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Pharmaceutical & Health Technology Division

Message from the Chair

Mary Chitty, Chair, PHTD 2013-2014

PHTD just finished an inspiring and enlightening spring meeting April 14-16 in Philadelphia. Kudos and thanks to Spring Meeting Chair Alex Feng and the hard-working team who spent the



past year making this happen – especially Karen Mirabile, Patrice Costa, Sean Smith, Tim Hoctor, John Chu, Penny Doane-Setzer and Lynn Schlesinger and Diane Webb and BizInt for the magnificent program. Thanks too to the 43 sponsoring companies, great speakers and all the volunteers who kept things running smoothly. A special surprise was the webcasting of two talks on Tuesday. Look for links to the slides, webcast and program on the PHTD website.

The PHT Executive Board met on Saturday, April 13 to discuss updating our Strategic Plan and Policies and Procedures Manual, particularly Committee job descriptions. We are fortunate to have both documents, but each needs to be reviewed regularly to remain vibrant and functional documents. Alex Feng convened this meeting and provided some excellent background reading which may be of interest to many PHT members. Look for updates on this process via the PHT listserv. There will also be a report and time for discussion at the annual SLA meeting in June in San Diego.

Planning for spring's 2014 PHT has already begun. Both the strategic planning and forward-looking 2013 talks provided useful lenses for thinking about our jobs and topics that will help you make a compelling case to your managers for attending PHT Spring 2014. I like to think of program planning as an organic evolutionary process. We're

always shooting at a moving target and trying to anticipate what people will want and need to know.

I plan to assemble a spring 2014 Advisory Board and put out a call for presentations. These discussions started in Philadelphia and will continue in San Diego in June – and before and after. If you haven't already, please connect with me on LinkedIn.

A variety of formats, with as much interactivity as possible seems desirable, with round-tables, panels, and informal topical discussions in "birds of a feather" style. Look for topical discussion opportunities in San Diego, such as at the PHT Open House and networking breakfast.

Partnering and collaboration also promise to be important considerations. We are in talks with several divisions about collaborating on meetings and webinars. We know that many people only get one meeting a year. Establishing liaisons with other SLA divisions and other information and pharmaceutical organizations also seems worth discussing.

Exploring possible program topics can also start with local meet-ups or virtually. Let's see which topics resonate and attract interest, and whether topics (or titles) need tweaking for optimum engagement. I am planning a fall meet-up in Boston in conjunction with a metadata medical librarian about partnering and communicating with IT.

There is no doubt that the pharmaceutical industry is changing and trying to re-invent itself. What is less clear is how best to do this (and what to stop doing). The Strategic planning session in Philadelphia April 2013 came up with these statements

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"Chair" continued from page 1

to make strategic business decisions for the business of health care.

Goals: In pursuit of this vision, we will:

- 1) Develop our membership, helping improve skills and helping members promote themselves. Rich Campbell is working on strategies and tactics for this.
- Promote the value of the profession. I am working on strategies and tactics for this.

More to come. What do you want to be talking about in the coming year? What would add value to your SLA experience? I look forward to many conversations.

Mary Chitty, Library Director & Taxonomist at Cambridge Healthtech in Needham MA, is the author of Federal Information Sources in Health and Medicine (Greenwood Press, 1988) and a number of book reviews. She's on the board of the newly formed Taxonomy division of SLA and was previously Head of Reference at the Library of the Massachusetts College of Pharmacy, Boston MA and supervised the Air Pollution Technical Information Center at the US EPA Library, Research Triangle Park NC. She has an MSLS from the University of North Carolina – Chapel Hill and a BA (Anthropology) from Yale. mchitty@healthtech.com

Book Review:

Emperor of all Maladies: A Biography of Cancer, Siddhartha Mukherjee, Scribner, 2010

A compelling and inspiring read for me, with great insights into the role of pharmaceuticals in oncology, including the irony of World War I's mustard gas leading directly to cancer chemotherapy and the importance (and challenges) of combination therapies and companion diagnostics for breakthrough drugs such as Herceptin®. Physician and cancer researcher Mukherjee, now at Columbia University and Columbia University Medical Center, also writes eloquently of the difficulty of assembling evidence for evidence-based medicine particularly in the context of cancer surgery and radical mastectomies. He does not shrink from discussing the politics and all too human hubris, egos and turf wars between surgery and chemotherapy. My paperback 2011 edition includes an interview with Mukherjee outlining the progress we have made, the ongoing challenges and going beyond cancer genetics to understand cancer. This Pulitzer Prize winning book is a useful reminder of why we're in this business, the progress that's been made, and the unmet medical needs that still exist.

Mary Chitty, Cambridge Healthtech



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BioIT World 2013

The greatest change I've seen in the years I've been going to BioIT World is the increasing emphasis on clinical data. I have long said that the irony of Big Data for pharma is that while we may feel overwhelmed by the data we have, we need even more. And the data we most need is clinical data correlating phenotypes with genotypes and patient outcomes. Privacy laws complicate this. I heard much talk this year of real world data to supplement the gold standard of randomized controlled trials (RCT). Patient recruitment is a huge challenge for RCT, and personalized medicine raises the specter of there not being enough patients in the world to fill trials, and the phenomenon of "N of one trials".

The price of next-generation sequencing keeps dropping, as does the cost of interpreting next-generation sequencing data. There is a multiplicity of genetic variants of unknown function and significance, and the difficulty of reproducing and validating sequencing data remains. Talks by clinicians from Mayo Clinic and Partners (Mass General and Brigham and Women's) made it clear that sequencing is increasingly moving into the clinic.

The best advice I heard about Big Data is to start small with pilot projects and proof of principle. IT departments are dealing with petabytes of data and being asked to do more without commensurate increases in staff or resources. While it seems clear that pharma needs to re-invent itself, how to do this is less clear. I'm hearing much more talk of collaboration (particularly precompetitive) and the need for bridging silos and integrating data.

So, are there opportunities for information professionals? I see particular promise in several areas, particularly looking at tasks which IT finds difficult. One of our strengths is dealing with unstructured data (including text). Search and query formulation remain challenging. Mapping ontologies is still nascent. I heard more talk of natural language processing (NLP) than text mining, but I'd say text mining will be of increasing interest.

