



Desktop Version (1.21)

Tutorial and User's Guide

Abstract

The Sciome Workbench for Interactive Computer-Facilitated Text-mining (SWIFT) was designed to allow users to more easily navigate, search, organize, visualize, prioritize and extract information from the large sets of citations that are typically produced during a comprehensive literature search. This document describes the SWIFT-Review User Interface and provides examples of common tasks and use cases.

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1. Getting Started

System Requirements

Operating System:

64-bit Windows 7, 8, 10

64-bit Mac OS X, version 10.8+

Hardware:

8 GB RAM is recommended.

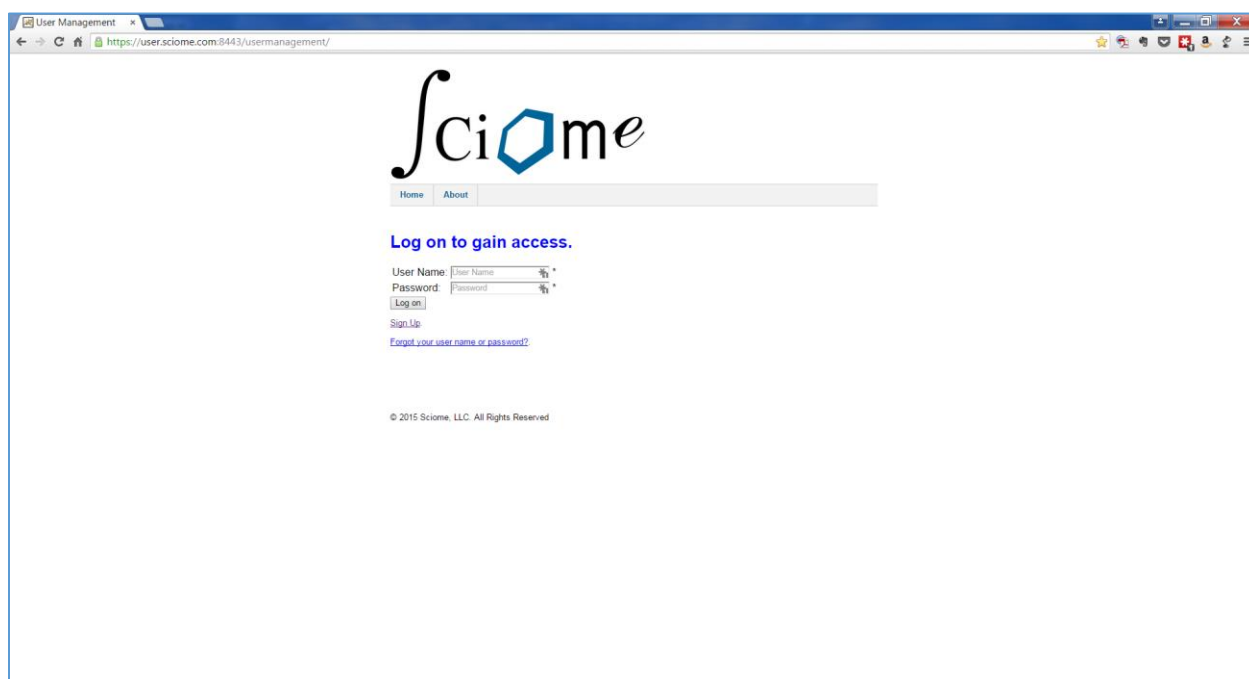
More may be required for very large projects.

Installation

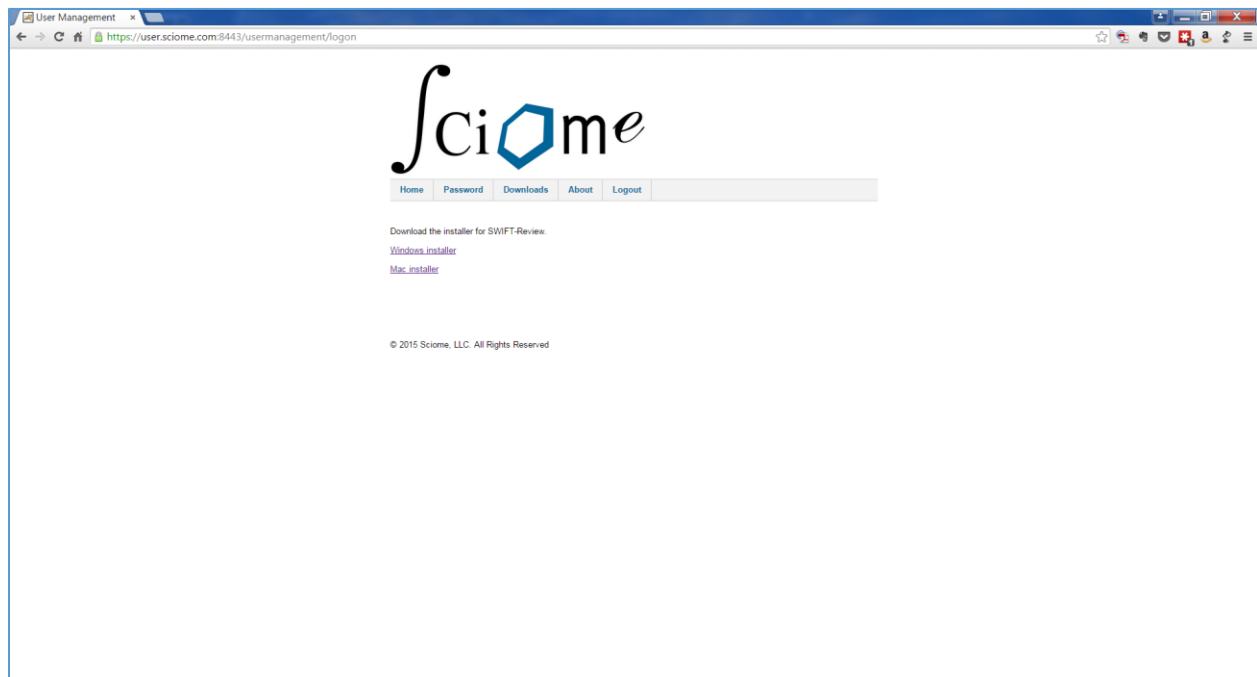
SWIFT-Review for Desktop is available for download at the following URL:

<https://user.sciome.com/usermanagement/>

When you browse to this location, you will be prompted to log on to the Sciome applications portal. If you have already created an account, simply enter your user name and password. Otherwise, you can click the "Sign up" link to create a free user account.



The Windows and Mac OS installers for SWIFT-Review for Desktop are available for download under the "Downloads" section:

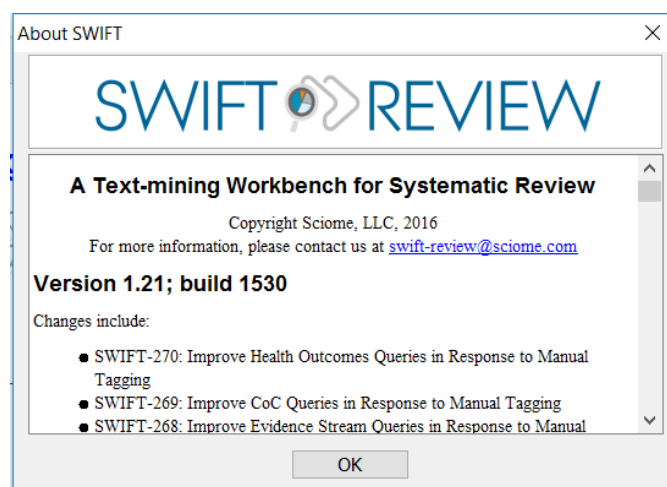


After downloading the appropriate installer, simply run it and follow the on screen instructions. You will need administrative access to your computer to complete the installation. In most cases the process should be self-explanatory, and it should usually be reasonable to accept all of the default choices during installation.

Updates

From time to time, the SWIFT-Review software will be updated to add new features and functionality.

You can check the current version of the software at any time by clicking **Help > About** from the SWIFT-Review menu:



SWIFT-Review software updates are made available automatically using the following complementary mechanisms:

- **Minor Updates:** In most cases, SWIFT-Review updates will happen automatically and *will not require any user action*.
- **Major Updates:** Occasionally, a more comprehensive update may be offered. In these cases, SWIFT-Review will prompt you after start-up to let you know that a major update is available. The upgrade will be optional, but if you choose to install it, you will need administrative privileges on your computer in order to run the installation package.

More Information

For more information about SWIFT-Review, and other Sciome products and services please contact us at: swift-review@sciome.com

The methods underlying SWIFT-Review are described in detail in ([Howard et al., 2016](#)). You can also find more information about SWIFT-Review, including a complete [release history](#) with additional information on the latest new features, at the following web address: <http://swift.sciome.com/>.

2. Introduction and Overview

Introduction

Here we introduce “SWIFT-Review” (SWIFT is an acronym for “Sciome Workbench for Interactive computer-Facilitated Text-mining”), a freely available interactive workbench which provides numerous tools to assist with problem formulation and literature prioritization. SWIFT-Review puts the systematic review expert in the driver’s seat by providing several features that can be used to search, categorize, and prioritize large (or small) bodies of literature in an interactive manner. SWIFT-Review utilizes newly developed statistical modeling and machine learning methods that allow users to uncover over-represented topics within the literature corpus and to rank order documents for manual screening. The following tutorial is designed to get you up and running as quickly as possible using brief, hands-on exercises.

GUI Orientation

The SWIFT-Review user interface, shown below, consists of three distinct panels, which are explained in the following sections.

The screenshot displays the SWIFT-Review interface with three main panels:

- Evidence Stream:** A table showing tags and their counts. The 'Human' tag has a count of 881, 'Animal' has 726, '[No Tag]' has 499, 'In Vitro' has 454, and 'Plant' has 143.
- Health Outcomes:** A table showing tags and their counts. The 'Cardiovascular' tag has a count of 65, 'Renal' has 157, 'Reproductive' has 128, 'Nutritional and Met...' has 145, 'Musculoskeletal' has 126, 'Gastrointestinal' has 75, 'Skin and Connectiv...' has 29, and 'Ocular and Sensory' has 42.
- Document Preview:** A detailed view of a document titled 'Persistence of EDHF pathway and impairment of the nitric oxide pathway after chronic mercury chloride exposure in rats: mechanisms of endothelial dysfunction.' The abstract states: 'Chronic mercury exposure impairs vascular function, leading to the depression of endothelium-dependent vasodilatation. Loss of the nitric oxide (NO) pathway has been implicated, but little is known about effects on other endothelial mediators. This study investigated the mechanisms of endothelial dysfunction in rats subjected to chronic mercury chloride exposure. The endothelium-dependent relaxation of rat aorta evoked by acetylcholine (ACh) and isoproterenol was impaired in a dose-dependent manner by chronic mercury chloride exposure. Endothelium-independent responses to sodium nitroprusside (SNP) were not affected by chronic...'.

