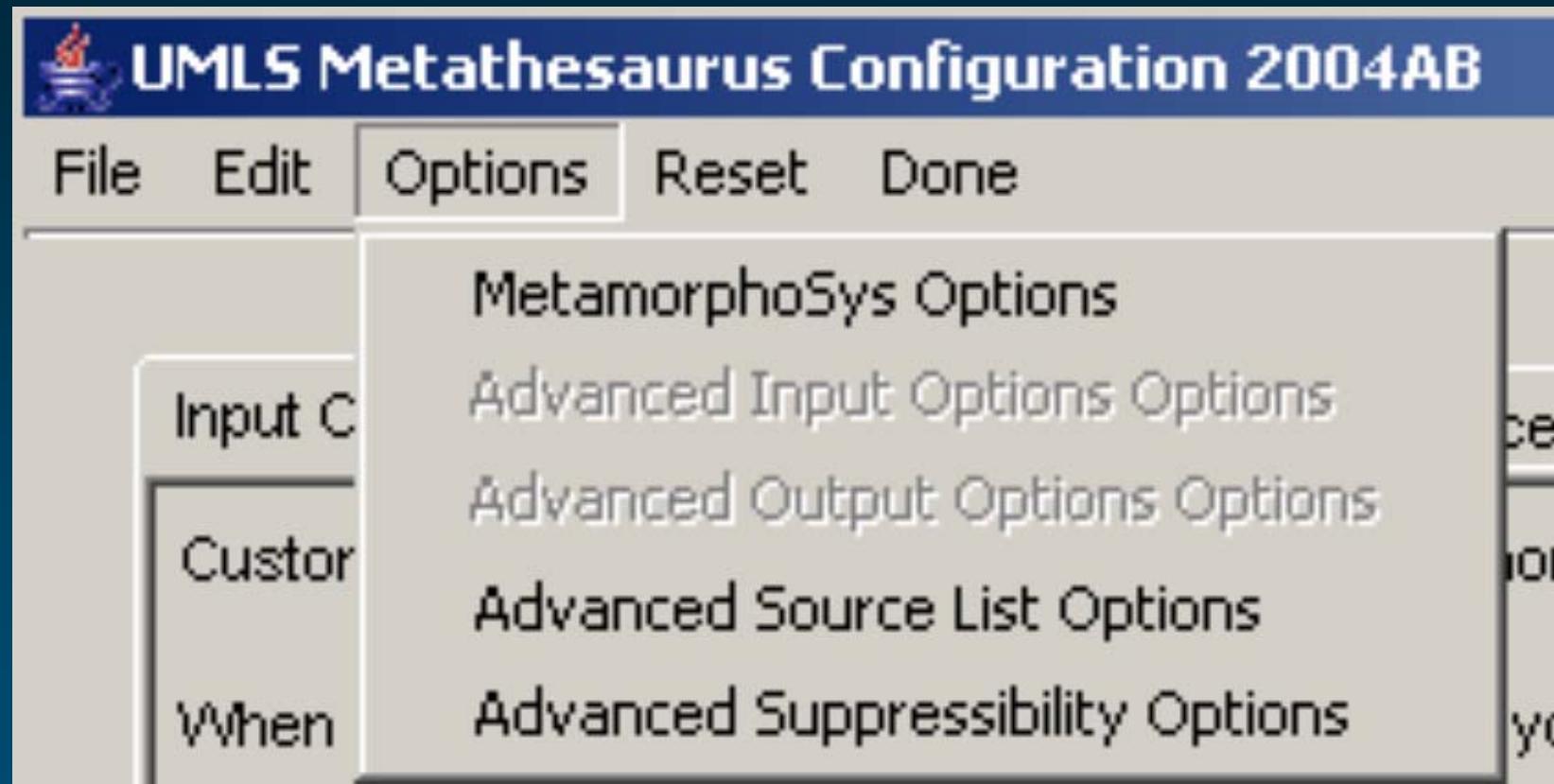
Edit menu



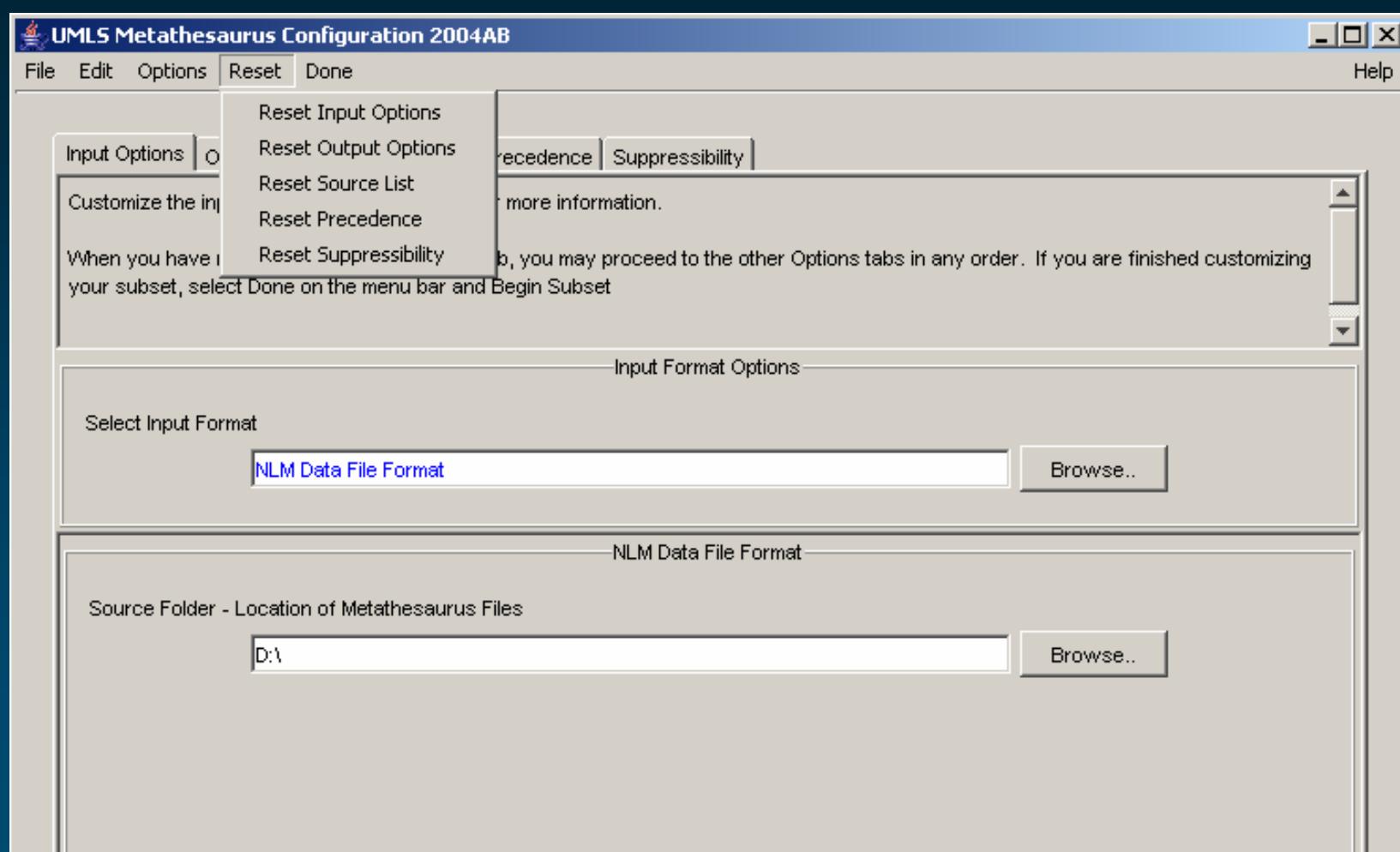
Options menu



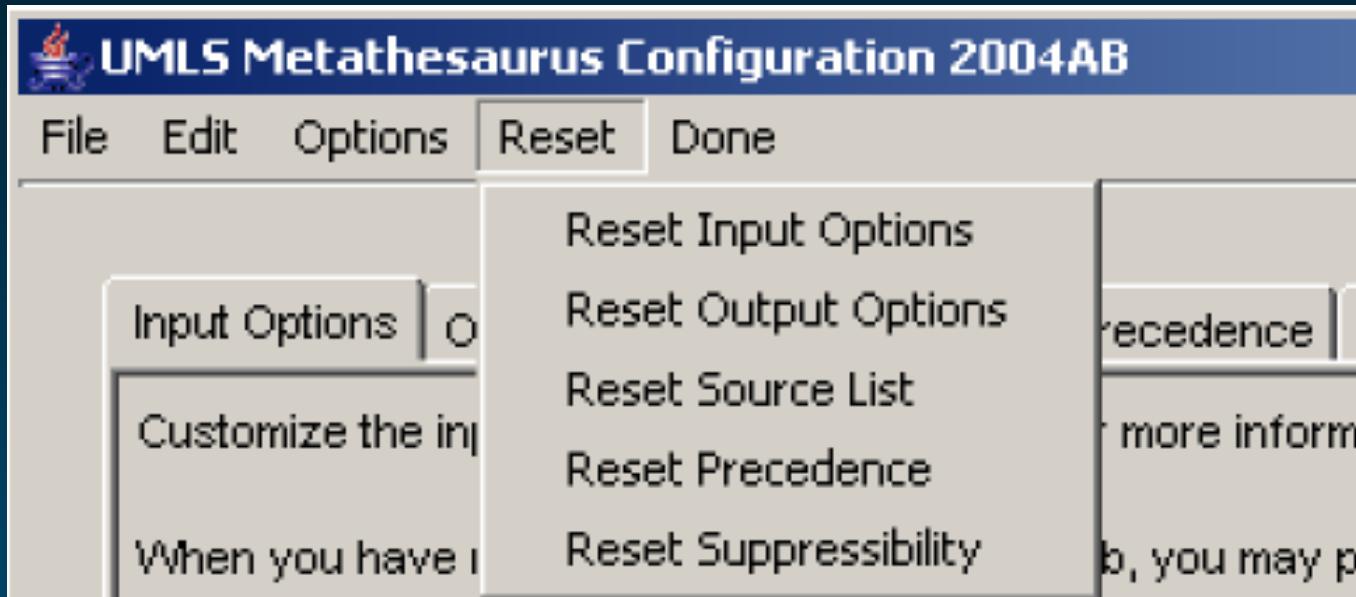
Options menu



Reset menu

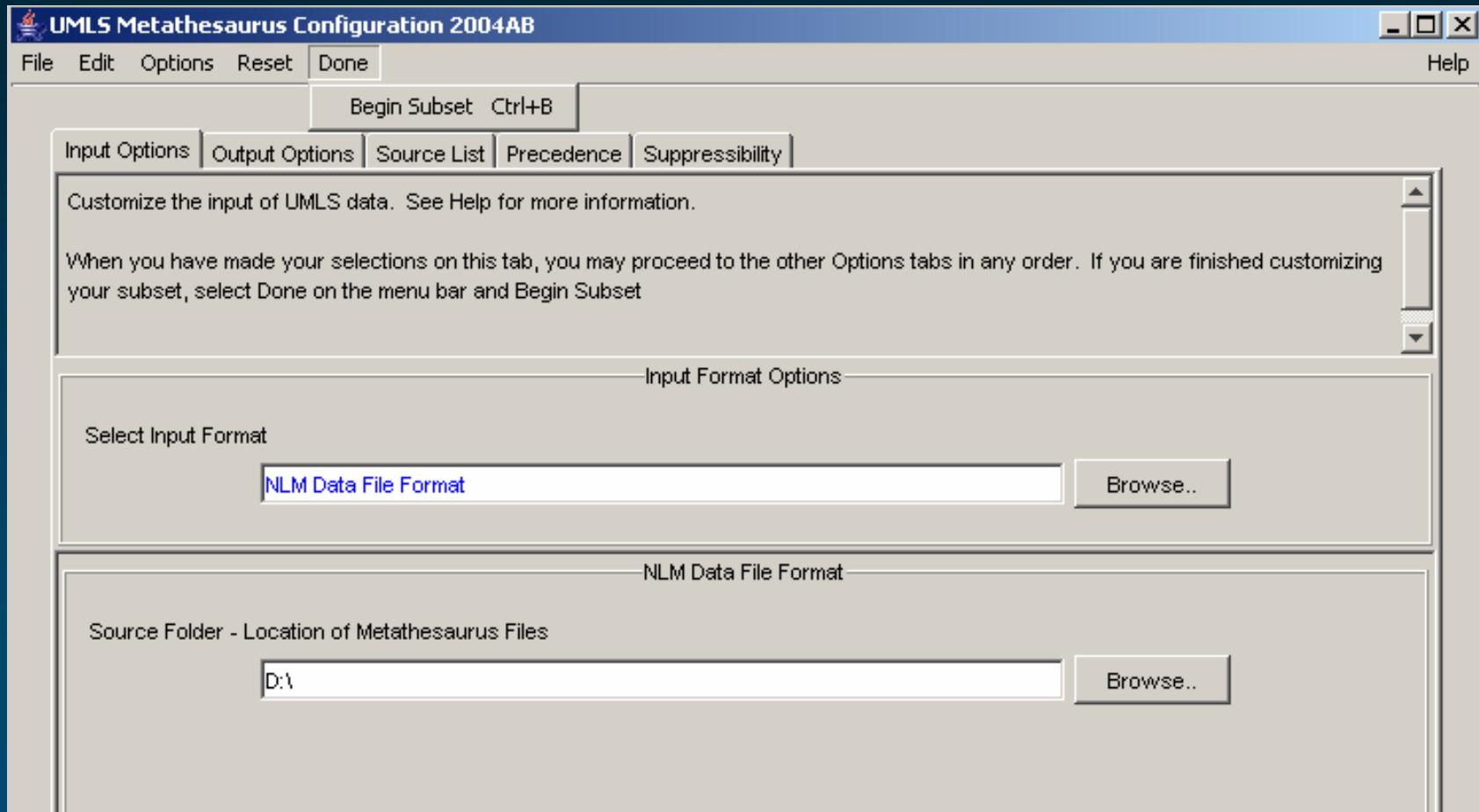


Reset menu



- ◆ Returns all filters to default selections
- ◆ Default selections in “mmsys.prop.default file” in config folder
- ◆ mmsys.prop.default contains properties in last run

Done – Begin Subset



Done – Begin Subset



- ◆ Compete configuration options
- ◆ Done menu
- ◆ Begin Subset

How MetamorphoSys Works

- ◆ Removes all information from relational files in excluded vocabularies
 - atoms, strings, relationships, attributes, mappings, etc.
- ◆ Applies additional options selected by user
 - such as adding source term suppressibility or altering precedence
- ◆ Produces a full set of Metathesaurus files
 - relational files with customized data
 - reflecting other user criteria



MetamorphoSys log

```
mmsys.log - Notepad
File Edit Format View Help

MetamorphoSys Version:.....5.21
MetamorphoSys Build Date:.....2004_08_30_14_47_11
UMLS Build Date:.....2004_07_12_09_57_26
Release Version:.....2004AB
Release Date:.....20040720
