

2017 National Directors of Graduate Studies in Pharmacology and Physiology Meeting in Review



Attendees of the 2017 NDOGS meeting in Stony Brook, NY.

The National Directors of Graduate Studies in Pharmacology and Physiology (NDOGS) meeting was held June 28-30, 2017 at Stony Brook University in Stony Brook, NY. This three-day meeting consisted of several lectures as well as corresponding panel discussions, allowing the opportunity for participation by all in attendance. A poster session was held where Stony Brook University graduate students presented their work, received feedback and connected with attending representatives of pharmacology and physiology graduate programs from institutions throughout the U.S.

Opening remarks by Kenneth Kaushansky, MD, MACP, dean of the School of Medicine, senior vice president of Health Sciences, Stony Brook University; and Charles Taber, PhD, dean of the Graduate School, vice provost for Graduate and Professional Education, Stony Brook University, stressed the importance of a meeting of this nature to discuss the challenges facing biomedical graduate studies, especially as the fiscal environment becomes more restricting, and as

the field of biomedicine evolves to become more interdisciplinary. Here, we summarize the valuable discussions that took place during the meeting regarding the three main themes of training and curriculum, diversity in recruitment and careers, and scientific rigor and communication.

Training and Curriculum

Following along with the idea of biomedicine emerging as a more interdisciplinary domain, much of the panel discussion pertained to pharmacology and physiology graduate curricula. Panel participants included Tom Pressley, PhD, Texas Tech University Health Science Center; Robert Duvoisin, PhD, graduate program director, OHSU Portland; Jeff Osborn, PhD, University of Kentucky; Bill Jackson, PhD, Michigan State University; Joey Barnett, PhD, Vanderbilt University; and Kelly Karpa, PhD, Penn State University. The panel participants focused on the benefits and challenges of the implementation of graduate umbrella programs. Though several programs have faced some challenges in how many students chose to join a pharmacology direction within a comprehensive biomedical sciences program, such umbrella programs have generally been beneficial for graduate students (giving them more options for selection of advisor) and for collaborations in research.

Another main point on this topic included the recruitment of undergraduates from pharmacology and physiology programs into pharmacology and physiology graduate programs, which many programs struggle to do as many of these students primarily intend to go to medical school. In answer to this, it seems that several programs are creating pharmacology minors, which may help increase the number of students exposed to the pharmacology and physiology disciplines, build a strong foundation in pharmacology, and thus consider pharmacology for graduate work.

Additionally, emphasis was placed on the establishment of a rigorous didactic design that can address all the arenas of pharmacology and physiology (cellular, molecular, systems, etc.). During lectures by Robert Watson, director of the undergraduate and master's programs in pharmacology, Stony Brook University; and Miguel Garcia-Diaz, pharmacological sciences graduate program director, Stony Brook University, a major focus was placed on the introduction of courses meant to teach quantitative skills, such as a Python coding course, which will help pharmacology students in addressing further quantitative requirements of the discipline. A critical requirement is to better train students in science communication and experimental rigor, which constitutes another main theme of this meeting. These topics also stimulated discussions about individual guidance for students and the need to address future career goals and options.

The program also included a panel segment on the outcomes of BEST (Broadening Experiences in Scientific Training) programs, which included presentations by Roger Chalkey, Vanderbilt University; David Farb, Boston University; and Richard Neubig, Michigan State University. In comparing aspects of BEST programs with non-BEST programs, many programs are currently moving toward career development and training in a range of career options. However, they are lacking in external partnerships to contribute and structure career offerings and internships. This panel emphasized the commitment to the development of research skills as well as preparation for a broader range of careers, which benefit those in PhD and postdoctoral training programs. Challenges included the timing of these internships and strategies for the exploration of such nonacademic careers in depth.

Another panel session discussed methods of recruiting and retaining diverse graduate students, as well as career preparation and career development. Members of the panel included Susan Scheckel, Kathleen Flint-Ehm, and Lyl Tomlinson, PhD candidate, all of whom are members of the Integration of Research, Education, and Professional Development (IREP) Office at Stony Brook University. Panelists expressed the importance of fostering initiatives at the intersection of research and education for an

integrated experience. ScienceWorks, a new program spearheaded by Lyl Tomlinson, introduces advanced PhD students into a structured internship program within the semester. This program includes incentives for advisors for participating in the program; the commitment to the internship is minimal to allow the student to continue to be productive in the laboratory. Many points of discussion included implementation of new programs, successful recruiting techniques, and ways of changing the culture of research to better serve both the needs of the principal investigator and current/future students.

The meeting's keynote address was given by George D. Yancopoulos, PhD, president and chief scientific officer, Regeneron Pharmaceuticals, Inc., who also discussed the importance of collaborations between academia and industry. Not only does Dr. Yancopoulos believe that this will be beneficial for students/scientists in training, but it will also bring about societal benefits, with better medications and health outcomes. Regeneron is an impressive biotechnology company that has given rise to six FDA-approved drugs and several clinical trials. Furthermore, Regeneron has taken over the high school Regeneron (formerly Intel) Science Competition and is committed to fostering the education of young scientists from a young age through the post-doctoral level.

Recruitment and Diversity

Several lectures and panel discussions revolved around the theme of recruitment and diversity. Toni Sperzel, director of the Center for Inclusive Education, Stony Brook University, discussed the Center for Inclusive Education (CIE) and how it fulfills its mission by providing three aspects of student support services: academic enrichment, professional development, and community building and mentoring/advisement. Though only in existence for 15 years, the CIE now hosts 7 state, federal, and nonprofit funded programs that support 163 underrepresented scholars at all levels of training. Approximately 70-75% of scholars are in the STEM disciplines, and recruitment efforts are focused in these fields. Ms. Sperzel led a panel discussion on diversity that also included Jeff Osborn, PhD, University of Kentucky, and Evangeline Motley-Johnson, PhD, Meharry Medical College.

Scientific Rigor & Communication

The last theme of central importance to the program was scientific rigor and communication. C. Glenn Begley, chief executive officer, Biocurate Pty Ltd., the keynote speaker of this segment, provided an entertaining review of data from prominent papers published in prestigious journals in his presentation “10% of the time it works every time – recognizing sloppy science.” Dr. Begley was joined by Michael Frohman, pharmacology and MSTP program, Stony Brook University, and discussion segued into methods to successfully teach students proper scientific controls, algorithms, and principles that generate reproducible results. The take-home message was to be skeptical and critically evaluate the literature as well as one’s own experimental designs.

Shifting the focus to successful communication of science, Laura Lindenfeld-Sher, director of the Alan Alda Center for Communicating Science, Stony

Brook University, provided a mini workshop on “Communicating Your Science”. This presentation and workshop emphasized the need to demonstrate the value of science and adapt to your audience. Dr. Lindenfeld-Sher engaged the attendees in improvisational exercises to practice connecting with an audience and to recognize that communication is engagement – your message must *land* with who you are communicating with. The Alan Alda Center for Communicating Science offers SciComm workshops, graduate courses, certification, and other forms of outreach to promote effective scientific communication.

“Communication is not something you add on to science; it is the essence of science” - Alan Alda (founder)

Submitted by Kaitlyn K. Thompson and Tanya R. Victor



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