Below the panels is a table showing 15 of 2000 loaded documents (1 selected; 0 total included; 0 total training docs.):

Score	Training Item?	Included?	RefID	Title	Year	Authors	Journal
0.235	☒	☒	21148200	Persistence of EDHF pathway and impairment of the nitric oxide pathway	2011	Omanwar, S; Ravi, K; Fahim, M	Human & experimental toxicology
0.179	☐	☐	18093879	Low nanomolar concentration of mercury chloride increases vascular reac...	2008	Wiggers, GA; Stefanon, I; Padilha, AS; Pezanha, FM; V...	Comparative biochemistry and physiology. Toxicology ...
0.159	☐	☐	2534665	Circulating and tissue immune complexes in mercury-treated mice.	1989	Hultman, P; Skogh, T; Eneström, S	Journal of clinical & laboratory immunology
0.092	☐	☐	2132651	[Effect of mercuric chloride poisoning on iron distribution in rats].	1990	Grosicki, A; Kossakowski, S	Polskie archiwum weterynaryjne
0.09	☐	☐	10469269	Early vasculitis in the mercuric chloride induced Brown Norway rat model l...	1999	Harris, FE; Turner, DR; Oliveira, DB	International journal of experimental pathology
0.087	☐	☐	25338424	Hypersmolality-mediated peritoneal microvascular vasodilation is linked t...	2014	Zakaria, el R; Althani, A; Fawzi, AA; Fituri, OM	Advances in peritoneal dialysis. Conference on Periton...
0.081	☐	☐	12779243	High-resolution identification of mercury in particles in mouse kidney after...	2003	Cunha, EM; Silva, DP; Aguiar, AP	Biometals : an international journal on the role of meta...
0.066	☐	☐	2845184	In vivo renal angiotensin converting enzyme activity decreases in glycerol...	1988	Baranowski, RL; Westenfelder, C	Kidney international
0.059	☐	☐	6221198	Glomerular filtration rate and brush border debris excretion after mercuric...	1983	Zager, RA	Nephron
0.057	☐	☐	8550837	Allogeneic hematolymphoid microchimerism and prevention of autoimmun...	1996	Delaney, CP; Murase, N; Chen-Woan, M; Fung, JJ; Star...	The Journal of clinical investigation
0.053	☐	☐	8997281	In vivo inhibition of transcellular water channels (aquaporin-1) during acut...	1996	Carlsson, O; Nielsen, S; Zakaria el-R, ; Rippe, B	The American journal of physiology
0.037	☐	☐	7354900	Effect of the dural application of Zenker's solution on the feline brain.	1980	Marlin, AE; Brown, WE; Huntington, HW; Epstein, F	Neurosurgery
0.034	☐	☐	2219114	Renal epithelial amino acid concentrations in mercury-induced and postsc...	1990	Duran, MA; Spencer, D; Weise, M; Kronfol, NO; Spenc...	Toxicology and applied pharmacology
0.018	☐	☐	8769778	Aquaporin-1 in plasma membrane and caveolae provides mercury-sensitiv...	1996	Schnitzer, JE; Oh, P	The American journal of physiology
0.008	☐	☐	21783472	Protection against mercury-induced renal damage in Swiss albino mice by ...	2005	Sharma, MK; Kumar, M; Kumar, A	Environmental toxicology and pharmacology

Document List (Bottom Panel)

The bottom panel is the **document list**. The document list includes information (e.g. PubMed ID, title, publication year, etc.) for each citation imported into SWIFT-Review. The exact information shown may differ depending on which of the **navigation views** is currently active. You can select citations in the document by clicking with your mouse; multiple items can be selected by clicking and dragging or by clicking while holding the control (command) and/or shift keys. You can also re-sort the document list by clicking the header of the column by which you would like to sort. Columns can be resized by clicking and dragging their boundaries in the column header. You can change the column order by dragging with the mouse.

Showing 10275 of 23202 loaded documents (0 total included; 0 total training docs.)

Score	PMID	Title	Year	A
0	23781721	[Analysis of cognitive function and sleep of nursing staff on different shift work].	2013	d
0	23444027	[Biological role and clinical relevance of central and peripheral circadian clocks].	2013	H
0	23395149	[Burnout-associated factors in anesthesia and intensive care medicine. 2009 survey of the French Society of anest...	2013	M
0	23336172	[Changes of biological clock protein in neonatal rats with hypoxic-ischemic brain damage].	2013	Li
0	23578294	[Complications resulting from osteosynthesis in children after supracondylar fractures of the humerus].	2013	S
0	23748721	[Correlation among measures of stress, indicators of biohumoral nature and medico-legal considerations].	2013	R
0	23781725	[Description of workloads and fatigue experienced among health workers in a teaching hospital].	2013	S
0	23952951	[Diurnal blood pressure profiles in night shift workers with incipient changes of blood pressure level].	2013	T
0	23901467	[Effect of melatonin on the thrombocyte hemostasis and its circadian organization].	2013	Al
0	23515802	[Factors that affect inpatients' quality of sleep].	2013	d
0	23789520	[Identification of risk factors for work-related stress in a hospital: a qualitative and quantitative approach].	2013	C

Navigation Pane (Top Left Panel)

The **navigation pane** contains a tabbed set of **navigation views** including *Tag Browser*, *Search*, *Browse MeSH Tree*, and *Prioritized Lists*. Each of these views provides a different way to explore your document set. For example, the *Search* view allows you to use a powerful query syntax to quickly find specific documents, while the *Browse MeSH Tree* view allows you to view subsets of your documents labeled with specific MeSH terms.

The selections made in the various navigation views determine which documents are shown in the document list. Just above the document list is a line of text that tells you how many of the total loaded documents are currently visible. The various navigation modes will be explained in more detail later in the tutorial.

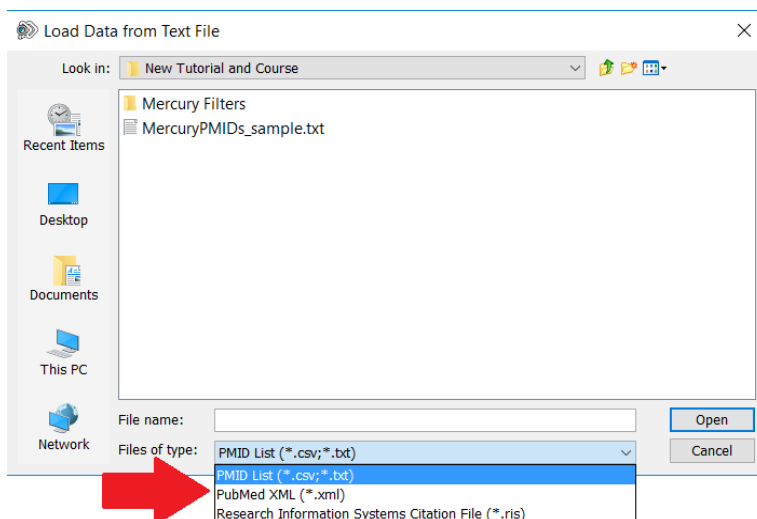
Data Pane (Top Right Panel)

The upper right panel contains the **data pane**, which contains a tabbed set of **data views** that display useful data and statistics about the set of currently visible and/or selected documents.

- The *Document Preview* shows the full abstract, the list of MeSH and Supplementary Chemical terms, and various other useful information associated with the currently selected document.
- The *Pie Chart* data view works in conjunction with the *Tag Browser* navigation view. It displays the distribution of the tags in the right-most tag category selection.
- Similarly, the *Bar Chart* data view displays the counts of documents labeled with each tag in the right-most tag category selection.

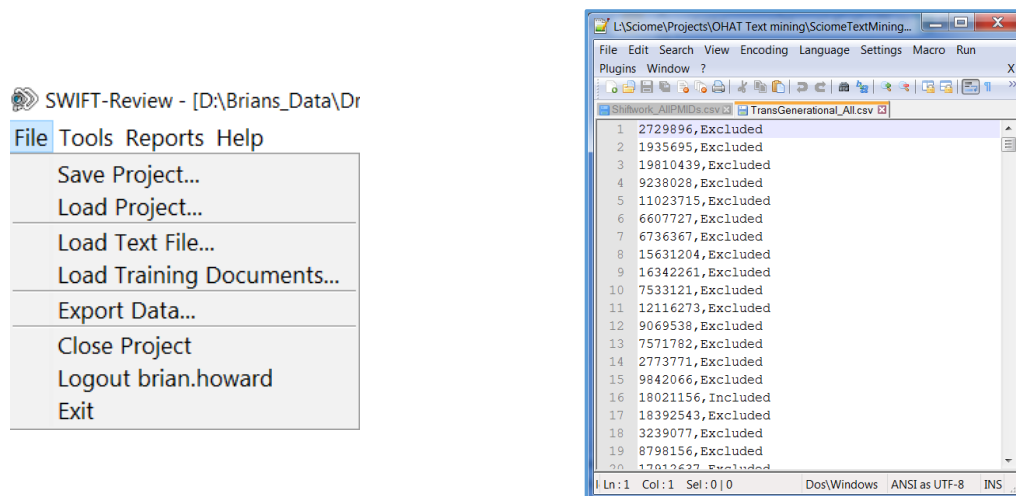
3. Loading and Saving Data

The menu option **File > Load Text File...** allows you to import a list of citations obtained from a search of a bibliographic database such as PubMed. Note that there are three types of text file that can be imported into SWIFT-Review, depending on your selection in the “Files of Type” drop list.



If you select the first choice “PMID List (*.csv, *.txt),” the input file should be a plain, comma-separated text file (.csv or .txt) file containing the PubMed identifiers (PMIDs) resulting from the search. The first column

must contain the PMID. The second column, which is optional, can contain the Inclusion/Exclusion status (i.e. "Included" or "Excluded") if this information is available for some or all of the records. After you have provided the input file, SWIFT-Review will automatically download the associated citation data from the PubMed database using NLM's Entrez e-Utilities interface.



Choose "PubMed XML (*.xml)" to import citation data directly from the results of a PubMed search that you have "Sent to" an XML file using the PubMed web interface.

If you already have data in another bibliographic management tool such as EndNote or Mendeley, you can export your data from that application in a standard file format called "RIS." To upload the resulting RIS file into SWIFT-Review, simply choose the third option, "Research Information Systems Citation Format (*.ris)," from the file type drop list when importing into SWIFT-Review.

Finally, it is also possible to load data from a previously created SWIFT Text-mining Project (.stp) file. Project files are created by first loading the data from a text file as described above, then clicking **File > Save Project...** You can save your work at any time by saving the project file in this manner.

Example 1: Loading SWIFT-Review Data

Loading from a project file

1. Download the example project, **MercuryPMIDs_sample.stp** from the following URL:
https://api.sciome.com/SWIFTupdates/Tutorial/MercuryPMIDs_sample.stp
This project contains a random subset of the PMIDs (about 5% of the total data set) from the full set of citations obtained during a preliminary literature search for articles that discuss various mercury compounds.
2. To load the project, click **File > Load Project...** and browse to the location of the file you downloaded in step 1.
3. Click **Open**.
4. After a few moments you should see a progress bar indicating that the data is being loaded into SWIFT-Review. Depending on the size of your project and the speed of your computer this can take anywhere from a few seconds to several minutes.