We hear talk of pharma outsourcing R&D. What I heard at BioIT was that development continues to be of interest, but drug discovery is not a hot area.

Mary Chitty, Cambridge Healthtech

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How Emerging Markets: What Information Should Be Considered?

How are pharmaceutical companies handling Emerging Market (EM) growth? Their success depends on the country, and the strategic approach to that country. Product patent expiries resulting in logarithmic declines in revenue have forced the pharmaceutical industry to look for future revenue sources. EM's beyond US and European borders seemed the logical place to look. According to IMS, analysts have forecast that nearly one third (30%) of global pharmaceutical revenue is to be generated in 2016 by EM countries.

The huge challenge confronting any pharmaceutical company's success in the EM countries is the simple fact that there is no "go-to market model" for those countries. Though most all countries have inherent challenges simply due to their government health care financing (payors) and restricted drug formularies, added hurdles vary from country to country depending upon the specific product development regulatory requirements compounding the situation.

The more developed EMs are the BRIC markets -- Brazil, Russia, India and China. In China, the government-run health service covers 90% of the population, and drugs must be on their Essential Drug List (EDL) to be covered. The Chinese government rotates physicians around various regions of the country, making it difficult to establish geographic relationships. In Brazil, the National Health Service insures the population, and both physicians and specialists have significant influence in prescribing decisions. Most drugs there, however, are purchased without a prescription. In Russia, there is a National Health Service. The Russian pharmaceutical market is plagued with volatility and lacks infrastructure. Not only is there a shortage of specialists, Russian doctors are among the lowest paid professionals in Russia. Russian doctors have little influence on prescribing decisions. Instead, prescribing decisions are made by the institution that employs the Russian doctor. In India, private insurance exists for only 2-3% of the population. The rest must pay for care at the point of service. It is extremely difficult for pharmaceutical company drug reps to get face time with physicians. Furthermore, there are major patent infringement and copyright problems to cope with.

Some EMs such as Brazil, India and China are growing in prosperity. With their increased wealth and adoption of Western diets comes a significant forecasted increase in concomitant diseases such as diabetes and cardiovascular disease. According to IMS though, in Brazil, top drug brand spend is for female contraception, hypertension and non-narcotic pain relief. In India, the list includes diabetes, bacterial infections and arthritis drugs. In China it includes bacterial infections, diabetes and cancer. In both India and China, drug regulatory authorities require any foreign manufacturer to complete a Phase III trial to demonstrate safety and efficacy in the local population. In Brazil, foreign drug companies must have received previous approval in another country to receive approval there. It is critical to understand the individual markets on a country by country basis.

Social media and the internet are playing a large role in the education of physicians in many countries, especially the EMs. In China, 98% of physicians access the internet, with more than 50% having access from their offices. Physicians in China's smaller cities are more active online than their larger city counterparts. In Brazil, 56% of physicians report using the internet in their practice. Since most drugs are purchased in Brazil without prescriptions, there are gaps between prescription and sales data. In India, 56% of physicians report using the internet in their practice of medicine. Doctors prescribe by brand name rather than chemical name, making brand loyalty a key goal for pharmaceutical companies. In India, drug reps are sometimes the only source of information doctors have, especially in rural parts of the country. In Russia, 45% of physicians use the internet and social media to contact drug reps. Visits from drug reps are restricted to clinical trials, professional improvement or for pharmacoviligance information. Low compensation of physicians in Russia had led many physicians to become drug reps of pharmaceutical companies. The result is 98% of all sales reps in Russia are former practicing physicians. Physicians prefer to speak to medical reps because they were former colleagues.

It is critical that pharmaceutical companies address these challenges on a country by country basis as they prepare strategies for success in these new regions. Information professionals must be prepared to provide country-specific regulatory, pipeline and market information to facilitate success. Information procurement efforts must be tailored to the "targeted" customer segment. The customer could be a regulatory agency, potential partner or payor (government). Focus on country specific regulations. Address regional risks. There is no "one-size-fits-all" model. There are lots of opportunities, but also lots of challenges. Think local, local!

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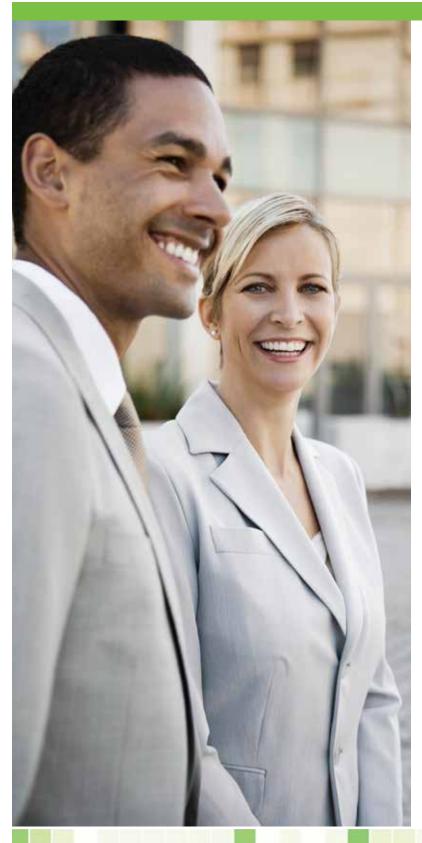
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SEC Foreign Filings (20F & 8K)

Barbara Gilmore

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SATURDAY, 8 JUNE

6:30pm - 9:30pm

Dine Around

Join your friends and colleagues of the Pharmaceutical Division as we explore the culinary delights of our host city!



SUNDAY, 9 JUNE

11:30am – 1:00pm

PHTD Annual Awards and Open Business Meeting

Please join us for our Annual Awards and Business Meeting. Who will be the Distinguished Members and Rising Stars for 2013? What is happening in PHTD and where are we headed for 2014? Lunch will be served.

1:30pm - 3:00pm

Hot Topics in Biobusiness

Something is always happening in biobusiness. Our panel will tell us about trends in the pharmaceuticals and health devices industries. Topics will include: "Outlook for the Biomedical Industry: What's Affecting Innovation?" "Reimbursement Trends," and "How Does and InfoPro Respond with Agility and Grace to an Ever-Changing Landscape."

Sponsored by Mary Ann Liebert, Inc.