Release Description:.....July 2004 Release
Metathesaurus Source paths:.....C:\UMLS\DVDIRAGE
Subsetted Metathesaurus folder:.....C:\UMLS\DVDIRAGE\2004AB\META
Start at:.....Wed Sep 01 13:04:18 EDT 2004
Initialize CUI List completed:.....Wed Sep 01 13:06:20 EDT 2004
Subset Metathesaurus completed:.....Wed Sep 01 14:13:02 EDT 2004
Subset Index Files completed:.....Wed Sep 01 14:21:11 EDT 2004
Subset Release Metadata completed:.....Wed Sep 01 14:21:17 EDT 2004
Finished at:.....Wed Sep 01 14:22:48 EDT 2004
Concepts in source:.....1078246
Concepts in subset:.....1078246
Time elapsed:.....01:18:29
```



MetamorphoSys log

mmsys.log - Notepad

File Edit Format View Help

Metathesaurus Output: Rich Release Format

Long fields were not truncated.

Source Abbreviations were written out with a versionless (root) representation.
Fields containing UTF-8 characters were not removed.

Excluded Sources

<none>

Kept Sources

AI/RHEUM, 1993	AIR93
Alternative Billing Concepts	ALT2003
Alcohol and Other Drug Thesaurus, 2000	AOD2000
Beth Israel Vocabulary, 1.0	BI98
Canonical Clinical Problem statement System, 1999	CCPSS99
Clinical Classifications Software, 2003	CCS2003
