

## Chemistry 137 Winter 2007

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### Outline

- Surfing the Web
- Using Socrates, Stanford's Library Catalog
- Understanding the Scientific Literature
- Choosing and Evaluating Resources
- Developing Search Strategies
- Managing and Formatting References
- Doing a Sample Search on Vancomycin

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### Surfing the Web

- Search Engines
- "Invisible Web"
- Subject Directories
- Content Evaluation

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### Types of Web Search Engines

- |  |   |
|--|---|
| <b>General</b> <ul style="list-style-type: none"><li>• Google<ul style="list-style-type: none"><li>• <a href="http://www.google.com">http://www.google.com</a></li></ul></li><li>• Google Scholar<ul style="list-style-type: none"><li>• <a href="http://scholar.google.com">http://scholar.google.com</a></li></ul></li></ul>   | <b>All-in-One</b> <ul style="list-style-type: none"><li>• ChemID Plus<ul style="list-style-type: none"><li>• <a href="http://chem.sis.nlm.nih.gov/chemidplus/">http://chem.sis.nlm.nih.gov/chemidplus/</a></li></ul></li><li>• Entrez, Life Sciences Search Engine<ul style="list-style-type: none"><li>• <a href="http://www.ncbi.nlm.nih.gov/gquery/gquery.fcgi">http://www.ncbi.nlm.nih.gov/gquery/gquery.fcgi</a></li></ul></li></ul>           |
| <b>Specialized</b> <ul style="list-style-type: none"><li>• ACS Journals Full-Text<ul style="list-style-type: none"><li>• <a href="http://pubs.acs.org">http://pubs.acs.org</a></li></ul></li><li>• Knovel eHandbooks<ul style="list-style-type: none"><li>• <a href="http://www.knovel.com">http://www.knovel.com</a></li></ul></li><li>• Wikipedia<ul style="list-style-type: none"><li>• <a href="http://www.wikipedia.org/">http://www.wikipedia.org/</a></li></ul></li></ul> | <b>Metasearch</b> <ul style="list-style-type: none"><li>• HighWire Press Plus PubMed<ul style="list-style-type: none"><li>• <a href="http://highwire.stanford.edu/cgi/search">http://highwire.stanford.edu/cgi/search</a></li></ul></li><li>• SearchPlus at LANL<ul style="list-style-type: none"><li>• <a href="http://search.lanl.gov/ssplus/jsp/AdvancedSearch.jsp">http://search.lanl.gov/ssplus/jsp/AdvancedSearch.jsp</a></li></ul></li></ul> |

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### The "Invisible Web"

- The Invisible Web is made up of thousands of databases and searchable sources that contain highly targeted and valuable information, and whose content is not seen (indexed) by traditional search engines. Examples include:
  - News sites updated frequently
  - Subscriber only access
  - Free but registration required
  - Interactive pages created dynamically

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### Subject Directories

- Merits of using a directory instead of a search engine include:
  - Quick access to a manageable number of pre-selected resources.
  - An easily understood arrangement for browsing.
  - Annotations and ratings.
  - Independent specialized referral.
- Example:
  - Analytical Chemistry Sites (selected list of guides)
    - <http://library.stanford.edu/depts/swain/help/subjectguides/analytical.html>

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## Checklist for Internet Quality

- Fitness for purpose – site serves intended purpose
  - Content – unique, relevant
  - Authority/Credibility – author identified, opinions or facts, sources cited, errors and quality control
  - Timeliness/Currency – maintained, no dead links
  - Navigation – clear logical structure
  - Ease of Access – site busy, unavailable
  - Design/Style – readable, use of graphics, ADA
  - Performance – response time, browser compatibility
- Source for checklist: Annette Skov. Internet Quality: Separating the Wheat from the Chaff. Database Aug/Sept, 1998, p. 40.

