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SciVal Experts: a Collaborative Tool

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Recommended Citation

Vardell, E., Feddern-Bekcan, T., & Moore, M. (2011). SciVal Experts: a Collaborative Tool. Medical Reference Services Quarterly, 30(3) 283-294.

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ONLINE UPDATES: A COLUMN FOR SEARCH ANALYSTS

Emily Vardell, Column Editor

SciVal Experts: A Collaborative Tool Emily Vardell Tanya Feddern-Bekcan

Mary Moore

ABSTRACT. SciVal Experts is a resource for finding experts and fostering collaboration. The tool creates researcher profiles with automatically updated publication and grant information and faculty-inputted curriculum vitae, more fully capturing a researcher's body of work. SciVal Experts indexes campus-based "experts" by research topic, allowing faculty to find potential research partners and mentors, furthering translational research opportunities and dissemination of knowledge.

KEYWORDS. Bibliometric analysis, bibliometrics, faculty profiles, MeSH, researcher profiles, SciVal Experts

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SciVal Experts is a tool that provides faculty profiles pages featuring automatic feeds of publication and grant data and sections available for self-entry, such as a faculty member's curriculum vitae. Originally named Collexis, the resource was recently purchased by Elsevier and renamed SciVal Experts. Institutions that purchase the product can customize it to their needs, including selecting which departments require faculty pages and customizing the features in the profile pages. The SciVal Experts resource is fully accessible and searchable by those outside the institution and is indexed by search engines such as Google, increasing the visibility of an institution's research efforts. In addition to serving as a translational science tool at the University of Miami, there are a total of 16 SciVal Experts sites as of April 2011, including Johns Hopkins University, the University of Michigan, and the University of Alabama at Birmingham. This article will outline the SciVal interface, special features, and comparable tools, as well as ways that librarians can get involved in institutional implementation.

SCIVAL EXPERTS RESEARCH PROFILES

SciVal Experts Home Page

SciVal Experts offers easy-to-use browsing and searching options. Many options are available from the home page, making browsing a one-click feature. The names of, and links to, specific departments take up the largest amount of space on the home page (see Figure 1). For example, since the University of Miami's SciVal Experts resource is designed to enhance clinical and translational science, a host of departments are featured. In addition to School of Medicine departments, there are links to departments in the College of Engineering, School of Nursing and

Health Studies, and other life science faculty (e.g., Biology, Chemistry, Education and

Psychological Studies, Marine Biology, etc).

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Legend: FIGURE 1. University of Miami SciVal Experts home page.

In additional to links to specific departments, there is a smaller column on the right with a feed of Recent Grants and another with Recent Publications. As the names suggest, these sections are updated frequently; Recent Publications is updated daily and Recent Grants weekly. These options (as well as Most Frequent Journals) are also available on the left side of the homepage.

Department Page

Clicking one of the department names (see Figure 2) displays a list of faculty members (or "Experts") organized alphabetically with each faculty member's publication trend chart preview and number of publications and grants. The left column features two data visualization tools. The first tool is called Research Trends. By clicking on the "Explore Research Trends" box, a graph displays, using colors to track the research concepts about which an institution has published the most research articles over the last decade. The height of the line indicates the number of publications, making it easy to track the publication trends of the department. The graph is interactive; selecting and deselecting topics and moving the timeline filter hones in on topics of interest. Hovering over the graph will display the represented concepts, the year of publication, and number of publications relating to that concept in that year.

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Legend: FIGURE 2. Department page.

Underneath the "Explore Research Trends" box in the left column is a box labeled "Explore Research Network." This tool creates a web of connections of researchers within the department. Each circle in the web represents a particular researcher in the department, and each line connecting two circles indicates a paper the two researchers have published together.

The right column of each department's page features a "Research Profile," using a bar chart to display the most common research areas in that department, and sections highlighting recent publications and grants (similar to the home page, but specific for that department). At the bottom of each department page are the most frequent journals of publication and the "Institutional Network," which displays the most common internal and external collaborators by department (internal) and institution (external).

SAMPLE SEARCH

The SciVal Experts database is searchable by concept, last name, full text, and keyword using Boolean methods (useful if a search includes non-MeSH terms). The default search is "by concept." A simple search on "atherosclerosis" was conducted as an example. A helpful feature in SciVal Experts is that the user does not need to type in the full word in order to find the concept (or last name, as will be discussed later) for which one is looking. After typing "atherosclerosis" in the search box, an intermediary page displays, asking the user to select the desired topic from a list of possible related options (i.e., from the options atherosclerosis, carotid artery diseases, coronary artery disease, and intracranial arteriosclerosis, the author clicked "atherosclerosis").

FIND THE EXPERT CONCEPT PAGE

With the atherosclerosis page open (see Figure 3), there is a list of the faculty experts on the University of Miami campus displayed on the left side (in this case, 100 faculty researchers). Their names, departments, number of publications, publication trend chart, and number of grants are displayed (similar to the department page outlined previously). The list of researchers is arranged in order of how relevant the chosen concept is to each author's publication output. Clicking on the plus symbol to the left of a researcher's name displays the publications most closely associated with the search term.

