

The NICHD Connection

April 2011

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Scientific Trends and Training

By Shana R. Spindler, PhD

Interview by Kristofor Langlais, PhD

As trends in science evolve, postdoctoral training must be guided in new directions. *NICHD Connection* contributor Kris Langlais discussed the future of science and scientific training with NICHD Director Dr. Alan E. Guttmacher.

“Pay attention to the fact that the future of science is interdisciplinary work,” emphasized Guttmacher, a concept that he would underscore throughout the conversation. Early in Guttmacher’s career, as a medical student, he found his biochemistry professor reading a physics journal. When Guttmacher questioned this seemingly mixed-up activity, his professor simply replied that some of his most important contributions stemmed from thinking about a problem from the viewpoint of another discipline. By reading outside his own field, he was able to gain new tools and develop novel ideas.

This small, but powerful, conversation struck a chord in Guttmacher. “I’ve seen this over and over again...a multidisciplinary team that brings together different tools and approaches, or the really fascinating people who have the ability themselves to do that. I think in terms of training, but I also think about the future of science in general, it’s how we construct appropriately with these multidisciplinary teams and perspectives.” He continued to explain that while a trainee is expected to develop a great depth of expertise in a certain focused area, the trainee should also strive to develop fluency in other scientific fields as well.

Finding the balance between the traditional, narrowly focused project and more broad interdisciplinary training can be difficult. Providing specific training awards that require co-mentoring or emphasizing collaborations could help accomplish this, explained Guttmacher, but ultimately he believes that it’s up to the individual mentor and trainee to find creative ways to incorporate interdisciplinary training. “It’s not that you have to have expertise in multiple areas,” he stressed, “it’s to have the fluency.”

The NICHD serves as a unique breeding ground for interdisciplinary work. By co-locating diverse groups of people, such as the NICHD biophysics group composed of biologists and physicists, the institute can affect both training and

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Letter from the Editor

This issue offers quite a bit of insightful information, so I will keep my words brief. As trainees at the NICHD, our main goal is to obtain the required skills and aptitude to enter the workforce as productive scientists, teachers, policy fellows, writers, or any other chosen professions. It is important for our program to understand the future of science and provide the best possible training curriculum to meet new needs.

To address the future of training at the NICHD, *The NICHD Connection* reports our [interview with NICHD Director Dr. Alan E. Guttmacher](#) as well as a recap of a workshop from the [NICHD Vision workshop series](#) by Dr. Jason Riley. Dr. Kandice Fero introduces the [new](#)

[zebrafish facility](#), a resource that will provide support for the rapidly growing zebrafish community. For many trainees, their future will include children, and Dr. Silviya Zustiak describes the first meeting of a [new parenting-scientist mentor program at the NIH](#). Finally, don't forget to check out Renee Royale's summary of the [Biophysical Society Annual Meeting Dinner, April Announcements](#), and this month's [events](#)!

Your Editor in Chief,
Shana R. Spindler, PhD

Questions or comments for *The NICHD Connection*?
Please send an email to Shana.Spindler@gmail.com.

NICHD Vision Workshops

By Jason Riley, PhD

The NICHD Vision Workshop series brings leaders in the extramural and international community together to create a blueprint for the way forward over the next ten years. I recently attended the workshop on Diagnostics and Therapeutics led by Dr. Guttmacher, with Dr. Stratakis also in attendance. The program began with a presentation from the leaders of key interest areas:

- therapy needs
- developing diagnostics and treatments for perinatal disorders
- improving methods to diagnose and manage childhood diseases: chronic inflammatory disease as a model
- investigating the substrates of neurodevelopmental disorders
- rehabilitation of neurological disability
- therapeutics development

These sessions were followed by four breakout groups, which then reported back to the whole

group:

- improving methods to diagnose and manage childhood diseases
- neurodevelopmental disorders
- rehabilitation of neurological disability
- therapeutics development

Due to my current interests in Autism Spectrum Disorder, I attended the neurodevelopmental disorders session. While participants were able to travel between breakouts, I wanted to observe the whole process in one place. Throughout, the message was to leave personal agendas at the door—a job which most delegates managed most of the time.

Overall, the sessions were interesting and watching the participants debate the field was eye-opening. I learned some new science, which was nice, but what really struck me were some interesting general points.

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Scientific Trends and Training

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conducting science in a multidisciplinary setting. Guttmacher sees a research model that forgoes the historical departmental structure for an assembly of people who have very different backgrounds, but are thinking about the same problems.