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## Socrates, Stanford's Library Catalog

- <http://socrates.stanford.edu>
- Contains cataloging information for **print** books, journal titles, theses, conference proceedings, technical reports, etc. acquired by the Stanford Libraries
- Contains cataloging information for **electronic** journals and some eBooks, conference proceedings, and technical reports acquired by the Stanford Libraries
- Does NOT contain article level information published in journals

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## Socrates - Tips for Searching Journal Titles

- Need full journal title for searching Socrates. To get full title from abbreviated title, use these web services:
  - *Abbreviations and Full Titles of Core Journals Covered by Chemical Abstracts*
    - <http://www.cas.org/sent.html>
  - *All that JAS: Journal Abbreviation Sources*
    - <http://www.public.iastate.edu/~CYBERSTACKS/JAS.htm>
- Browse rather than search by periodical title
- Alternate strategy: Use Combined Search tab and Sort by Title

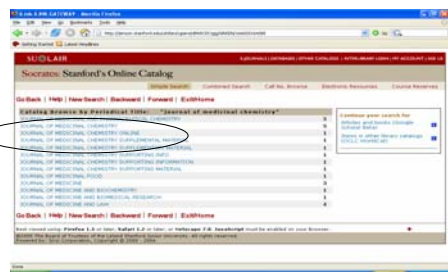
9

## Browse Periodical Title



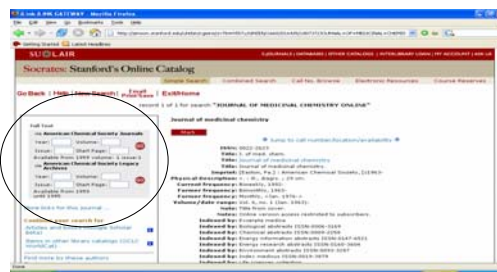
10

## Browsing by Periodical Title



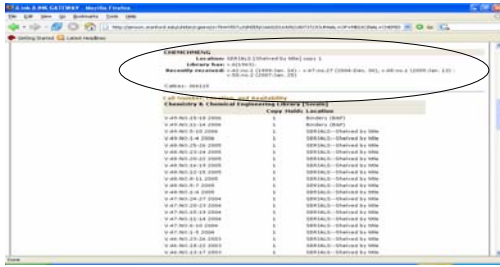
11

## Viewing Detailed Information Plus Full-Text Links



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## Viewing Detailed Information to see Print Volumes Available at Stanford



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## Socrates - Tips for Searching Titles and Subjects

- Searching Title identifies items that have your term in the title of a book, journal or conference proceeding.
- Use a database instead of Socrates to search titles of papers that were published in journals.
- Focused Search: Search "ideal" term as title word and view full record to see official subject terms.
- Broad Search: Search "Everything" to find your term in anywhere in the library catalog record (e.g. table of contents or notes)

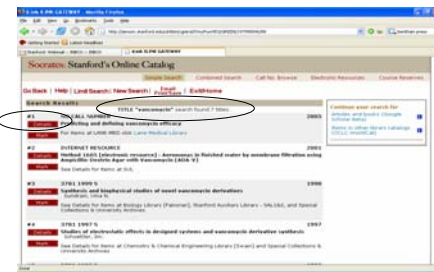
14

## Socrates - Title Search



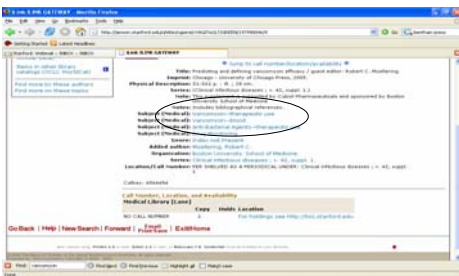
15

## Socrates - Results of Title Search - Click on Details Button to see if Item is Available



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## Socrates - View Details to View/Search Subjects Terms



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## Socrates -Everything Search



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## Socrates - Detailed Display - Search Term in Table of Contents



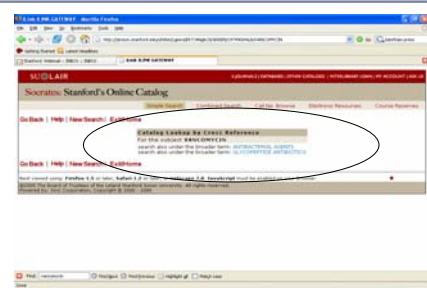
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## Socrates - Browse Subject Term and Related Subject Terms



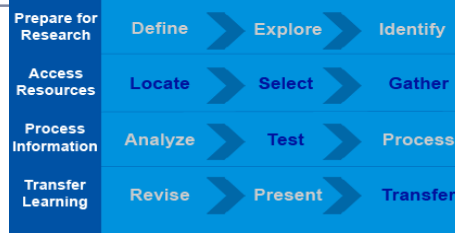
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## Socrates - Viewing Related Subject Terms



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## Academic Research Process

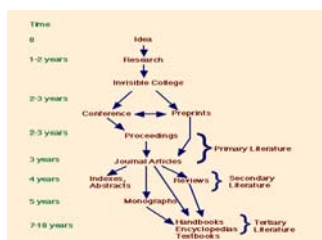


Summary from Amazeia Services received by GB in email, 1/13/06

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## Flow of Scientific Information

