Seminar on Standardization of Laboratory Data with LOINC
Hong Kong Hospital Authority

REgenstrief LOINC Mapping Assistant

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Regenstrief Institute
Medical Informatics

Overview

- 1. Other tools for LOINC Mapping
- 2. RELMA
 - 1. Highlights
 - 2. Simple search
 - 3. Mapping
 - 4. Other RELMA Features

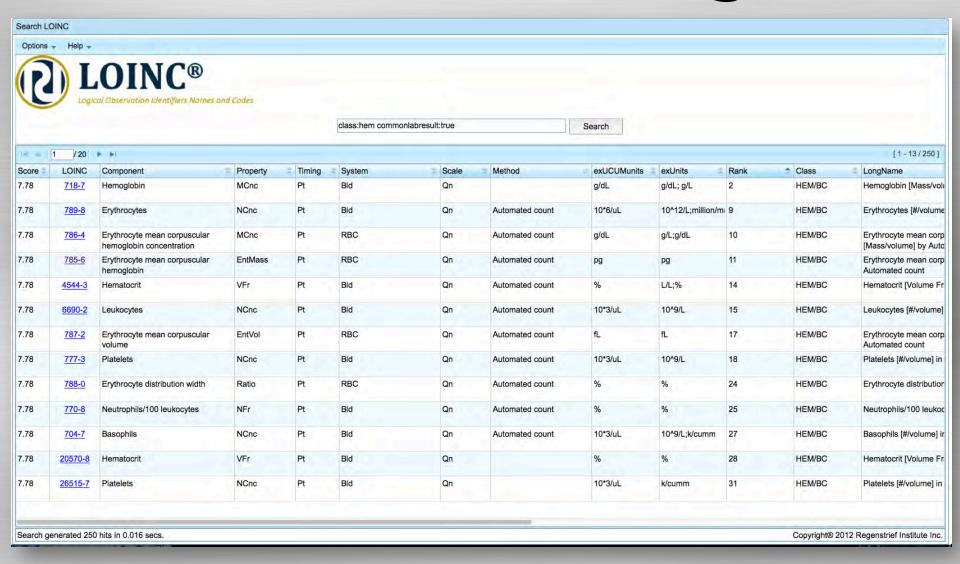




search.loinc.org

A convenient place to browse LOINC

search.loinc.org

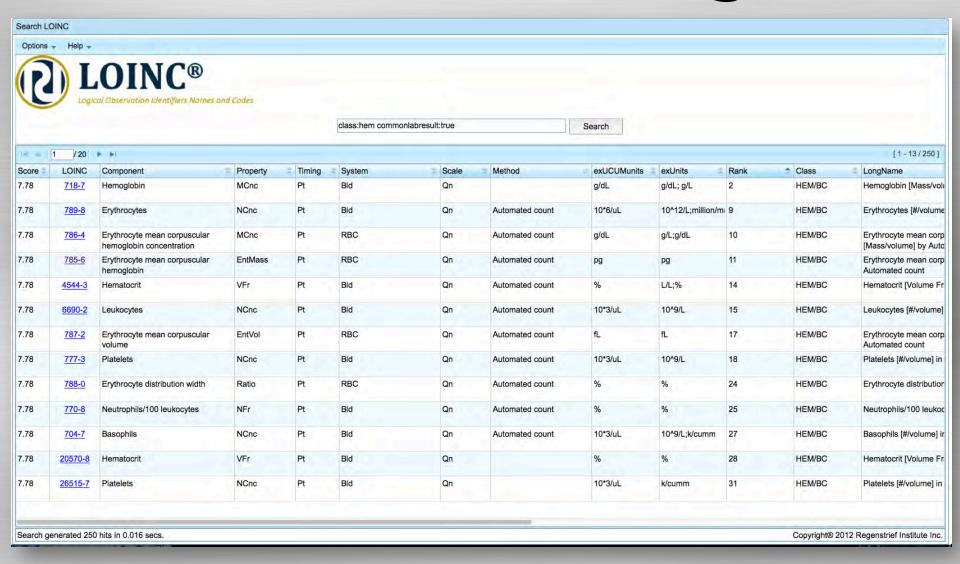


Search Syntax

Same as in RELMA
Google-like
AND, OR, -<word>, +<word>
Limit by category (e.g. class:micro)
Wildcards (? and *)

Assumes EXACT MATCH unless you use wildcards

search.loinc.org



search.loinc.org

785-6 Erythrocyte mean corpuscular hemoglobin [Entitic mass] by

Automated count

NAME

Fully-Specified Name:

Component

Erythrocyte mean corpuscular hemoglobin

Property EntMass

Time Aspect Pt

System RBC

Scale Method Qn

Automated count

DEFINITION/DESCRIPTION

Source: Wikipedia

The mean corpuscular hemoglobin, or "mean cell hemoglobin" (MCH), is the average mass of hemoglobin per red blood cell in a blood sample. It is decreased in hypochromic anemias, and increased in hyperchromic anemias. MCH is obtained by dividing the total mass of hemoglobin by the number of red blood cells in a volume of blood.

MCH=(Hgb*10)/RBC

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URL: MCH

BASIC ATTRIBUTES

Class/Type:

HEM/BC/Lab

Common Lab Results Rank:

#11

Last Updated: Order vs. Obs.: Status:

2010/03/08 Observation

Active

FORMULA -- READABLE

 $Hgb (g/L)/RBC(x10^12/L)$

MEMBER OF THESE PANELS

57021-8 57022-6 57782-5 CBC W Auto Differential panel in Blood

CBC W Reflex Manual Differential panel in Blood CBC with Ordered Manual Differential panel in Blood

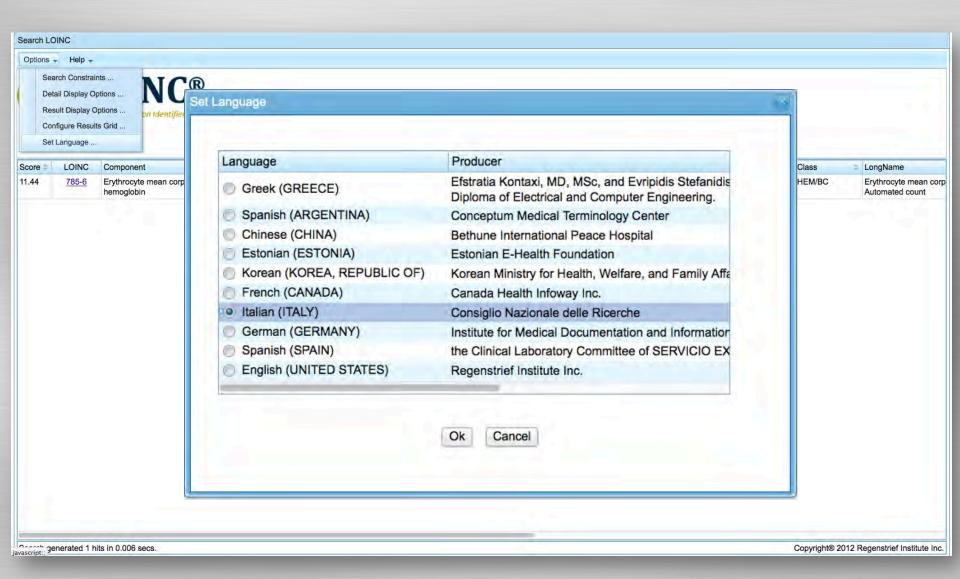
Complete blood count (hemogram) panel in Blood by Automated count

PARTS

58410-2

Part Type	Part No.	Part Name	
Component	LP17689-8	Erythrocyte mean corpuscular hemoglobin	
Property	LP6809-0	EntMass [Entitic mass]	
Time	LP6960-1	Pt [Point in time (spot)]	
System	LP7536-8	RBC [Red Blood Cells]	
Seele	I D7752 0	On	

Alternate Language Search



Alternate Language Search



LOINC Mapper's Guide to the Top 2000

loinc.org/usage

loinc.org/usage



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Documentation

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2 search all of loinc.org

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LOINC Usage

Harnessing Zipf's law for you.

results | orders | units



Current Versions

LOINC 2.38

Released: 2011-12-30

RELMA 5.5

Released: 2011-12-30





Common LOINC Laboratory Observation Codes

We created an empirically-based list of the most common LOINC result codes for laboratories, practices, researchers, and others who wish to map their int for much of the result volume, we think that Top 2000+ list will be an

"Top 2000 Results"

represent about 98% of the test volume carried by three large

ab Tests with a wealth of advice and guidance about which codes to

LOINC Top 2000+ Lab Observations and Mapper's Guide

- LOINC Mapper's Guide to the Top 2000+ Lab Observations Introduction to Version 1.0 (pdf)
 - File Version: Top 2000+ Lab Observations Introduction 1.0 | File type: application/pdf | Release Date: 2011-05-31

File Description: Background document describing the origins, development, and organization of the LONIC Mapper's Guide to the Top 2000+ Lab Observations.

- LOINC Mapper's Guide to the Top 2000+ Lab Observations Version 1.0a (pdf)
 - File Version: LOINC Mapper's Guide to the Top 2000+ Lab Observations 1.0 | File type: application/pdf | Release Date: 2011-06-01

File Description: Document containing mapping guidance for the LOINC Top 2000+ Lab Observations.

OID: 1.3.6.1.4.1.12009.10.2.3

- LOINC Mapper's Guide to the Top 2000+ Lab Observations Version 1.0a (xlsx)
 - File Version: LOINC Mapper's Guide to the Top 2000+ Lab Observations 1.0 | File type: application/vnd.openxmlformats-officedocument.spreadsheetml.sheet | Release Date: 2010-06-01 File Description: Document containing mapping guidance for the LOINC Top 2000+ Lab Observations. Requires a loinc.org account.

OID: 1.3.6.1.4.1.12009.10.2.3

LOINC Top 2000+ Lab Observations - Version 1.0 (csv)

File Version: Top 2000+ Lab Observations 1.0 | File type: text/comma-separated-values | Release Date: 2010-05-31

File Description: The list of LOINC Top 2000+ Lab Observations in a simple CSV file. Does NOT contain mapping guidance.