Current Dental Terminology (CDT), 4	CDT4
COSTAR, 1989-1995	COSTAR_89-95
Medical Entities Dictionary, 2003	CPM2003
Physicians' Current Procedural Terminology, Spanish Translation, ...	CPT01SP
Physicians' Current Procedural Terminology, 2004	CPT2004
CRISP Thesaurus, 2004	CSP2004
COSTART, 1995	CST95
Diseases Database, 2000	DDB00
German translation of ICD10, 1995	DMDICD10_1995
German translation of UMDNS, 1996	DMDUMD_1996

Output directory contents

Name	Size	Type
CHANGE		File Folder
indexes		File Folder
release.dat	1 KB	DAT File
config.prop	8 KB	PROP File
AMBIGLUI.RRF	1,225 KB	RRF File
AMBIGSUI.RRF	955 KB	RRF File
MRCOC.RRF	809,207 KB	RRF File
MRCOLS.RRF	21 KB	RRF File
MRCONSO.RRF	596,528 KB	RRF File
MRCUI.RRF	9,221 KB	RRF File
MRCXT.RRF	9,391,778 KB	RRF File
MRDEF.RRF	17,172 KB	RRF File
MRDOC.RRF	88 KB	RRF File
MRFILES.RRF	4 KB	RRF File
MRHIER.RRF	899,786 KB	RRF File
MRHIST.RRF	70,843 KB	RRF File
MRMAP.RRF	9,362 KB	RRF File

Summary

UMLS Overview

- ◆ UMLS = 3 Knowledge Sources
 - Metathesaurus
 - Semantic Network
 - SPECIALIST Lexicon and Lexical Tools
- ◆ MetamorphoSys
 - installs
 - customizes
- ◆ UMLSKS
 - remote access
 - resources and documentation