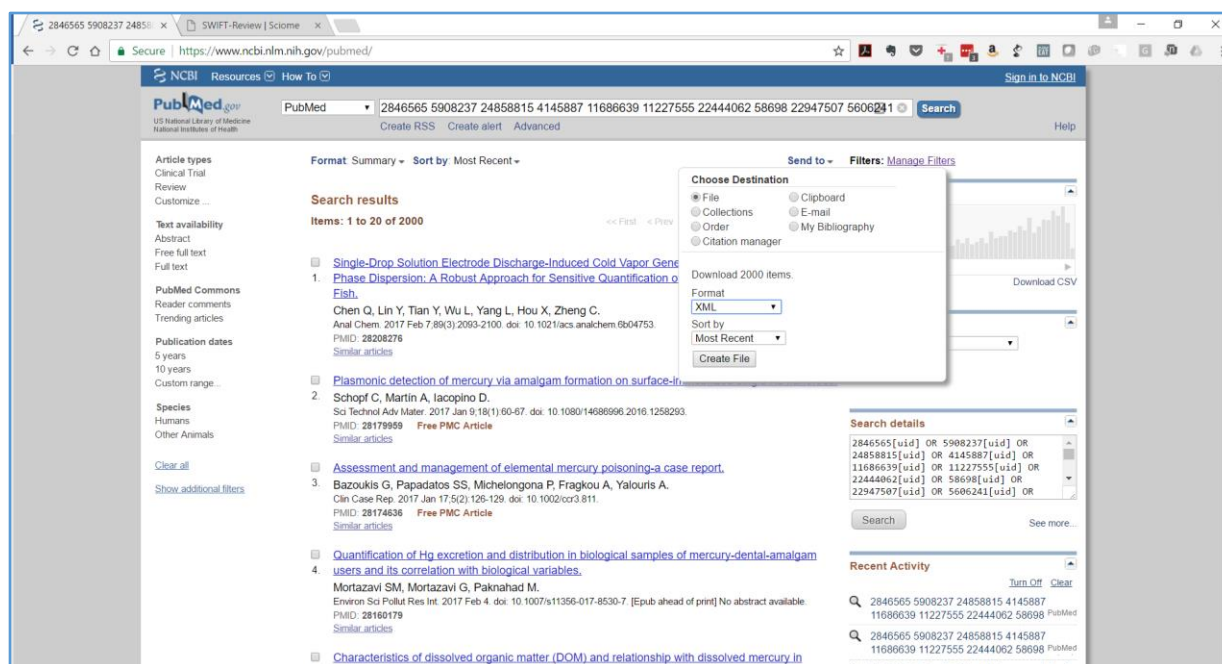
NOTE: Several of the remaining examples in this tutorial will use this project file as a running example.

Loading from a PMID list

1. Download the example file, MercuryPMIDs_sample.txt from the following URL:
https://api.sciome.com/SWIFTupdates/Tutorial/MercuryPMIDs_sample.txt
This is a text file containing the same set of PMIDs as above. If you want to see the PMIDs, you can open the file in Excel or a text editor.
2. To load the data, click **File > Load Text File...** and browse to the location of the file you just downloaded. (PMID List is the default file type, so you do not need to change the selection in the file type drop list).
3. Click **Open**.
4. After a few moments you should see a progress bar indicating that the data is being loaded into SWIFT-Review. Depending on the size of your project and the speed of your computer this can take anywhere from a few seconds to several minutes. Loading data from a PMID list will usually take longer than opening data from a SWIFT-Review project file because, in this case, the application has to download and pre-process all of the associated bibliographical data from the PubMed website.

Loading from a PubMed XML file

1. Download the example file, MercuryPMIDs_sample.xml from the following URL:
https://api.sciome.com/SWIFTupdates/Tutorial/MercuryPMIDs_sample.xml
This is an XML file containing the same dataset as above. Alternatively, you can obtain this data directly from PubMed with the following procedure:
 - a) In Excel, or some other spreadsheet program, open the file
https://api.sciome.com/SWIFTupdates/Tutorial/MercuryPMIDs_sample.txt
Select the first column, which contains the PMIDs and then copy the selected PMIDs to the clipboard.
 - b) Browse to www.ncbi.nlm.nih.gov/pubmed and paste the PMIDs into the search box and click search. The search results should contain 2000 records.
 - c) Send the data from PubMed to an XML file: click "Send to," choose destination "File" and format "XML". Click "Create File" and choose a location to store the resulting XML file.
2. To load the data, click **File > Load Text File...**
3. Choose "PubMed XML (*.xml)" from the File type drop down, and browse to the location of the file you just downloaded.
4. Click **Open**.
5. After a few moments you should see a progress bar indicating that the data is being loaded into SWIFT-Review. Depending on the size of your project and the speed of your computer this can take anywhere from a few seconds to several minutes.



4. Tag Browser

The SWIFT-Review tag browser view allows you to use various annotations, called **tags**, to filter the set of visible documents. Tags can be computed automatically by SWIFT-Review, or they can be derived from an outside annotation source, like NCBI MeSH. SWIFT-Review users can also create and assign their own custom tags. Tags are grouped into sets called **tag categories**. Examples of tag categories computed automatically by SWIFT-Review include “Health Outcomes”, “Exposure”, “Evidence Stream”, “Topic Models”, “Tox21 Chemicals”, and various MeSH annotations. See **Box 1** for an overview of the various mechanisms used to assign tags in SWIFT-Review.

Example 2: Exploring a Corpus with the Tag Browser

1. After loading the project **MercuryPMIDs_sample.stp** into SWIFT Review, open up the Tag Browser by clicking the “Tag Browser” tab in the upper left navigation pane.
2. Select the “Health Outcomes” tag category from the dropdown list at the top of the tag browser. You should see a list of various health-related tags along with counts of the number of documents associated with each of those tags.
3. Click the tag “Endocrine.” Notice that the document list at the bottom of the screen has been filtered to show only the 584 documents tagged with the Endocrine category
4. Add another “level” to the term browser. Right-click the tag browser in the space to the right of the drop down list to bring up the context menu and choose “Add Level.” There should now be two side-by-side lists of tags in the tag browser. In this way, you can add up to 4 different levels in the tag browser.

Box 1: Tags in SWIFT-Review

SWIFT-Review **tags** are labels assigned to bibliographic documents. Tags are organized into **tag categories**. For example, the tag category “Evidence Stream” includes the following tags: “Human”, “Animal”, “In Vitro”, “Plant.” A given document can be assigned to multiple tags, both from the same tag category and from different tag categories. When used with the *Tag Browser* or *Search* functionalities in SWIFT-Review, tags can help you to quickly find the documents that you are interested in. Tags can be assigned both manually and automatically using a variety of mechanisms:

MeSH Terms and Bibliographic Data: Documents originating from PubMed bring along their associated Medline tags, including MeSH Terms, Supplementary Concept Records, Publication Type, Pharmacological Actions, etc.

Queries and Filters: SWIFT-Review incorporates several pre-defined search filters. These filters have been prepared by information scientists at NIEHS and EPA for various topics of relevance to environmental health scientists. In general, these pre-defined filters emphasize recall at the expense of precision. For details on these filters, click **Help > Search Strategies** in SWIFT-Review. You can also use SWIFT-Review queries to define your own tags, through either the **Batch Query** mechanism or by choosing “**Tag Search Results...**” from the context menu in the document list after conducting an *ad hoc* search.

Topic Models: Topic modeling is a statistical method that can automatically discover interesting themes and concepts in a large set of documents. SWIFT-Review uses **Latent Dirichlet Allocation (LDA)** to automatically compute topic models. Each “topic” in a topic model gets its own tag. You can also build your own topic model on a subset of the documents by choosing **Tools > Build Topic Model...**

Chemical Names: SWIFT-Review automatically tags documents that mention chemicals occurring in several chemical lists of relevance to environmental health researchers. These lists include nearly 10,000 Tox21 chemicals and a large set of more than 1,300 Endocrine Disruptors. Curated chemical synonym lists from the ChemIDPlus database are used to identify chemical names in the documents.

Ranked Lists: When documents are triaged in SWIFT-Review using the SWIFT-Review Prioritization Feature, the resulting ranked list is assigned a time-stamped tag under the tag category “Ranked Lists.” This can help to organize your prioritized lists when you have several of them.

Manual Tags: SWIFT-Review tags can also be assigned manually. To add a tag to set of documents, simply highlight those documents in the document list and then choose “**Add Tag to Selected...**” from the context menu. Conversely, to remove a tag from a set of documents, choose “**Remove Tag from Selected...**”

- Choose the “Evidence Stream” tag category in the newly added level. Making selections in the tag browser builds a filter which limits the documents shown in the document list. When you select multiple tags within a single level, those terms are OR’d together. Then, the sets of terms you select in the individual levels are AND’d together. If you make a *single selection* in a given level, terms associated with that tag are highlighted in the document preview pane. Each level has its own highlight color. For example, in the figure below, 215 documents tagged with both the Health Outcome “Endocrine” AND the Evidence Stream tag “Human” are shown. In the Document Preview pane, terms associated with the Endocrine tag are highlighted in blue and terms associated with the Human Evidence Stream are highlighted in yellow. (You can change the highlight colors by clicking the colored patch beside the corresponding tag category drop list).

The screenshot displays the SWIFT-Review application window. The 'Tag Browser' on the left shows a hierarchy with 'Health Outcomes' and 'Evidence Stream' selected. Under 'Health Outcomes', 'Endocrine' is selected with a count of 584. Under 'Evidence Stream', 'Human' is selected with a count of 215. The 'Document Preview' pane on the right shows the title 'Serum omega-3 polyunsaturated fatty acids and risk of incident type 2 diabetes in men: the Kuopio Ischemic Heart Disease Risk Factor study.' and the abstract text. The bottom pane shows a list of documents with columns for Score, Training Item?, Included?, RefID, Title, Year, Authors, and Journal.

Score	Training Item?	Included?	RefID	Title	Year	Authors	Journal
0.3	☐	☐	24026545	Serum omega-3 polyunsaturated fatty acids and risk of incident type 2 dia...	2014	Virtanen, JK; Mursu, J; Voutilainen, S; Uusitupa, M; Tu...	Diabetes care
0.153	☐	☐	17537290	Fish intake, mercury, long-chain n-3 polyunsaturated fatty acids and risk ...	2007	Wennberg, M; Bergdahl, IA; Stegmayr, B; Hallmans, G...	The British journal of nutrition
0.148	☐	☐	25240691	Quality of diet is associated with insulin resistance in the Cree (Eeyouch) ...	2015	Johnson-Down, L; Labonte, ME; Martin, ID; Tsuji, LJ; ...	Nutrition, metabolism, and cardiovascular diseases : N...
0.136	☐	☐	11505716	[Changes in the risk profile and the development of hypertension in the p...	2001	Mayer, O; Rosolová, H; Wiendl, M; Simon, J	Vnitřní lékařství
0.111	☐	☐	10078167	Elemental mercury in the appendix: an unusual complication of a Mexican...	1999	McKinney, PE	Journal of toxicology. Clinical toxicology
0.11	☐	☐	23555627	Improvement of mercuric chloride-induced testis injuries and sperm qualit...	2013	El-Desoky, GE; Bashandy, SA; Alhazza, IM; Al-Othman...	PloS one
0.105	☐	☐	20961536	Varying coefficient function models to explore interactions between mater...	2011	Lynch, ML; Huang, LS; Cox, C; Strain, JJ; Myers, GJ; B...	Environmental research
0.101	☐	☐	21543284	Cadmium, lead, and mercury in relation to reproductive hormones and an...	2011	Pollack, AZ; Schisterman, EF; Goldman, LR; Mumford, ...	Environmental health perspectives
0.099	☐	☐	25721244	The influence of obesity on blood mercury levels for U.S. non-pregnant ad...	2015	Rothenberg, SE; Korrick, SA; Fayad, R	Environmental research
0.089	☐	☐	19840149	Aquaporins in the human testis and spermatozoa - identification, involve...	2010	Yeung, CH; Callies, C; Tüttelmann, F; Kliesch, S; Coop...	International journal of andrology
0.082	☐	☐	10699136	Mercury intoxication and arterial hypertension: report of two patients and...	2000	Torres, AD; Rai, AN; Hardiek, ML	Pediatrics
0.079	☐	☐	21778284	The association between cadmium, lead and mercury blood levels and re...	2011	Jackson, LW; Howards, PP; Wactawski-Wende, J; Schl...	Human reproduction (Oxford, England)
0.078	☐	☐	925721	Hemochromatosis associated with brain lesions—a disorder of trace-metab...	1977	Miyasaki, K; Murao, S; Koizumi, N	Journal of neuropathology and experimental neurology
0.065	☐	☐	12929470	Very-low-dose combination of perindopril and indapamide: efficacy on blo...	2003	Laurent, S	Journal of hypertension. Supplement : official journal o...
0.062	☐	☐	16904865	Methylmercury and neurodevelopment: longitudinal analysis of the Seych...	2006	Davidson, PW; Myers, GJ; Cox, C; Wilding, GE; Shamil...	Neurotoxicology and teratology
0.061	☐	☐	23222182	Hair toxic metal concentrations and autism spectrum disorder severity in	2012	Geier, DA; Kern, JK; Kiron, DG; Sokos, JK; Geier, MR	International journal of environmental research and nu