OID: 1.3.6.1.4.1.12009.10.2.3

Notes about Version 1.0a: This version contains a couple of corrections for UCUM units. The rest of the content is unchanged from version 1.0 (2010-05-31)

Recent Forum Posts

Microbiology | Re: Microbiology Text results and LOINC

Microbiology | Re: Organism Names and LOINC?

More posts.



LOINC New paper published in JBI about helping map to #LOINC with RELMA by augmenting local test names loinc.org/articles /Kim20... about 1 hour ago - reply - retweet -

Join the conversation

Mapper's Guide to Top 2000

Introduction to the Guide to the Top 2000+ LOINC Laboratory Observations

Why a Table of the Top 2000+ Tests?

We created this list for laboratories, practices, researchers, and others who wish to map their laboratory test codes to universal LOINC codes (http://loinc.org). The "Mapper's Guide" provides a starter, target set of LOINC codes against which to map local test codes, as well as guidance about which LOINC codes to choose for which purpose. This list contains the 2017 most commonly reported LOINC codes, representing about 98% of the test volume carried by three large organizations that mapped all of their laboratory tests to the LOINC codes.

Each row in the spreadsheet and the PDF report of its contents carries information about one laboratory test observation including its LOINC code and name, example units of measure expressed in UCUM units (http://unitsofmeasure.org), its relative frequency (rank), guidance (in some cases) about when to choose that test code, and more. The corresponding spreadsheet carries, in addition, the LOINC short name and the full six parts of the LOINC formal name.

If you are a laboratory, we advise you to organize your mapping effort by LOINC class override, which will correspond roughly to your laboratory section.

Download Formats

You will be able to obtain the Mapper's Guide in three formats downloadable from the LOINC web site at no cost (http://loinc.org/usage):

LOINC MAPPER'S GUIDE TO TOP 2000+ LAB TESTS v1.0a

SORT BY: Class Override >System Adjusted > Long Common Name

В	C	E	F	G	Н		P
LOINC # Long Comm	on Name	Class Override	Rank	Example UCUM	Example UCUM Display	Comment	System Adjusted

126 Antibacterial susceptibility

The statistics for antibiotic susceptibility tests in the Top 2000 List are not as broadly based as most of the other test categories, because antibiotic susceptibilities were available from only one of our 3 sources.

LOINC provides codes for antibiotic suceptibility testing based on method used. The four major categories are as follows:

- 1) A general flavor that does not specify the method of testing used
- 2) Minimum Inhibitory Concentrations (MIC)
- 3) Kirby Bauer disc testing (KB) and
- 4) Gradient strip (E-test)

The general flavor can be used to report results for any of the three more specific approaches (Kirby Bauer, MIC or E-test susceptibilities) assuming that the details regarding the method of testing is provided elsewhere in the messages or in other OBX segments.

The majority of the antibiotic susceptibility tests that made it into the top 2000 list are of this general flavor type, but a few MIC tests and gradient strip LOINC codes also appear. In case your laboratory prefers the more specific codes for the antibiotics listed here, you can find them under the Antibiotic susceptibility class in the full LOINC database.

Some of the antibiotics used to treat tuberculosis are also used to treat more common bacterial infections. LOINC provides specific codes for reporting antibiotic susceptibilities to slow growing Mycobacteria – such as M.tuberculosis, M.avium and M.intracellular, and these codes should be used for reporting antibiotic susceptibilities for such bacteria. These codes can be identified by the phrase "slow growing mycobacteria" in the method part of the LOINC name. Antibiotic susceptibilities to a fast growing mycobacteria can be reported under the same codes as any other bacteria.

4	-	-
п	,	_

128	L7-3 Methicillin resistant Staphylococcus aureus [Presence] in Unspecified specimen by Organism specific culture	Antibacterial susceptibility	146	Methicillin Resistant Staphlocuss via culture	Any
129	50-7 Amikacin [Susceptibility]	Antibacterial susceptibility	414		Isolate
130	52-3 Amoxicillin+Clavulanate [Susceptibility]	Antibacterial susceptibility	549		Isolate
131	54-9 Ampicillin [Susceptibility]	Antibacterial susceptibility	331		Isolate
132	55-6 Ampicillin+Sulbactam [Susceptibility]	Antibacterial susceptibility	330		Isolate
188	58-0 Aztreonam [Susceptibility]	Antibacterial	454		Isolate

Also available as .CSV file

II.	A	В	C	D	E
1	LOINC_NUM	LongName	SHORTNAME	CLASS	Rank
2	2160-0	Creatinine [Mass/volume] in Serum or Plasma	Creat SerPI-mCnc	CHEM	1
3	718-7	Hemoglobin [Mass/volume] in Blood	Hgb Bld-mCnc	HEM/BC	2
4	2823-3	Potassium [Moles/volume] in Serum or Plasma	Potassium SerPI-sCnc	CHEM	3
5	2345-7	Glucose [Mass/volume] in Serum or Plasma	Glucose SerPI-mCnc	CHEM	4
6	2951-2	Sodium [Moles/volume] in Serum or Plasma	Sodium SerPI-sCnc	CHEM	5
7	3094-0	Urea nitrogen [Mass/volume] in Serum or Plasma	BUN SerPI-mCnc	CHEM	6
8	2028-9	Carbon dioxide, total [Moles/volume] in Serum or Plasma	CO2 SerPI-sCnc	CHEM	7
9	2075-0	Chloride [Moles/volume] in Serum or Plasma	Chloride SerPl-sCnc	CHEM	8
10	789-8	Erythrocytes [#/volume] in Blood by Automated count	RBC # Bld Auto	HEM/BC	9
11	786-4	Erythrocyte mean corpuscular hemoglobin concentration [M	MCHC RBC Auto-mCnc	HEM/BC	10
12	785-6	Erythrocyte mean corpuscular hemoglobin [Entitic mass] by A	MCH RBC Qn Auto	HEM/BC	11
13	17861-6	Calcium [Mass/volume] in Serum or Plasma	Calcium SerPI-mCnc	CHEM	12
14	2339-0	Glucose [Mass/volume] in Blood	Glucose Bld-mCnc	CHEM	13
15	4544-3	Hematocrit [Volume Fraction] of Blood by Automated count	Hct VFr Bld Auto	HEM/BC	14
16	6690-2	Leukocytes [#/volume] in Blood by Automated count	WBC # Bld Auto	HEM/BC	15
17	1742-6	Alanine aminotransferase [Enzymatic activity/volume] in Serv	ALT SerPl-cCnc	CHEM	16
18	787-2	Erythrocyte mean corpuscular volume [Entitic volume] by Au	MCV RBC Auto	HEM/BC	17
19	777-3	Platelets [#/volume] in Blood by Automated count	Platelet # Bld Auto	HEM/BC	18
20	1920-8	Aspartate aminotransferase [Enzymatic activity/volume] in Se	AST SerPI-cCnc	CHEM	19
21	1751-7	Albumin [Mass/volume] in Serum or Plasma	Albumin SerPl-mCnc	CHEM	20
22	1975-2	Bilirubin.total [Mass/volume] in Serum or Plasma	Bilirub SerPl-mCnc	CHEM	21
23	2885-2	Protein [Mass/volume] in Serum or Plasma	Prot SerPI-mCnc	CHEM	22
24	6768-6	Alkaline phosphatase [Enzymatic activity/volume] in Serum of	ALP SerPI-cCnc	CHEM	23
25	788-0	Erythrocyte distribution width [Ratio] by Automated count	RDW RBC Auto-Rto	HEM/BC	24
26	770-8	Neutrophils/100 leukocytes in Blood by Automated count	Neutrophils NFr Bld Auto	HEM/BC	25
27	33914-3	Glomerular filtration rate/1.73 sq M.predicted by Creatinine-	GFR/BSA.pred SerPl MDRD-ArVRat	CHEM	26
28	704-7	Basophils [#/volume] in Blood by Automated count	Basophils # Bld Auto	HEM/BC	27
29	20570-8	Hematocrit [Volume Fraction] of Blood	Hct VFr Bld	HEM/BC	28

loinc.org/documentation

Logical Observation Identifiers Names and Codes (LOINC®) Users' Guide

Edited by: Clem McDonald, MD, Stan Huff, MD, Kathy Mercer, Jo Anna Hernandez, Daniel J. Vreeman, PT, DPT

Please send questions and comments to:

LOINC c/o Regenstrief Institute, Inc 410 West 10th St. Suite 2000 Indianapolis, IN 46202

or via email: loinc@regenstrief.org

This and other relevant documents and files are available at http://loinc.org

RELMA®

Regenstrief LOINC® Mapping Assistant

Version 5.6 Users' Manual

RELMA®

REgenstrief LOINC Mapping Assistant

Get LOINC

you are here: home → downloads

LOINC 2.38

RELMA 5.6

Recent Forum Posts

LOINC

LOINC RT @techydoc: @Farzad ONC is in the house #hims12 MU Stage 2 will be in the Fed Reg tomorrow! #meaningfuluse

Join the conversation

LOINC and RELMA Complete Package

Download Now (free)

This file contains the RELMA® program installer (which also includes the LOINC® and RELMA® Users' Guides), and the LOINC® database in both MS Access™ and tab-delimited formats.

LOINC 2.38

The LOINC table with fields for LOINC codes, each of the six parts of the formal name of the LOINC, synonyms, comments,

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Additional files available in the LOINC distribution.

- . LOINC Panels and Forms File
- · LOINC Multiaxial Hierarchy File
- LOINC Context-specific Hierarchy Template File

Download Now

Regenstrief LOINC Mapping Assistant (RELMA®) is a Windows

Download Now

Request LOINC CD-ROM

The full LOINC, RELMA, and related files can also be obtained on CD-ROM by filling out our online request form.

What's it Good For?