(Source: <http://www.indiana.edu/~cheminfo/acs800/structs.htm>)



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## About STM Journals

- Magazines, trade and scholarly journals
- Peer-reviewed vs. non-peer reviewed
- Types of articles:
  - Research articles
  - Rapid communications
  - Review articles
- Chemistry journals have the highest average cost of all subject areas.
- Publishers:
  - Professional societies
  - Non-Profit Organizations
  - Commercial publishers
  - Educational institutions
  - Government
- Formats: print & electronic

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## About STM Journals continued

- **Abbreviations:**
  - Core Journals Covered by Chemical Abstracts
    - <http://www.cas.org/sent.html>
  - All that JAS: Journal Abbreviation Sources
    - <http://www.public.iastate.edu/~CYBERSTACKS/JAS.htm>
- **Quality:**
  - JCR: Journal Citation Reports (ranks prestige or "Impact Factor" of journals)
    - <http://portal.isiknowledge.com/>
- **Access:**
  - Nearly all major STM databases have links to full-text articles.
  - Locate where print and online journal titles are held by using:
    - Swain's Journal List
    - E-Journals at Stanford
    - Socrates, Stanford's library catalog

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## About STM Databases

- **Types of databases:**
  - Bibliographic
  - Citation
  - Structure
  - Reaction
  - Numeric
- **Key Databases:**
  - Chemical Abstracts via SciFinder Scholar
  - Web of Science

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## Chemistry Databases are Large and Complex

- Chemistry databases are the largest ones of all the subject areas
- Types of searches: bibliographic, cited/citing references, structure, reaction, sequence, and numeric.
- Key document types: journals, patents, conferences, dissertations, monographs and reference works.
- Client-server technology still used as web isn't robust enough yet.

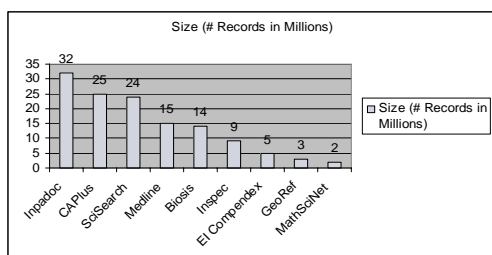
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## Chemistry Databases are Large and Complex

- Handbooks such as Beilstein and Gmelin, have up to 350 and 800 fields respectively, for a substance.
- Data entry based on a myriad of rules and formats
  - Nomenclature Rules
  - MFs: Hill System Order and Case Sensitivity
  - Numeric ranges vs CAS Registry Numbers

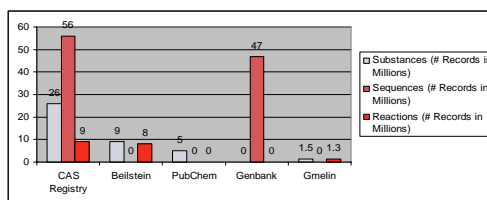
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## Major STM Databases



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## Selected Databases for Substances, Sequences & Reactions



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## SciFinder Scholar

- Most comprehensive database for the chemistry and chemical engineering literature.
- Updated daily, covers 1907 to present (w/ growing number of pre-1907).
- Includes over 23 million articles, 25 million compounds, 53 million sequences, and 8.7 million reactions.
- 9,500 serials plus patents, dissertations, technical reports, books, conferences. Only database that covers all types of documents.
- Also includes Medline database (1958-present).
- Contains cited/citing references from 1959-present. Also contains full-text links to articles.
- Client-software for searching Chemical Abstracts Online.  
<http://library.stanford.edu/depts/swain/sci/iststop.html>
- User-friendly yet powerful search software.
- Download and use on campus or at Swain.
- Restricted to current Stanford students, faculty, and staff.
- Limits on number of references you can download.
- Max 7 simultaneous users for campus

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## Web of Science

- “Core” Journals Only
  - Cover 1900-, updated weekly
  - 6,000 journals covering sciences, medicine, and engineering
  - Cover to cover indexing of issues
  - Unique feature is ability to see who has cited a paper
- Web interface
  - <http://www.isiknowledge.com>
  - Unlimited number of simultaneous users
- Includes link to full-text articles and Socrates

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## Search Strategy Checklist