- Click the “Pie Chart” tab on the right side your screen to open the pie chart data pane. The pie chart and bar chart views work in conjunction with the tag browser to show you the distribution of documents within the *right-most* tag browser level. The pie chart and bar chart show similar but not identical information. The pie chart shows the distribution of tags over documents, but since a document can belong to more than one tag in a tag category, the ratio is taken relative to all tagging instances, not all documents. Hence if a corpus contains two documents and one is tagged ‘Cardiovascular Diseases’ and the other is tagged ‘Virus Diseases’, each of these tags would both be allocated 50% of pie. However, the pie chart would look the same if the corpus had two documents each labeled with both of these tags, or if one of the documents had both tags and the other document had no tags.
- Click the “Bar Chart” tab on the right side your screen to open the bar chart data pane. While the pie chart is good for showing the relative percentage of the available evidence allocated to each tag, the bar chart gives a better picture of the actual number of documents in available in each category. Its

interpretation is simpler. For each tag, the bar chart simply shows number of documents associated with that tag. Similar to the pie chart, the bar chart view always displays the distribution of documents within the *right-most* tag browser level.

8. *Add a custom tag to some documents.* Select a set of documents in the document list. Right click and choose "Add Tag to Selected..." Choose "Add New Tag..." from the tag dropdown and enter a name, like "Common Cold" for a new Health Outcomes tag. When you have done so, so the new tag will be added to the selected documents and the changes will be reflected in the tag browser. You can also rename and delete tags after right clicking the tag name in the tag browser.

5. Search

Query Syntax

SWIFT-Review indexes articles using the powerful Lucene search engine (<http://lucene.apache.org/core/>). To quickly find documents of interest, you can execute queries from the *Search* navigation tab. The Lucene search engine offers the following capabilities:

- Boolean operators
- Fielded search
- Wildcard operators
- Fuzzy search
- Proximity search
- Range search

Example 3: Searching for Documents

1. You can use *Boolean operators* to combine search terms. To find papers about human cancer, type the following into the Query box on the *Search* tab and press **Execute**. (Note that the "AND" must be in all-caps):

```
human AND cancer
```

2. Use *parentheses* to group query subsections and define operator precedence. Here we are looking for documents about cancer in either a human or mouse model:

```
(human OR mouse) AND (cancer OR neoplasms OR tumor)
```

Notice that the results are sorted by the quality of the match (score field) and that documents having the same score are sorted so that the most recently published citations are shown first.

3. Use a *fielded search* to find all documents by authors with the name "Smith":

```
author:smith
```

The following table lists the (case sensitive) terms available to use with fielded search:

Search Term	Document Section	Example Search
contents	Entire Document (default)	<code>"estrogen receptor"</code>
id	PubMed ID	<code>id:23276611</code>
title	Title text	<code>title:"Third generation"</code>
abstract	Abstract text	<code>abstract:"estrogen receptor"</code>
tiab	Title OR abstract text	<code>tiab:"randomized"</code>
journal	Journal name	<code>journal:"Medicina"</code>
pubyear	Publication year	<code>pubyear:2013</code>
author	Author name	<code>author:Coronado</code>
mesh_mh	MeSH heading	<code>mesh_mh:Adenocarcinoma</code>
mesh_mh_noexp	MeSH heading (no explosion). Disables default behavior, which is to "explode" MeSH terms to retrieve citations that contain not only the requested term, but also MeSH terms below it in the hierarchy.	<code>mesh_mh_noexp:Adenocarcinoma</code>
mesh_sh	MeSH subheading	<code>mesh_sh:("chemically induced")</code>
mesh_code	MeSH numeric code	<code>mesh_code:("c04.557.470.200.025")</code>
suppchem	MeSH Supplementary chemical name	<code>suppchem:estrogens</code>
mesh_pubtype	MeSH Publication type	<code>mesh_pubtype:review</code>
pharm_actions	MeSH pharmacological actions	<code>pharm_actions:"Antineoplastic Agents"</code>
tox21	Tox21 Chemical name	<code>tox21:"ampicillin"</code>
Health_Outcomes	Health outcomes tag set	<code>Health_Outcomes:Bacterial*</code>
Exposure	Exposures tag set	<code>Exposure:Pesticides</code>
Evidence_Stream	Evidence stream tag set	<code>Evidence_Stream:Human</code>
Topic_Models	Topic models tag set	<code>Topic_Models:"Topic 1*"</code>
Tag_Name	User tag set. Search term is the name of the tag with spaces replaced by underscore character ("_")	<code>My_Tag:Favorites</code>
title_stemmed, abstract_stemmed, tiab_stemmed	Adding "_stemmed" to the title, abstract, or tiab uses a computational algorithm to inflect words to their root forms before searching. Hence "investigate" would also match "investigation", "investigating", etc	<code>title_stemmed:investigate</code>

4. Use a *proximity search* to find all documents where the word "exposure" appears within 5 words of the word "mercury" in the *title field*:

```
title:"mercury exposure"~5
```

Note that the result of this search includes the title "Neurobehavioral effects of combined prenatal **exposure** to low-level **mercury** vapor and methylmercury."

5. Use the * *wildcard* to find articles that contain the words "optimize", "optimizing", "optimized," etc:

```
abstract:optimiz*
```

Similarly, the following search

```
abstract:*ized
```

results in all abstracts contained words that end in "ized"

6. Use the ? *wildcard*, which matches any single letter or number, to find articles that contain the words "nucleoside" or "nucleotide":

```
tiab:nucleo?ide
```

7. Use the ~ fuzzy match operator to find articles that contain words that are similar in spelling to "exposure":

```
tiab:exposure~
```

You can specify a number between 0 and 1 after the ~ to specify how similar the words have to be. To find documents containing words with only a few letters different from "breast", try the following search:

```
tiab:breast~0.7
```

The search

```
tiab:breast~0.1
```

allows more dissimilar matches and thus returns more documents (e.g. "yeast" and "areas")

8. Use a *ranged query* to find documents published between 2010 and 2014:

```
pubyear:[ 2010 TO 2014 ]
```

(Note that the keyword "TO" is in all-caps).

Example 4: Batch Queries

SWIFT-Review includes a powerful batch query utility which allows you to reuse complex search strategies between projects and employ them to automatically classify documents into useful categories. The following example illustrates this feature.

1. The input to the Batch Query tool is a set text files located in a single folder of your computer. Each text file should contain a single SWIFT-Review query and the name of the file should be the name of a new tag you would like to add to your project. You can download an example file set here:

<https://api.sciome.com/SWIFTupdates/Tutorial/Mercury Filters.zip>

Unzip this filter set to a folder in your computer. The contents of the zip file are shown below

Filename	SWIFT-Review Query
Elemental Mercury (7439-97-6).txt	tiab: ("7439-97-6" OR "metallic mercury" OR "quick silver" OR "quecksilber" OR "mercure" OR "mercurio" OR "liquid silver" OR "colloidal mercury" OR "mercury vapor" OR "mercury")
MeHg(22967-92-6).txt	tiab: ("22967-92-6" OR "methylmercury" OR "methylmercury(1+)" OR "methylmercury ion" OR "methylmercury(ii) cation" OR "methylmercury ii" OR "MeHg") OR suppchem: ("methylmercury ii" OR "methylmercury compounds") OR mesh_mh:("methylmercury compounds")
Mercuric Chloride (7487-94-7).txt	tiab: ("7487-94-7" OR "dichloromercury" OR "fungchex" OR "mercury perchloride" OR "mercury(ii) chloride" OR "mercuric bichloride" OR "mercury bichloride" OR "corrosive sublimate" OR "mercuric chloride" OR "mercury chloride (hgcl2)" OR "bichloride of mercury" OR "mercury dichloride" OR "sublimat" OR "calochlor" OR "hgcl2") OR mesh_mh: ("mercuric chloride") OR suppchem:("mercuric chloride")
Mercuric Oxide (21908-53-2).txt	tiab: ("21908-53-2" OR "yellow mercuric oxide" OR "mercury oxide" OR "mercuric oxide" OR "red precipitate" OR "yellow precipitate") OR suppchem: ("mercuric oxide")
Mercurous Chloride (7546-30-7).txt	tiab: ("7546-30-7" OR "mercurous chloride" OR "mercury(i) chloride" OR "mercury chloride" OR "cyclosan")

2. Browse to the **Search** tab in SWIFT-Review and press the **"Batch Query..."** button. Fill in the resulting dialog box as follows (substituting the directory containing the unzipped files in the table above), and press **Execute**.

Batch Query

Specify the directory containing the query files:

Store results in a Tag Category named:

Results:
 ous Chloride (7546-30-7).txt

Results are tagged using: Mercury Compounds > Mer
 ous Chloride (7546-30-7)

There are 17 hits.

Finished. Results are in the 'Mercury Compounds' tag category.

3. In the *Tag Browser*, choose the newly created “Mercury Compounds” tag category to view the results.

SWIFT-Review - (D:\Brains_Data\Dropbox\Work Stuff\Data Analysis and Support\EPA - Kris - Mercury Queries\New Tutorial and Course\MercuryPMIDs_sample.xml)

File Tools Reports Help

Tag Browser Search Browse MeSH Tree Prioritized Lists

Mercury Compounds

Tag	Code(s)	Count
Elemental Mercury (7439-97-6)		1401
[No Tag]		401
MeHg(22967-92-6)		270
Mercuric Chloride (7487-94-7)		199
Mercurous Chloride (7546-30-7)		17
Mercuric Oxide (21908-53-2)		6

Showing 1401 of 2000 loaded documents (1 selected; 0 total included; 0 total training docs.)