Browse LOINC

Map your local terms to LOINC

import/export translate local words to LOINC-speak manual/automated mapping

RELMA Highlights

Search Enhanced details view Common test list Panels and forms Results grid with easy export, copy, paste, more

More RELMA Highlights

User Specified Search Limits
Selectable hierarchy trees for:

Class

Multi-axial (component/system)

System (specimen)

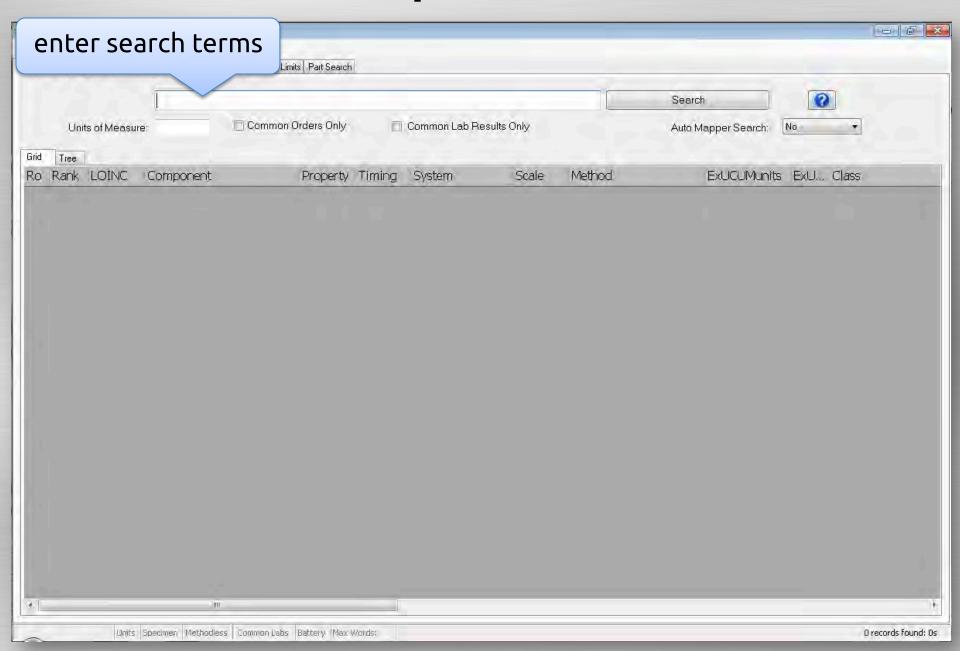
Component

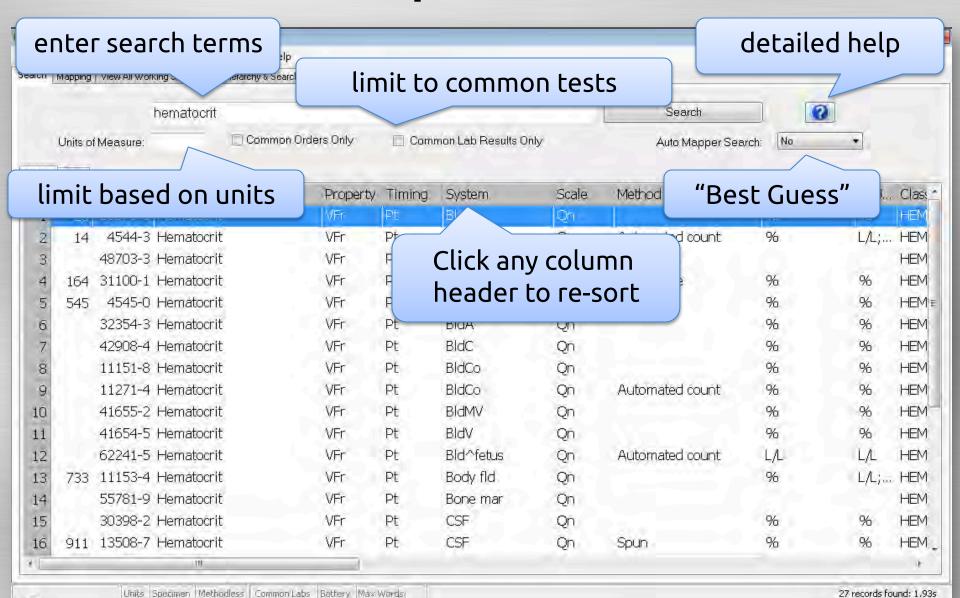
Method

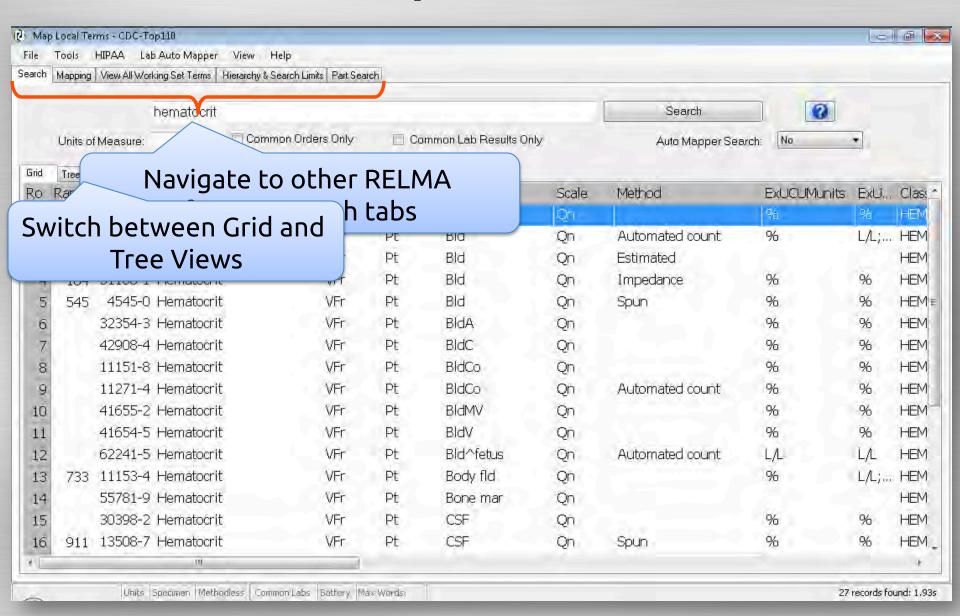
For exploring what is in LOINC

Main Menu/Welcome Screen

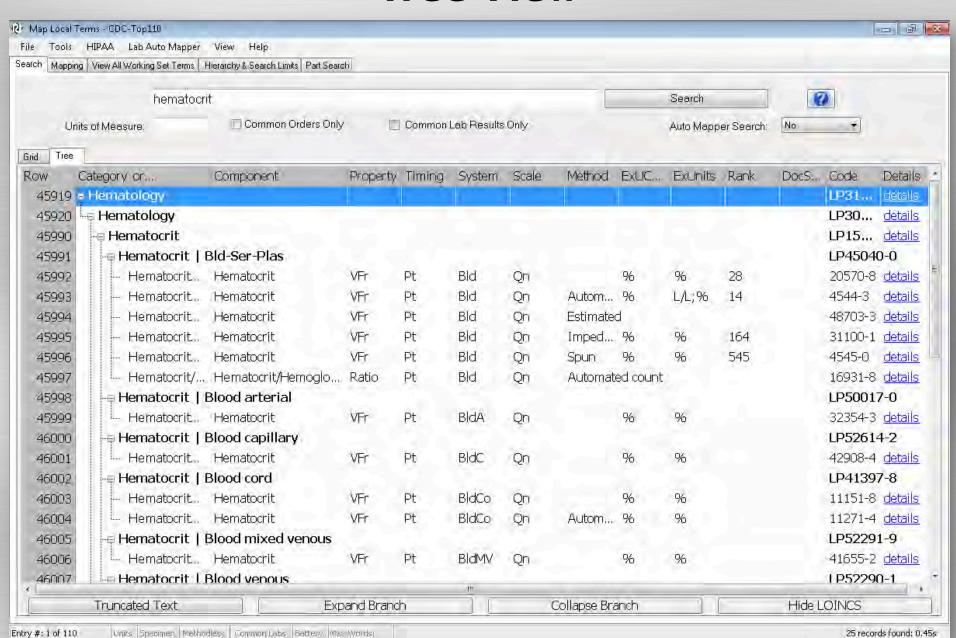




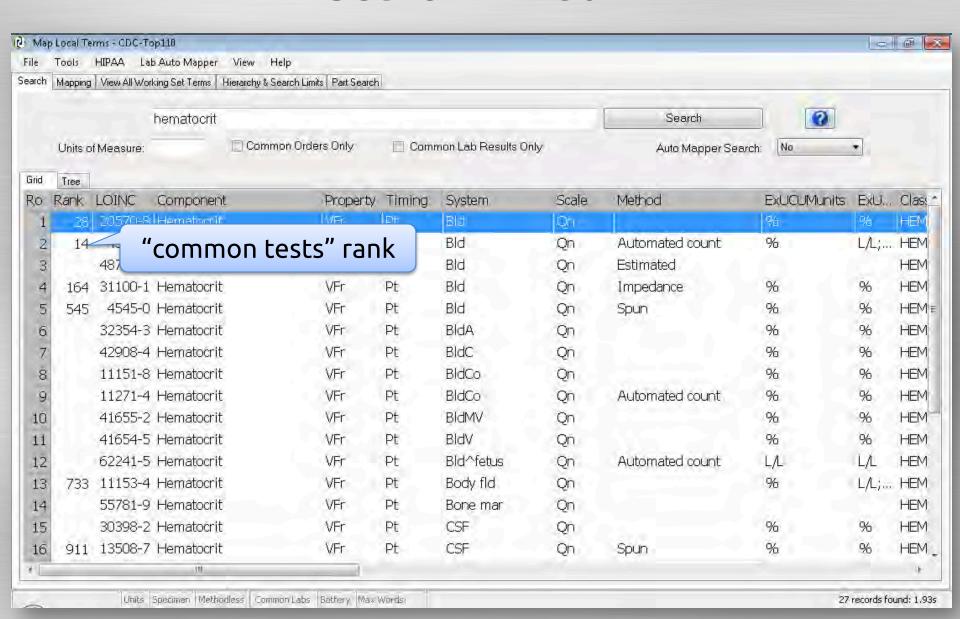




