The Lasker Foundation annually presents a series of awards to “recognize the contributions of researchers, clinician scientists, and public servants who have made major advances in the understanding, diagnosis, treatment, cure, or prevention of human disease.” This year, a member of the NIH OxCam Executive Committee was the co-recipient of one of these awards. It is with great excitement that we congratulate Dr. John Schiller who, along with his colleague Dr. Douglas Lowy, won the 2017 Lasker-DeBakey award. Dr. Schiller is the Deputy Chief and NIH Distinguished Investigator in the Laboratory of Cellular Oncology and Head of the Neoplastic Section of the National Cancer Institute (NCI) and OxCam Executive Board member since 2016. We are honored to have Dr. Schiller as a member of the OxCam Executive Board for both his scientific expertise and dedication to the training of future scientific leaders.

Dr. Schiller and Dr. Lowy (Chief of the Laboratory of Cellular Oncology, Head of the Oncogenesis Section and Deputy Director of the NCI), received the 2017 Lasker-DeBakey Clinical Medical Research Award for their work developing the HPV vaccines for cancer prevention. The Lasker-DeBakey Clinical Medical Research Award is presented “for a major advance that improves the lives of many thousands of people.” Drs. Schiller and Lowy discovered that a single protein from the capsule of papillomaviruses can self-assemble into particles that resemble the virus; this work built the foundation for HPV vaccines that prevent cervical and other cancers.

OUTSTANDING LINE-UP: KEYNOTES INSPIRE AND MOTIVATE

The Annual Workshop provides an opportunity for scholars to share their science, find inspiration for new ideas, and engage with their mentors and peers. In addition to the traditional student presentations and poster session, the workshop aims to provide additional academic enrichment through unique training and learning opportunities.

This year’s keynote speakers were selected for their outstanding work and diverse experiences, but also for their ability to share that knowledge and experience and motivate our scholars. Dr. Nadia Rosenthal and Dr. Dan Barry offered unique presentations that highlighted their individual careers, research interests, and advice for scholars, no matter where their paths will take them.

Dr. Nadia Rosenthal, Scientific Director and Professor at the Jackson Laboratory for Mammalian Genetics, gave a largely science-focused talk, highlighting her career path over the years along with her accomplishments. Her career decisions were always based on a fundamental love of science and finding answers to new and challenging questions. Her move from an Associate Professor at Harvard University to the European Molecular Biology Laboratory (EMBL) in Rome was especially daring and instinct-driven. She recounted students and colleagues alike advising her against the move; they told her not to abandon her position at Harvard for something so, according to them, risky. In response, she responds with a quote that she likes from E. M. Forster's novel, Where Angels Fear to Tread: "'Let her go to Italy!' he cried. 'Let her meddle with what she doesn't understand.'"

Her travels around the world (from the UK, to Harvard, to Rome, to Australia, and back to the U.S.) also frequently meant transitions in her science: from molecular biology to developmental biology to translational and back. All the while, she focused on her love of research, learning, and collaboration; constants throughout her life and the driving force behind her career. Despite this love of science and discovery, Dr. Rosenthal discussed the challenges she has faced as a woman in science. From the start of her PhD, she recalled that her class had 10 students, 5 of whom were women, and of those, she was the only one who finished. She recounted the cut-throat competition and sexism that drove so many from the field and even left her questioning her goals, despite her love of research. Her postdoc at the NIH helped her find her passion again and helped guide her forward in her scientific pursuit.

In the face of her challenges, she advised scholars “If you’re not having fun, it’s not worth it.” Her career taught her to follow her instincts and to always be flexible. She told scholars to focus on their love of science and research, but don’t be afraid to try something new and venture away from their comfort zone. One OxCam Scholar, Lindsey Rosen, was especially “drawn to [Dr. Rosenthal’s] unapologetic style,” and commented that, “it seems many women in science (both research and medicine) tend to be more reserved, particularly in group settings, than their male counterparts. I like to think that with women like Dr. Rosenthal leading the charge, that trend is changing and equality is on the horizon.”