- Get overview of topic by consulting books, encyclopedias & review articles
- Identify search terms and select sources to search
- Choose what indexes to search, proximity of search terms to one another, and what terms to “stem”
- Do sample search, entering terms in priority order. Display full record of relevant articles to identify additional search terms

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## Refining a Search Strategy

- To broaden search:
  - Only use 1-2 concepts
  - Stem all terms
  - Use acronyms, synonyms & related terms
  - Allow terms to be anywhere in the same record
  - View cited/citing references
  - Search full-text instead of citation databases
- To narrow search:
  - Use 3-4 concepts
  - Don't stem terms
  - Have close proximity between terms
  - Restrict keywords to title field
  - Limit by language, doc type, pub year

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## Managing & Formatting References

- RefWorks (<http://www.refworks.com/refworks/>)
  - Stanford Libraries have site license.
  - Use is free for all Stanford students, faculty, and staff.
  - Web based product that you can use to
    - Store your bibliographic references.
    - Use Write-N-Cite with Word to put footnotes into a manuscript.
    - Select an output “style” to format your references.
  - For more information, please see:  
<http://library.stanford.edu/depts/serg/bibsoftware.html>
    - This page is still under construction.
- ACS Style Guide – on Permanent Reserve at Swain.

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## Sample Search

- Vancomycin, an antibiotic
- Get overview by consulting books, handbooks, encyclopedias, and review papers
- Read journal articles for more current and detailed information

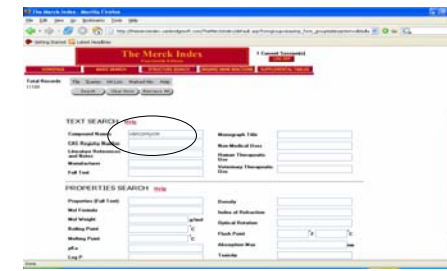
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## Merck Index – Concise Source for Substances of Biological Importance



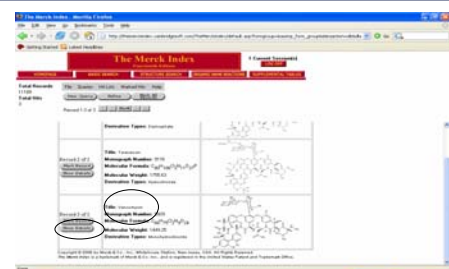
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## Merck Index – Search by Chemical Name



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## Merck Index – View Results



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## Merck Index – View Detailed Information for Vancomycin



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## Access Science: McGraw-Hill Encyclopedia of Science & Technology



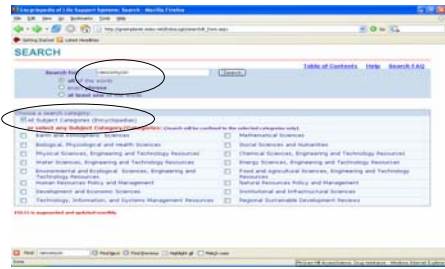
41

## Access Science Search Results



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## Encyclopedia of Life Support Systems (EOLSS)



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## EOLSS - Search Results



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## Annual Reviews



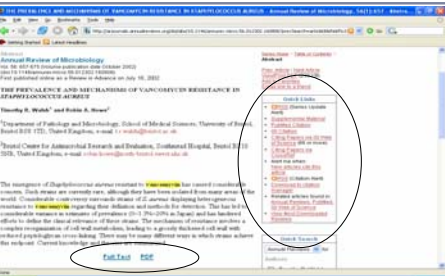
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## Annual Reviews - Search Results for Vancomycin



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## Annual Reviews - Viewing an Abstract in Search Results



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## Annual Reviews - Citing Papers via ISI's Web of Science



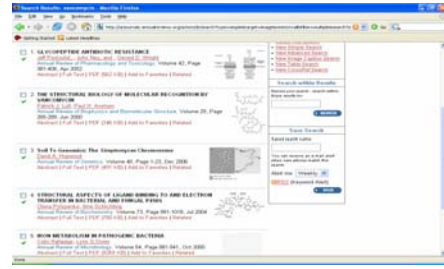
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## Annual Reviews - Image Caption Search



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## Annual Reviews - Results of Image Caption Search



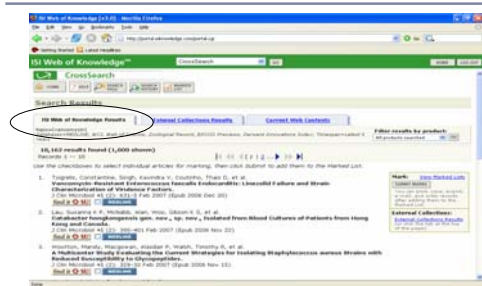
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## ISI Web of Knowledge