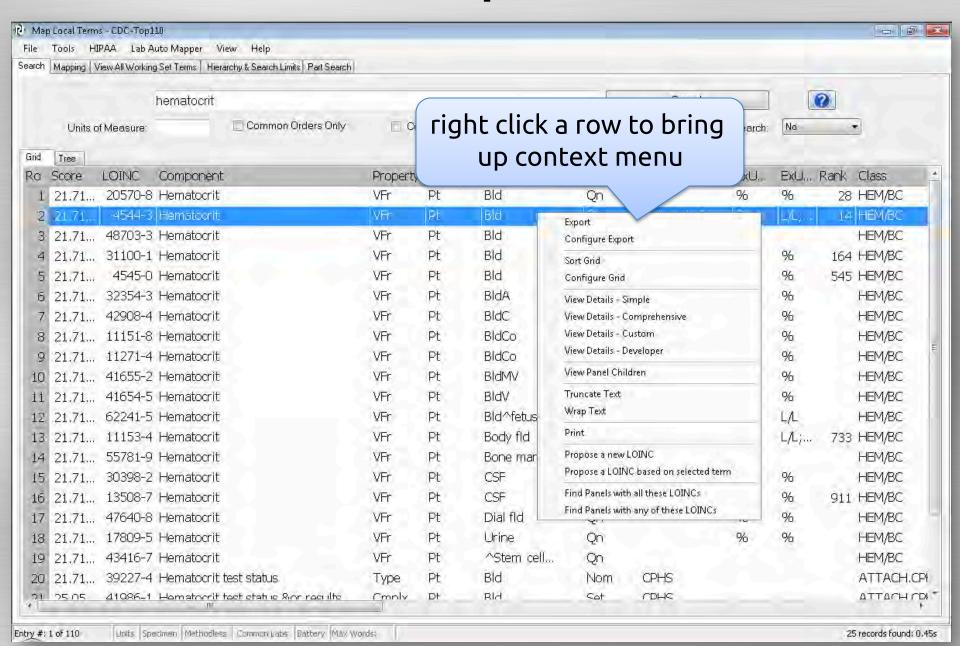
Tree View



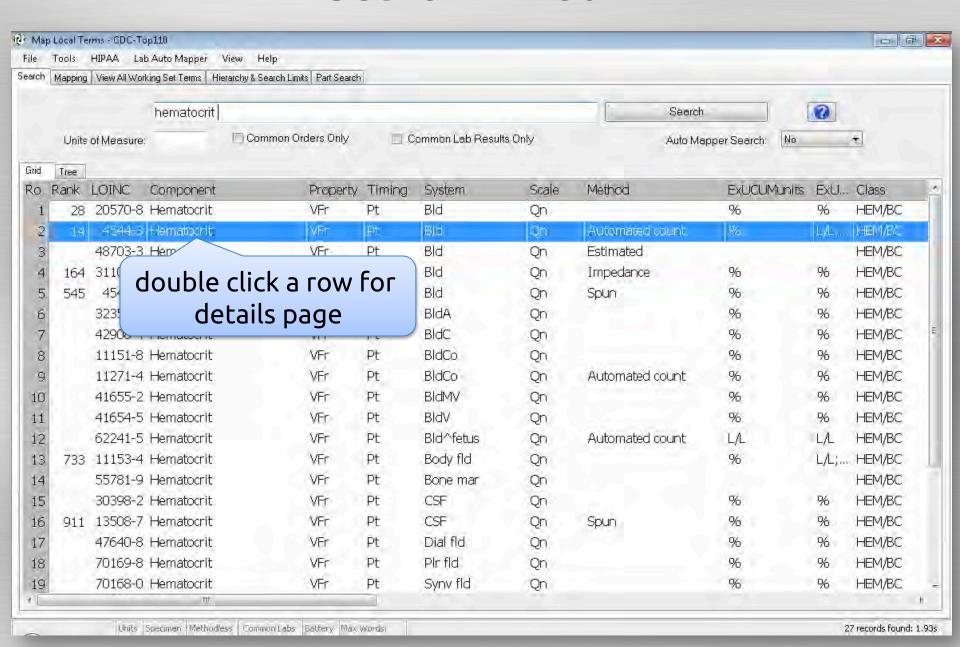
Search Window



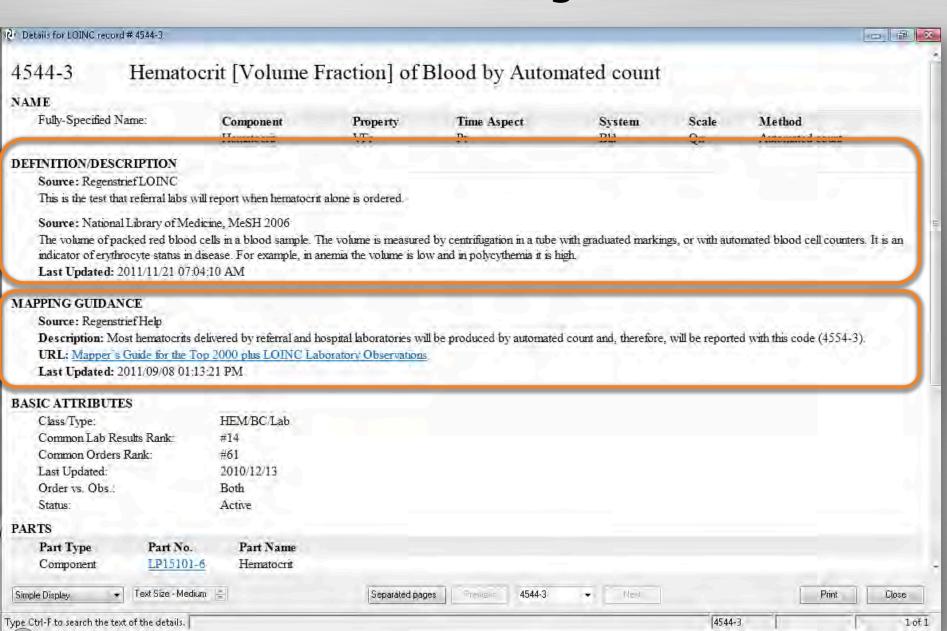
Grid Options



Search Window



Details Page



Mapping to LOINC

RELMA's main purpose

Importing Local Terms into RELMA



4 Ways to Build LMOF

- 1. Hand enter
- 2. Make your own table
- 3. Import your test catalog from text file
- 4. Import from real HL7 v2.x messages

bad

bad

good

best

Main Menu/Welcome Screen

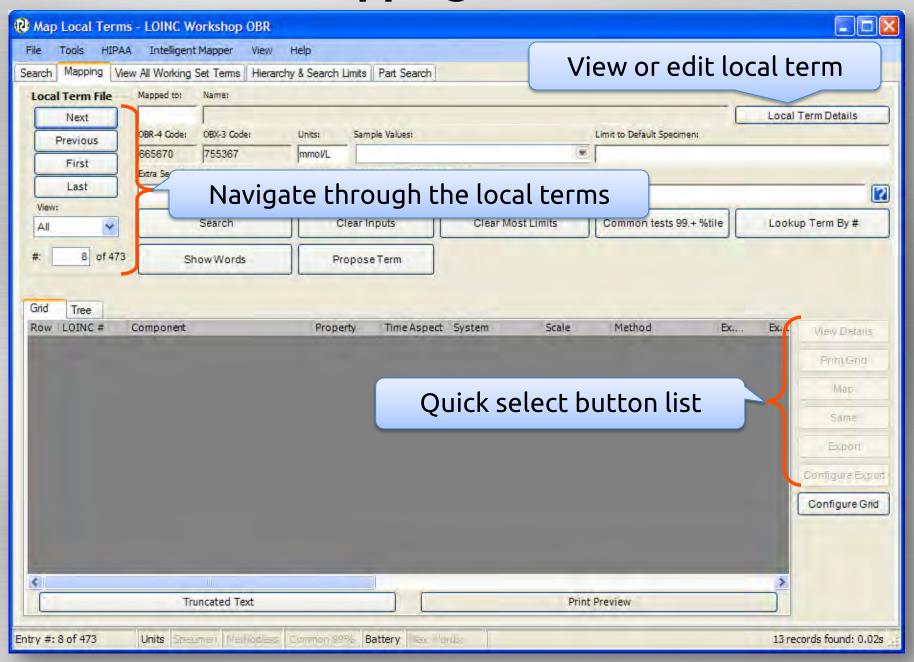


Core Mapping Screen Features

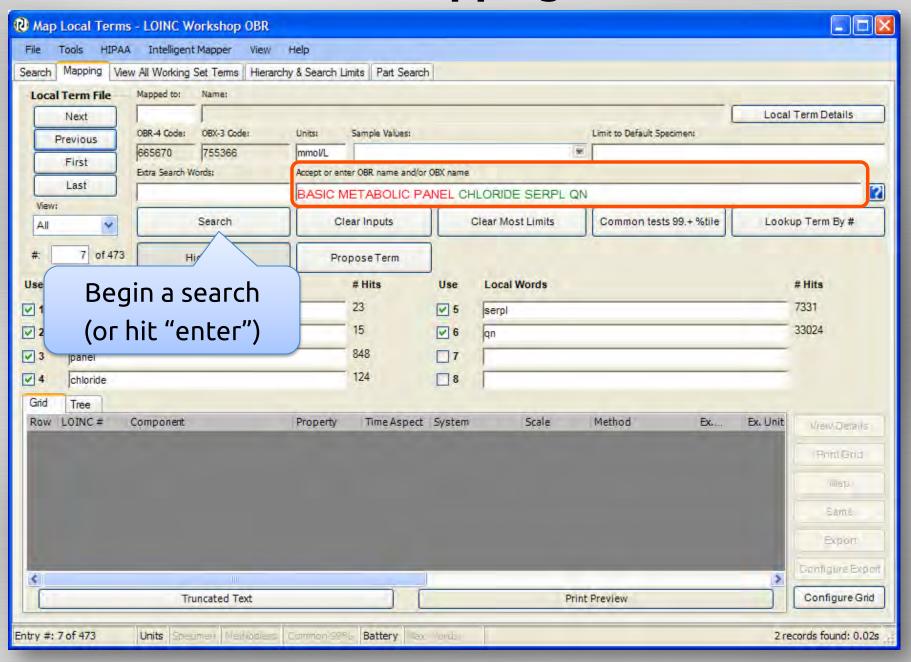


Customizable grid Sort by columns View term details Export results grid
Stores mappings