Dr. Dan Barry, Former Astronaut, STS-72, STS-96, STS-105, President/Founder of Denbar Robotics, and co-Founder of Fellow Robotics, gave a very different talk, that was, as one student said, “inspiring in a broader sense.” His talk focused on his long-term goals and dreams and how that ultimate goal helped to drive him through the stages of his career. As OxCam Scholar Alex Ivovic put it, “an important part of his story was his dealing with rejection, showing that it was humbling, but not defeating for him.” His early and fervent desire to become an astronaut was challenged at almost every stage. Throughout his career, Dr. Barry was always working toward his ultimate goal of going to space, but was regularly told that he wasn't smart, athletic, or (in one memorable case) attractive enough to achieve this. Once eligible for the space program, he applied yearly…and was declined yearly. He reminded scholars that if you want something, go for it, the worst that can happen is that you are told “no” and then you try again. And again. And again. This lesson of perseverance is something that can be a lesson for anyone in any career and Dr. Barry’s talk was shaped by his optimism, enthusiasm, and determination.

EVENT REMINDERS

LASKER LESSONS IN LEADERSHIPS - Policy
February 28, 2018
Keynote Speaker: Dr. Mary Wooley

GLOBAL DOCTORAL PARTNERSHIPS ANNUAL WORKSHOP
University of Cambridge, Homerton College
July 16 - 18, 2018
In order to be successful, the design of healthcare technology needs to involve end-user feedback and be tested in the real world. These obstacles include difficulty in identifying needs, working in various teams, finding access to resources, and balancing the space in our suitcase between clothes and lab supplies. For most of us, this program structure and these collaborations allow us to do research that we would not be able to do effectively if only at a US institution.

My research is an example of a project that is greatly enhanced by collaborations overseas. The goal of my thesis is to develop a low-cost sensor to detect antimalarial drugs from patient blood samples. This is important because in Southeast Asia, malaria parasites are developing resistance to first line antimalarial therapies and if this resistance further develops and spreads, we may soon have malaria infections without any effective medications. A low-cost assay that is feasible for use in rural, malaria-endemic settings will allow us to track antimalarial drug use, monitor drug compliance, and could serve as an indicator of previously failed treatment and spreading resistance.

I work with four supervisors on this project: Drs. Carole Long and Tom Wellems at the NIH (Bethesda, MD), Prof. Maarten De Vos at the University of Oxford in the United Kingdom, and Prof. Joel Tarning at the Mahidol Oxford Tropical Medicine Research Unit (MORU) in Bangkok, Thailand. Since beginning the program, I have spent 6 months in the UK, 6 months in Bangkok, and 1 year at the NIH. Having a lab and a home base at each of these institutions has allowed me to move back and forth fairly seamlessly and to access diverse resources when needed. For example, when I realized last year that a lab at Oxford had expertise in an aspect of the sensor development that I was trying to learn, I moved there for 6 months to work in that lab. This past spring, I spent 3 months collecting feedback on my assay design in Southeast Asia. With the support of my labs in Bangkok and the NIH, I visited government organizations, laboratories, and clinics in Thailand and Cambodia to describe our assay and gather opinions on the most realistic applications for our tool and desired operational characteristics. This feedback has helped identify target drug priorities for current rounds of sensor development at the NIH.

There are many challenges with the model where researchers in well-funded labs in the US or Europe, develop healthcare technology for use in low-resource environments. These obstacles include difficulty in identifying needs, unforeseen cultural barriers, and lack of local infrastructure. In order to be successful, the design of healthcare technology needs to involve end-user feedback and be tested in the intended settings of use early and often. With the support of my supervisors and the collaboration allowed by the OxCam program, I have been able to access the reagents and expertise I need to develop the sensor as well as engage with end-users to ensure it is a useful tool that can be feasibly implemented the way we intend.
A WORD FROM JAKOB’S MENTORS

By: Ed Bullmore and Dr. Armin Raznahan

As brain networks have become of ever greater interest to neuroscience over the last decade or so, we have wanted a technique that would allow us to measure the anatomical connectome – approximately, the wiring diagram – of the human brain. But there have been two challenges. First, all the existing neuroimaging methods have limitations. Diffusion tensor imaging can produce a representation of the connectome, but it generally lacks the long-distance connections between brain areas that we know are important for its integrative function as a network. Structural covariance network analysis can generate a more plausible looking connectome, but only for a group of people, not a single individual. The second big challenge is that we don’t know the ground truth of the human connectome, so it can be problematic to work out if a new MRI-based method is really doing a better job getting closer to the truth than existing methods.