When asked what he perceives will be the next great interdisciplinary area of scientific research, Guttmacher responded that the intersection between genomics and environment is an exciting subject of investigation. “We have a historic opportunity to understand how genetic elements and environmental ones—using those terms both rather broadly—combine to create health and disease,” said Guttmacher, “and that’s what the fundamental biology of the next few decades is.” Guttmacher envisions a scientific community that defines human diseases by biological pathways and causes, rather than disease symptoms.

The ability to address issues as complex as genetic susceptibility to environmental influences requires substantial amounts of information. The exponential accumulation rate of genomic, molecular, and environmental data makes the computational aspect of data analysis ever more important. “If somebody is going to be a really expert scientist in years to come, even if they are not going to specialize in bioinformatics, they need to be fluent in it,” said Guttmacher.

The take-home message: The new trend in science is interdisciplinary, both out of necessity and intrigue, and this trend requires a model of training that can accommodate the breadth of experiences a trainee would need to succeed. Based upon Guttmacher’s long-held and sincere dedication to multidisciplinary work, a major goal of the NICHD leadership is to provide ample interdisciplinary training opportunities.



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NICHD Vision Workshops (continued from page 2)

Amongst clinicians, there was a tendency to avoid the discussion of imaging as part of diagnostics. As a physicist and imager, I found this fascinating; a major component of diagnostics is to distinguish between A and B, which very well may require an image.

This experience reminded me of when I was asked by a military clinician if I could build a device to image a certain condition. The device would be relatively trivial to design, so I quickly said yes. However, the clinician—wary of a bench scientist's creation—asked if the device would be simple enough to be used in the field by a corporal. I then realized that the perception in the clinic is that we might wheel out some gadget with knobs and dials and whistles and bells that would be unusable by a nonspecialist. Perhaps a main breakdown in communication between the bench and the clinic is the unmet need for clinicians to tell basic scientists what is needed, and at the same time have basic scientists really hear what the clinicians want.

Another major theme of the day was how to make NICHD a repository or central mediator for research data. It was noted that other countries (in my group Australia and Sweden were mentioned) often have better long-term and cross-institute information for studies, via

collaboration, records maintenance, and patient follow-through. It was suggested that NICHD become centrally involved in maintaining cross-site databases, perhaps requiring the centralized storing of data from any grants disbursed.

The final theme in the workshop was how to go about training. It seems that training MD's to do research is a key area. In juxtaposition, a skill that I am learning slowly at NIH is how to make a PhD (me) understand clinical imperatives. During a talk with Dr. Stratakis and Dr. Guttmacher, I learned that they see training and how to achieve it as an essential part of our vision. I put it to them that perhaps the fellows would be a good resource for helping the visioning process. They agreed, as it was an idea they had already had. I therefore promised them that I would write this article and prompt NICHD fellows to review the vision white papers that are being posted on the web, to learn about the visioning process, and to make contributions to developing a better training program for the future.

After all this I realize that to have a vision, perhaps we must first all learn to listen better. That said, do all please participate in the visioning process and help yourself to be heard: www.nichd.nih.gov/vision

New Shared Zebrafish Facility Offers New Resources

By *Kandice Fero, PhD*

On March 10, 2011, Hiba Cordore (from Harold Burgess's lab) was the proud recipient of a new clutch of healthy zebrafish embryos, born in the expansive new Shared Zebrafish Facility in building 6. This is the first successful mating in the new facility, which was completed last fall, and signifies the end of a long, and at times arduous, process.

The relative novelty of the zebrafish as a model organism is reflected in the fact that few places in the country are equipped with the space and resources needed to utilize one of the model's most valuable features: its amenability for large-scale genetic screens. Dr. Igor Dawid, whose lab was the first to begin zebrafish research at the NIH, initially constructed a small holding system in Building 6B, which has since been converted into the fish quarantine room.

Upon the arrival of investigators Dr. Ajay Chitnis and current PGD Director Dr. Brant Weinstein to the NIH's burgeoning zebrafish program in 1997, a larger facility in 6B was opened for use. Weinstein and Dawid both described how capacity was rapidly exceeded after only a few years of activity and a larger facility was required to support ongoing research. Additional space was allotted in building 14G to temporarily house fish while over the next 10 years, through the collective work of many individuals at the NICHD, NHGRI, and the Office of Research Facilities, and through various logistical hurdles, the Shared Zebrafish Facility was constructed.

Building a bigger holding facility presents challenges, but it also presents opportunities to improve rearing and facilitate research. "The scope of this project has changed system

design...large labs like this drive innovation," said Mark Rath (Aquatics Assistant Project Manager). Rath emphasized the importance of standardization in husbandry practices as more labs adopt the zebrafish model.