Mapping Screen



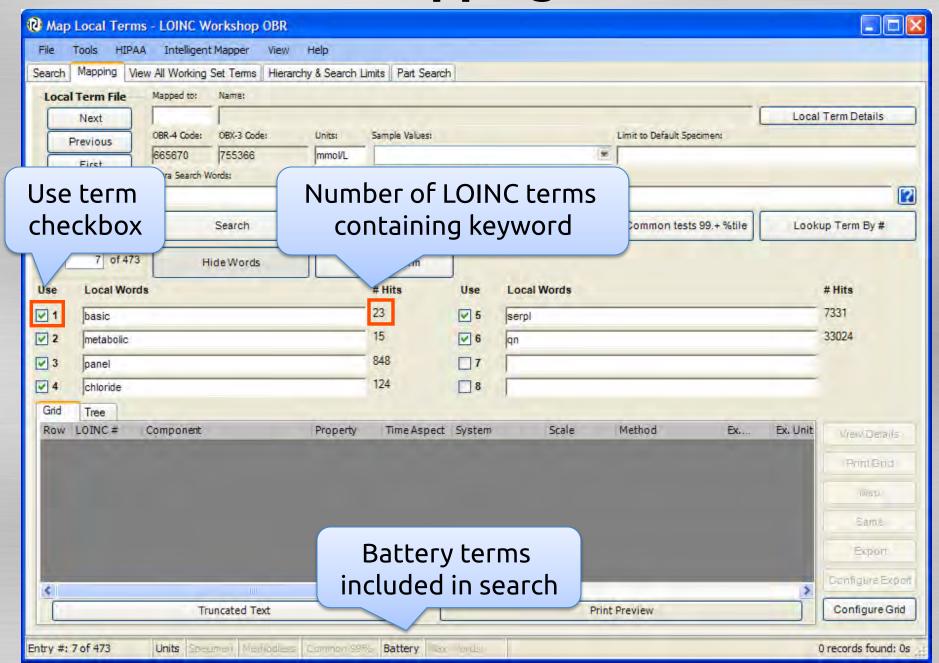
Standard Mapping Screen



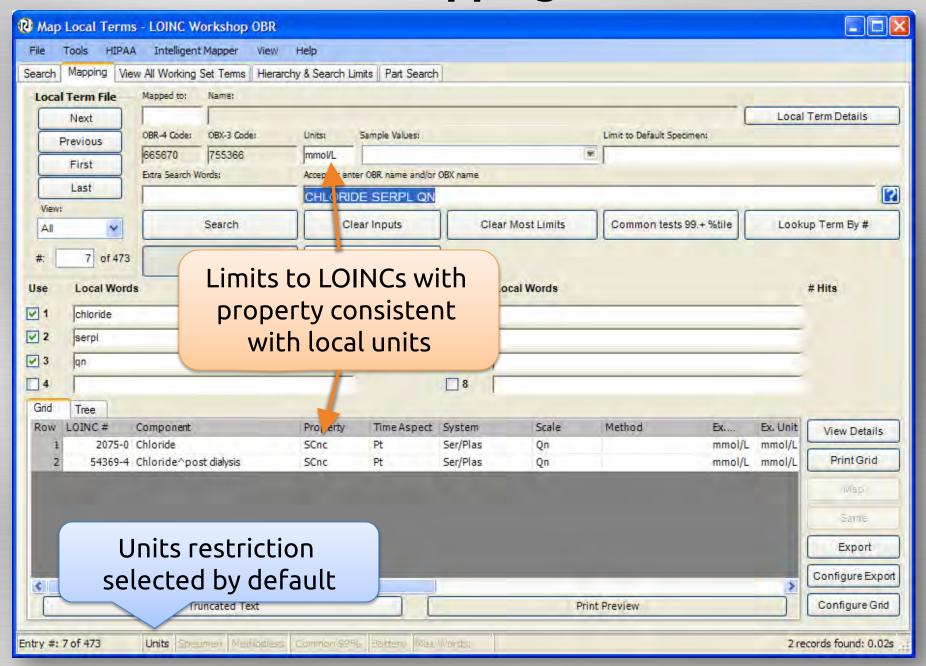
Initial Mapping Results



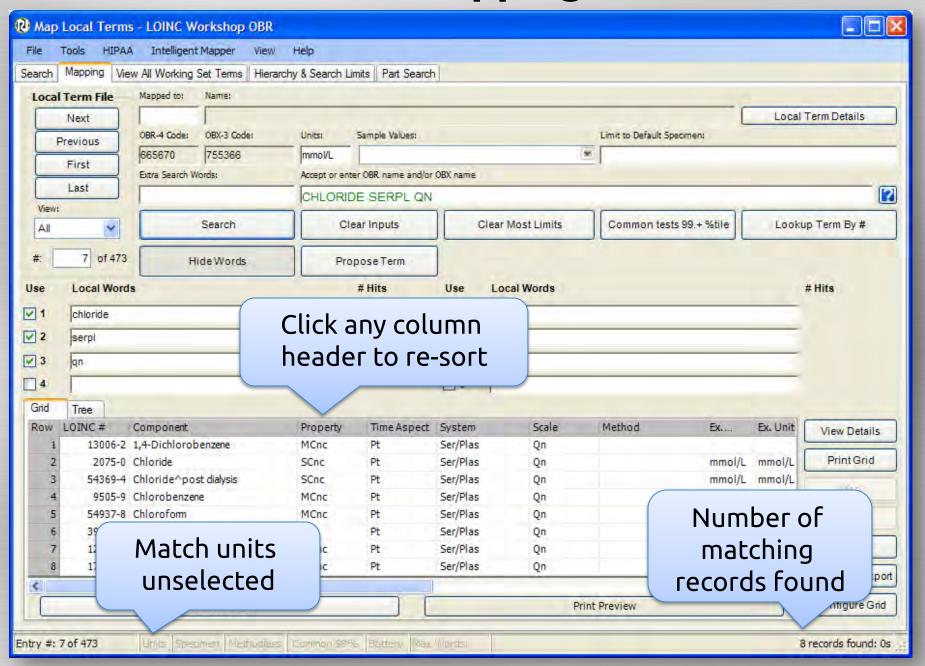
Initial Mapping Results



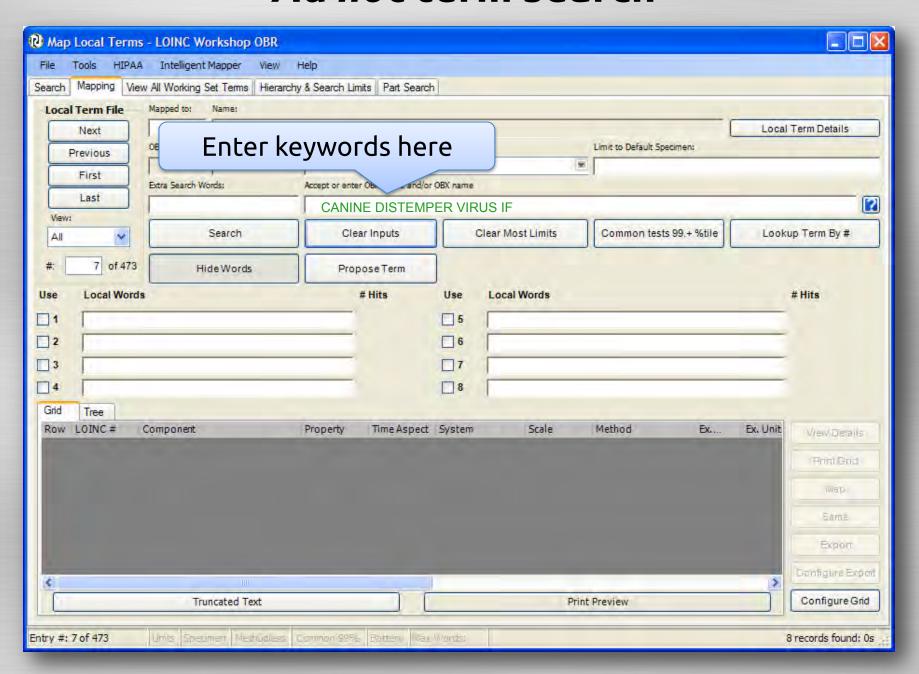
Revised Mapping Results



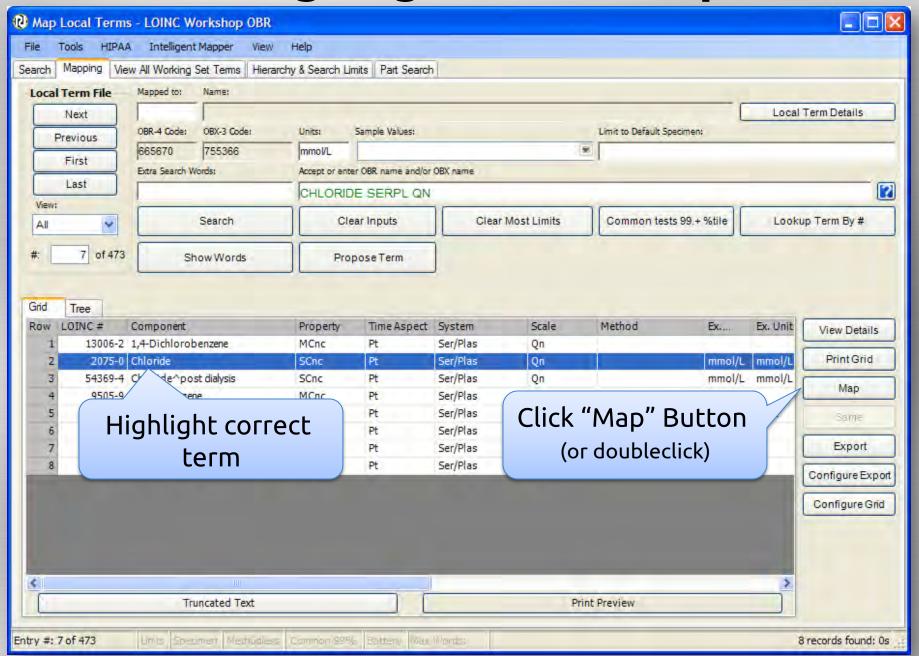
Re-revised Mapping Results



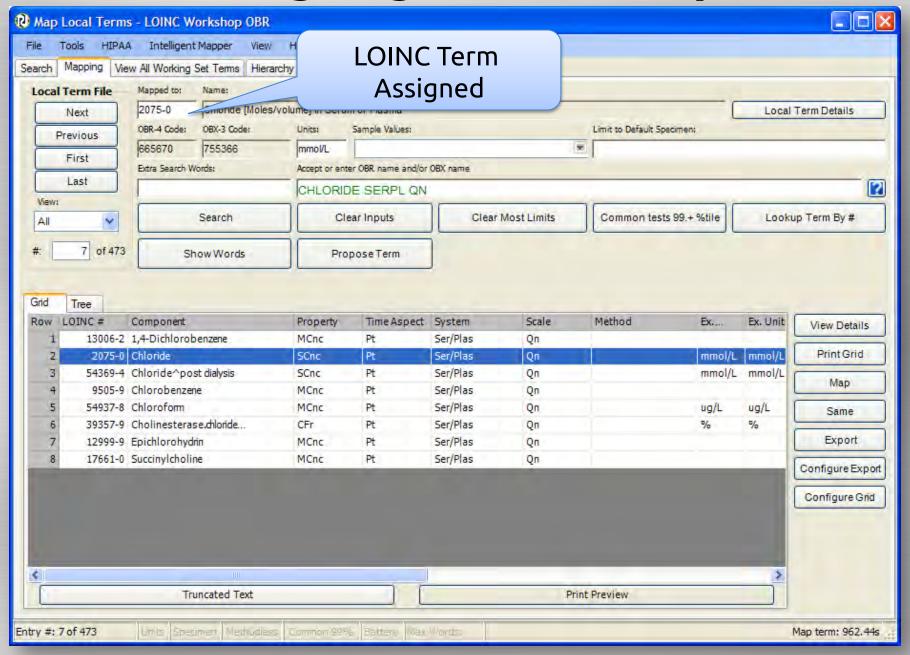
Ad hoc term search



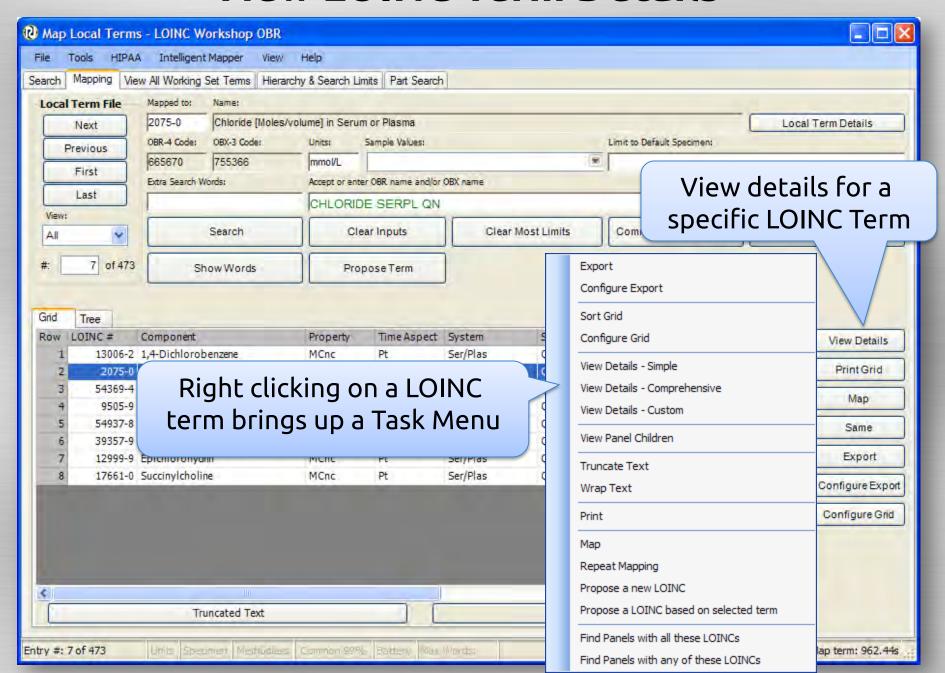
Assigning a LOINC Map



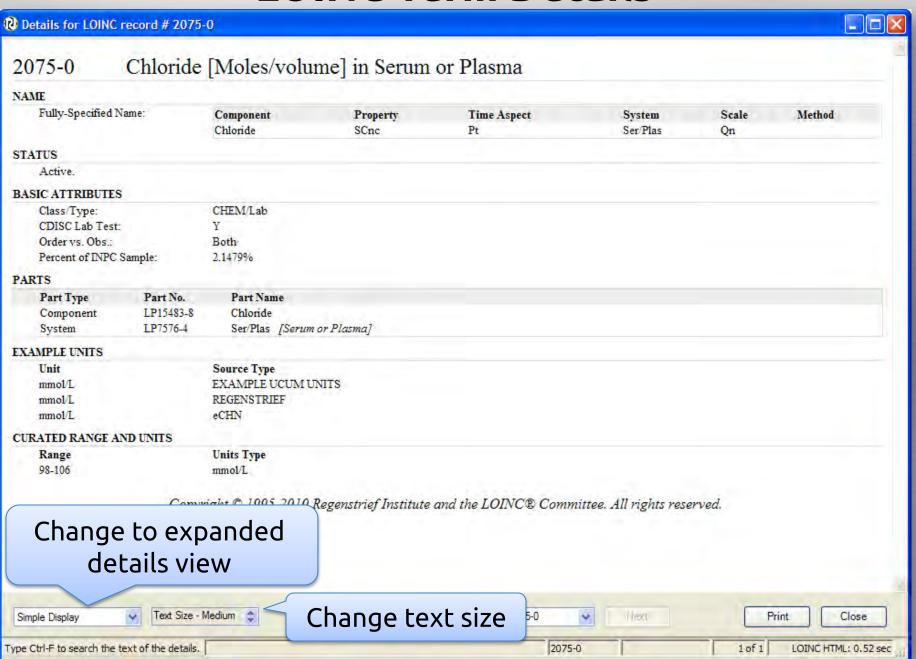
Assigning a LOINC Map