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## WoS - CrossSearch Results



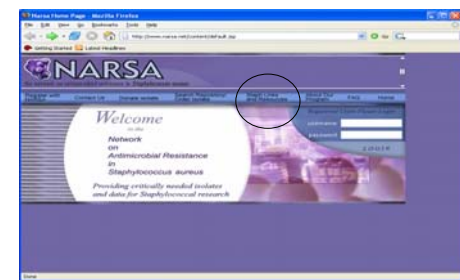
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## WoS CrossSearch - Current Web Contents



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## WoS CrossSearch - Current Web Contents Link to NARSA



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## Web of Science (WoS)

The screenshot shows the Web of Science homepage. The 'Web of Knowledge' section is highlighted. Below it, there are search options and filters. A red circle highlights the 'Web of Knowledge' link. Another red circle highlights the 'Web of Science' link. A third red circle highlights the 'Web of Science' link in the 'Web of Knowledge' section.

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## WoS Search Results

The screenshot shows the search results page for 'Web of Science'. The 'Search Results -- Summary' section is highlighted. Below it, there are search results. A red circle highlights the 'Search Results' link. Another red circle highlights the 'Search Results' link in the 'Search Results' section.

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## WoS Search Results - Sorting Results by Most Cited Papers

The screenshot shows the search results page for 'Web of Science'. The 'Search Results -- Summary' section is highlighted. Below it, there are search results. A red circle highlights the 'Sort by' dropdown menu, which is set to 'Most Cited'. Another red circle highlights the 'Sort by' dropdown menu in the 'Sort by' section.

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## WoS Search Results - Most Cited Paper

The screenshot shows the search results page for 'Web of Science'. The 'Search Results -- Summary' section is highlighted. Below it, there are search results. A red circle highlights the 'Most Cited' link. Another red circle highlights the 'Most Cited' link in the 'Most Cited' section.

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## WoS > Analyzing by Author

The screenshot shows the 'Web of Knowledge' analysis page. The 'Web of Knowledge' section is highlighted. Below it, there are analysis options. A red circle highlights the 'Web of Knowledge' link. Another red circle highlights the 'Web of Knowledge' link in the 'Web of Knowledge' section.

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## WoS - Analyze by Pub Year

The screenshot shows the 'Web of Knowledge' analysis page. The 'Web of Knowledge' section is highlighted. Below it, there are analysis options. A red circle highlights the 'Web of Knowledge' link. Another red circle highlights the 'Web of Knowledge' link in the 'Web of Knowledge' section.

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## WoS - Analyze by Document Type

The screenshot shows the 'ISI Web of Knowledge' interface with the 'Analyze' menu open. Below the menu, a table displays document types and their counts. The 'REVIEW' type is circled in red.

Document Type	Count	% of Total
ARTICLE	5073	70.3027 %
LETTER	759	0.2258 %
REVIEW	759	0.2258 %
EDITORIAL ABSTRACT	472	0.6686 %
EDITORIAL NOTE	272	0.3493 %
NEWS ITEM	33	0.2724 %
CORRECTION	30	0.2724 %
BRIEFING	16	0.1354 %
CORRECTION ADDITION	15	0.2079 %

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## WoS - Viewing Review Papers

The screenshot shows a list of search results for 'Review Papers'. The first result is highlighted in red. The 'Analysis Results' panel on the right is also visible.

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## WoS - Analyzing Review Papers by Subject Category

The screenshot shows the 'ISI Web of Knowledge' interface with the 'Analyze' menu open. Below the menu, a table displays subject categories and their counts. The 'PHARMACOLOGY & PHARMACY' category is circled in red.

Subject Category	Count	% of Total
PHARMACOLOGY & PHARMACY	233	23.5811 %
IMMUNOLOGICAL ENGINEERING	161	16.1616 %
PHYSIOLOGY	152	15.2828 %
MEDICAL, GENERAL & INTERNAL	60	6.0606 %
PHARMACOLOGY	60	6.0606 %
BIOCHEMISTRY & MOLECULAR BIOLOGY	51	5.1515 %
CHEMISTRY, ANALYTICAL	27	2.7273 %
PHYSIOLOGY	27	2.7273 %
CHEMISTRY, INDUSTRIAL	24	2.4242 %
CENTRAL, CLINICAL MEDICINE	23	2.3232 %
PHYSIOLOGY	21	2.1212 %
BIOTECHNOLOGY & APPLIED MICROBIOLOGY	17	1.7273 %

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## WoS > Review Papers > Medicinal Chemistry

The screenshot shows a list of search results for 'Review Papers' in the field of medicinal chemistry. The first result is highlighted in red.