MONDAY, 10 JUNE

8:00 a.m. - 9:30 a.m.

The Race to the Patent Office: The Impact of the America Invents Act

The America Invents Act (Patent Reform Act) became effective March 16, 2013. It switched the U.S. patent system from "first to invent" to "first to file" and is the most significant change to the U.S. patent system in nearly 60 years. There are broad ramifications concerning the kinds of innovations that are patentable, who owns inventions, who can use inventions, and how patents are challenged and defended. A panel of speakers (librarian/patent searcher, inventor, technologist and attorney) will discuss how it has affected the patent process and the dramatic and unforeseen impacts they have seen during the past three months since the law went into effect.

Lead Unit: Engineering Division

Co-hosting Unit: Pharmaceutical & Health

Technology Division

Spotlight Session: Yes

Sponsored by ACM, Springer, Dialog Proquest and

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Noon - 1:30pm

Listening to Pharma Chatter: Real-world Topic Monitoring

Building on the success of last year's session "Pharma Chatter," this session is on media and topic monitoring which are becoming increasingly critical to all information work, especially in the pharmaceutical industry. Rachel Bates Wilfahrt, author of a recent series on Current Awareness in Pharma, and Scott Brown, social media expert, will walk you through the practice of monitoring topics in pharma, medical and devices. Using examples, they'll demonstrate the ins and outs of monitoring, and also share some of the free and subscription tools currently available for effective information tracking.

Sponsored by Dialog Inc.

Photo courtesy Joanne DiBona, SanDiego.org



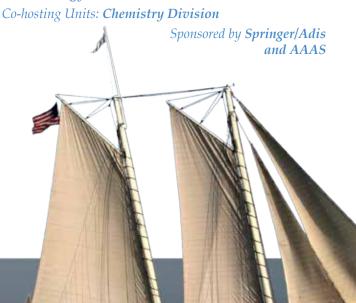
Photo courtesy San Diego Zoo

4:00pm - 5:30pm

Biomaterials and Their Use in Tissue Engineering

Join us for a glimpse behind the scenes into the development of biomaterials. Dr. Karen Christman is an award-winning polymer chemist and bioengineer who develops novel biomaterials for tissue engineering and regenerative medicine applications. Projects are highly interdisciplinary and include the development of materials for in vitro differentiation of stem cells to injectable biomaterials for tissue repair and regeneration. Her talk will focus on the development and testing of injectable biomaterials for treating cardiovascular disease or for treating myocardial infarction.

Lead Unit: **Pharmaceutical and Health Technology Division**



q

MONDAY, 10 JUNE (CONTINUED)

5:30 p.m. - 7:30 p.m.

All-Sciences Poster Session and Reception

This event highlights multiple themes representing connections, collaboration, and strategy, with support from multiple divisions. Join your colleagues for food, drink, and networking, and learn new ideas to take back to your library.

6:30pm - 9pm

PHTD Open House

Please join us for an evening highlighting the cuisine and culture of San Diego. Rumor has it that there will be a tequila-tasting and educational session.

Sponsored by Reprints Desk

TUESDAY, 11 JUNE

7:30am - 9:30am

PHTD Open Board Meeting and Networking Breakfast

Join us for breakfast and for the Open Board Meeting. Help the Division prosper by learning more about the business of PHTD and providing your input. What would you like your division to be doing in 2014? Hot topics, directions, programming suggestions -- here's your chance to guide the future!

Sponsored by Information Express

10:00am - noon

A Brave New World: Molecular Diagnostics

Everyone's heard about the \$1000 genome test. How useful will it be? What are the ramifications of direct to consumer (DTC) genetic and sexually transmissible disease testing? Come to this session on Molecular Diagnostic Testing to learn the basics of this rapidly



changing field including the difference between labdeveloped and FDA-approved tests. Then hear a panel of experts discuss topics such as reimbursement (physician fees or lab tests?), regulatory challenges, role of genetic counseling, use of companion diagnostics in targeted therapy, point of care molecular diagnostic testing and molecular testing for infectious diseases.

2:00pm - 3:30 pm

Introduction to Text Mining

How can Twitter be used to predict a flu outbreak or identify needed supplies in a disaster area? This program will introduce you to the power and flexibility of text mining to discover valuable insights in a wide variety of applications.

Lead Unit: Social Science Division
Co-Hosting Unit: Pharmaceutical & Health
Technology Division



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The PHTD Spring Meeting Through the Eyes of Travel Award Winner Meaghan Corbett

I attended the SLA Pharmaceutical & Health Division Conference in Philadelphia, hoping to meet some librarians in the pharmaceutical industry and to learn more about a day in the life of an information professional in the private sector. Below, I discuss some of the presentations I found to be particularly interesting and germane to my current position and professional development.

The theme of the conference was Big Data, the buzzword du jour in the library sphere: what is Big Data, how is it collected and managed, and how can libraries use it to their advantage to reach their patron or client base? Big Data sets are so large and unwieldy that they can't effectively be processed with traditional database management tools; our institutional repository, which contains somewhere around 2,000 entries, is challenging enough to manage for me. But Big Data refers to data sets many, many times larger than my little database, including those generated by GPS systems and social media. The task of making sense of these behemoth data sets is a daunting one, to be sure; when I first heard that the Library of Congress was going to assume control of Twitter's entire archive, my first thought was, how on earth are they going to make sense of millions of users' 140-character musings? Properly curated and presented in a format that users can understand, Big Data sets can provide a keen insight into current trends and attitudes; the presenter showed some of the latest developments in visualizing and presenting Big Data, and discussed how it represents the latest frontier in information management.

Of particular interest to me were the presentations on web scraping and news alerts. RSS feeds are nothing new, but I am seeing this technology being applied more often in a library setting—to deliver the content directly to patrons' email inboxes or social media feeds by way of a predetermined set of parameters or a predefined search query. I rely completely on web alerts from several of our health sciences databases to deliver citations from university faculty and physicians, according to several saved search queries, and I have found them to be invaluable tools. While I have not moved away from searching altogether, I find alerts to be more manageable and userfriendly than wading through a long list of results. One of the other panels focused on social media in pharmaceutical and health libraries, and how information professionals can harness it to their advantage. Organizations have wildly different policies on social media; some encourage their employees to Tweet the latest bits of news and to share industry-related discoveries with their colleagues and followers; others take a hands-off approach and require their employees to keep mum on proprietary social media accounts ("You can follow, but you can't respond!"). If used smartly, social media can boost an organization's presence and generate awareness among one's client base. Conversely, a single slip—a disgruntled employee venting about a product or policy, or a misplaced "like" affixed to a controversial topic—can have far-reaching consequences.