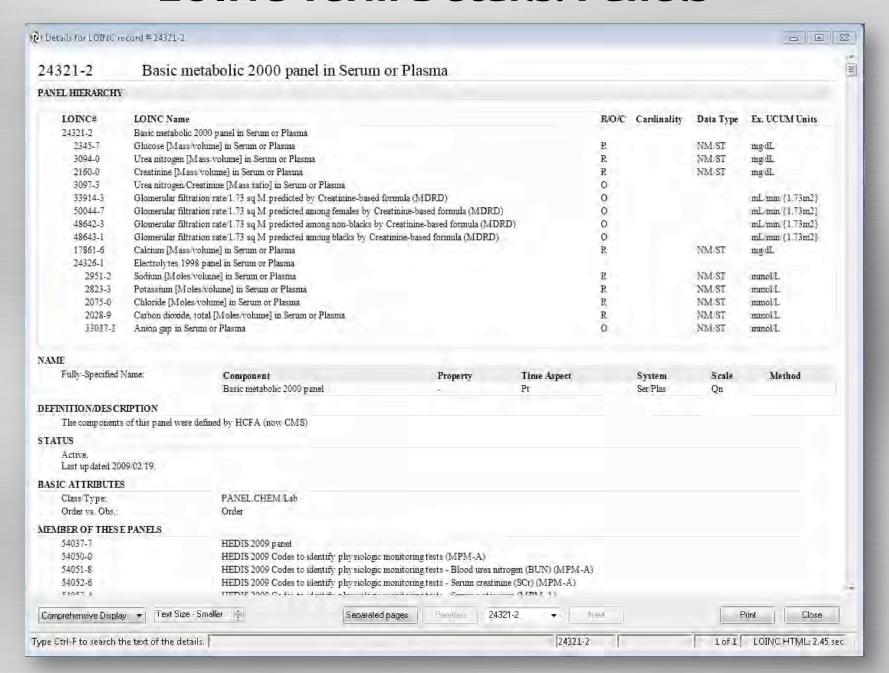
View LOINC Term Details



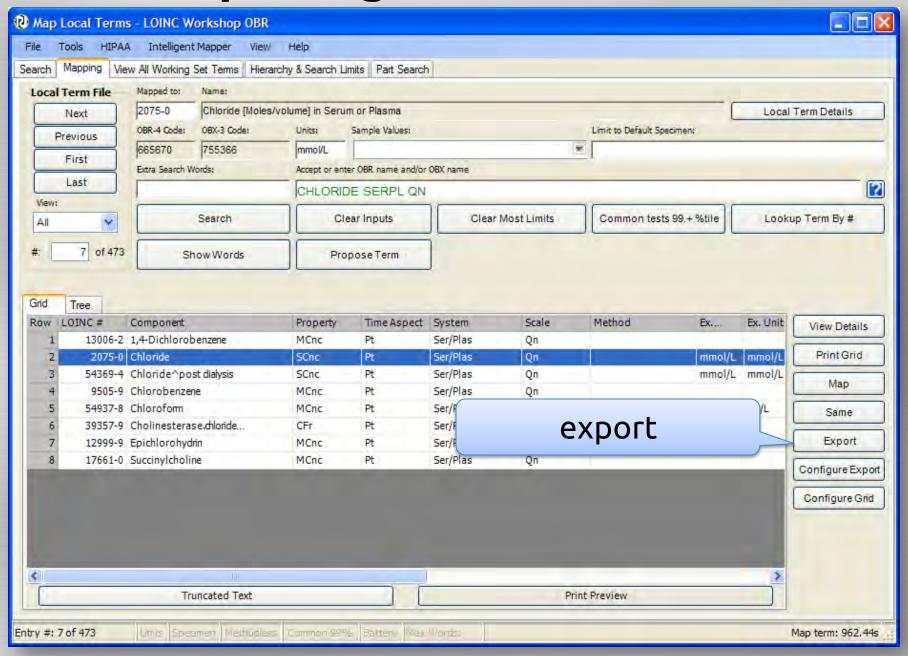
LOINC Term Details



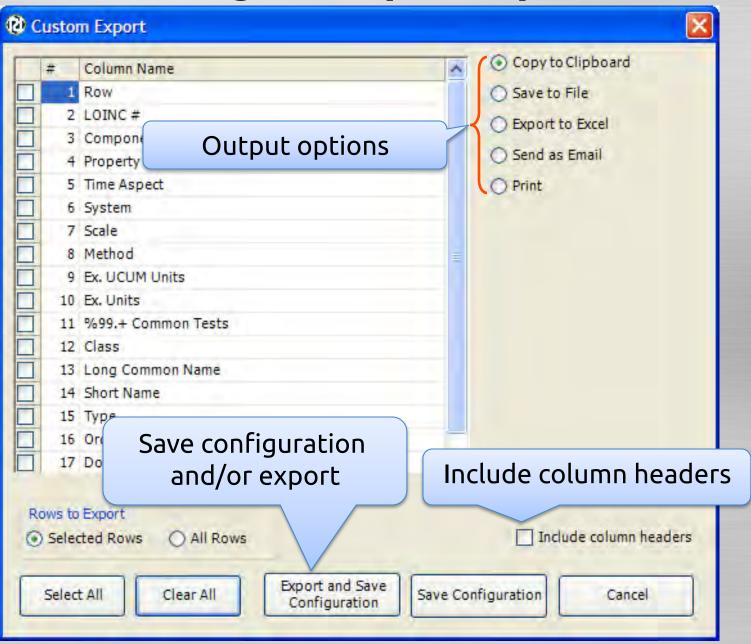
LOINC Term Details: Panels



Exporting Rows from Grid



Configure Export Options



More on Search Syntax

Tips and Tricks

Search in a Field

Field	Example		
Component	component:chemotherapy		
Property	glucose property:CCnc		
Timing	glucose timing:24H		
System	glucose system:CSF		
Scale	glucose scale:Nar		
Method	mycobacterium method:EIA		
Class	glucose class:UA		