Questions

Documentation and Support

UMLS documentation and support

- ◆ UMLS homepage <http://umlsinfo.nlm.nih.gov/>
 - with links to all other UMLS information
- ◆ UMLSKS homepage <http://umlsks.nlm.nih.gov/>
 - with links to the User's and Developer's guides
- ◆ Email address for support custserv@nlm.nih.gov



Appendix 1

UMLS files in
Rich Release Format

MRCONSO (sample rows 1..5)

(2004AB)

1	2	3	4	5	6	7	8	9	10	11	
	CUI	LAT	S	LUI	STT	SUI	ISPREF	AUI	SAUI	SCUI	SDUI
1	C0001403	ENG	P	L0001403	PF	S0354372	Y	A4367951			
2	C0001403	ENG	P	L0001403	PF	S0354372	N	A2922421	485624014	363732003	
3	C0001403	ENG	P	L0001403	VC	S0010794	Y	A0019740		M0000346	D000224
4	C0001403	ENG	S	L0494851	PF	S2164152	N	A2018589			
5	C0001403	FRE	P	L3246333	PF	S3773545	Y	A3996251			D000224

12

13

14

15

16

17

18

12	13	14	15	16	17	18
SAB	TTY	CODE	STR	SRI	SUPPRESS	CVF
1 MTH	PN	NOCODE	Addison's disease	0	N	
2 SNOMEDCT	PT	363732003	Addison's disease	4	N	
3 MSH	MH	D000224	Addison's Disease	0	N	
4 MDR	LT	10052381	Primary adrenal insufficiency	3	N	
5 MSHFRE	MH	D000224	Addison, maladie	3	N	



MRCONSO (sample rows 6..10)

(2004AB)

1	2	3	4	5	6	7	8	9	10	11	
	CUI	LAT	S	LUI	STT	SUI	ISPREF	AUI	SAUI	SCUI	SDUI
6	C0001403	FRE	S	L1272481	PF	S1514427	Y	A1464383			
7	C0001403	GER	P	L1229627	PF	S1471573	Y	A4030156			D000224
8	C0001403	GER	S	L1239271	PF	S1481217	Y	A4034094			D000224
9	C0001403	JPN	P	L3437833	PF	S3965327	Y	A4264008			D000224
10	C0001403	JPN	S	L3465347	PF	S3992841	Y	A4291522			D000224

12

13

14

15

16

17

18

	SAB	TTY	CODE	STR	SRI	SUPPRESS	CVF
6	WHOFRE	IT	0410	MALADIE D'ADDISON	2	N	
7	MSHGER	MH	D000224	Addison-Krankheit	3	N	
8	MSHGER	SY	D000224	Bronzehautkrankheit	3	N	
9	MSHJPN	MH	D000224	Addison病	3	N	
10	MSHPJN	SY	D000224	副腎性黒皮症	3	N	



MRCONSO (sample rows 11-13)

(2004AB)

1	2	3	4	5	6	7	8	9	10	11	
	CUI	LAT	S	LUI	STT	SUI	ISPREF	AUI	SAUI	SCUI	SDUI
11	C0001403	POR	P	L3302998	PF	S3831123	N	A6382080			
12	C0001403	RUS	P	L3336992	PF	S3864473	Y	A4157629			
13	C0001403	SPA	P	L1226877	PF	S1468823	Y	A1419475			



12	13	14	15	16	17	18	
	SAB	TTY	CODE	STR	SRI	SUPPRESS	CVF
11	MDRPOR	LT	1001130	Doença de Addison	3	N	
12	MSHRUS	MH	D000224	АДИСОНОВА БОЛЕЗНЬ	3	N	
13	WHOSPA	IT	0410	ADDISON, ENFERMEDAD	3	N	



MRHIER (sample rows)

(2004AB)

	1	2	3	4	5	6
	CUI	AUI	CXN	PAUI	SAB	RELA
1	C0001403	A0019740	1	A0020270	MSH	
2	C0001403	A0019740	2	A0028022	MSH	
3	C0001403	A0019743	3	A1988358	PSY	member_of_cluster
4	C0001403	A2922421	1	A3307650	SNOMEDCT	isa
5	C0001403	A2922421	2	A3307650	SNOMEDCT	isa

7

8

9

PTR

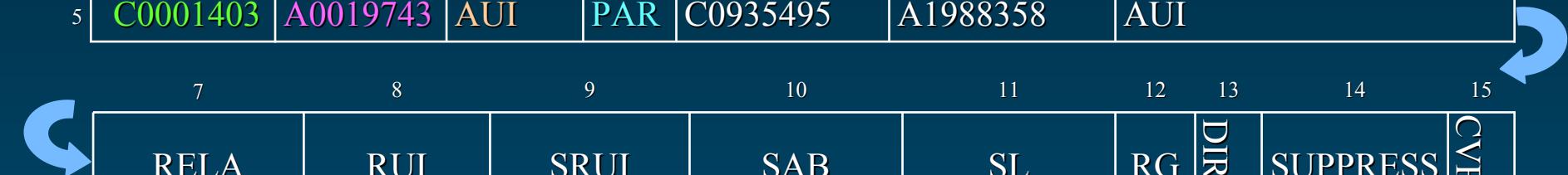
	7	8	9
	PTR	HCD	CVF
1	A0434168.A2367943.A2366890.A0135391.A0054194.A0020267.A0020270	C19.053.264.263	
2	A0434168.A2367943.A2366890.A0135391.A0072566.A0028022	C20.111.163	
3	A0449751.A1988279.A1988358		
4	A3684559.A3886745.A2880798.A3398606.A3399335.A3398961.A2872359. A2872360.A3307650		
5	A3684559.A3886745.A2880798.A3398606.A3399335.A3398961.A2872359. A2933400.A2989549.A3307650		



MRREL (sample rows)

(2004AB)

	1	2	3	4	5	6	
	CUI1	AUI1	STYPE1	REL	CUI2	AUI2	STYPE2
1	C0001403		CUI	RB	C0001621		CUI
2	C0001403	A0019738	AUI	SY	C0001403	A0049628	AUI
3	C0001403	A2922421	SCUI	CHD	C0085859	A2977940	SCUI
4	C0001403	A6326321	SCUI	RO	C0688490	A6339383	SCUI
5	C0001403	A0019743	AUI	PAR	C0935495	A1988358	AUI