Jakob’s work has dealt with both these challenges very impressively. He has developed a new technique – called morphometric similarity mapping (MSM) – which constructs an anatomical connectome for a single human. The basic idea of MSM is simple but novel: we can collect multiple pieces of information about cortical structure in each part of the brain using multi-parameter MRI and then estimate the similarity between cortical regions in terms of their morphometric profiles. Jakob got this technique to work pretty quickly and it seemed to produce some nice looking results. But what he then did was very courageous and important. He tried hard to break his brand new technique. He tested it on multiple datasets and he worked out ways of testing it in situations where we know what the ground truth is. For example, working with colleagues at the NIH, he accessed MRI data on the macaque monkey and could show that the MSM results were correlated with what we know about the anatomical connectivity of the macaque brain from gold standard tract-tracing experiments.

By pushing forwards in these directions Jakob also forged new technical, programmatic and interpersonal connections between and within his NIH and Cambridge laboratories which will continue to bear fruit for years to come.

This has been a huge amount of work, much of it designed to kill off a good idea if it turned out not to be good enough. But the upshot is that morphometric similarity mapping has survived a rigorous process of validation and we all have confidence that this could be a very useful new contribution to the rapidly growing field of connectomics.

*Created in 2005 by a group of forward-thinking individuals interested in supporting unique and creative models for doctoral education and research at the NIH, the International Biomedical Research Alliance is a 501(c)(3) organization whose only mission is to support the NIH Oxford-Cambridge Scholars Program.
DURING THE 2017 ANNUAL WORKSHOP, EIGHT ALUMNI OF THE OXCAM AND WELLCOME TRUST PROGRAMS TRAVELED TO THE BOLGER CENTER TO PARTICIPATE IN BREAKOUT SESSIONS TO DISCUSS THEIR CAREER PATHS AND OFFER ADVICE TO STUDENTS. EACH OF THE THREE ALUMNI PANELS AGREED THAT SCHOLARS SHOULD START EARLY IN THINKING ABOUT THEIR NEXT STEP AFTER GRADUATION, AND MAKE USE OF RESOURCES AT THE NIH AND IN THE UK TO TAKE ADVANTAGE OF EARLY CAREER OPPORTUNITIES. THE FIRST POSITION AFTER GRADUATION, WHETHER A FELLOWSHIP, A RESIDENCY, OR A POSITION IN INDUSTRY, IS CRUCIAL TO ACHIEVE THE SUCCESS THAT OUR VISITING ALUMNI HAVE FOUND SO QUICKLY.

THE PANEL WITH A FOCUS ON ACADEMIA, LED BY DRS. DEREK NARENDRA, ELAINE OSTRANDER, AND AMBKA BUMB, ENCOURAGED SCHOLARS TO FIND AN EXPERIENCED MENTOR WITH KNOWLEDGE ABOUT THE GRANT APPLICATION PROCESS AND WHO WOULD TAKE ON A YOUNGER SCIENTIST AS A CO-PI ON AN NIH GRANT PROPOSAL. THEY ALSO SPOKE WITH EXCITEMENT ABOUT TRAINING THE NEXT GENERATION OF RESEARCHERS IN THE LABORATORY AND IN THE CLASSROOM.

WELLCOME TRUST STUDENT BRIAN CAFFREY PARTICIPATED IN THE SESSION WITH DRS. BUMB, KNIGHT, AND VIOLLET, AND WAS THRILLED TO LEARN ABOUT THE DIFFERENT INDUSTRY CAREER PATHS TO WHICH HE HAD PREVIOUSLY LITTLE EXPOSURE. DR. BUMB SPOKE OF HER BIOTECHNOLOGY COMPANY, BIKANTA, AND HOW SHE SAW AN OPPORTUNITY TO APPROACH CANCER TREATMENT FROM A DIFFERENT DIRECTION THROUGH THE DEVELOPMENT OF NANODIAMOND TECHNOLOGY THAT SHE PATENTED ALONG WITH HER COLLEAGUES AT THE NIH. THE PANEL EMPHASIZED THE IMPORTANCE OF THE CULTIVATION OF TRANSFERABLE SKILLS TO INDUSTRY, INCLUDING THE WILLINGNESS TO TAKE SMART RISKS AND MENTOR TALENTED RESEARCHERS IN THEIR OWN ORGANIZATIONS.