Other Tricks

Use parentheses

glucose (phosphate OR phosphatase) rbc -ord

component:(norepinephrine creatinine)

Fuzzy search (~)

Bergdorferi~

Limiting Your Searches

Sometimes 68,000+ terms is too many

Setting Search Limits

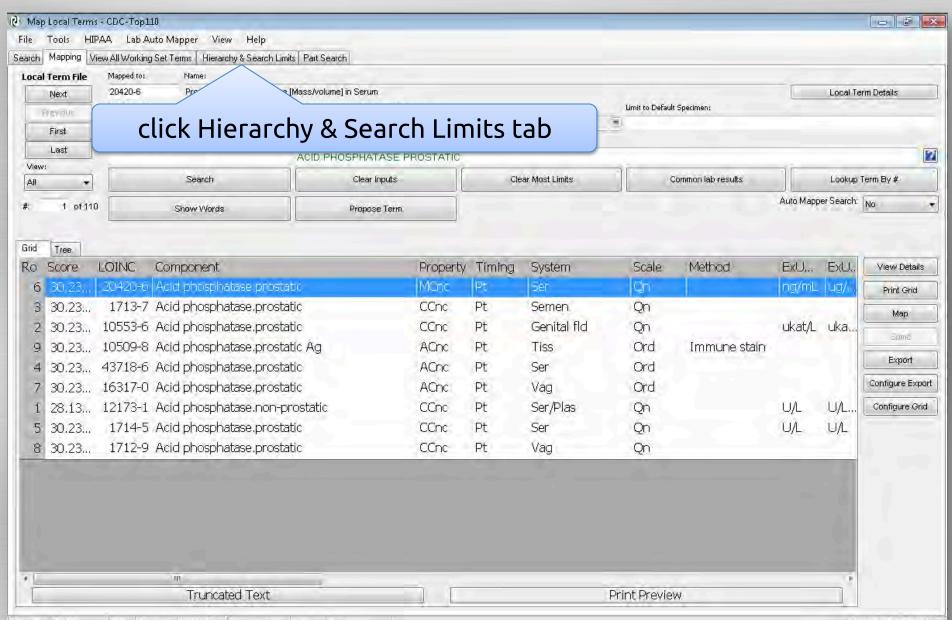
Reduces number of candidate terms Many, many options for limits Hierarchy allows domain restrictions

Caution

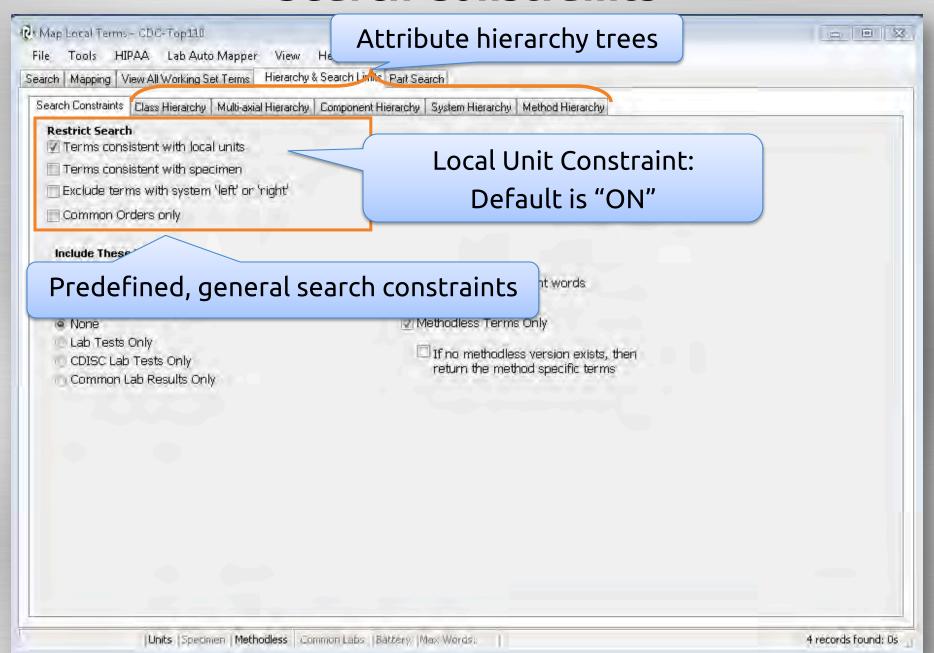
Easy to forget that a search restriction is turned on.

A common reason for not finding a LOINC that really is there.