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Legend: FIGURE 3. Find the Expert concept page.

On the right side of the column, users can filter the experts based on publications, grants, and curriculum vitae (CV). SciVal Experts also offers the option to refine one's search by adding concepts. It displays the most relevant co-concepts and includes a bar graph that shows the number of articles on atherosclerosis and each co-concept. The additional concepts are sorted by type, including disorders, chemicals and drugs, procedures, and anatomy. As additional concepts are added, each is displayed in the right column under "Your search terms."

From this search, users can click on the name of a particular "expert" to see the complete profile. A user would also be able to locate a profile page by searching with the "by last name" option in the upper right-hand corner.

RESEARCHER PROFILE

Each faculty member's profile page includes a host of information, both pre-populated and some sections available for self-entry. Each profile page includes a quick navigation section in the upper left-hand corner, including links to profile, publications, grants, similar experts, journals, trends, institutional network, coauthor network, research network, and additional activities and CV (see Figure 4). Underneath these quick links is a box for a profile picture (which must be uploaded by the faculty member or an assistant). Underneath the photo are the name of the faculty member's department and contact information (including office phone, e-mail, and link to BiomedExperts Profile, which will be discussed later). There is also a link to the faculty member's Scopus profile (clicking on the link displays the Author Profile for the researcher in

Scopus) and a line indicating whether the faculty member is available as a mentor, emphasizing

the collaborative theme of this resource.

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Legend: FIGURE 4. Researcher Profile page.

The most interesting feature of SciVal Experts is its automated nature, creating a "digital fingerprint" from the information downloaded nightly from PubMed and weekly from NIH

RePORTER. SciVal Experts uses this information to create list of topics the faculty member has published about or received a grant for. As readers know, an article or grant title does not give a complete picture of its content, but the abstract and list of MeSH terms does. SciVal Experts does provide the abstracts with the PubMed article citations and detailed grant information, but the brilliance of SciVal Experts is the data visualization via MeSH. This information is displayed with one to three bars of different lengths underneath the MeSH terms associated with the researcher. A blue bar indicates publications, red for grants, and yellow for CV. If the user chooses the Combined Profile option, one can see that although a researcher may publish the most on actins, most of his grants come from his work on gene expression and profilins, and his experience is in Vitamin D-Binding Protein.

The bulk of the information displayed in the Researcher Profile is organized by topic. "Profile" includes a visual display of the most common areas of publication, shown by topics and a bar under each topic displaying the number of publications. Next to "Profile" is "Publications," which is a feed of the latest publications indexed by PubMed/MEDLINE. This section includes the year of publication as well as the title of the article, name of the journal, and article information (including issue, number, and pages). Clicking on "more" at the top of the list of publications displays the entire list of the author's publications as well as the option to export the citations to EndNote. Clicking on the title of a specific article displays a "Publication Detail" page, with the article's abstract and a link to the article in PubMed. Underneath the "Publication Detail" section, a "Scientific Context" section displays related topics (with topics included in the article demarcated with a red circle), related publications, related grants, and internal experts. Authors of the publication are again demarcated with a red circle.

Back on the individual faculty member page (see Figure 4), the "Similar Experts" section lists institution faculty members who have publications that are in similar topic areas. This is displayed by faculty member and number of publications. The "Journals" section lists the top journal titles in which the faculty member has published the most number of articles. This is displayed by journal title and number of publications.

Underneath these sections, there is a "Trends" chart as well as a "Research Network" chart similar to the charts discussed previously for the department-specific page, but in the individual profile page serve as a graphical display of research concepts and coauthors most significantly present over the researcher's career.

At the bottom of the researcher profile page is a list of faculty member grants, which is created via a feed from NIH RePORTER. In the middle column is the "Institutional Network," which displays internal departments the faculty member has published with and which external institutions the faculty member shares publications with. Next is a "Coauthor Network" that shows which faculty members both within the institution ("Internal Coauthors") and outside of the institution ("External Coauthors") the faculty member has published with the most.

The "Additional Activities & CV" link in the left-hand column is an area which the faculty member can customize individually by entering in his or her CV information. Although the publication and grant data are automatically added to the researcher's profile, the CV is not. The researcher may choose to easily create or add to password-protected CV data to further enrich his or her profile by clicking on the "Additional Activities & CV" tab and then on the "edit your CV" link. SciVal Experts has data entry boxes for a personal statement, additional research interests & activities, mentor availability, comments, professional experience, education, honors and awards, teaching experience, service,

lectures/presentations/seminars/grand rounds, publications, external research support, special projects, and other. Those data-entry boxes that are analyzed for the digital fingerprint are valued by researchers who may have important clinical or teaching experience they want known or have numerous publications or grants not indexed in PubMed or NIH RePORTER. The researcher can partner with a librarian to list MeSH terms in those boxes to ensure incorporation of these elements into the research data visualization ("digital fingerprint").