MRDEF

(2004AB)

CUI	AUI	ATUI	SATUI	SAB	DEF	SUPPRESS	CVF
C0001403	A0019740	AT15061584		MSH	A disease characterized by hypotension, weight loss, anorexia, weakness, and sometimes a bronze-like melanotic hyperpigmentation of the skin. It is due to tuberculosis- or autoimmune-induced disease (hypofunction) of the adrenal glands that results in deficiency of aldosterone and cortisol. In the absence of replacement therapy, it is usually fatal.	N	



MRSAT (sample rows)

(2004AB)

	1	2	3	4	5	
	CUI	LUI	SUI	METAUI	STYPE	CODE
1	C0001403	L0001403	S0010792	A0019738	AUI	D000224
2	C0001403	L0001403	S0010794	A6326321	SCUI	C712
3	C0001403	L0001403	S0354372	A2922421	SAUI	363732003
4	C0001403			R15742591	SRUI	
5	C0001403				CUI	



	7	8	9	10	11	14	15
	ATUI	SATUI	ATN	SAB	ATV	SUPPRESS	CVT
1	AT15321482		DID	MSH	D000224	N	
2	AT33411754		MESH UI	NDFRT	D000224	N	
3	AT24166602		DESCRIPTION STATUS	SNOMEDCT	0	N	
4	AT27438950		REFINABILITY	SNOMEDCT	0	N	
5	AT02925340		ST	MTH	R	N	



CUI	TUI	STN	STY	ATUI	CVF
C0001403	T047	B2.2.1.2.1	Disease or Syndrome	AT17683850	



MRHIST (sample rows)

(2004AB)

	1	2	3	4	5
	CUI	SOURCEUI	SAB	SVER	CHANGETYPE
1	C0001403	1198962018	SNOMEDCT	20020731	0
2	C0001403	1212124016	SNOMEDCT	20020731	0
3	C0001403	1490869013	SNOMEDCT	20030131	0
4	C0001403	363732003	SNOMEDCT	20020129	0
5	C0001403	373662000	SNOMEDCT	20020731	0



	6	7	8	9
	CHANGEKEY	CHANGEVAL	REASON	CVF
1	DESCRIPTIONSTATUS	0		
2	DESCRIPTIONSTATUS	0		
3	DESCRIPTIONSTATUS	0		
4	CONCEPTSTATUS	0		
5	CONCEPTSTATUS	0		



Appendix 2

UMLS files in
Original Release Format

MRCON Concepts

(2003AA)

CUI	LAT	TS	LUI	STT	SUI	STR	LRL
C0001403	ENG	P	L0001403	PF	S0010794	Addison's Disease	0
C0001403	ENG	P	L0001403	VC	S0352253	ADDISON'S DISEASE	0
C0001403	ENG	P	L0001403	VO	S0010792	Addison Disease	0
C0001403	ENG	P	L0001403	VO	S0033587	Disease, Addison	0
C0001403	ENG	P	L0001403	VO	S0469271	Addison's disease, NOS	3
C0001403	ENG	S	L0278071	PF	S0352321	ADRENAL INSUFFICIENCY (ADDISON'S DISEASE)	0
C0001403	ENG	S	L0278422	PF	S0352329	ADRENOCORTICAL INSUFFICIENCY, PRIMARY FAILURE	0
C0001403	ENG	S	L0367999	PF	S0469267	Addison melanoderma	3
C0001403	ENG	S	L0368000	PF	S0496840	Melasma addisonii	3
C0001403	ENG	S	L0368398	PF	S0506528	Primary adrenal deficiency	3
C0001403	ENG	S	L0373744	PF	S0471237	Asthenia pigmentosa	3
C0001403	ENG	S	L0377831	PF	S0473611	Bronzed disease	3
C0001403	ENG	S	L0494940	PF	S0718028	Primary adrenocortical insufficiency	3
C0001403	ENG	S	L0494937	PF	S0718027	Primary adrenocortical insuff	3
C0001403	FIN	P	L1510041	PF	S1805950	Addisonin tauti	3
C0001403	FRE	S	L1272481	PF	S1514427	MALADIE D'ADDISON	2
C0001403	GER	P	L1229627	PF	S1471573	Addison-Krankheit	3
C0001403	GER	S	L1288823	PF	S1530769	Primaere Nebennierenrindeninsuffizienz	1
C0001403	ITA	P	L1276837	PF	S1518783	Morbo di Addison	3
C0001403	POR	P	L0324623	PF	S0432928	DOENCA DE ADDISON	2
C0001403	RUS	P	L0889403	PF	S1093220	ADDISONOVA BOLEZN'	3
C0001403	SPA	P	L0342625	PF	S0450930	ENFERMEDAD DE ADDISON	3
[...]							



MRSO Sources

(2003AA)

CUI	LUI	SUI	SAB	TTY	SCD	SRL
C0001403	L0001403	S0010792	MSH	EN	D000224	0
C0001403	L0001403	S0010794	MSH	MH	D000224	0
C0001403	L0001403	S0010796	MSH	PM	D000224	0
C0001403	L0001403	S0010796	PSY	PT	00810	3
C0001403	L0001403	S0033587	MSH	PM	D000224	0
C0001403	L0001403	S0220088	MSH	PM	D000224	0
C0001403	L0001403	S0352252	CCPSS	PT	0022753	3
C0001403	L0001403	S0352252	DXP	SY	NOCODE	0
C0001403	L0001403	S0352253	CST	GT	ADREN INSUFFIC	0
C0001403	L0001403	S0352253	WHO	IT	0410	2
C0001403	L0001403	S0354372	AOD	DE	0000005430	0
C0001403	L0001403	S0354372	CSP	PT	0060-3321	0
C0001403	L0001403	S0354372	LCH	PT	U000061	0
C0001403	L0001403	S0354372	MDR	LT	10001130	3
C0001403	L0001403	S0354372	RCD	PT	C1541	3
C0001403	L0001403	S0354372	SNM	SY	D-2332	3
C0001403	L0001403	S0365923	CST	GT	ADREN INSUFFIC	0
C0001403	L0001403	S0469271	SNMI	PT	DB-70620	3
C0001403	L0001403	S1619433	MDR	LT	10001130	3
C0001403	L0001403	S1911394	ICPC2P	PT	T99002	3
C0001403	L0001403	S1921523	MTHICD9	ET	255.4	0
C0001403	L0001403	S1932462	ICPC2P	SF	T99002	3
[...]						