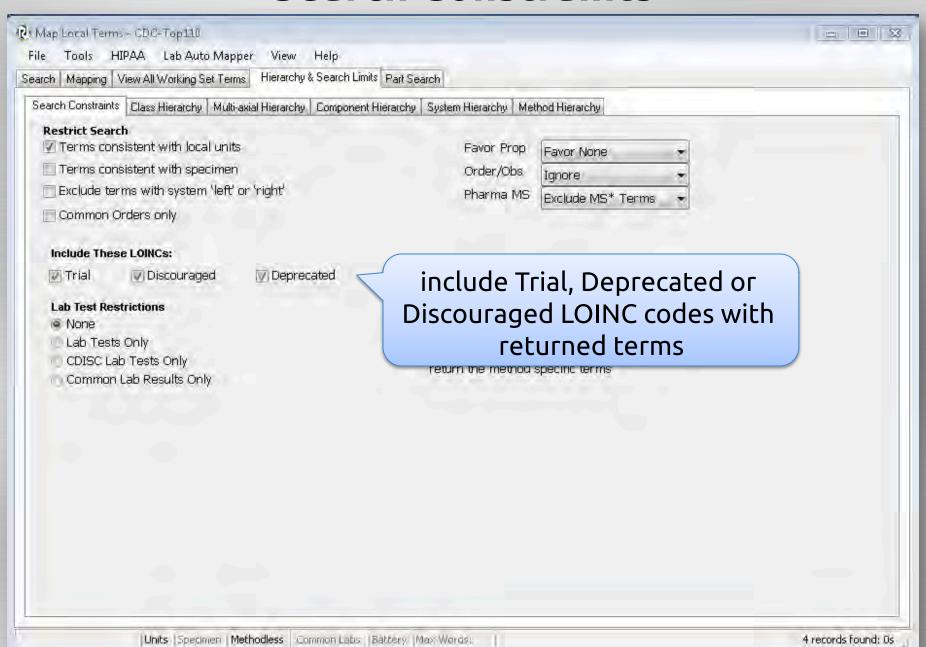
Setting Search Limits



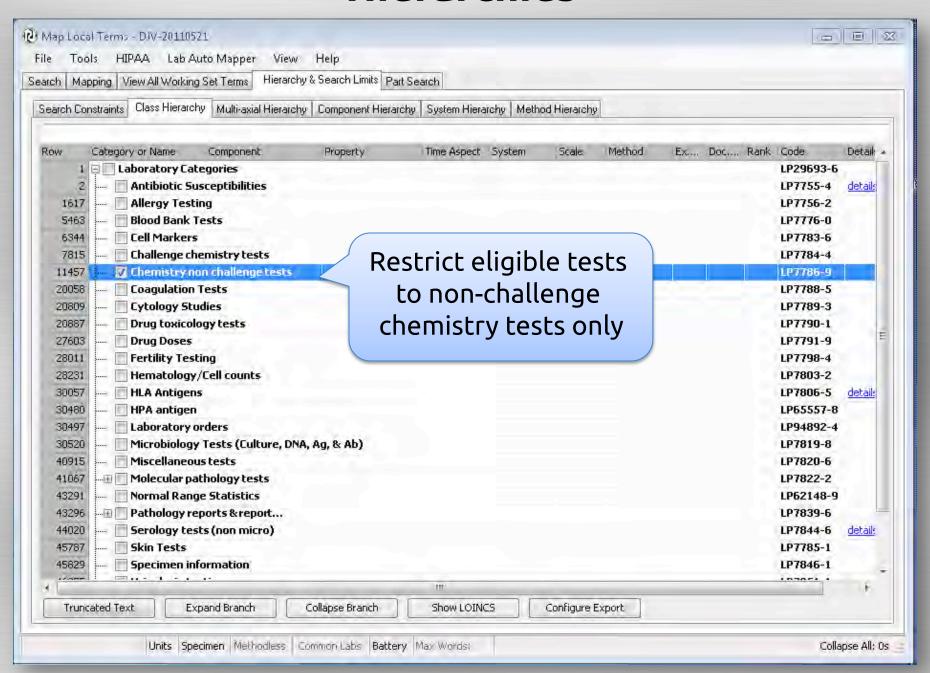
Search Constraints



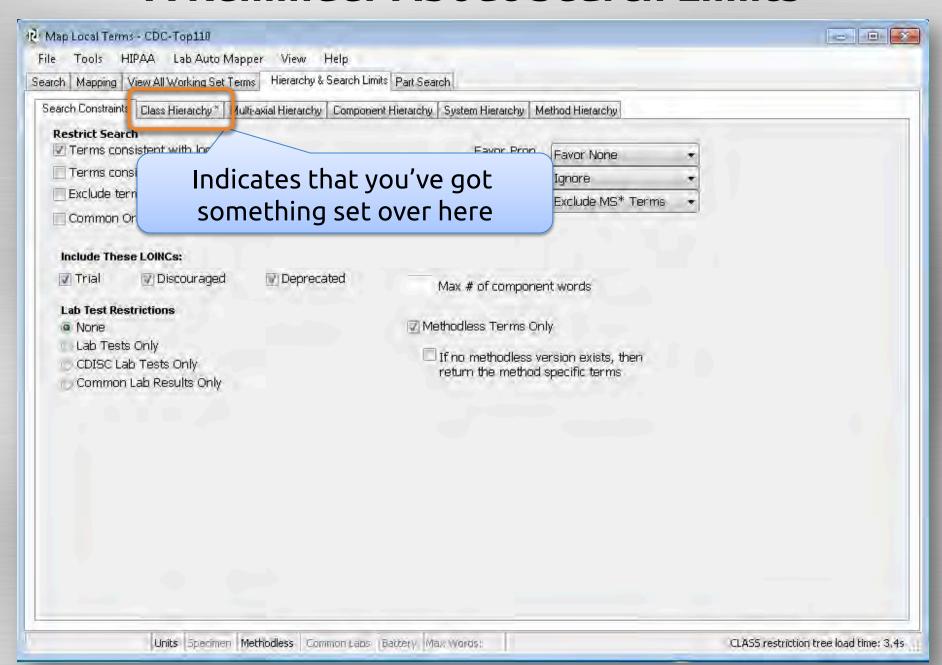
Search Constraints



Hierarchies



A Reminder About Search Limits



Search Limit Wrap-up

Helps narrow results returned Many available from search line Combine tree limits with others

Button to quickly erase limits

Accept or enter OBR name and/or O	BX name		
r urn albumin creat			?
Clear Inputs	Clear Most Limits	Common lab results	Lookup Term By #
Propose Term		Auto Mapper Search: No .	

Search Hints and Tips

Zero hit keywords are ignored (may need to rephrase)

Common causes of Zero results

Too many keywords

Limits and keyword contradictions

Local term name is very peculiar

Units are **GREAT** discriminators

RELMA's Auto Mapper

Ranked list of candidate LOINCs



What Does It Do?

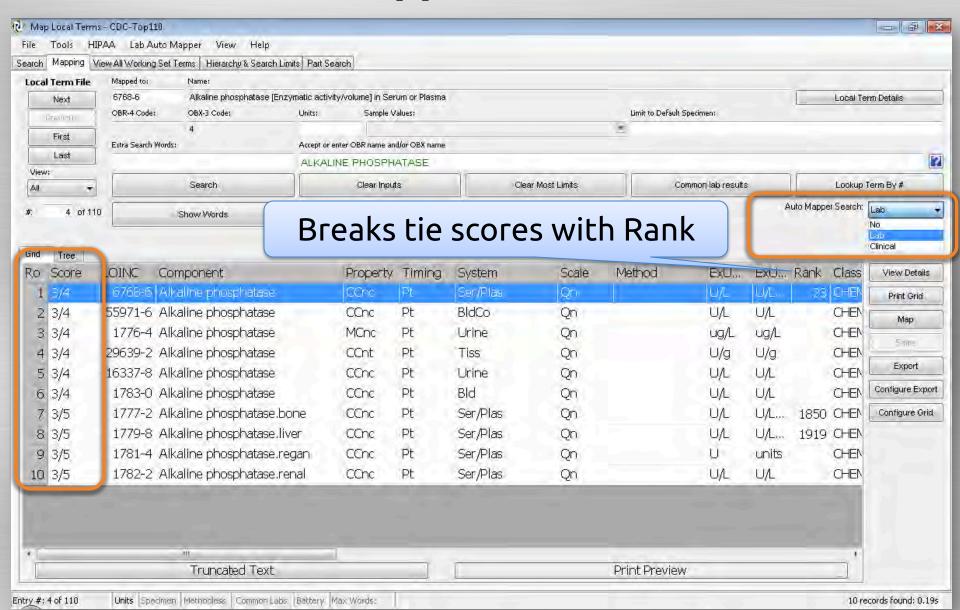
Batch processes local term file or runs on-demand for selected local term

Uses words and units from local terms

Produces a ranked list for your review



Auto Mapper On-Demand

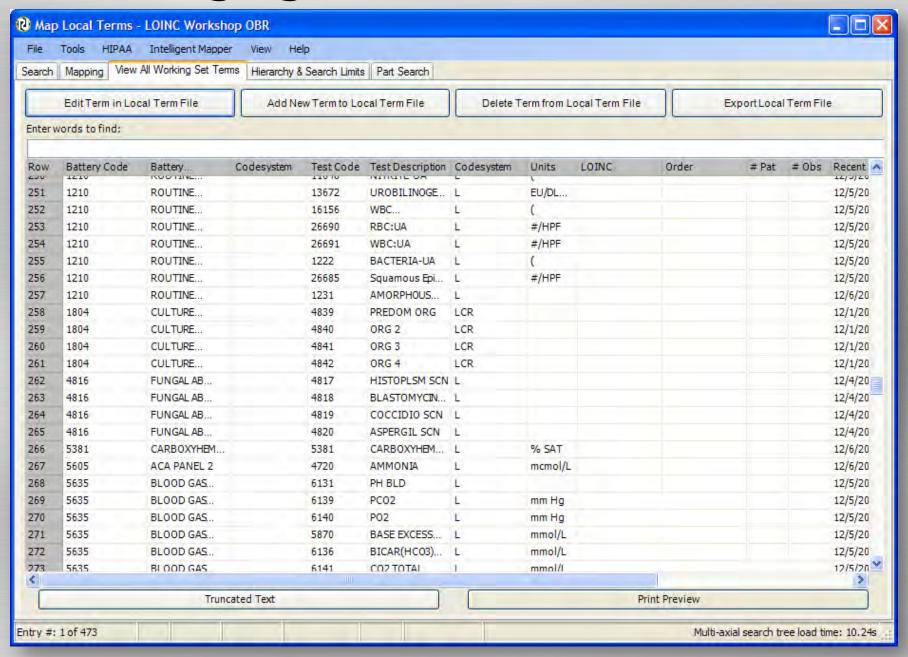


Other RELMA Features

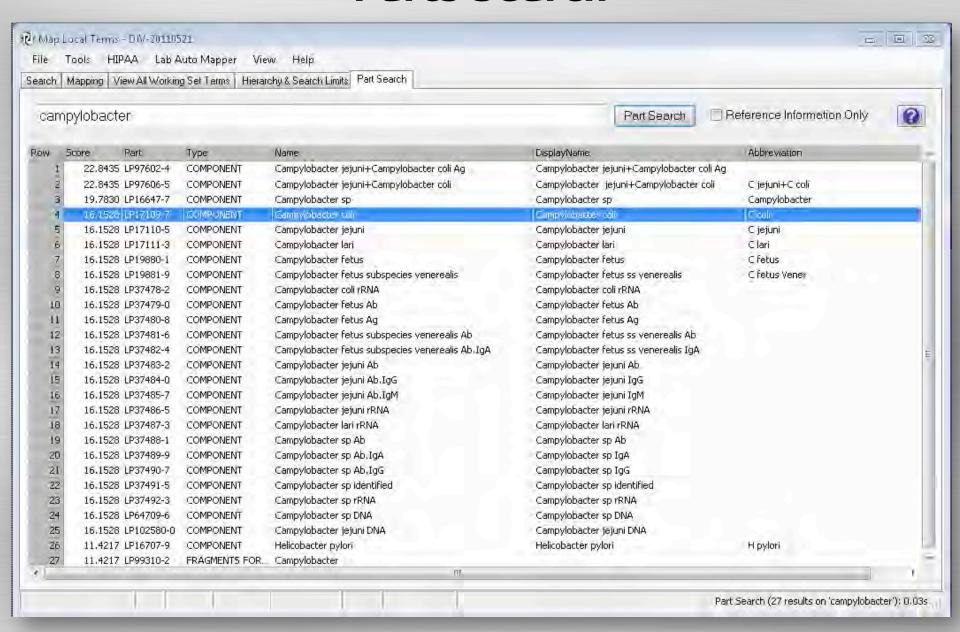
Preview of some topics for tomorrow's Advanced Workshop



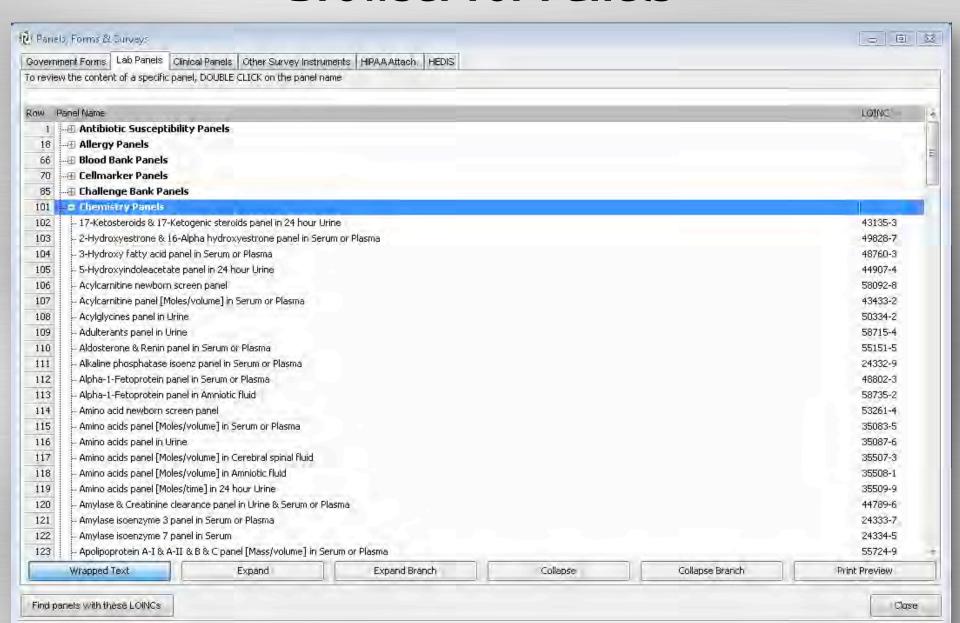
Managing Your Local Term File



Parts Search



Browser for Panels



Propose New LOINC Codes