HOW LIBRARIANS CAN GET INVOLVED

At the University of Miami Miller School of Medicine, the Louis Calder Memorial Library was exploring products to foster mentoring and collaboration when a representative of the university's Office of Research asked the library director to partner in implementing Collexis (now known as SciVal Experts). The advantage of Collexis over other options was that it automatically updated information based on feeds from PubMed and NIH RePORTER. The library director, however, was concerned that only limited aspects of a researcher's complete professional body of work were represented in Collexis. She diagrammed the aspects that were represented in Collexis, the aspects that perhaps could be added into a customized field, and aspects that were difficult to represent. For example, Collexis could help those looking for research partners or mentors where an individual had published or had grants funded, but it did not show areas of education or training, the positions they had held, where they had worked, or other valuable skills they had developed (such as computer programming, public speaking, or graphical representation of data), illustrated in Figure 5. The Library, the Department of Research, and Collexis worked together to develop customizable options to include and index

those additional aspects of a researcher's body of work. The University of Miami was the first to offer this customized feature. Collexis was jointly purchased by the Library and the Office of Research. Librarians continue to promote the product and provide education and training, and the Office of Research administers technical aspects.



Legend: FIGURE 5. Illustration of the complexity of a researcher's body of work.

MORE RESOURCES: BIOMEDEXPERTS

BiomedExperts is a free portal also recently purchased by Elsevier which enables researchers to connect and visually construct networks of collaborators. After signing up for a free account, users are directed to a page where they can create their own profile. This profile is created using the author listings of articles indexed by PubMed/MEDLINE. If a user (or the researcher in question) has not yet published, a profile can still be created by finding direct contacts and connecting to the contact's network profiles.

The author searched for Pascal Goldschmidt-Clermont and found his expert profile. The BiomedExperts profile, though not as robust as a profile in SciVal Experts, displays similar information, including graphical representations of the top research areas, a list of the most recent publications (with symbols representing articles where the researcher was first or last author), a coauthor network organized alphabetically, and a "Times&Places" tab, which uses bar graphs to show trends in a researcher's publications based on the institution's location and the year of publication.

The NetworkView and GeoNetworkView (which require Java) are perhaps the most unique aspects of a BiomedExperts profile. The NetworkView creates a web of coauthors for the researcher, which can be manipulated by selecting particular coauthors or by adjusting the number of copublications, publications, or connections. The GeoNetworkView displays the researcher's coauthor network on a map of the world, which serves as a powerful reminder for how globalized medical research is today.

Although not as robust or customizable as SciVal Experts Research Profiles, BiomedExperts is a good way to dip one's toes in the waters of biomedical research networks. Since BiomedExperts is free, it may serve as an easier way to start out on these ventures before investing in a tool such as SciVal Experts.

COMPARABLE RESOURCES

There are other collaboration tools currently on the market and in the spotlight. One example is VIVO, an open-source, semantic web application currently used by institutions such as Cornell University (where it originated), Weill Cornell Medical College, University of Florida, Washington University School of Medicine in St Louis, and others. VIVO is currently being expanded for national use through the support of an NIH grant.

Similarly to SciVal Experts, VIVO maps researchers by research area, authorship, collaboration, etc. The application provides information from open source external data sources such as PubMed and grant databases via RDF data. It is then up to the institution to develop applications to enhance the resource. Some of the advantages of VIVO are that it is freely available and customizable. One of the disadvantages of VIVO is that it requires the institution to be responsible for content development and maintenance.

Other tools include Profiles RNS, CAP, Loki, and Digital Vita. The NIH National Center for Research Resources supports a Clinical and Translational Science Award initiative called Distributed Interoperable Research Experts Collaboration Tool (DIRECT). DIRECT is designed to bring all of the collaboration resources (including SciVal Experts and VIVO) together in a "federated network of biomedical research expertise DIRECT-ly supported by researchers' institutions."¹ The DIRECT Web site (http://www.direct2experts.org) features a list of participants and outlines which software options they use.

WHY SCIVAL EXPERTS

SciVal Experts is a one-stop information resource about your institution's faculty. Not only does it provide basic faculty information, such as photo, department, contact information, and a list of published works and grants, SciVal Experts provides an automated, visual analysis of a faculty member's body of work. Many faculty appreciate SciVal Experts for several reasons:

- Users can find potential mentors and collaborators on campus who are working on their area of interest.
- Faculty and their staff do not have to update the SciVal Experts publications and grants portions of their profile. SciVal Experts automatically uploads their PubMed-indexed citations and NIH-funded grants into their profile.
- Most faculty profiling software does not allow a faculty member to upload his CV.
 SciVal Experts does, and it automatically attaches MeSH terms to it.
- SciVal Experts allows for viewers to quickly export all (or selected) publication citations into EndNote, which saves staff time.
- Faculty can indicate their interest in mentoring, encouraging them to consider their stance on mentorship.

FOR MORE INFORMATION

For more information on SciVal Experts and librarians' experiences, please contact the authors. For product information, please direct queries to Tom Thayer, Product Manager (t.thayer@elsevier.com or 1 212 633 3825). Queries may also be sent via the "Contact Us" link on the SciVal Experts home page or directly at <http://www.info.scival.com/contact>.

REFERENCE

1. DIRECT. "DIRECT | Participants." Available: http://direct2experts.org/?pg=participants>.

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