MRDEF Definitions

(2003AA)

CUI SAB DEF

C0001403|MSH|A disease characterized by hypotension, weight loss, anorexia, weakness, and sometimes a bronze-like melanotic hyperpigmentation of the skin. It is due to tuberculosis- or autoimmune-induced disease (hypofunction) of the adrenal glands that results in deficiency of aldosterone and cortisol. In the absence of replacement therapy, it is usually fatal.|

[...]



MRSTY Semantic Types

(2003AA)

CUI TUI STY

C0001400	T040	Organism Function
C0001403	T047	Disease or Syndrome
C0001406	T083	Geographic Area
C0001407	T114	Nucleic Acid, Nucleoside, or Nucleotide
C0001407	T123	Biologically Active Substance
[...]		



MRATX Associated Expressions (2003AA)

CUI SAB REL ATX

Closed fracture of malar and maxillary bones, NOS

C0009045 | MSH | RB | <Zygomatic Fractures> OR <Maxillary Fractures> |

Unilateral congenital dislocation of hip

C0009702 | MSH | RB | <Hip Dislocation, Congenital> AND <Femur Head>/<abnormalities> |

Suture of bladder

C0010700 | MSH | RB | <Bladder>/<surgery> |

Corneal abrasion

C0010032 | MSH | RO | <Cornea>/<injuries> |

CORRECTIVE LENS PROBLEM

C0010099 | MSH | RO | <Contact Lenses>/<adverse effects> |

Chronic cough

C0010201 | MSH | SY | <Cough> AND <Chronic Disease> |

Cyst and pseudocyst of pancreas

C0010623 | MSH | SY | <Pancreatic Cyst> OR <Pancreatic Pseudocyst> |

Cystitis

C0010692 | LCH | RU | <Bladder>/<Inflammation> |

[...]



MRCXT Contexts

(2003AA)

CUI	SUI	SAB	SCD	CXN	CXL	RNK	CXS	CUI2	HCD	REL	XC
C0001403	S0469271	SNMI	DB-70620	1	ANC	1	SNOMED International	C1140118			
C0001403	S0469271	SNMI	DB-70620	1	ANC	2	DISEASES/DIAGNOSES	C0338067			
C0001403	S0469271	SNMI	DB-70620	1	ANC	3	DISEASES OF THE END. SYSTEM	C0014130			
C0001403	S0469271	SNMI	DB-70620	1	ANC	4	DISEASES OF THE ADRENAL GLANDS	C0001621			
C0001403	S0469271	SNMI	DB-70620	1	CCP		<u>Addison's disease, NOS</u>	C0001403	DB-70620		
(* = C0001403 S0718028 ICD10)											
* E27.1 1 ANC 1 ICD... , Tenth Revision (ICD-10) C1140143											
* E27.1 1 ANC 2 Endocrine, nutritional and metabolic diseases C0694452 E00-E90.9											
* E27.1 1 ANC 3 Disorders of other endocrine glands C0178257 E20-E35.9											
* E27.1 1 ANC 4 Other disorders of adrenal gland C0494313 E27											
* E27.1 1 CCP Primary adrenocortical insufficiency C0001403 E27.1											
(* = C0001403 S0010794 MSH)											
* D000224 1 ANC 1 MeSH C1135584											
* D000224 1 ANC 2 MeSH Descriptors C1135587											
* D000224 1 ANC 3 Index Medicus Descriptor C1135589											
* D000224 1 ANC 4 Diseases (MeSH Category) C0012674 C											
* D000224 1 ANC 5 Endocrine Diseases C0014130 C19											
* D000224 1 ANC 6 Adrenal Gland Diseases C0001621 C19.53											
* D000224 1 ANC 7 Adrenal Gland Hypofunction C0001623 C19.53.264											
* D000224 1 CCP <u>Addison's Disease</u> C0001403 C19.53.264.263											
* D000224 1 SIB Adrenoleukodystrophy C0001661 C19.53.264.270											
* D000224 1 SIB Hypoaldosteronism C0020595 C19.53.264.480											



MRSAT Simple concept attributes (2003AA)

CUI	LUI	SUI	SCD	ATN	SAB	ATV
C0001403	L0001403	S0010792	D000224	DID MSH	D000224	
C0001403	L0001403	S0010792	D000224	EV MSH	ADDISON DIS	
C0001403	L0001403	S0010792	D000224	MUI MSH	M0000346	
C0001403	L0001403	S0010792	D000224	TH MSH	UNK (19XX)	
C0001403	L0001403	S0010794	D000224	AN MSH	an autoimmune dis with adrenal hypofunction	
C0001403	L0001403	S0010794	D000224	AQL MSH	BL CF CI CL CN CO DH DI DT EC EH EM EN ...	
C0001403	L0001403	S0010794	D000224	DC MSH	1	
C0001403	L0001403	S0010794	D000224	DID MSH	D000224	
C0001403	L0001403	S0010794	D000224	EV MSH	ADDISON DIS	
C0001403	L0001403	S0010794	D000224	MDA MSH	19990101	
C0001403	L0001403	S0010794	D000224	MED1963 NLM-MED	*2	
C0001403	L0001403	S0010794	D000224	MED1963 NLM-MED	2	
[...]						
C0001403	L0001403	S0010794	D000224	MED2002 NLM-MED	*19	
C0001403	L0001403	S0010794	D000224	MED2002 NLM-MED	23	
[...]						
C0001403	L0001403	S0010794	D000224	MN MSH	C19.53.264.263	
C0001403	L0001403	S0010794	D000224	MN MSH	C20.111.163	
[...]						
C0001403	L0001403	S0469271	DB-70620 SIC SNMI	255.4		
[...]						
C0001403		DA MTH	19900930			
C0001403		MR MTH	20021026			
C0001403		ST MTH	R			