The keynote address described the constantly evolving role of the librarian and what we will need to do to keep up in the digital revolution. Indeed, many librarians have job titles that don't include the word "librarian" at all; they can be known as "information architects," "learning resources team leaders," and "strategic information managers," all of which I gleaned from a quick Google search, and some of whom I got to meet at this conference. Librarians must continue to be agile, navigating the brave new world of Big Data, social media, and content at your fingertips. We need to market ourselves aggressively to their organizations, and show what we can do for the organization's bottom line. As any librarian who's sat at a reference desk can attest, many users believe that a simple Google search like the one I used above will get them what they need. I find Google as useful as much as anyone else, but after taking a class in searching techniques, I learned that databases have their own set of rules and regulations, and many have their own "language" that the searcher must use. This is where the information professional comes in, and this is their key value to companies—helping clients and patrons find what they need, when they need it.

I thank the Special Libraries Association and the PHT Division for the travel award and for the opportunity to attend this conference. I look forward to attending future events as well.

Meaghan Corbett

Meaghan Corbett is currently at George Washington Medical Center Library in a paraprofessional position in collections support. She has a liberal arts background and has previously worked in academic libraries in various support roles. She is also a part-time MLIS Student at Rutgers University, concentrating in Knowledge Management.





A Glance into the PHTD 2013 Spring Meeting "Increasing our Impact: Tools to Know, Techniques to Use, and Trends to Embrace", Philadelphia, PA

CE Course: An Introduction to the Growing Field of Systems Biology – Tools, Techniques, and Trends to Embrace

Chris Willis, PhD and Andreas Matern, PhD

Sunday morning's CE course with Thomson Reuters representatives Chris Willis and Andreas Matern focused on information needs related to systems biology and the tools needed to turn data into new therapies. According to Dr. Matern, you won't get very far without systems biology as it's the only real approach that will make sense of President Obama's BRAIN initiative. The overall goal of the course was to develop a solid novice understanding of systems biology and the resources that support it.

We started with the definition of systems biology: the study of all the elements in a biological system and their relationships to one another in response to perturbations. There are two main types of data generated when investigating these relationships: low-throughput addresses smaller scale experiments, while high-throughput is the building of terabytes of data. The latter cannot be visualized and inevitably needs the help of computers.

According to Lee Hood from the Institute of Systems Biology (quoted a lot in this course), "One of the big problems in systems biology is separating signal from noise in the data." Separating signal from noise is an IT infrastructure problem and new technologies are generated all the time to deal with this data digestion. One useful tool in particular, and the center of this conversation, is Thomson Reuter's MetaCORE, a product that contains "systems biology content and context at your fingertips." MetaCORE relies on manual curation of 3,125 journals by a staff of 45 PhDs and 5 MDs, comprising high quality annotations and data storage with ontologies and controlled vocabulary.

Why does quality matter? Pathway reconstruction relies on the quality and accuracy of manual curation. The lower the average confidence of interactions, the lower the chance to reconstruct a real pathway within the network. A pathway is compiled of different data from a number of sources, and the MetaCORE global interaction network combines various types of molecule interactions -- building pathway maps that can be used to help classify patient stratification and personalized medicine.

At the end of the course we were presented with case study combining MetaCORE data with Linguamatics, one of the product collaborations discussed that allows more efficient analysis of validated pathways. It turns out the contribution by both sources (manual and automated curation) held more significance than either one alone, and the two methods can also be used as a means of narrowing down the network space to pinpoint the most directly interacting genes that meet both query conditions. This could lead to faster discovery of mechanistic connections that may account for disease pathogenesis.

As more and more data is generated, having easily accessible interfaces for combining multiple types of data will be paramount; systems biology analytic tools such as MetaCORE may serve an important role in drug discovery and development.

Stephanie Soscia, PhD, Information Research Scientist, Global Research Library, Biogen Idec

The Global Information Manager: Creating Strategic Value

Presenter: Deb Hunt, President, SLA

Deb Hunt kicked off the DPHT Spring Meeting with a broad overview of what is needed to succeed and how SLA looks to assist its members in their goals. From her perspective, the emphasis should not be on what our title is, but on what we do and how we are perceived. A key question then is, "am I seen as an Investment or an Expense?" To be an investment, information professionals must be able to provide appropriate services, achieved through education and investment in ourselves. To be seen as an investment, the C-suite and end users need to be aware of what we do. This is not always as straightforward as it may seem. For example, as research services are often made available virtually, end users may not make the connection between the services and the source. Therefore Deb encouraged us all to "shout it from the rooftops" to make our services and expertise known. However, she cautioned against "confusing efforts for results." To ensure results, the information function needs to align with corporate goals. Be relevant according to those corporate goals and, even if not invited there, act like you belong in the C-suite. To help members be able to further their ability to provide strategic value, SLA's 3 year Strategic Agenda is focusing on 5 areas:

- 1) The annual conference. Through more collaboration and reducing overlap in content, SLA strives to offer attendees a more valuable learning experience. There are also plans for "virtual conferencing" in the fall to broaden the reach.
- Professional development. The new SLA website includes a centralized calendar, listing all division and chapter webinars and events.
- Creating richer volunteer experiences to help members develop in-demand skills.
- 4) Opening new markets through collaboration. Collaboration with vendors, i-schools and others is ongoing.
- 5) Growth through diversity, including diversity of what members are doing.

Deb closed her session with the quote, "Magic usually happens outside your comfort zone."

Sidney McNab, Director, U.S. Information Centers, L.E.K. Consulting

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A View from the Executive Level: What the Info Pro Needs to Know

Presenter: Mark Burfoot, PhD, Executive Director, Novartis

In spite of reports about costs rising and approvals decreasing, the environment is not as bad as it was a few years ago. However, there are a number of changes that impact the information professional: working styles, emerging models, new markets, changing focus and Big Data.