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## WoS - Displaying a Full Record and Link to Full-Text Info

The screenshot shows a full record for a review paper. The 'Abstract' section is highlighted in red. The 'Full-Text' link is also visible.

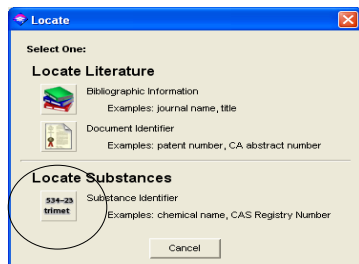
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## SciFinder Scholar (SFS) - Chemical Abstracts Online

The screenshot shows the SciFinder Scholar search interface. The 'Search' button is highlighted in red.

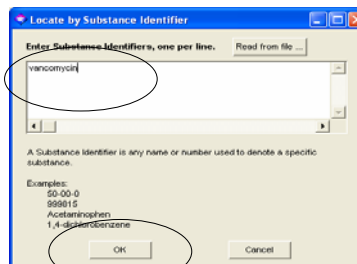
66

## SFS - Use Locate to find by Substance Name



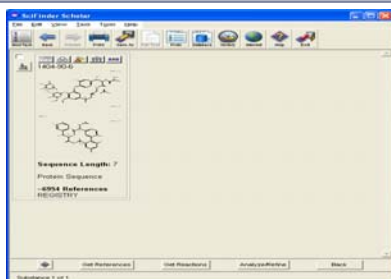
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## SFS - Locate Substance by Name



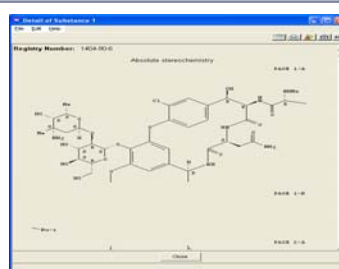
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## SFS - Display Brief Substance Info



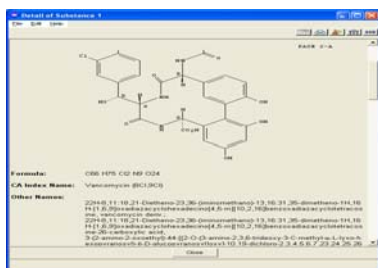
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## SFS Substance Info - Display of 2-D Structure



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## SFS Substance Info - Display of Structure - Formula, Chemical Names



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## SFS Substance Info - Display of Structure - Sequence Info