The new facility will house the NIH zebrafish community under one roof; four independently functioning systems, each dedicated to a given institute, simultaneously segregate and homogenize rearing of zebrafish stock populations. Tanks designed specifically for the facility are structured such that they are self-cleaning, and ambient lighting more closely mimics naturalistic conditions by gradually changing in intensity at day/night transitions.

The incorporation of two procedure rooms each for NICHD and NHGRI, as well as spaces for imaging and mutagenesis, serve to consolidate operations. NICHD procedure rooms currently feature several injection apparatuses and Mass Embryo Production Systems (MEPS), which are able to produce thousands of embryos per day through controlled mass mating. This all translates to an easier life for researchers and more stable and standardized rearing conditions for the fish.

One additional resource for postdocs in particular is the opportunity to learn what is needed when going on to start up labs where there may not be a centralized fish facility. Husbandry and project staff including Rath and Doreen Bartlett (Lab Animal and Fisheries Facilities Manager), who is largely responsible for the design and logistical concerns for the new facility, are both available to answer any questions that postdocs may have.

Mentoring for Mom and Dad Clinicians and Scientists: MOMDOCS

By *Silviya Zustiak, PhD*

Many of us have grasped, at some point in time, the importance of having a mentor. As postdocs, we have our scientific mentors, who are generally our PIs. Ideally, we also have additional career and life mentors. All of our mentors play an important—if not crucial—role in our growth as independent scientists. We learn to seek their advice as we encounter challenges during experiments, in defining our future goals, or in making that first step into a permanent position. Postdoctoral work is often challenging in unexpected ways, but I, and many others in my shoes, would argue that parenthood is just as challenging. Why then don't we look for mentors who can advise us on parenthood? And I don't mean the advice we get from other moms or our own parents on how we should raise our children. I am referring to an established professional who has gone through the same experiences and has found ways to be successful in both parenthood and career with a minimum sacrifice of sanity.

Aviva Ellenstein, a clinical fellow at NINDS, followed this line of thought. While at NIH, she decided to look for a mentor to help her balance work and family. She discovered that this was not an easy task, especially since there was a lack of any parent-scientist mentoring program at NIH. So, she decided to start an organization with the support of OIR and OITE, which was named Mentoring for Mom and Dad Clinicians and Scientists or MOMDOCS. The original idea was pretty simple: match mentees to mentors and go from there. She did a little investigation to see how many people would be interested, and she got a lot of feedback.

Here is an interesting bit: of all the people that responded (n=45), there was not a single dad! However, as the name suggests, the program is opened to all parents, irrespective of gender.

The March 1, 2011 kick-off event, organized by Dr.

Lori Conlan, Director of the Office of Postdoctoral Services, was well attended—mostly by women. The event included a keynote speaker and a panel of successful moms and dads: Kristina Rother, MD (NIDDK), Michelle Bennett, PhD (NHLBI), Andy Golden, PhD (NIDDK), and Christina Barr, VMD, PhD (NIAAA).

The panel speakers shared tips that helped them cope with the responsibility of career and family, such as “get help whenever you can even if it means hiring somebody to clean your house,” or “take your family along on conferences rather than sacrificing the conference for the sake of family.” Some of the simplest suggestions were to know your limits, learn to say no, or minimize commute time. Most of the panelists also agreed that having a helpful spouse, available grandparent(s), or a full-time nanny has to be part of the equation.

Dr. Bennett shared a favorite quote with the audience: “when both spouses feel that they are doing 90% of the work, it means that they are doing 50-50.”

The session closed with questions from the audience. When asked “when does it get easier,” all of the panelists answered as one, “Never!” When asked “did you ever feel the guilt-at-home and guilt-at-work syndrome,” they again all answered as one, “Yes!”

The overall vibe of the meeting was both encouraging and inspiring, and the take-home message was that being a good parent and having a successful career is certainly possible.

If you are interested in mentoring, simply follow the link below where you can find more information and sign up to be a mentor or a mentee.

MOMDOCS Mentoring Registration: <http://ti-nyurl.com/NIH-MMDCS>

55th Annual Meeting of the Biophysical Society Dinner Recap

By Renee Royale

This past March 5-9, 2011, the NICHD members of the Program in Physical Biology (PPB) presented their research at the 55th Annual Meeting of the Biophysical Society in Baltimore, MD. It was an exciting time to share research with others, learn about new research, and meet fellow scientists.