MRRANK Name Ranking

(2003AA)

RANK SAB TTY SUPRES

0401	MTH	PN	N
0400	MTH	MM	N
0399	MSH	MH	N
0398	MSH	TQ	N
0397	MSH	EP	N
0396	MSH	EN	N
0395	MSH	XQ	N
0394	MSH	NM	N
0393	RXNORM	SCD	N
0392	RXNORM	SCDC	N
0391	DSM4	PT	N
0390	DSM3R	PT	N
0389	SNMI	PT	N
0388	SNMI	PX	Y
0387	SNMI	HT	N
0386	SNMI	HX	Y
0385	VANDF	CD	N
0384	VANDF	HT	N
0383	VANDF	IN	N
0382	Mddb	CD	N
0381	MMX	CD	N
0380	MMX	IN	N
0379	RCDSA	PT	N
[...]			



MRREL Inter-concept Relationships (2003AA)

CUI1	REL	CUI2	RELA	SAB	SL	MG
C0001403	AQ	C0348026		MSH	MSH	
C0001403	CHD	C0342477		RCD	RCD	
C0001403	CHD	C0546992		RCD	RCD	
C0001403	PAR	C0001621		PSY	PSY	
C0001403	PAR	C0001621		SNMI	SNMI	
C0001403	PAR	C0001623		MSH	MSH	
C0001403	PAR	C0935495	has_member	PSY	PSY	
C0001403	RB	C0001621		PSY	PSY	
C0001403	RB	C0001623		MTH	MTH	
C0001403	RB	C0004364		CSP	CSP	
C0001403	RB	C0004364		MTH	MTH	
C0001403	RL	C0405580	mapped_from	SNMI	SNMI	
C0001403	RN	C0518933		MTH	MTH	
C0001403	RN	C0518934		MTH	MTH	
C0001403	RO	C0152889	associated_with	SNMI	SNMI	
C0001403	RO	C0546992		MTH	MTH	
C0001403	RQ	C0020615	clinically_associated_with	CCPSS	CCPSS	
C0001403	RQ	C0151467	clinically_similar	RAM	RAM	
C0001403	RQ	C0300942	classifies	MDR	MDR	
C0001403	RQ	C0405580	mapped_from	CST	CST	
C0001403	RQ	C0405580	mapped_to	HLREL	HLREL	
C0001403	RQ	C0740740	inverse_isa	CCPSS	CCPSS	
C0001403	SIB	C0001206		MDR	MDR	
[...]						



MRCOC Co-occurrences

(2003AA)

CUI1 CUI2 SOC COT COF COA

C0001403	C0000727	MED	L	1	CO=1,DI=1,ME=1
C0001403	C0000737	MBD	L	1	CO=1,DI=1
C0001403	C0000833	MED	L	2	MI=2,DT=1,RA=1
C0001403	C0001175	MBD	L	1	CO=1
C0001403	C0001418	MED	L	1	ET=1
C0001403	C0001430	MBD	L	1	BL=1,CO=1
C0001403	C0001551	MED	L	3	DT=3
C0001403	C0001613	MBD	L	6	ET=2,IM=2,CL=1,CN=1,DI=1,PA=1,PP=1
C0001403	C0001613	MED	L	6	IM=4,PP=3,CO=2,BL=1,DI=1,TH=1
C0001403	C0001614	MBD	L	1	BL=1,CI=1
C0001403	C0001617	MBD	L	1	BL=1
C0001403	C0001618	MBD	L	2	BL=2,CO=1,ET=1
C0001403	C0001618	MED	L	1	CO=1,PA=1

[...]

C0018099	C0151373	AIR	KP		
C0018099	C0151407	AIR	KP		
C0018099	C0151463	CCPSS	PP	1	
C0018099	C0205082	CCPSS	MP	1	
C0018099	C0205090	CCPSS	MP	8	
C0018099	C0205091	CCPSS	MP	2	
C0018099	C0221598	AIR	KP		

[...]



MRCON Suppressible synonyms (2003AA)

CUI	LAT	TS	LUI	STT	SUI	STR	LRL
C0001403	ENG	P	L0001403	PF	S0010794	Addison's Disease	0
C0001403	ENG	P	L0001403	VC	S0352253	ADDISON'S DISEASE	0
C0001403	ENG	P	L0001403	VO	S0010792	Addison Disease	0
C0001403	ENG	P	L0001403	VO	S0033587	Disease, Addison	0
C0001403	ENG	P	L0001403	VO	S0469271	Addison's disease, NOS	3
C0001403	ENG	S	L0278071	PF	S0352321	ADRENAL INSUFFICIENCY (ADDISON'S DISEASE)	0
C0001403	ENG	S	L0278422	PF	S0352329	ADRENOCORTICAL INSUFFICIENCY, PRIMARY FAILURE	0
C0001403	ENG	S	L0367999	PF	S0469267	Addison melanoderma	3
C0001403	ENG	S	L0368000	PF	S0496840	Melasma addisonii	3
C0001403	ENG	S	L0368398	PF	S0506528	Primary adrenal deficiency	3
C0001403	ENG	S	L0373744	PF	S0471237	Asthenia pigmentosa	3
C0001403	ENG	S	L0377831	PF	S0473611	Bronzed disease	3
C0001403	ENG	S	L0494940	PF	S0718028	Primary adrenocortical insufficiency	3
C0001403	ENG	S	L0494937	PF	S0718027	Primary adrenocortical insuff	3
C0001403	FIN	S	L1510041	PF	S1805950	Addisonin tauti	3
C0001403	FRE	S	L1272481	PF	S1514427	MALADIE D'ADDISON	2
C0001403	GER	P	L1229627	PF	S1471573	Addison-Krankheit	3
C0001403	GER	S	L1288823	PF	S1530769	Primaere Nebennierenrindeninsuffizienz	1
C0001403	ITA	P	L1276837	PF	S1518783	Morbo di Addison	3
C0001403	POR	P	L0324623	PF	S0432928	DOENCA DE ADDISON	2
C0001403	RUS	P	L0889403	PF	S1093220	ADDISONOVA BOLEZN'	3
C0001403	SPA	P	L0342625	PF	S0450930	ENFERMEDAD DE ADDISON	3
[...]							