Users want to be equally able to access information at work and on-the-go. Most expect a Google experience and to find the same answers from free resources as from paid content. In addition, they expect paid resources to be better than free sources and are frustrated when that is not always true. The users don't want to know if it is internal or external content, they want to have a single searching point for it all. With "bring your own device" gaining traction, security and access needs to be more seamless than many authentication methods currently allow while still gathering the metrics. Open innovation, where academia works more closely with pharmaceuticals, and less secrecy about research needs licenses a need to have more gray to cover these new relationships. R&D is emerging in new places, and we may soon need to ask publishers how to get access to content for our African colleagues. Focus is shifting from molecules to other ways to treat or cure diseases, such as electroceuticals and regenerative medicine. In addition, there is movement from the blockbuster to the orphan drug. Finally, Big Data (which was defined as any data asset you cannot manipulate easily or analyze quickly), including healthcare data, next-generation sequencing and consortia pooling data may improve quality or just flood the field with studies that cannot be reproduced.

What skills do we need to face these challenges? Users want access to content simply – from the lab notebook or Word document; they don't want to have to leave their space to get content but rather have a ribbon where they can get information where they are. Build relationships and know experts in all of the various business units. Make sure the channels for educating users are broad, especially access to five-minute videos on what a user needs rather than hour-long training sessions. Look into Microsoft Connect, which could be modified to allow a scientist in a lab to access content while performing an experiment without ever leaving the lab or touching a screen/keyboard. Tools need to be flexible and visual - clients find visualization a value-add and the functions need to be fully functional on mobile devices. Information professionals need to be comfortable in the IT space – capable of building a Sharepoint site, visualizing with Spotfire and using an API. We need to able to engineer solutions and be pioneers, getting ahead of the wave of change rather than being swamped. Outsource all of the simple stuff so you have time to focus on the key topics. And remember, this is what the next generation of information professionals is learning and why so many are i-schools rather than Library Schools.

Jessica Bland, Electronic Resource Administrator, Infotrieve Inc.

NIH Library Bioinformatics Support Program: Hitting a Home Run

Presenter: Medha Bhagwat, PhD, National Institutes of Health (NIH)

There is a growing need for health sciences libraries to establish bioinformatics support programs for the bioinformatics specialists, scientists and researchers, said Dr. Medha Bhagwat, informationist at the National Institutes of Health (NIH). The support programs provide database search skills training for analyzing data. As part of the program, it is the role of the librarian to add meaningful interpretation of the data output.

Dr. Bhagwat recommended that all health sciences librarians take one or two biology courses to learn the skills needed for biological data interpretation. Another avenue of training is through the Medical Library Association, which offers continuing education credits for the Bioinformatics 101 course. Librarians who accomplish these goals are in high demand by the bioinformatics specialists, scientists and researchers.

Establishing a Bioinformatics Support Program

Dr. Bhagwat described how the establishment of the NIH Library Bioinformatics Support Program came about. From 2000 to 2008, Dr. Bhagwat offered a variety of bioinformatics training at the National Center for Biotechnology Information (NCBI). Her interaction with the individuals taking the bioinformatics courses and working as a bench scientist with other scientists made her aware that they lacked database research skills. She joined the NIH Library in February 2009 to establish the NIH Library Bioinformatics Support Program to provide database research training courses for the bioinformatics specialists, scientists and researchers. The training provides the research skills needed to search databases for analyzing and understanding the biological significance of a variety of data.

Development Process

Dr. Bhagwat researched the bioinformatics support programs at the University of Denver, Massachusetts Institute of Technology and Harvard University to learn about the services offered at their health sciences libraries. At NIH, she interviewed the bioinformatics specialists, surveyed scientists, and interacted with researchers during training and consulting sessions to understand what they would need from a bioinformatics support program. As the result of this gathered information, training tools include one-on-one tutorials, online tutorials, classroom training, analysis tools and databases. Classroom training is taught by NIH library staff and outside speakers.

When considering the development of a bioinformatics support program, stated Dr. Bhagwat, it is important to survey the bioinformatics specialists, scientists and researchers in your scientific community to comprehend their needs.

Medha Bhagwat earned her PhD in biochemistry in December 1994 from the University of Maryland at College Park. Dr. Bhagwat did her postdoctoral training at the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), NIH on the structure-function studies of bacteriophage T4 RNase H.

Stephanie R. Altbier, CEO of Pinpoint Search Strategies LLC

Panel: Key Trends to Embrace: Bioinformatics and the Information Professional

Facilitated by John Chu

Panelists: Andreas Matern (Thomson Reuters) and Ilya Mazo (Elsevier)

Andreas introduced Thomson Reuters branches outside the news arena: Financial and Risk, Legal, Tax and Accounting, Intellectual Properties and Science. The company has four distinct areas within the Life Sciences: Disease Biology (Thomson Reuters MetaCORE), Drug Research and Development (Thomson Reuters Integrity), Drug Pipeline (Thomson Reuters Pharma and Newport) and Regulatory (IDRAC).

Thomson Reuters has created a new flexible platform called Cortellis that links data and creates a single-source web portal. Clients can use Cortellis as a single source or add their own internal systems. The data from various fields is brought together to make it interoperable and visually pleasing. Through the Informatics Application Programming Interfaces, searching includes: Analytics (aggregated information from drug development pipelines and trials), Clinical Trials, Investigational Drugs, Ontologies (taxonomy search/browse), Patents and Targets.

Once the data has been brought together it can be overlayed. Andreas used the example of Data Mash Ups, placing real estate information over a Google map. Before, you had two separate pieces of information, but when brought together they form a more powerful whole. From one simple query in Cortellis, very complicated data can provide solutions.

Ilya introduced the idea of repurposing scientific discovery to deliver structured intelligence from unstructured text. One of the challenges is how to use bioinformatics tools inside libraries, including creation of a simple interface that maintains the complexity of the data. His solution is to build more intelligence in the middle layer of the tool. That layer would consist of structured information, journals, and other content.

Ilya presented two solutions – TargetInsights and MedScan, both part of the Elsevier family. Elsevier is the parent company of a large collection of journals and scientific resources that provide sources for this middle layer.

TargetInsights is taxonomy-based with a simple interface. It helps scientists refine their understanding of disease biology, understand the impact of publishing on disease models, and find evidence to support target selection.

