

## Editorial

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Those of you familiar with Journal of Proteomics & Bioinformatics (JPB) are well aware of the challenges underlying research in proteomics and its associated bioinformatics fields. These challenges—spanning experiment design, sample preparation and processing, separations, mass spectrometry, data processing, computational approaches, and bioinformatics—drive some of the most active areas of chemical, biological, and computational research and development. As a result, experimental approaches and knowledge are changing at an incredible pace. New methodologies, reagents, instrument platforms, and software tools abound — far more than even the largest labs can realistically evaluate, and much faster than even the most prolific researchers can track and digest, much less adopt for the betterment of their labs.

It's clear in complex research areas such as proteomics and bioinformatics, that the old ways of doing business need to change, and indeed are changing at an increasingly rapid pace. What's less clear is where these changes are taking us and how quickly we will get there. At present the dominant mechanism by which we disseminate scientific advances is through peer-reviewed publications. Open access journals such as JPB improve upon the more traditional publication paradigms, allowing faster, free, and unconstrained access to scientific results. This change benefits all of us. You can help by checking out the growing array of open access journals and seriously considering them when you next plan to publish.

We also need to remove biases in the review process to encourage works that *critically* review and/or compare methods and analytical approaches. While difficult and often contentious, such publications are badly needed because of the overwhelming amounts of information available. We may ignore or be unaware of information that could impact the effectiveness of our labs, perhaps hoping that if something is truly useful it will somehow rapidly gain our attention by way of a 'major' publication or a news article—a

questionable hope at best. Often such information is received second-hand, such as in a discussion or email from colleague. This works best in fields where the research community is small and communicates fluidly, but not so well when the research community is large and diverse, and where the induction period for effective dissemination can be years.

Are larger labs better able to discern effective advancements? At Pacific Northwest National Laboratory (PNNL), our proteomics program and scope of research are larger than many. Major sources of support include the U.S. Department of Energy's Office of Biological and Environmental Research, PNNL's Environmental Molecular Sciences Laboratory, and the National Center for Research Resources that supports a "Proteomics Research Center for Integrative Biology." Our scope of research activities includes new technology development in conjunction with a broad range of applications. Undoubtedly the relatively large size of our lab and research team makes it easier to consider and explore a wide range of techniques, instrumentation, sample processing approaches, data analysis tools, etc. However, neither we nor any proteomics lab on earth has anywhere near the resources necessary to broadly assess which combination of new instrument platform(s), sample processing and fractionation schemes, sets of informatics tools, and so on, are most effective for each type of proteomics application. There is no solution to this dilemma that does not depend on the broader community.

We are at the relative beginning of a period of profound changes in the ways in which we conduct biological research, as well as changes to our scientific culture. As an example, there is no doubt in my mind that the present large scientific meetings will gradually disappear. Besides being extraordinarily expensive, they are inefficient in the use of researchers' time and resources. Probably the best justification for their continued existence is that they provide a forum to meet with colleagues and 'network'. At the most

recent annual conference of the American Society for Mass Spectrometry (ASMS), which probably brings together a larger set of proteomics researchers than any other meeting at present, more than 6000 attendees were presented with six parallel oral presentation sessions and nearly 700 posters per day and, if you were willing to forsake meals (or hospitality-suite enabled networking), a wide array of vendor sessions and workshops.

One of the newer features of the ASMS annual conference is that attendees can view any of the oral presentations via the web for two months following the meeting. My hope is this becomes common practice for all scientific meetings, and will be extended to include meeting workshops and perhaps even posters in some fashion. I also hope that future meetings will offer a 'virtual registration' option, where, at a lesser cost, one can view the presentations without having to physically attend. Not to offer this option for fear that it would precipitate a drop in physical attendance would be short sighted. But regardless, I think

such an option will turn out to be just a brief intermediate step. While some of us likely will never want to replace attending scientific meetings with virtual web-based conferences, the next generation of researchers raised using "Web 2.0+" tools and who are comfortable with internet social networking, and perhaps distributed 'cloud science' approaches to research, will have no such reservations.

This brings me back to the importance of open access literature; that is, its speed, flexibility, and unconstrained availability. It is yet unclear what will replace the present publication paradigm, only that something else will; the open access movement is an early step in the right direction. I hope you will join me in this movement, and in particular, that you will consider using the JPB as a venue for reviews, perspectives, and other manuscripts to communicate advances faster and more effectively. And I expect that JPB will continue to adapt quickly and allow us all to effectively communicate advances faster and more usefully.