

## Predictive toxicology faculty rallies around new directions

By Eddy Ball

The Predictive Toxicology and Disease (PT&D) faculty meeting June 2 attracted some fifty scientists from across the three research divisions at NIEHS. The meeting provided historical perspective on the PT&D initiative and activity updates, and solicited ideas from the audience for implementing the Institute's [2012-2017 strategic plan](#).

PT&D is one of eight crosscutting themes in the strategic plan. The faculty concept is an effort to marshal resources developed in the various labs, sections, and groups where science is being conducted, into a unified effort.

"The implementation teams were the obvious next step for the strategic plan," said NIEHS planning and policy lead [Sheila Newton, Ph.D.](#), in her opening talk on historical perspective. Since the themes are ones that all the divisions independently identified as priorities, she continued, "[Leaders proposed] we should have the planning process be one that involves all of the divisions working together, rather than [having each division] independently come up with a plan."

### Deconstructing silos

Representatives of the three divisions - the Division of Intramural Research (DIR), Division of Extramural Research and Training (DERT), and Division of the National Toxicology Program (DNTP) - took turns at the podium, describing their respective programs and resources, in a demonstration of the kind of proactive communication the faculty concept is working to inspire. As speakers shared the details of their predictive toxicology and disease programs, they also attempted to identify intersections among their divisions' efforts.

### DNTP [Tox21](#)

(<http://www.niehs.nih.gov/news/newsletter/2014/7/spotlight-predictivetox/file695905.pdf>) (613KB) lead and Biomedical Screening Branch (BSB) head [Raymond Tice, Ph.D.](#), helped set the tone with his report on the federal partner consortium formed in 2008 to address the development of next-generation high-throughput toxicology testing for thousands of chemicals. Colleague [Stephen Ferguson, Ph.D.](#), joined in to discuss progress in Phase III of the Tox21 program now underway.

"We're actively seeking the opportunity for cross-division collaborations," Tice told the group, "and one of the purposes of the faculty is to provide a forum for the free exchange of information."

In her report, DERT representative [Claudia Thompson, Ph.D.](#), briefly discussed a database that coded all the epidemiology projects supported by NIEHS. She said the database could be used as a resource to identify potential sources of biological samples, to address questions of concern for the PT&D initiative.

DIR toxicogenomics veteran [Richard Paules, Ph.D.](#), described a leadership-sponsored, cross-division effort to develop a high-throughput transcriptome platform using approximately 1,500 genes that could be used to greatly expand our understanding of the relationship between chemicals, genes, pathways, and disease.

DERT program lead [Daniel Shaughnessy, Ph.D.](#), offered a preview of the stem cell development meeting June 3-4 and its significance for PT&D implementation efforts.

DERT representative [Kimberly McAllister, Ph.D.](#), pointed to an upcoming workshop on collaborative cross and diversity outbred mice models.

[Warren Casey, Ph.D.](#), director of the NTP Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM), reviewed his group's work in adverse outcome pathway research using *in vitro* testing, as well as alternative animal models, including zebrafish, and noted the added benefit of an integrated predictive toxicology program, with the reduction of the number of animals used in testing.

Facilitator [Elizabeth Maull, Ph.D.](#), of DNTP, closed the meeting with a look at next steps, including a possible PT&D lecture series. By specifically describing itself as a faculty activity, such a series might lure scientists away from their silos of specialization and into the broader arena of communication, and help people perceive, more acutely, activities across the divisions.

### Putting the strategic plan into action

NIEHS is using the concept of cross-divisional faculties and overarching themes to unite efforts to implement the strategic plan and advance research and public health in eight key areas of interest and concern:

- **Epigenetics**
- **Exposome** (see [story](#))
- **Global Environmental Health**
- **Inflammation** (see [story](#))
- **PT&D**
- **Stem Cell Biology**
- **Website and Social Media**
- **Scientific Data Management**



Tice led off the agenda of division reports with a summary of Tox21 activities. (Photo courtesy of Steve McCaw)



The speakers listened, as audience members made comments on Tice's report. Shown, from left, are Shaughnessy, Ferguson, McAllister, and Newton. (Photo courtesy of Steve McCaw)



*Casey heads the NTP center that promotes federal agencies' adoption of testing methods to reduce the use of animals in safety testing, through refinements in predictive toxicology. (Photo courtesy of Steve McCaw)*



*Paules, who holds a joint appointment in DIR and DNTP, was a leader in the former National Center for Toxicogenomics, which played an important role in inspiring the now firmly established relationship between bioinformatics and computational toxicology. (Photo courtesy of Steve McCaw)*



*NIEHS Deputy Director Rick Woychik, Ph.D., offered insights about silos in private industry, where programs within an organization generally work independently and sometimes at cross-purposes, often failing to discover where they might collaborate to the best interest of the organization's overall goals. (Photo courtesy of Steve McCaw)*



*Mauil is one of the heavy lifters for the PT&D faculty. Her experience with DERT and BSB, prior to joining NICEATM, has been instrumental in highlighting the connections among NIEHS divisions, as well as external agency and private sector programs. (Photo courtesy of Steve McCaw)*

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