MedScan technology is an integrated data mining tool and visualization software. The software text-mines the collections and then visualizes the facts in a biological context. It allows organizations to test hypotheses across a wide range of disciplines.

Lori Smith, Information Specialist, Merial Ltd., A Sanofi Company

Decentralizing Budget to Maximize Information Return

Presented by Mindy Beattie and Bob Kowalski of Pfizer

Pfizer Information & Library Services (I&LS) handles 120 content contracts and serves 19,000 individuals. There is no question its services are used. But how does a library continue to finance subscriptions in times of reduced budgets?

Mindy remarked that she has never known a time when the subscription budget wasn't centralized in the library. However, Mindy and Bob's budget had been shrinking consistently over the past decade, and the business unit to which they reported, an IT function, was not the primary user of these subscriptions.

What were their options? Restrict or cancel subscriptions, offer access to FTEs only, or transfer the financial onus to the business. A decision was made to take the latter route -- decentralize the budget, based on usage.

So Bob and Mindy embarked on an intense project to collect, analyze, map, and report twelve months of subscription usage data. They employed Blue Coat software to track usage of specific URLs, and matched the resulting data with the company's personnel database. The results were further analyzed by Pipeline Pilot and Spotfire. In most cases, the primary user group was identified for each subscription so that group could own financial responsibility going forward.

Before presenting funding model proposals to management, Mindy and Bob also looked to industry best practices by benchmarking with a dozen pharmaceutical companies. They subsequently interviewed two which had well-established chargeback models.

Next, they partnered with the business by meeting regularly with stakeholders, prepping them for the renewal process, including a warning that they could assume paying more money for the following year's subscription due to expected cost increases.

I&LS negotiated the contracts and received some valuable feedback from their internal funders. For instance, some departments asked to do multi-year agreements, something the library had never been able to do before. The entire project ran from February 2011 through August 2012.

Key learnings overall were that usage statistics and analysis are paramount; sufficient time is necessary for collection, mapping and meeting with stakeholders; and stakeholder buy-in is critical.

One positive effect is that upper management is now encouraging greater use of information resources; in the past, such promotion usually came only from the library.

Benefits of the project for I&LS include: retaining more content in 2013 than in previous years; getting a seat at the table with R&D leadership; and introducing process improvements overall

For the future, Pfizer I&LS is looking into a single-sign-on solution to more easily track usage. Not all usage comes through the library web site.

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This decentralized approach to the library budget is not without risk. What will happen if a department pulls out of the model in the future? Will these "allocations" to other departments have a domino effect where the departments in turn charge back their customers?

Overall, Mindy and Bob are pleased with the results of this project; they believe that it brought a strong value proposition to the library. Time will tell if it is sustainable.

Susan Gleckner, Johnson & Johnson Consumer & Personal Products Worldwide, Skillman, NJ

Web Scraping Technology as a Cost Effective Solution for News Alerting

Presenter: David Breiner, Senior Knowledge Scientist, Boehringer Ingelheim

Mr. Breiner's team has offered a news alerting service for almost twenty years, and typically took $1 - 1\frac{1}{2}$ hours a day. The team tried a number of vendor products, but none met their requirements for a variety of reasons (too much duplication, not timely enough, too costly, etc.). In 2010, they produced their first in-house tool, but despite the fact it was easy to build and maintain, there were no time savings as the product still required a lot of manual curation to remove duplicates. In 2011 there was a large reorganization, and the department no longer had the staffing to support the news monitoring service. In addition, the new manager wanted the team to find ways to automate without outsourcing. In the first quarter of 2012 they relaunched the service with four key concepts: the snapshot would only include company and industry headlines for the US (as they only supported US locations), the manual process should take less than thirty minutes, they would leverage internal expertise with web scraping and utilize the most cost effective news resources (both fee and free). Delivery was limited to only the top dozen or so articles every day that included press releases, mentions of the company in major and local sources, major milestones for competitor products and industry trends.

The process includes logging into the system, which is based on PERL coding that took about two months to create. The system lists all of the results by source, and the staff member simply selects the items of interest and clicks "submit" when all have been selected. This generates an HTML page that can be copied and pasted into Outlook for distribution to the readership and simultaneously creates an RSS feed which is posted in several spaces. It now takes about fifteen minutes to create the alerts. There is still the challenge of duplication among resources, and occasionally sources don't scrape correctly, especially if the source's technology changes. Another major challenge is keeping the content brief – to only select a dozen of the most important articles. The lessons learned are to look within your organization before going external, to accept change as an opportunity and regularly seek out user feedback. There was a question about expanding and sharing with their global counterparts, but their counterparts in Germany don't manage the news alerting – it is another department. Someone else asked if the alerts are archived, but he said it is unusual for a user to request an older article, and if it does happen, he simply runs a search as they are not archived. Another person asked if they had cancelled any content, and he said they did discontinue one commercial source and it was a significant cost savings. There was a question about metrics, and unfortunately, they have had trouble gathering usage data. What they really want to know is who is actually reading more than the summary as opposed to which articles are being viewed.

Jessica Bland, Electronic Resource Administrator, Infotrieve Inc.

How I Did It: Semantics and the Information Professional

Presenter: James Morris, AstraZeneca

Morris began by defining Linked Data as the language of the semantic web. He pointed out that controlled vocabularies do not exist on the web because the necessary levels of control do not exist. At AstraZeneca, Morris headed up the Semantic Framework Initiative, the goal of which was to link existing controlled vocabularies of R&D terminology in a collaborative way. To do this, his team created linkages among a variety of sources to connect concepts across them, thus adding structure to unstructured text. The task was complicated due to the different vocabularies used by companies joined by mergers and acquisitions, regulatory terminology and the variety of different domains encountered. Therefore, Morris stated that coordination was more important than control in a heterogeneous information landscape.

Once developed, the AstraZeneca vocabulary network was able to facilitate data interoperability. Some of the key principles in the process of developing the vocabulary network are:

- don't create a vocabulary where one already exists
- extend existing vocabularies with internal terms used within the organization
- don't corrupt authoritative vocabulary sources
- semantic web is the standard for vocabularies, and data conversion is a necessary part of the process

Morris discussed the URI (unique address identifier) that links data within web pages, as opposed to linking whole pages. He also explained the RDF (Resource Description Framework - identifying Subject, Predicate and Object within text). Further, he asserted that ontologies also have a role to play in creating linked data.