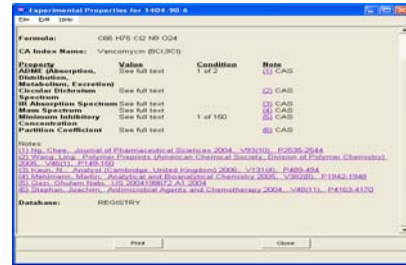
72

## SFS Substance Info -Display of Structure - Links to Properties



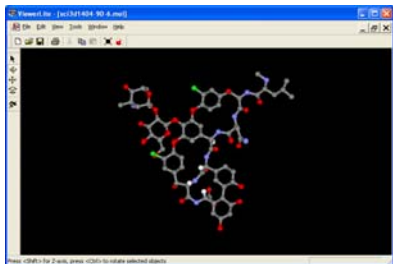
73

## SFS Substance Info -Display of Structure - Experimental Properties



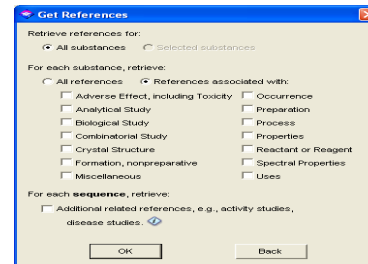
74

## SFS Substance Info - 3-D Structure Available for Many Compounds (Additional Software Required)



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## SFS - Find References



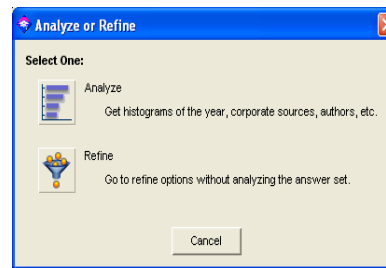
76

## SFS - Brief Display of Results



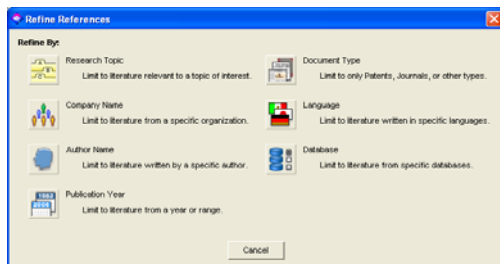
77

## Refine or Analyze



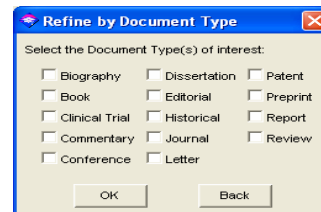
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## SFS - Refine



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## SFS - Refine by Doc Type - e.g. Review for Review Papers



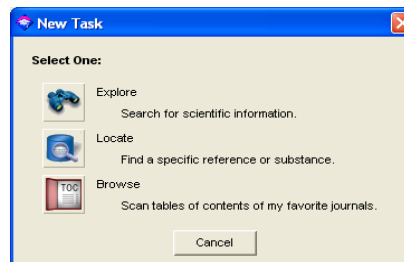
80

## SFS - Displaying Review Papers



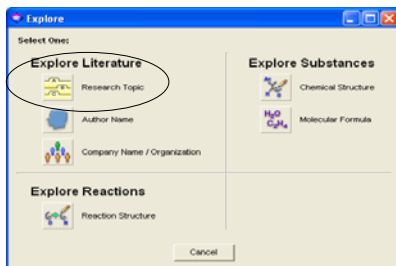
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## Explore



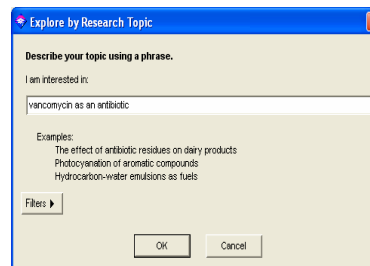
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## SFS - Explore Options



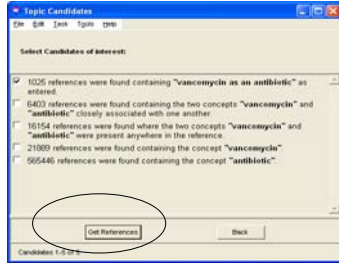
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## SFS - Explore by Research topic



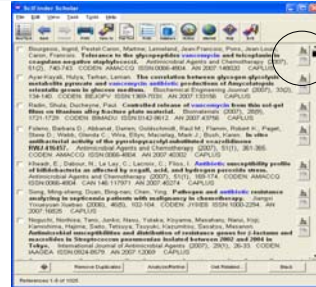
84

## SFS - Explore by Topic - Candidates



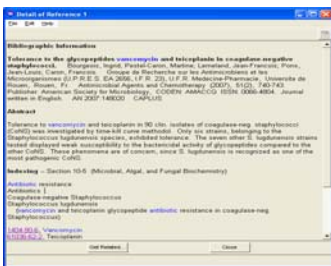
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## SFS - Brief Display of Results - Microscope for Detailed Info, Page Icon for Full-Text Access Info



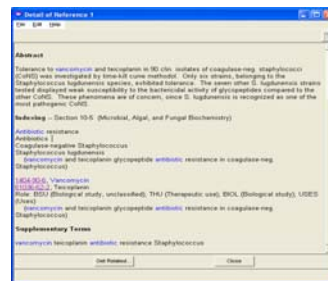
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## SFS - Detailed Display