Score	Training Item?	Included?	RefID	Title	Year	Authors	Journal
1	☒	☐	1812400	[Mercury vapor in dental office].	1991	Dermann, K; Dermann, C	Zahnärztliche Mitteilungen
1	☐	☐	2951931	[Toxicodermis caused by mercury vapor].	1987	Gusein-Zade, KM; Agakishiev, DD; Kerimov, SG; Abba...	Vestnik dermatologii i venerologii
0.889	☐	☐	5981887	[Metallic mercury in the lumen of the digestive tract].	1966	Szczepański, L; Gutka, A	Wiadomosci lekarskie (Warsaw, Poland : 1960)
0.734	☐	☐	1360929	Toxicity assessment of mercury vapor from dental amalgams.	1992	Goering, PL; Galloway, WD; Clarkson, TW; Lorscheider...	Fundamental and applied toxicology : official journal of...
0.734	☐	☐	2797665	Exposure to mercury vapor endangers workers' mental, physical health.	1989		Occupational health & safety (Waco, Tex.)
0.734	☐	☐	3781894	Urinary biochemical changes in workers exposed to mercury vapor.	1986	Himeno, S; Watanabe, C; Suzuki, T	Industrial health
0.734	☐	☐	4529961	Mercury vapor levels in the dental office: a survey.	1974	Miller, SL; Dorney, RG; Elston, SF; Milligan, G	Journal of the American Dental Association (1939)
0.734	☐	☐	4532832	[Semi-quantitative test for mercury vapor in air].	1973	Jorgensen, KD	Tandlaegebladet
0.725	☐	☐	1561464	[Subclinical poisoning by metallic mercury. Which diagnostic techniques a...	1992	Martinez Vázquez, C; Gil, M; Rodríguez, M; García Ca...	Revista clinica espanola
0.725	☐	☐	10038500	Probing the transition from van der Waals to metallic mercury clusters.	1988	Bréchinac, C; Broyer, M; Cahuzac, P; Delacretaz, G; L...	Physical review letters
0.725	☐	☐	6704166	Mechanism of metallic mercury oxidation in vitro by catalase and peroxida...	1984	Ogata, M; Aikoh, H	Biochemical pharmacology
0.725	☐	☐	1086961	Subacute and chronic tissue reaction to metallic mercury: two cases and ...	1976	Geller, SA	The Mount Sinai journal of medicine, New York
0.725	☐	☐	4655717	[Clinico-experimental study of ear lesions following exposures to metallic ...	1972	Palgov, VI; Pokotlenko, AK; Novikova, VA; Dmitrenko, ...	Gigiena truda i professional'nye zaboлевaniia
0.725	☐	☐	5878740	[Mercury poisoning following accidental penetration of metallic mercury in...	1965	Maranzana, P; Finulli, M	La Medicina del lavoro
0.65	☐	☐	21234679	Lessons learned from a fatal case of mercury intoxication.	2012	Alhamad, T; Rooney, J; Nwosu, A; Maccombs, J; Kim, ...	International urology and nephrology
0.601	☐	☐	7804408	Distribution of mercury in neonatal guinea pigs after exposure to mercury...	1989	Yoshida, M; Satoh, H; Aoyama, H; Kojima, S; Yamam...	Bulletin of environmental contamination and toxicology

Document Preview Pie Chart Bar Chart

[Mercury vapor in dental office].

Dermann, K; Dermann, C. *Zahnärztliche Mitteilungen* (1991)

▼ Abstract
No Abstract available

▼ Health Outcomes

▼ Topic Models

Topic 9: amalgam, dental, mercury, thimerosal, amalgams, fillings, restorations, oral, vaccines, study (46%)

Topic 7: mercury, determination, method, samples, electrode, detection, analysis, spectrometry, atomic, sample (24%)

Topic 19: blood, pressure, patients, hypertension, mmhg, measurements, device, systolic, temperature, diastolic (23%)

Topic 16: mercury, soil, data, results, study, model, environmental, air, studies, health (2%)

4. Suppose we want to modify our new tag category to include an additional tag called “Other” which contains the following query:

```
mesh_mh:( mercury OR "mercury poisoning" OR "mercury compounds" OR "organomercury compounds" ) OR
```

```
suppchem:( "mercury" OR "mercury compounds" OR "methylmercuric chloride" OR
"mercury isotopes" OR "organomercury compounds" OR "mercury radioisotopes" OR
"thimersoal" OR "ethylmercury compounds" ) OR
tiab:( hg OR mercury OR hgcl2 )
```

Simply paste the above query into the Query window in SWIFT-Review and click **Execute**. Then choose **"Tag Search Results..."** from the context menu, to add the results to a new tag within the Mercury Compounds tag category.

Tag search query

Category:
Mercury Compounds

Tag:
Other

Scope:
All search results

OK
Cancel

6. Browsing Documents using MeSH Terms

The *Browse MeSH Tree* navigation view allows you to explore your documents using the National Library of Medicine's Medical Subject Headings, a controlled vocabulary which is used to tag PubMed articles according to their subject matter (<http://www.nlm.nih.gov/pubs/factsheets/mesh.html>). The figure below, for example illustrates how a user has selected to view only those articles that have been labeled with the MeSH Disease code "A08 – Nervous System." The MeSH subject headings are hierarchical, making it possible to "drill down" into more and more specific subject headings. For example, the code "A08 – Nervous System" has several children including "A08.186 – Central Nervous System", "A08.713 – Neurosecretory System", and "A08.800 – Peripheral Nervous System."

Showing 121 of 2000 loaded documents (1 selected; 0 total included; 0 total training docs.)

Score	Training Item?	Included?	RefId	Title	Year	Authors	Journal
1	☒	☐	27476942	Immunotoxic Effect of Low-Dose Methylmercury Is Negligible in Mouse Models of Ovalbumin or Mite-Induced Th2 Allergy.	2016	Nakamura, R; Takanezawa, Y; Sone, Y; Uraguchi, S; S...	Biological & pharmaceutical bulletin
1	☐	☐	26986620	Protective effects of Alpha-lipoic acid on MeHg-induced oxidative damage ...	2016	Yang, T; Xu, Z; Liu, W; Xu, B; Deng, Y	Free radical research
1	☐	☐	26398726	Specific Pathways of Dietary Methylmercury and Inorganic Mercury Deter...	2015	Feng, C; Pedrero, Z; Gentile, S; Barre, J; Renedo, M; T...	Environmental science & technology
1	☐	☐	24710318	Microglia trigger astrocyte-mediated neuroprotection via purinergic gliotra...	2014	Shimozaki, Y; Nomura, M; Iwatsuki, K; Moriama, Y; G...	Scientific reports
1	☐	☐	22526770	Degeneration of peripheral nervous system in rats experimentally induced...	2013	Cao, B; Lv, W; Jin, S; Tang, J; Wang, S; Zhao, H; Guo, ...	Neurological sciences : official journal of the Italian Ne...
1	☐	☐	23358134	Emergence of delayed behavioral effects in offspring mice exposed to low...	2013	Yoshida, M; Watanabe, C; Honda, A; Satoh, M; Yasuta...	The Journal of toxicological sciences
1	☐	☐	23603214	Mercury, APOE, and children's neurodevelopment.	2013	Ng, S; Lin, CC; Hwang, YH; Hsieh, WS; Liao, HF; Chen...	Neurotoxicology
1	☐	☐	23340980	Mercury exposure and neurochemical biomarkers in multiple brain regions...	2013	Dornbos, P; Strom, S; Basu, N	Ecotoxicology (London, England)
1	☐	☐	22683800	Effects of environmental contaminant exposure on visual brain developme...	2012	Ethier, AA; Muckde, G; Bastien, C; Dewailly, E; Ayotte...	Neurotoxicology
1	☐	☐	22885222	Evidences for a role of glutathione peroxidase 4 (GPx4) in methylmercury ...	2012	Zemolin, AP; Meinerz, DF; de Paula, MT; Mariano, DO...	Toxicology
1	☐	☐	22207210	Role of cinnabar and realgar of WSHPD in protecting against LPS-induced ...	2012	Zhang, F; Lu, Y; Wu, Q; Yan, J; Shi, J; Liu, J	Journal of ethnopharmacology
1	☐	☐	21741406	Methylmercury (MeHg) elicits mitochondrial-dependent apoptosis in devel...	2011	Sokolowski, K; Falluel-Morel, A; Zhou, X; DiCicco-Bloo...	Neurotoxicology
1	☐	☐	21488088	Vitamin K has the potential to protect neurons from methylmercury-induc...	2011	Sakae, M; Mori, N; Okazaki, M; Kadowaki, E; Kaneko...	Journal of neuroscience research
1	☐	☐	20568450	[Time-course effect and region-specificity of endoplasmic reticulum stres...	2010	Zhang, Y; Jiang, X; Zhao, X; Qian, H; Wang, S; Xing, G...	Wei sheng yan jiu = Journal of hygiene research
1	☐	☐	20642023	Focus on autism.	2010	Turlejski, K	Acta neurobiologicae experimentalis
1	☐	☐	20386881	Identification and distribution of mercury species in rat tissues following a	2010	Rodrigues, II; Serenoni, JM; Batista, BI; Souza, SS; B...	Archives of toxicology

It is possible to select more than one MeSH code in SWIFT-Review. Simply hold the Control (Command) key while clicking to select multiple codes. SWIFT-Review will show all articles containing at least one of the selected codes.

7. Prioritization

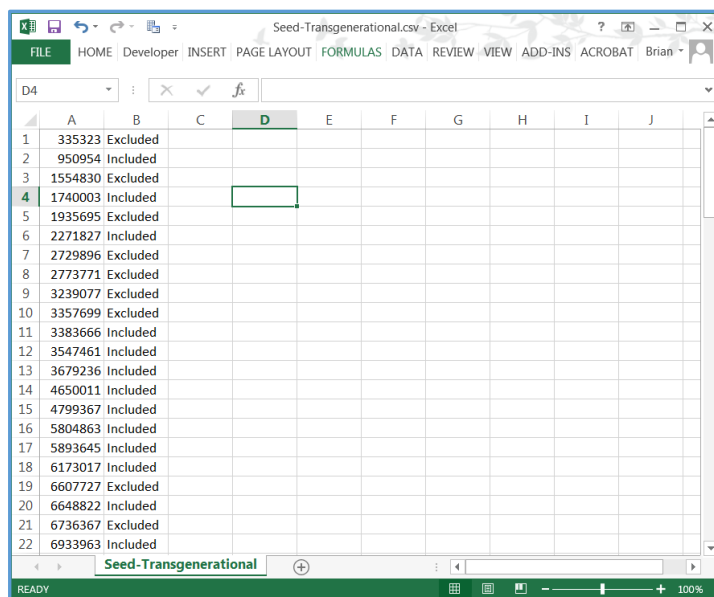
If you are able to manually annotate a small subset of your documents as "Included" or "Excluded" documents, SWIFT-Review can help you triage the remaining documents. The following example illustrates this feature.

Example 5: Automatically Triage your Documents

1. *Load the Transgenerational project.* For this exercise, we will use a SWIFT-Review Project that includes documents that have previously been screened for inclusion in a systematic review. Download the example project, **Transgenerational_small.stp** from the following URL:
https://api.sciome.com/SWIFTupdates/Tutorial/Transgenerational_small.stp

This project contains a random subset of the PMIDs (about 1/10 of the data) from the full set of citations obtained during a preliminary literature search for studies pertaining to the transgenerational effects of various environmental exposures.

2. *Load a human curated training set.* From the File menu, choose **File > Load Training Documents**. Download and choose the file <https://api.sciome.com/SWIFTupdates/Tutorial/Seed-Transgenerational.csv>. This file is a comma-separated text (.csv) file which contains 50 of the project's PMIDs marked as "Included" and 50 PMIDs marked as "Excluded."
3. *Sort the document list* by the "Training Item?" column (descending) to see all the training documents at the top of the list.