Building on that point, Morris explained the SKOS (Simple Knowledge Organization System), which helps model vocabularies. SKOS employs vocabulary matching, in which terms from one vocabulary are matched (exact match, narrower, broader, etc.) to terms from another vocabulary to build rich synonym sets. On the semantic web, what you do is match patterns. All Elsevier vocabularies are available in SKOS. SPARQL (SPARQL Protocol and RDF Query Language) rules add intelligence to concepts, and this RDF language tool has versioning capability to keep track of changes.

Reassuringly, Morris told his audience that the semantic web is not rocket science and that by developing these skills as "Informaticians" we can build a bridge to IT in developing the semantic web. The software used for the initiative was Top Quadrant.

Jean Fisher, Vantage Information Services

Key Trends to Embrace: Supporting "Big Data" *Edd Dumbill, Editor in Chief, Big Data*

Edd began by presenting a history and definition of Big Data as a way of analyzing data that brings value and reveals hidden insights to your data. Recently, thanks to the cloud and open source hardware, it has become easier for companies and startups to analyze and successfully use Big Data. For example, Amazon uses company data to analyze users' buying habits and create user recommendation lists.

Big data is characterized by the three Vs of volume, velocity, and variety:

Volume – The more data you have, the better you can predict behavior. Edd introduced Apache Hadoop, a platform for distributing computing problems across a number of servers. Created as open-source software by Yahoo, Hadoop makes data available to multiple computing nodes which then analyze the data. It is not a database, but acts as an analytical adjunct to one. Facebook is one of the most well-known Hadoop users. Facebook stores their data in MySQL; it is then reflected in Hadoop, where the computations occur. Facebook may then use the results to serve up recommendations based on your friends' interests.

Velocity – Velocity is the increasing rate at which data flows into an organization. The organization must have a handle on this information, which can provide a competitive advantage. An online retailer could keep click records – not just final sale records – to analyze what their clients are viewing. Data gathered could be used for fraud prevention or advertising.

Variety - Most data is messy, freeform, not structured, not square, and gathered from multiple data sources. There can be value in bringing the data together. The underlying principle of Big Data is to keep everything when possible, even though the data may have errors or inconsistencies. Once an attempt to clean up data occurs, you may lose useful signals in the bits that are thrown away. The source can't be recreated once it has been deleted.

Importantly, we are seeing a shift from the ability to see only a few data points to the ability to see everything. If we use data samples, useful predictions can be created. This shift is closely tied to the emergence of data science. To benefit from Big Data, companies must invest in teams with specific skills:

Technical Expertise – the best data scientists typically have expertise in some scientific discipline.

Curiosity – a desire to discover and distill a problem so that a hypothesis can be tested.

Storytelling – the ability to use Big Data to tell a story and communicate it effectively.

Cleverness – the ability to look at a problem in different, creative ways.

In the future as we become a virtual world, the companies that succeed will be able to communicate, interpret and bring value to the consumer through Big Data.

Lori Smith, Information Specialist, Merial Ltd., A Sanofi Company

Big Data Problem? or Big Problem with Data?

Presenter: William Hayes, Senior Vice President, Selventa

Dr. Hayes discussed the necessity of developing a "Big Data" analytics engine that uses open-platform technology designed to extract, integrate, and share large amounts of knowledge within an organization. While access to information is much easier and less expensive than it was in the past, information integration itself is getting much more difficult. There is an ever-growing need to filter and analyze larger amounts of data. Information has to be transformed in a way that is consumable before it reaches the consumer, which Dr. Hayes refers to as "Smart Data" -- data that "knows about itself" with its function and significance defined. In previous years, the focus was how to convert data to knowledge. Now it's on transforming dumb data to smart data, with the "goal to be data jockeys that deliver the knowledge."

Who has any idea what's in most of the available databases? You can speculate there is probably a lot of overlap. Unfortunately databases talk about other databases but they don't talk about how they overlap. Dr. Hayes therefore proposed Grand Challenge I to the audience: create a master database with the ability to pathfind and link multiple databases together, playfully referred to as Semantic Indexicus Databasicus. He pointed out that there are careers built on knowing a small subset of databases really well, extracting information from them and integrating it altogether. "This is not scalable enough," said Dr. Hayes, "There is value in being able to extract all information."

Data extraction and integration is not the whole story, however, which is where Grand Challenge II comes into play – figure out how to make the knowledge generated reusable. This is built upon a major frustration Dr. Hayes experienced in previous years while directing the Biogen Idec Library and Literature Informatics team, where the library was doing well at automating and delivering information in a format that was completely un-reusable (i.e., Excel spreadsheets). Audience members assented to sharing this problem.

Dr. Hayes not only proposed these challenges, but he also proposed the solution (with full disclosure of his own personal commercial interests, of course). The OpenBEL (Biological Expression Language) platform not only has the ability to capture and integrate large amounts of information from multiple databases, it also allows for reuse of this knowledge. The pathfinding platform uses succinct expressions that can capture casual relationships in context as part of the curation process. While text analytics at Biogen Idec enhanced database

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integration, now BEL has figured out how to keep this information within network. In Dr. Hayes concluding remark, he speculated how *OpenBEL.org* enables us to think about how we can start building an Überdatabase of knowledge.

Stephanie Soscia, PhD, Information Research Scientist, Global Research Library, Biogen Idec

How I Did It – A Case Study of Full Text Patent Mining

Presenter: Yun Yun Yang, PhD, Senior Patent Analyst, Bristol-Myers Squibb

As a patent analyst for Bristol-Myers Squibb (BMS), Dr. Yang was tasked with analyzing technology developments in kinase drug screening for BMS business development groups. Kinase drug screening is a particularly difficult area in which to identify trends. This not only because patents are long, technical, legal documents but also because of the nature of kinases. Kinases are a class of 500 different biomolecules divided into 10 different groups with 7,100 patents assigned to them. Furthermore, naming kinases is so complicated that 10,000 synonyms are used in describing them. Aside from the formidable problem of organizing the patents, the time required to review each patent must also be considered when calculating the time needed to monitor kinase patent developments. Far too much reading would be required to identify developing trends among all this information. Dr. Yang calculated that when a patent attorney spends an average of one hour per

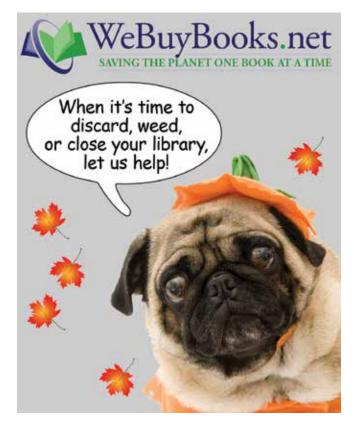
patent review, it would require 3.5 years of FTE time to review all the patents in the protein kinase arena.