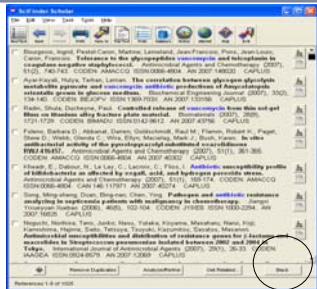
87

## SFS - Detailed Display cont.



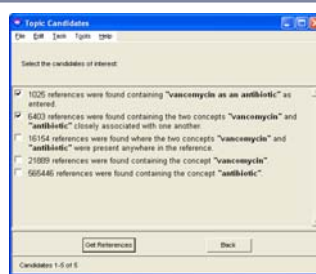
88

## SFS - Using Back Button



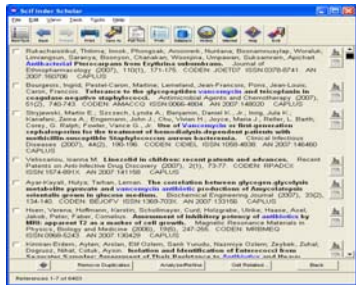
89

## SFS - Broadening Search



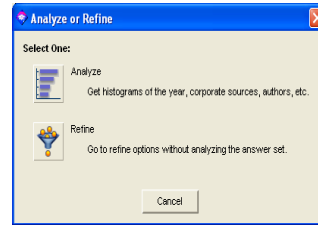
90

## SFS - Brief Display of Broader Search



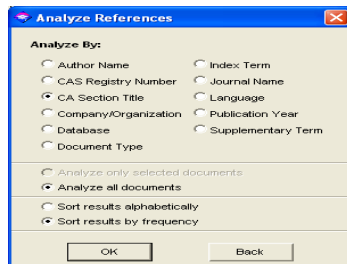
91

## SFS - Analyze to Focus Results



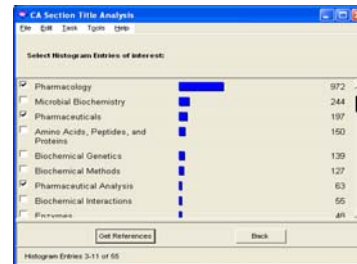
92

## SFS - Analyze Options -- Use CA Section and then Index Term to Focus by Subject



93

## SFS - Choosing CA Section Titles



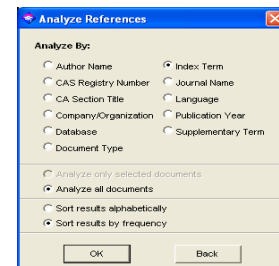
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## SFS - Brief Display from CA Section Titles



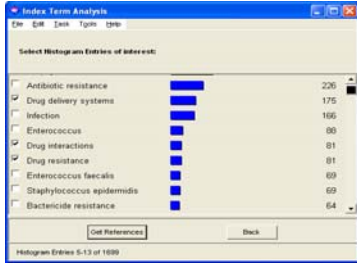
95

## SFS - Analyze Again using Index Term



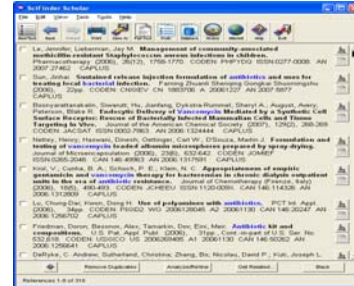
96

## SFS - Analyzing by Index Terms



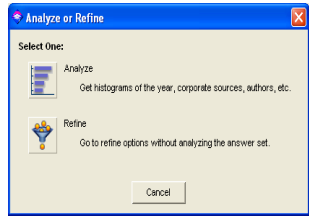
97

## SFS - Viewing Results After Analysis



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## SFS - Refine by Language



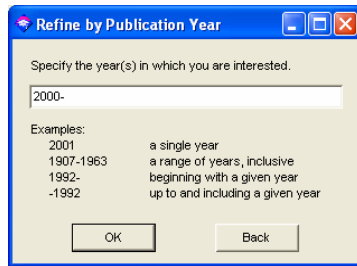
99

## SFS - Limit to English Language Papers



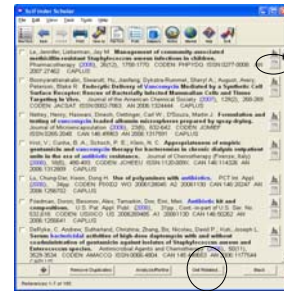
100

## SFS - Refine by Publication Year



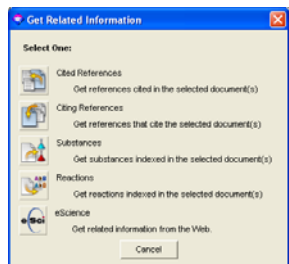
101

## SFS - Review Results - Full Text Link and Get Related Info



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### SFS – More Options -- Get Related Information – Can see Substances Covered in a Paper Article or Who has Cited a Paper



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### SFS – More About Searching

- SciFinder Scholar Learning Resources
  - <http://www.cas.org/SCIFINDER/SCHOLAR/resources.html>
- Consult Swain Librarian  
graceb@stanford.edu

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