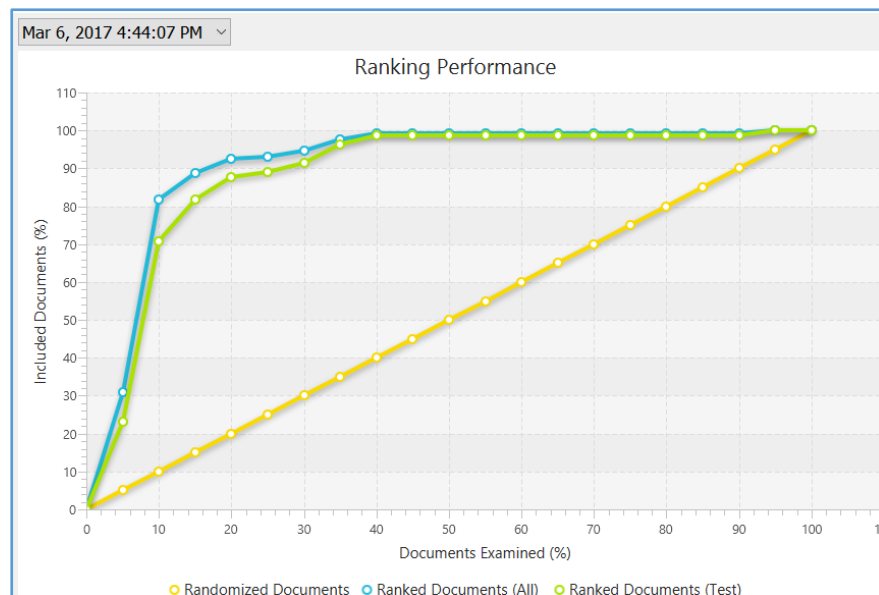
	A	B	C	D	E	F	G	H	I	J
1	335323	Excluded								
2	950954	Included								
3	1554830	Excluded								
4	1740003	Included								
5	1935695	Excluded								
6	2271827	Included								
7	2729896	Excluded								
8	2773771	Excluded								
9	3239077	Excluded								
10	3357699	Excluded								
11	3383666	Included								
12	3547461	Included								
13	3679236	Included								
14	4650011	Included								
15	4799367	Included								
16	5804863	Included								
17	5893645	Included								
18	6173017	Included								
19	6607727	Excluded								
20	6648822	Included								
21	6736367	Excluded								
22	6933963	Included								

- To triage the documents, simply click **Tools > Prioritize**. SWIFT-Review uses a machine learning algorithm to compute a score which attempts to prioritize the unlabeled documents such that the documents similar to the "Included" documents are ranked near the top of the list.

Showing 4964 of 4964 loaded documents (132 total included; 100 total training docs.)

Similarity	Priority	Training Item?	Included?	PMID	Title
0.228	0	✓	✓	16573251	An investigation of potential Holocaust-related secondary traumatization in the third generation.
0.154	0	✓	✓	19585292	An evaluation of monitoring practices in patients on second generation antipsychotics.
0.105	0	✓	✓	9870241	Group belonging and mourning as factors in resilience in second generation of Holocaust surviv...
0.092	0	✓	✓	4650011	DNA (cell number) and protein in rat brain. Second generation (F 2) alteration by maternal (F ...
0.085	0	✓	✓	9069538	Prevalence and mechanism of resistance to 'third-generation' cephalosporins in clinically releva...
0.084	0	✓	✓	16467006	Hospitalization due to alcohol and drug abuse in first- and second-generation immigrants: a fol...
0.082	0	✓	✓	19513948	GA-101, a third-generation, humanized and glyco-engineered anti-CD20 mAb for the treatment...
0.082	0	✓	✓	17763547	TMC125 (etravirine), a second generation non-nucleoside reverse transcriptase inhibitor.
0.075	0	✓	✓	2773771	Effect of the second-generation calcium channel blocking drug nisoldipine on diastolic left ventr...
0.062	0	✓	✓	3239077	The Gotland house: family relations through four generations in rural Sweden.
0.062	0	✓	✓	8640195	Gametocytogenesis of Leucocytozoon caulleryi in vitro culture: effect of human red blood cell...
0.055	0	✓	✓	22902003	The next generation of disease risk: are the effects of prenatal nutrition transmitted across ge...
0.047	0	✓	✓	18451013	NAMI perspective on CATIE: policy and research implications.
0.045	0	✓	✓	19329490	Cortical thinning in persons at increased familial risk for major depression.
0.045	0	✓	✓	3679236	Family distances and human lymphocyte antigens.
0.038	0	✓	✓	7399270	Even unto the fourth generation.
0.037	0	✓	✓	12172548	Mutant frizzled-4 disrupts retinal angiogenesis in familial exudative vitreoretinopathy.
0.036	0	✓	✓	9914457	An overview of the fifth-generation implantable cardioverter defibrillator.
0.03	0	✓	✓	18392543	Conceptions held by health professionals on violence against children and adolescents within th...
0.029	0	✓	✓	6933963	Changes in the gonads, reproduction and generations of white rats under the effect of some p...
0.022	0	✓	✓	18950056	Effects of removal of Cardinium infection on fitness of the stored-product pest Liposcelis bostry...
0.022	0	✓	✓	4799367	[Proceedings: 177. Mechanisms of non-shivering thermogenesis of rats reared in cold for succ...
0.021	0	✓	✓	10680451	[Evaluation of selected HLA DRB1 gene alleles as genetic markers of type 1 diabetes in the pop...
0.021	0	✓	✓	18095228	Optimizing therapy for infections caused by enterobacteriaceae producing extended-spectrum ...
0.019	0	✓	✓	6173017	[Effects of lindane upon the reproductive function in four generations running in the quail. Stud...

- The *Prioritized Lists* view displays the percentage of the included documents (blue line) occurring in each quantile of the ranked list. For example, we can see that in this case, nearly 80% of the Included documents occur in the top 10% of the ranked list and virtually all the Included documents occur in the top 50% of the ranked list. Be cautioned, however, that the ranking performance on the training documents will typically exceed the performance on the unlabeled document set.



The yellow line shows the baseline performance we should expect if the ranking score had been generated completely at random such that the included documents were uniformly distributed in the ranked list.

The green line shows the performance for items in your “test set” (if you have one). The test set is defined by checking “Included?” for a set of known relevant items, but **not** checking the “Training Item?” box for those same items. The test set performance can provide a more realistic estimate of the expected performance on the remaining unlabeled items.

- The prioritization operation only computes scores for the set of visible documents. It is possible to compute more than one prioritized list. For example, you may wish to compute distinct sets of scores for several separate subsets of your documents. In this case, you can switch between these lists by making different selections in the dropdown list at the top of the *Ranked Lists* view. By default, ranked lists are named using the date and time they were created.

Sending Documents to SWIFT Active-Screener for Screening

[SWIFT-Active Screener](#) is a web-based, collaborative screening application for systematic review. Active screener was designed to be easy-to-use, incorporating a simple, but powerful, graphical user interface with rich project status updates. As screening proceeds, reviewers include or exclude articles while an underlying statistical model automatically computes which of the remaining unscreened documents are most likely to be relevant. This “Active Learning” model is continuously updated during screening, improving its performance with each article reviewed. Meanwhile, a separate statistical model estimates the number of relevant articles remaining in the unscreened document list. Together, the combination of the two models allows users to screen relevant documents sooner and provides them with accurate feedback about their progress. Using this approach, the vast majority of relevant articles can often be discovered after reviewing only a fraction of the total number of articles. This can result in a significant time and cost savings for you and your team, especially for large projects.

If you have an Active Screener account, you can send documents from SWIFT-Review directly to Active Screener for screening. Simply select the articles you would like to send and choose “**Send to Active Screener...**” from the context menu.

The screenshot displays the SWIFT-Review application window. The top menu bar includes File, Tools, Reports, and Help. Below the menu is a toolbar with buttons for Tag Browser, Search, Browse MeSH Tree, and Prioritized Lists. A dropdown menu for 'Mercury Compounds' is open, showing a list of tags and their counts:

Tag	Code(s)	Count
Elemental Mercury (7439-97-6)		1401
[No Tag]		401
MeHg(22967-92-6)		270
Mercuric Chloride (7487-94-7)		199
Mercurous Chloride (7546-30-7)		17
Mercuric Oxide (21908-53-2)		6

The main document preview area shows the title "[Mercury vapor in dental office]." and the abstract "Dermann, K; Dermann, C. *Zahnärztliche Mitteilungen* (1991)". Below the abstract, there are sections for "Health Outcomes" and "Topic Models". The "Topic Models" section lists several topics with their percentages: Topic 9: amalgam, dental, mercury, thimerosal, amalgams, fillings, restorations, oral, vaccines, study (46%); Topic 7: mercury, determination, method, samples, electrode, detection, analysis, spectrometry, atomic, sample (24%); Topic 19: blood, pressure, patients, hypertension, mmhg, measurements, device, systolic, temperature, diastolic (23%); Topic 16: mercury, soil, data, results, study, model, environmental, air, studies, health (2%).

At the bottom, a table shows 1401 of 2000 loaded documents. The table has columns for Score, Training Item?, Included?, RefID, Title, Year, Authors, and Journal. A context menu is open over the first row, showing options: Select All, Shuffle, Add Tag to Selected..., Tag Search Results..., Remove Tag from Selected..., Compute Fingerprint for Selected..., Send to Active Screener..., Copy Selected, and Export Selected...

Select the Active Screener Project

×

Project:

Add new project...

▼

Document Scope:

Selected documents only

▼

De-duplication:

☐ Title
☐ Year
☐ Journal

New Project Name:

Elemental Mercury

OK

Cancel

When the operation has completed, you will be able to log in to Active Screener and screen your documents.

SWIFT AS - Screening R

Secure

https://swift.sciome.com/activescreener/#ISCREENING_REFERENCES/level/121

SWIFT ActiveScreener

Elemental Mercury

brian.howard

Screening References

Add New Review

Include

Exclude

Detailed Screen

Title

☒
☒
☒

☒
☒
☒

☒
☒
☒

☒
☒
☒

[Blood trace elements content in adolescents in an industrial town].

Mercury 203 distribution in pregnant and nonpregnant rats following systemic infusions with thiol-containing amino acids.

Note: implementation of a cold spot setup for controlled variation of vapor pressures and its application to an InBr containing discharge lamp.

Evaluation of two devices for self-measurement of blood pressure according to the international protocol: the Omron M5-I and the Omron 705IT.

[Trends in the quantity of foreign substances in feed mixtures and in pigsty dust at large pig farms].

Adsorptive stripping square wave voltammetry (Ad-SSWV) accomplished with second-order multivariate calibration determination of fenitrothion and its metabolites in river water samples.

Mercury and methylmercury bioaccumulation by polychaete worms is governed by both feeding ecology and mercury bioavailability in coastal mudflats.

An electrochemical analysis of changes in properties of DNA caused by ionizing and ultraviolet radiations.

[Tympanic thermometer. The left or the right ear?]

[PRESENT STATUS OF KNOWLEDGE ON THE VARIOUS FORMS OF MERCURY VAPOR POISONING].

Phenological development stages variation versus mercury tolerance, accumulation, and allocation in salt marsh macrophytes Triglochin maritima and Scirpus maritimus prevalent in Ria de Aveiro coastal lagoon (Portugal).

Effect of watershed parameters on mercury distribution in different environmental compartments in the Mobile Alabama River Basin, USA.

[Clinico-experimental study of ear lesions following exposures to metallic mercury fumes and noise].

Nephrotic syndrome of minimal change disease following exposure to mercury-containing skin-lightening cream.