One of the highlights of the conference was a reunion dinner, bringing together 45 people, including current and former members of the NICHD PPB and friends. The gathering was held at P.F. Chang's in downtown Baltimore with three generations of scientists present! Many of the current PPB researchers in building 9 attended, along with former PPB members and some of their current students.

Dr. Adrian Parsegian, former Chief of the Laboratory on Physical and Structural Biology of NICHD, which has now been subsumed into the PPB, attended this festive event. Adrian is now the Robert L. Gluckstern Chair in Physics at the University of Massachusetts Amherst.

The former PPB members who came to the dinner include Drs. Daniel Harries, Senior Lecturer at Hebrew University of Jerusalem in Israel, Xiangyun Qiu, Assistant Professor at George Washington University, and Horia Petrache, Assistant Professor at Indiana University-Purdue University Indianapolis.

The evening was one to remember, consisting of merriment, stories, and science—all in the company of new and old friends.

April Events

TUESDAY, APRIL 5, 3-5 PM

NICHD Exchange presents "Minds, Medicine, and Youth: Understanding the origins and treatment of behavioral problems in children"

5th Floor Conference room, 6100 Executive Blvd.

Register at <http://insider.nichd.nih.gov/director/exchange/Pages/default.aspx>

WEDNESDAY, APRIL 6, 12-1 PM

Let's Talk Worklife Balance: Successful Conversations with Your Supervisor

Presented by: Julie Broussard Berko, Director, Workforce Relations Division, Office of Human Resources, NIH

Building 31, Room 6C/10

THURSDAY, APRIL 7, 4:30 PM

AWIS-Bethesda presents "Careers in Program/Policy/Review"

National Library of Medicine Visitor Center, Bldg 38A.

No registration necessary

TUESDAY, APRIL 26, 3-4 PM

NICHD Director's Lecture Series

Esther Duflo: "Low hanging fruit for better global health? Evidence from the field"

Bldg 10, Lipsett Auditorium.

Contact: Lynne Haverkos, haverkol@mail.nih.gov

April Announcements

THE NICHD EXCHANGE APRIL MEETING

The NICHD Exchange is a series of quarterly meetings designed to bring the NICHD community together and to foster thought-provoking discussions on scientific topics that cut across intramural and extramural boundaries.

The Third NICHD Exchange will be held Tuesday, April 5, 3-5 PM, in the 5th Floor Conference room, 6100 Executive Blvd.

Topic: "Minds, Medicine, and Youth: Understanding the origins and treatment of behavioral problems in children"

Agenda:

1. Child exuberance or problem behavior; shyness or social problem: An overview of behavioral disorders in children - Lisa Freund
2. Growing up in a monkey's world: Nature, nurture, and normalcy - Steve Suomi
3. Psychoactive Drugs: Who is using them and for what indications? - Perdita Taylor-Zapata
4. Challenges in access to mental health services: No child left behind? - Regina James

Refreshments will be served!

To register for the event, please complete the registration form at <http://insider.nichd.nih.gov/director/exchange/Pages/default.aspx>

AWIS-BETHESDA PRESENTS CAREERS IN PROGRAM/POLICY/REVIEW

The Bethesda Chapter of the Association for Women in Science (AWIS) is presenting a panel discussion in an annual series titled "Careers in Program/Policy/Review." This event will be held on Thursday, April 7, from 5-6 PM on the main NIH campus at the National Library of Medicine Visitor Center, Bldg 38A. They will have light refreshments and networking opportunities starting at 4:30 pm.

The panel will consist of Dr. Margaret Ames (National Cancer Institute, OSPA), Dr. Sacha Vignieri (Editor, Science Magazine), Dr. Della Hann (NIH, Office of the Director), and Dr. Yuan Lao (NIH, Center for Scientific Review). Each panel participant will speak informally for 5-10 minutes without slides followed by questions from the audience and discussion.

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April Announcements

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SAVE THE DATE: WRITING ADVANTAGE WORKSHOP OFFERED MONDAY, MAY 2, 2011

FranklinCovey's *Writing Advantage* Workshop aims to help individuals organize ideas around a clear purpose, structure a prototype, generate a draft document, and edit the draft according to formal standards. The workshop will provide tools such as a writing guidebook, a document planner, and the award-winning FranklinCovey Style Guide with companion CD. This event is limited to 40 people. Please register with Brenda Hanning at hanningb@mail.nih.gov.

ANNUAL RETREAT

The registration deadline for the May 16-17 annual retreat was extended to April 1, but there MAY still be space available if you'd like to attend. Please check with Brenda Hanning at hanningb@mail.nih.gov for more information.