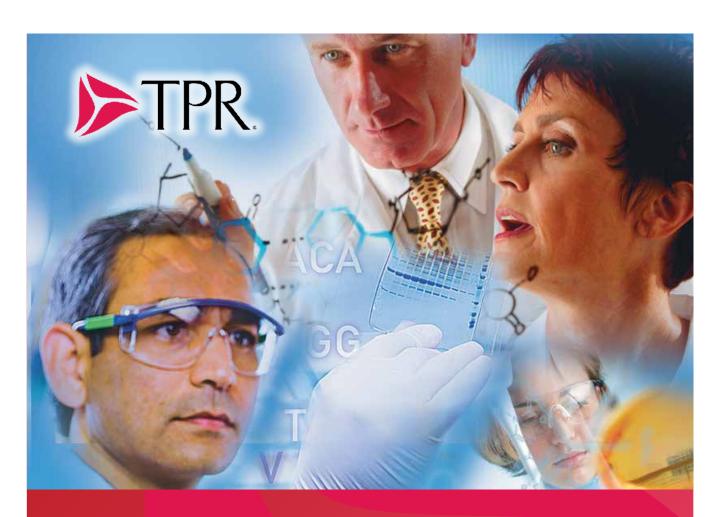
Text mining was used to solve this problem of information overload. At first, several indexing technologies were recruited for the job: in addition to PatBase (a patents database), there was IBM's patent-indexing tool and a BMS inhouse utility. For text mining, however, indexing is only the first part of the job. Furthermore, BMS wanted to organize their monitoring of kinase drug screening in two ways: on the basis of therapeutic area and on the basis of the kinase technology platform used. Linguamatics I2E software was chosen to handle the job.

By working with the business development groups, Yang's team created dozens of queries to function across the therapeutic areas and kinase platforms. Employing three custom macros, output consisted of 12,000 rows of data exportable to Excel. This created a new problem – how to make sense of all this data. The Spotfire graphics program was the answer to this problem, and it visualized the results. This made the project a success by providing the business development groups with the information they needed in a clear format they could use to make decisions. When asked what the hardest part of the project was, Dr. Yang's answer was figuring out what to do after the 2-hour Linguamatics I2E training session. The problem sounded like a good one to have in that the possibilities offered by text mining were so broad that it became a job in itself to determine how to best apply its power.

Mark Domke, MLIS, Pharmaceutical Informationist, Prescott Medical Communications Group







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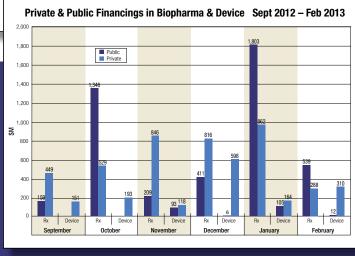
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PHT-D Discussion List Highlights – Spring 2013

Welcome new and returning subscriber/members to the PHTD List! We have maintained a relatively constant level of subscribers since winter quarter (514 regular members, a 2% decrease since 04/22/2013)

Number of Posts over the past 2 months: 64; (the LIST average of 20-30 posts per month has remained steady)

Education has been the primary theme for posts on the PHT-Division List this Spring, with 14 Webinar And Twitter-Discussion Announcements, 2 open sessions from the Spring Meeting for those unable to attend in Philadelphia (thanks to the generous support of Elsevier) and an announcement for a "massive open online course" (MOOC), coming this Fall, from SJSU SLIS. The List has also served as a source of information for questions and problems that our members regularly encounter in the workplace, as well as a fabulous source for information about upcoming conference/division opportunities and the occasional job posting.

Notable Posts

Benchmarking the actions of our peers is a convenient way to measure how we're doing. Members of both PHT and DBIO were given the opportunity to take part in a free Benchmarking Survey at the PHT Spring meeting, provided by one of our 2013 Spring Meeting sponsors, Best Practices, LLC.

The following quick pulse survey for benchmarking your fit within your Organization was posted on the List by Beth Autin, Hologic | Gen-Probe, San Diego, CA and received 54 responses.

Questions: What, Where, Who

Words used in how work group is identified:

Information - 21 respondents
Services - 11
Library - 9
Center - 7
Research - 5

Management - 5
Scientific - 5
Knowledge - 4
Corporate - 3
Global - 2

Industry employed in:

Pharmaceutical - 27
Biotechnology - 7
Medical Device/Diagnostics - 7
Telecommunications - 1
Consulting / Financial / Business Services - 11
Hospital - 1

To which department does the library/information center report (highest position):

Executive Office (e.g. CEO, CIO, COO, CKO, VP)
Finance
Research / Research & Development
Information Systems / Information Technology /
Information Services
Human Resources / Organizational Learning &
Development
Marketing

Read More:

Find the full results posted by Beth Autin on 2013-02-28; she also provided a summary in the form of an Excel spread-sheet, for your convenience.

Thanks to all who contribute and read the posts on our List on a regular basis and for taking the time to share topics with which we all struggle, important announcements and opportunities from which the rest of us greatly benefit. Watch the LIST for news and announcements pertaining to the upcoming annual meeting in San Diego. And, as always, continue to utilize your network of peers on the List when you need to jumpstart that new project.

To post to the PHT-D discussions, email **SLA-DPHT@sla. lyris.net**

View/Search the Archives by logging into http://sla.lyris.net/read/login/

Julia Parker Discussion List Admin, PHT-D Comments/Questions? – biosleuth@gmail.com

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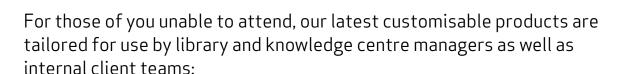
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