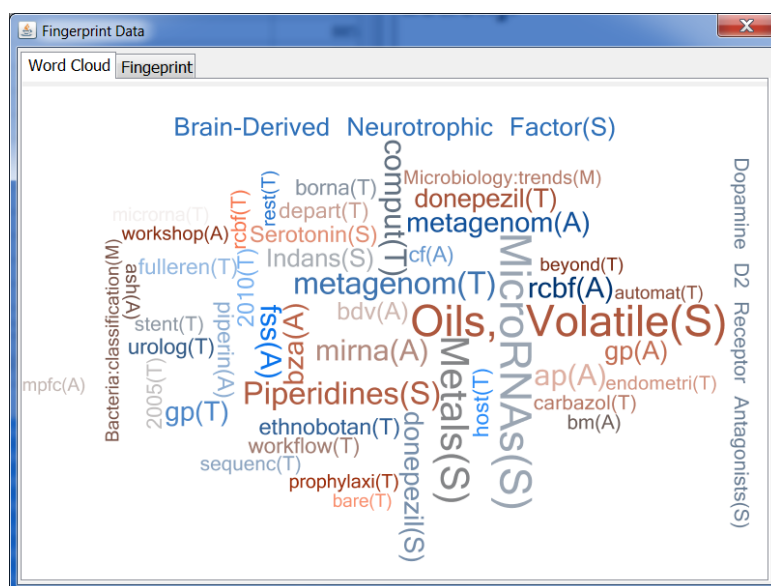
The source and fate of sediment and mercury in the Tapajós River, Pará, Brazilian Amazon: Ground- and space-based evidence.



 Enabling Science via Analytical Informatics

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SWIFT-Review includes a convenient feature that can automatically identify over-represented words and phrases in your corpus. Simply select some documents of interest in the document list and then choose the right-click option “Compute Fingerprint from Selected...” to compute over-represented terms within the selected documents. The results are displayed in the form of a Word Cloud and a tabular “Fingerprint.” The fingerprint table displays a score that quantifies the salience of terms in the selected documents as compared to the rest of the corpus. In the Word Cloud, the sizes of the words correspond to the scores shown in the fingerprint panel. Word Cloud terms are suffix with (T) for title words, (A) for abstract words, (M) for MeSH terms and (S) for Supplementary Chemical terms.



1. *Load the Mercury project.* For this exercise, we will once again use the SWIFT-Review Project **MercuryPMIDs_sample.stp**. If you have not already obtained this project, it is available for download [here](#):

https://api.sciome.com/SWIFTupdates/Tutorial/MercuryPMIDs_sample.stp

Load the project by choosing **File > Load Project...** from the menu.

2. In the *Tag Browser* view, select the tag category “Characteristics of Cancer” and choose “Induces Oxidative Stress.” Select all 188 documents and choose **“Compute Fingerprint from Selected...”**

The screenshot displays the SWIFT-Review software interface. The main window shows a list of documents with columns for Score, Training Item?, Included?, RefID, and Title. The highest scoring document is 'Improvement of mercuric chloride-induced testis injuries and sperm quality deteriorations by Spirulina platensis in rats.' with a score of 1.001. A word cloud window is open, showing terms and their frequencies. The most frequent terms are 'Glutathione' (37), 'oxid' (32), 'Oxidation-Reduction' (29), 'Superoxide Dismutase' (11), 'Antioxidants' (17), 'Hydrogen Peroxide' (12), 'Oxidative Stress' (21), and 'Methylmercury Compounds' (31).

- SWIFT-Review computes a modified term frequency/inverse document frequency (tf-idf) score for each term found in the selected documents. High scoring terms are more frequent in the selected documents than in the remaining documents. Using this feature can be a convenient way to identify additional search terms to use when designing new queries and filters. As shown in the diagram, high scoring terms for the documents we selected include “Glutathione”, “oxid”, “Oxidation-Reduction (MeSH)”, “Superoxide Dismutase (SuppChem)”, “Antioxidants(SuppChem)”, “Hydrogen Peroxide (SuppChem)”, “Oxidative Stress (MeSH)”, and “Methylmercury Compounds (SuppChem).”

Note that title and abstract words are “stemmed” using the Porter stemmer. When stemming, SWIFT-Review uses a computational algorithm to inflect words to their root forms. Hence "investigate" would also match "investigation", "investigating", etc.

- To copy the entire word list to Excel, simply right-click and choose “Copy Fingerprint.” Then paste the data into an excel spreadsheet.

Fingerprint Data				
Word Cloud Fingerprint				
Word	Type	Word Count	Document Frequency	Score
Glutathione	SUPPCHEM	37	37	8.702
Glutathione (D12.644.456.448)	MESH	37	37	5.89
oxid	Title	32	32	4.996
Oxidation-Reduction (G02.14...	MESH	29	41	4.969
oxid	Tiab	254	125	4.808
Superoxide Dismutase	SUPPCHEM	11	11	4.771
Antioxidants	SUPPCHEM	17	18	4.608
Hydrogen Peroxide	SUPPCHEM	12	12	4.406
oxid	Abstract	222	118	4.237
glutathion	Title	15	15	3.952
Oxidative Stress (G03.495.71...	MESH	21	21	3.813
Methylmercury Compounds	SUPPCHEM	31	197	3.663
Hydrogen Peroxide (D01.248....	MESH	12	12	3.367
Antioxidants (D27.505.519.2...	MESH	17	18	3.203
Reactive Oxygen Species	SUPPCHEM	10	10	3.122
Superoxide Dismutase (D08....	MESH	11	11	3.076
glutathion	Tiab	97	49	3.013
Lipid Peroxidation (G02.111.0...	MESH	11	11	2.997
gsh	Abstract	80	27	2.825

9. Getting data out of SWIFT-Review

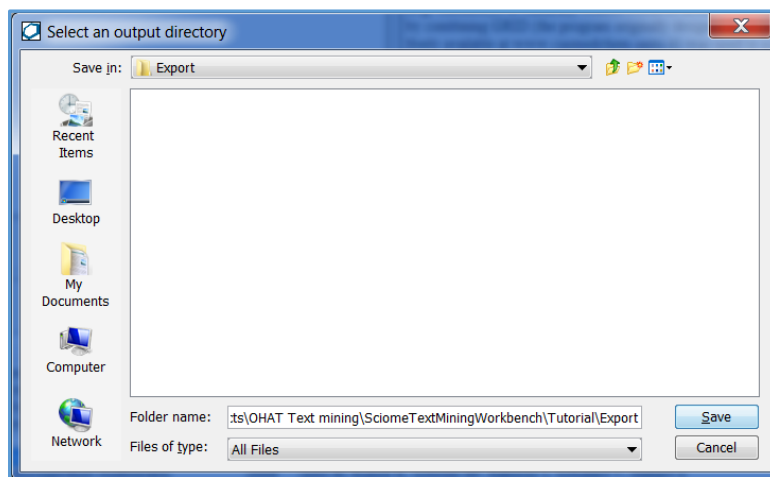
Copy/Paste Functionality

Many of the screens within SWIFT-Review offer right-click options which allow you to copy text and/or data which can then be pasted into other applications. Screens which support this functionality include the document list, tag browser, pie and bar charts, document preview, tag browser, and word cloud views.

Data Export

You can also export your data from SWIFT-Review using the command **File > Export Data...**

Simply choose a directory and click **Save**:



After the export, you should find a directory with a name like “SWIFT-Review Export NNNNNNNN-NNNNNN” (where the N’s are numbers derived from the current data and time.) The top level of this output directory will contain a text file with the list of all documents in your project. In addition, you will find a subdirectory for each tag set. Each of these subdirectories will contain: a) a text file with pie chart data summarizing the proportion of documents associated with each tag, b) lists of documents for each tag. All files are tab-delimited text files that can be easily imported into Excel.

Alternatively, you can also select any subset of the documents visible in the document list and export it to a file by right-clicking and choosing “**Export Selected...**” Using this method, it is possible to export documents in the form of an Excel Workbook, as RIS citation files or as plain tab-delimited text. The type of file exported depends upon your choice in the “Files of type” dropdown filter in the export dialog.

Reports

SWIFT-Review includes the ability to export data to Excel, allowing you to create detailed reports customized for your topic. Additional report types will be integrated into future versions of SWIFT-Review. Example 7 provides an example of this reporting functionality.

Example 7: Compile a SWIFT-Review Report

1. *Load the Mercury project.* For this exercise, we will once again use the SWIFT-Review Project **MercuryPMIDs_sample.stp**. If you have not already obtained this project, it is available for download here:

https://api.sciome.com/SWIFTupdates/Tutorial/MercuryPMIDs_sample.stp

Load the project by choosing **File > Load Project...** from the menu.

2. In the *Tag Browser* view, make the following selections:

Level 1: Article Type = Research Articles

Level 2: Evidence Stream = Human, Animal, and In Vitro

Level 3: Health Outcomes (no selection)

3. Choose **Reports > Publish Current Tag Browser Selection...** Type in a file name, check all the boxes, and click OK.

The screenshot displays the SWIFT-Review software interface. The 'Tag Browser' section on the left shows a list of tags and their counts. The 'Evidence Stream' section in the middle shows a list of evidence streams and their counts. The 'Health Outcomes' section on the right shows a list of health outcomes and their counts. A 'Publish Tag Browser Selection' dialog box is open, prompting for a file path and options to include bar charts, pie charts, and items with zero counts. The background shows a list of articles and a preview of a document titled 'Comparison of the cytotoxicity of the MEIC reference chemicals measured in protein free and in complete culture medium.'

Article Type	Count
Research Articles	1040
[No Tag]	846
Non-Research Articles	162
Systematic Reviews	1

Evidence Stream	Count
Human	476
Animal	456
In Vitro	299
[No Tag]	205
Plant	84

Health Outcomes	Count
Endocrine	343
[No Tag]	80
Hematological and Imm...	292
Developmental	247
Neurological	185
Mortality	169
Renal	137
Nutritional and Metabolic	128

Showing 810 of 2000 loaded documents (1 selected; 0 total included; 0 total training)

Score	Training Item?	Included?	RefID	Title
0.696	☒	☒	16054330	Comparison of the cytotoxicity...
0.499	☐	☐	21741406	Methylmercury (MeHg) elicits
0.493	☐	☐	12523884	Factors for glaucoma progress
0.477	☐	☐	17053538	Short-term incidence rate of h
0.475	☐	☐	8952810	[Treatment of hypertension w
0.473	☐	☐	15232398	Fish intake during pregnancy and early cognitive development of offspring...
0.457	☐	☐	16439859	Occupational exposures and movement abnormalities among Japanese-A...
0.457	☐	☐	25721244	The influence of obesity on blood mercury levels for U.S. non-pregnant ad...
0.455	☐	☐	12805652	Effect of methylmercury on midbrain cell proliferation during organogenes...
0.443	☐	☐	15967199	The association between genetic polymorphisms of coproporphyrinogen o...
0.431	☐	☐	6193166	Immunohistochemical application of monoclonal antibodies against myel...
0.426	☐	☐	10486683	Feasibility and importance of self-monitoring in patients over 75 years ol...
0.41	☐	☐	26262441	Persistent Organochlorine Pesticide Exposure Related to a Formerly Used...
0.409	☐	☐	7662341	Estimation of kinetics of mercury detoxification from low-inoculum batch ...
0.406	☐	☐	21488088	Vitamin K has the potential to protect neurons from methylmercury-induc...
0.4	☐	☐	1507267	Exposure assessment for heavy metal ingestion from a sport fish in Buert...

Filepath for the results: \v Tutorial and Course\MercuryProject.xlsx

☒ Include bar chart
☒ Include pie chart
☒ Include 'No Tag' items
☒ Include items with zero counts

Ok Cancel

Comparison of the cytotoxicity of the MEIC reference chemicals measured in protein free and in complete culture medium.