MRCUI Concept history

(2003AA)

CUI1	VER	CREL	CUI2	MAPIN
C0241779	1996AA	SY	C0001403	Y
C0271735	1996AA	SY	C0001403	Y
[...]				



MRSAB Source information

(2003AA)

VCUI RCUI VSAB RSAB SON SF SVER MSTART MEND IMETA RMETA SLC SCC SRL TFR

C1140103|C1140104|INS2002|INS|French translation of the Medical Subject Headings, 2002|MSH|2002|2002_04_11||2002AB||Dr. Annie Advocat; e-mail: advocat@inserm-dicdoc.u-strasbg.fr|Dr. Annie Advocat; e-mail: advocat@inserm-dicdoc.u-strasbg.fr|3|30883|20692||MH,SY||FRE|ISO646-US|Y|Y|

C1140132|C1140133|BRMP2002|BRMP|Portuguese translation of the Medical Subject Headings, 2002|MSH|2002|2001_12_04||2002AA||Elenice de Castro; e-mail: elenice@brm.bireme.br|Elenice de Castro; e-mail: elenice@brm.bireme.br|3|41853|27195||EP,MH,SY||POR|ISO646-US|Y|Y|

C1140297|C1140298|DUT2001|DUT|Dutch Translation of the Medical Subject Headings, 2001|MSH|2001|2001_12_04||2002AB||A.J.P.M.Overbeke, overbeke@ntvg.nl, * 20 662 0150|A.J.P.M.Overbeke, overbeke@ntvg.nl, * 20 662 0150|3|35705|17733||EP,MH,SY||DUT|ISO646-US|Y|Y|

C1142630|C1135584|MSH2003_2002_10_24|MSH|Medical Subject Headings, 2002_10_24|MSH|2003_2002_10_24|2002_11_05||2003AA||Stuart Nelson, M.D., Head, MeSH Section; e-mail: nelson@nlm.nih.gov|Stuart Nelson, M.D., Head, MeSH Section; e-mail: nelson@nlm.nih.gov|0|516015|231458|FULL-MULTIPLE|CE,EN,EP,HS,HT,MH,N1,NM,PM,TQ,XQ|AN,AQL,CX,DC,DID,DQ,DS,DX,EC,EV,FR,FX,HM,HN,II,LT,MDA,MMR,MN,MUI,OL,PA,PI,PM,QA,QE,QS,RN,RR,SOS,SRC,TH|ENG|ISO646-US|Y|Y|



SRDEF Basic information

(2003AA)

RT	TUI	STY/RL	STN/RTN	DEF	EX	UN	NH	ABR	RIN
STY T001 Organism A1.1 Generally, a living individual, including all plants and animals. Homozygote; Radiation Chimera; Sporocyst									
STY T002 Plant A1.1.1 An organism having cellulose cell walls, growing by synthesis of inorganic substances, generally distinguished by the presence of chlorophyll, and lacking the power of locomotion. Plant parts are included here as well. Pollen; Potatoes; Vegetables									
STY T003 Alga A1.1.1.1 A chiefly aquatic plant that contains chlorophyll, but does not form embryos during development and lacks vascular tissue. Chlorella; Laminaria; Seaweed									
STY T004 Fungus A1.1.2 A eukaryotic organism characterized by the absence of chlorophyll and the presence of a rigid cell wall. Included here are both slime molds and true fungi such as yeasts, molds, mildews, and mushrooms. Aspergillus clavatus; Blastomyces; Helminthosporium; Neurospora									
[...]									
RL T132 physically_related_to R1 Related by virtue of some physical attribute or characteristic. PR physically_related_to									
RL T133 part_of R1.1 Composes, with one or more other physical units, some larger whole. This includes component of, division of, portion of, fragment of, section of, and layer of. PT has_part									
[...]									
RL T186 isa H The basic hierarchical link in the Network. If one item "isa" another item then the first item is more specific in meaning than the second item. IS inverse_isa									
[...]									



SRSTR Structure

(2003AA)

STY/RL	RL	STY/RL	LS
Biologic Function	affects	Organism D	
Biologic Function	isa	Natural Phenomenon or Process D	
Biologic Function	process_of	Organism D	
Biologic Function	produces	Biologically Active Substance D	
Biologic Function	produces	Body Substance D	
[...]			
Disease or Syndrome	conceptually_related_to	Experimental Model of Disease DNI	
Disease or Syndrome	isa	Pathologic Function D	
Disease or Syndrome	produces	Tissue D	
[...]			
Medical Device	isa	Manufactured Object D	
Medical Device	prevents	Injury or Poisoning D	
Medical Device	prevents	Pathologic Function D	
Medical Device	treats	Anatomical Abnormality D	
Medical Device	treats	Injury or Poisoning D	
Medical Device	treats	Pathologic Function D	
Medical Device	treats	Sign or Symptom D	
[...]			
Mental Process	process_of	Plant B	blocks
			Biologic Function process_of
			Organism D
[...]			
part_of	isa	physically_related_to D	
[...]			



SRSTRE2 Structure (expanded)

(2003AA)

STY	RL	STY	
Disease or Syndrome	isa	Pathologic Function	Pathologic Function isa Biologic Function
Disease or Syndrome	isa	Biologic Function	Biologic Function isa Natural Phen. or Process
Disease or Syndrome	isa	Natural Phen. or Pr.	Natural Phen. or Process isa Phen. or Process
Disease or Syndrome	isa	Phenomenon or Process	Phenomenon or Process isa Event
Disease or Syndrome	isa	Event	
Disease or Syndrome	affects	Alga	
Disease or Syndrome	affects	Amphibian	
Disease or Syndrome	affects	Animal	
Disease or Syndrome	affects	Archaeon	
Disease or Syndrome	affects	Bacterium	
Disease or Syndrome	affects	Biologic Function	
Disease or Syndrome	affects	Bird	
Disease or Syndrome	affects	Cell Function	
Disease or Syndrome	affects	Cell or Molecular Dysfunction	
[...]			