Dierickx, PJ. *Toxicology in vitro : an international journal published in association with BIBRA (2005)*

Abstract

In order to investigate if a protein free cytotoxicity assay could improve the prediction of human ...

Journal

Toxicology in vitro : an international journal published ...

Neurotoxicology

Archives of ophthalmology (Chicago, Ill. : 1960)

Journal of hypertension

Archives des maladies du coeur et des vaisseaux

Epidemiology (Cambridge, Mass.)

Neuroepidemiology

Environmental research

Toxicological sciences : an official journal of the Societ...

Toxicology and applied pharmacology

The journal of histochemistry and cytochemistry : offic...

Archives des maladies du coeur et des vaisseaux

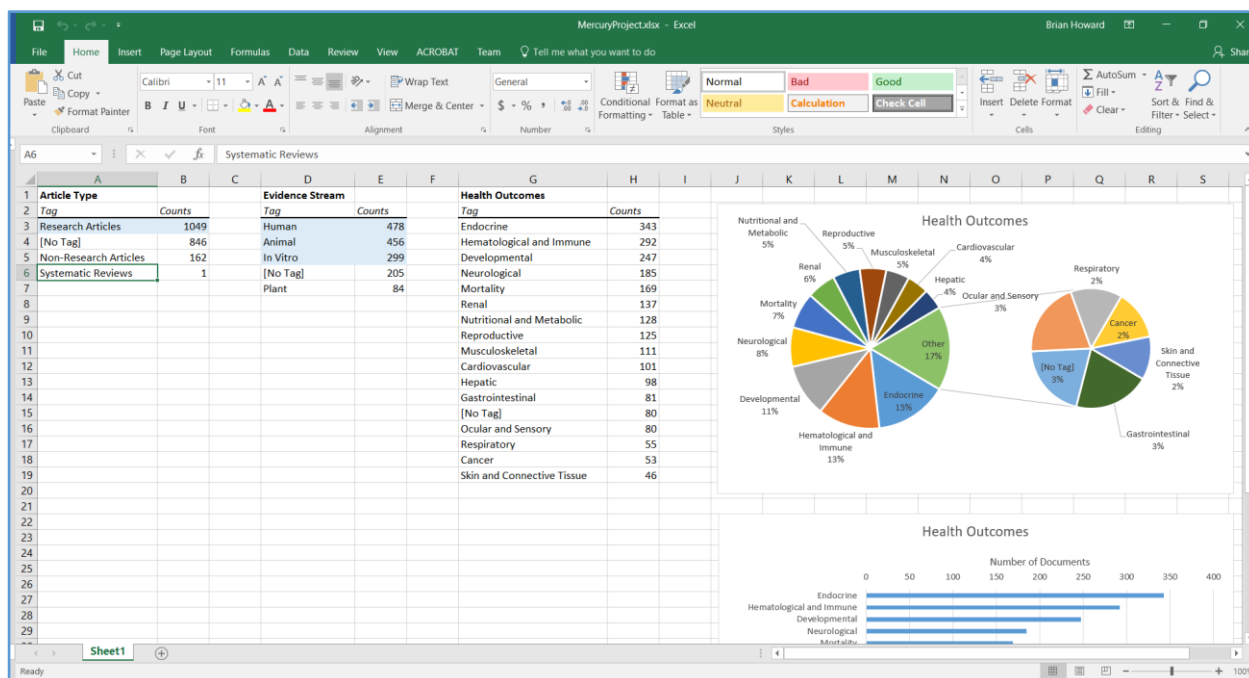
Journal of toxicology and environmental health. Part A

Journal of biotechnology

Journal of neuroscience research

Journal of toxicology and environmental health

4. Open the resulting Microsoft Excel spreadsheet. You should see an accurate reflection of the Tag Browser selections made in step 2.



- Now create a new sheet called "Review Articles." Let's compile a list of all the Review articles about our topic. In the *Tag Browser*, choose the "MeSH Publication" Type tag category in level 1, and select "Review". Clear all selections in any subsequent levels. This will filter and show the 81 review articles in this project. In the document list, select all articles and then choose "Copy Selected" from the context menu. Paste the Articles into your Excel Spreadsheet. You may want to re-arrange the columns and provide column headers. Save your Excel file and **close it**.

PMID	Title	PubYear	Authors	Journal
21452433	Book: Hepatic Circulation: Physiology and Pathophysiology	2009	Lautt, WW	Book: Hepatic Circulation: Physiology and Pathophysiology
28074219	Bioremediation of mercury: not properly exploited in contaminated soils!	2017	Mahbub, KR; Bahar, MM; Labbate, M; Krishnan, K; An	Applied microbiology and biotechnology
27696224	Cyanidation of Mercury-Contaminated Tailings: Potential Health Effects and Environmental Justice.	2016	Drace, K; Kiefer, AM; Veiga, MM	Current environmental health reports
27671962	Policy Development Fosters Collaborative Practice: The Example of the Minamata Convention on Mercury.	2016	Meyer, DM; Kaste, LM; Lituri, KM; Tomar, S; Fox, CH; I	Dental clinics of North America
27552445	Pollution by metals: Is there a relationship in glycemic control?	2016	González-Villalva, A; Collin-Barenque, L; Bizarro-Ne	Environmental toxicology and pharmacology
27411811	The 2014 FDA assessment of commercial fish: practical considerations for improved dietary guidance.	2016	McGuire, J; Kaplan, J; Lapolla, J; Kleiner, R	Nutrition journal
25644627	Aqueous mercury adsorption by activated carbons.	2015	Hadji, P; To, MH; Hui, CW; Lin, CS; McKay, G	Water research
26563794	Clinical description of toxic neuropathies.	2015	Little, PA; Albers, JW	Handbook of clinical neurology
26563793	Tremor secondary to neurotoxic exposure: mercury, lead, solvents, pesticides.	2015	Lucchini, RG; Hashim, D	Handbook of clinical neurology
24779180	[Heavy metals deserves continued vigilance].	2014	Sällsten, G; Barregård, L	Lakartidningen
22334439	Epigenetic targets of some toxicologically relevant metals: a review of the literature.	2012	Cheng, TF; Choudhuri, S; Muldoon-Jacobs, K	Journal of applied toxicology : JAT
21786069	Serum paraoxonase-1 (PON-1) genotype and exposure to organophosphorus insecticides—is there a high-risk pop	2011	Matthews, AR; Sutter, ME; Rentz, DE	Journal of medical toxicology : official journal of the American Coll
19013355	Metals and apoptosis: recent developments.	2008	Rana, SV	Journal of trace elements in medicine and biology : organ of the Soc
17825680	Environmental factors implicated in the causation of adverse pregnancy outcome.	2007	Triche, EW; Hossain, N	Seminars in perinatology
15073495	Blood pressure measurement in research and in clinical practice: recent evidence.	2004	Parati, G; Bilo, G; Mancina, G	Current opinion in nephrology and hypertension
15366346	Is shellfish consumption safe?	2004	Diaz, JH	The Journal of the Louisiana State Medical Society : official organ o
15096651	Mushrooms, tumors, and immunity: an update.	2004	Borchers, AT; Keen, CL; Gershwin, ME	Experimental biology and medicine (Maywood, N.J.)
12946237	Th1/Th2 balance: the hypothesis, its limitations, and implications for health and disease.	2003	Kidd, P	Alternative medicine review : a journal of clinical therapeutic
12929470	Very-low-dose combination of perindopril and indapamide: efficacy on blood pressure and target-organ damage.	2003	Laurent, S	Journal of hypertension. Supplement : official journal of the Internat
12427049	Core temperature measurement: methods and current insights.	2002	Moran, DS; Mendall, L	Sports medicine (Auckland, N.Z.)
12051792	Metals and women's health.	2002	Valter, M; Berglund, M; Akesson, A; Lidén, C	Environmental research
12412959	The use of amalgam in pediatric dentistry.	2002	Fuks, AB	Pediatric dentistry
11248754	Blood pressure monitoring during pregnancy.	2001	Feldman, DM	Blood pressure monitoring
11560286	Folk use of elemental mercury: a potential hazard for children?	2001	Oziah, PO	Journal of the National Medical Association
10212916	Broadsheet number 48: Mercury, cadmium and arsenic: toxicology and laboratory investigation.	1999	Campbell, BG	Pathology
10466227	Human health implications of environmental contaminants in Arctic Canada: a review.	1999	Van Oostdam, J; Gilman, A; Dewailly, E; Usher, P; Whe	The Science of the total environment
9472760	Heavy metal toxicity, Part I: arsenic and mercury.	1998	Graeme, KA; Pollack, CV	The Journal of emergency medicine
9185355	The future of dental amalgam: a review of the literature. Part 4: Mercury exposure hazards and risk assessment.	1997	Eley, BM	British dental journal

- It can be useful to export a matrix of document counts associated with various pairs of SWIFT-Review tag categories. For example, to create a matrix of document counts for tags in the Health Outcomes and Exposure categories, select **Tools > Export Tag Heatmap...** and fill in the resulting dialog as shown below. You can either create a new file to store these results, or you can choose the same Excel file used in previous steps of this exercise.

Export Tag Heatmap

Category 1 (Rows) Health Outcomes

Category 2 (Columns) Exposure

Document Scope: All documents

Sheet Name: Tag Heatmap

Filepath for the results: n Tutorial and Course\MercuryProject.xlsx Browse...

Ok

Cancel

When you click “OK”, an Excel report will be created, with rows and columns named according to the tags in the chosen categories. Each cell in the grid will contain the count of documents having the pair of tags designated by the intersection of that cell’s row and column labels. Combinations of tags with large counts are colored in red and indicate potentially information-rich “pockets” of the literature; conversely, light blue and white cells indicate information poor topics.

	Air Pollution	Allergens	Diet and Nutrition	Drugs of Abuse	Endocrine Disruptors	Flame Retardants	General Environmental Exposures	Heavy Metals	Ionizing Radiation	Miscellaneous	Occupational	Pesticides	Phthalates	Polycyclic Aromatic Hydrocarbons	Solvents	Stress	[No Tag]
1																	
2	4	2	8	4	0	1	5	69	3	2	5	10	0	2	0	2	19
3	6	1	14	14	0	1	3	75	4	1	5	5	0	0	1	1	97
4	22	5	59	23	3	1	18	322	9	6	16	34	1	3	8	8	71
5	17	4	72	21	4	3	20	462	8	9	15	45	1	5	6	15	80
6	4	6	11	7	0	1	5	97	4	4	7	7	0	0	3	0	43
7	27	19	59	27	1	1	16	330	11	8	31	33	1	2	3	11	124
8	4	0	20	6	0	2	9	130	3	2	5	17	0	1	3	6	25
9	17	4	43	13	1	3	8	274	2	3	21	26	1	3	5	15	11
10	6	3	21	12	0	0	7	127	3	2	8	10	0	1	3	7	40
11	9	5	45	17	2	1	11	253	4	2	22	26	0	0	6	9	61
12	7	3	56	14	1	2	7	180	4	2	11	26	1	3	3	12	36
13	8	14	9	3	0	0	5	94	6	3	10	7	1	0	4	1	45
14	12	4	15	10	0	1	8	192	4	4	29	12	0	0	0	6	51
15	11	2	37	17	3	0	3	156	5	2	10	21	1	1	0	5	26
16	16	1	6	6	0	1	1	68	0	0	9	11	0	3	0	4	18
17	10	15	3	2	0	0	1	73	1	1	11	6	0	1	0	1	20
18	44	2	21	10	0	1	13	357	11	19	18	17	0	7	3	1	146