THE MD/PHD PANEL WAS LED BY DRS. NARENDRA AND SHENEROY, WHO DISCUSSED THEIR STRATEGY TO MAINTAIN AND GROW PROFESSIONAL NETWORKS TO EASE THEIR TRANSITIONS TO THE NEXT CAREER STAGE. SCHOLARS WERE ENCOURAGED TO MEET THE CHALLENGES ON THE PATH TO BECOMING A PHYSICIAN SCIENTIST - TO PRODUCE PUBLISHABLE WORK DURING THEIR RESIDENCIES, AND TO FIND WAYS TO INTEGRATE A CLINICAL PERSPECTIVE INTO THEIR ACADEMIC RESEARCH.

WE WANT TO THANK OUR ALUMNI FOR TAKING TIME OUT OF THEIR SCHEDULES TO MEET WITH OUR CURRENT SCHOLARS, AND APPRECIATE THE FEEDBACK THEY PROVIDED DURING THE BREAKOUT AND POSTER SESSIONS. WE LOOK FORWARD TO KEEPING IN TOUCH AND HOPE FOR MORE OPPORTUNITIES TO CONNECT IN THE FUTURE!

THE MENTORING CONTINUES

YOU'RE INVITED: GIVING A GUEST TALK

*Class of 2014 OxCam Scholar, Adam Steel, was invited to give several guest presentations in the past years and, when asked, was willing to share some suggestions for fellow students based on his experiences:

I'll admit, when the invitation arrived, I was surprised. It took a few reads to really sink in: another lab wanted me to travel to them to present my research. The emotions came quickly: a wash of elation (I made it!), followed by a torrent of anxiety. Presenting my work at their departmental seminar series would be different from the previous talks I'd had given at conferences. Conference presentations can be large and anonymous; departmental seminars and lab meetings are far more intimate. I was going to be under the microscope. I had to bring my best.

Luckily, I survived my first talk at the University of Birmingham in the UK, and, since then I have presented at the University of East Anglia (UK), Cal Berkeley, and the University of Pittsburgh. Unsurprisingly, preparation is the most important step. Know who to expect in the audience and practice, practice, practice. But besides that, I’ve learned a few other things that could also help make your visit enjoyable:

1. Be gracious to your collaborators while highlighting your contributions. When speaking about projects in which specific collaborators played a large role, I find it liberating to acknowledge their contribution right from the beginning. Not only will the audience appreciate your candor, but it gives you the opportunity to highlight your own contribution.

2. Pitch your research at the right level. Giving a departmental seminar is different from a lab meeting presentation. In a lab meeting, your colleagues will be familiar with your work and will tend to focus on more refined details; you should expect more interruptions. In contrast, at a departmental seminar people may not understand (or care about) the minutia of your research. However, in both cases, unless you are explicitly presenting a method, the particularities can come up in private meetings or during questions. More often than not, people will be most interested in the big picture. So, focus on that.

3. Set limits for yourself. Time is an important one. Stick to your schedule and remind your hosts of your time constraints. This lesson I learned first-hand, when I was forced to run through the terminal to make my flight home from Pittsburgh. Instead of graciously thanking my hosts, I had to make a mad dash out the door. It was embarrassing. Try to avoid that.

Finally, shed your impostor syndrome. You were asked to give the talk because the hosts see value in your research. Relish the opportunity, smile, and remember to put your best foot forward. You deserve it.

THE MENTORING CONTINUES

Dr. Elaine Ostrander, Chief and Distinguished Investigator of the Comparative Genomics Branch in NHGRI, was awarded the 2017 Outstanding Mentor Award during this year’s Annual Workshop. Dr. Ostrander was recognized for her dedication to mentoring future scientific leaders. Her mentorship can be seen both in and out of her lab and extends to all of the students in the program.

Dr. Ostrander, who also serves as the Director of Admissions for the OxCam Program, gave a scientific talk following the presentation of her award. Dr. Ostrander’s talk was recognized by our scholars as an outstanding presentation and even described as “a phenomenal, entertaining talk that everyone could understand and relate to.” As a result of this, and based on her own passion about scientific communication, Dr. Ostrander hosted a Skills Workshop for scholars on “How to Prepare a Scientific Talk.”

Using her own past presentations, Dr. Ostrander broke down the basics of a scientific talk and demonstrated creative ways to present each section of information. She discussed different ways to share data and details without overwhelming an audience with minutia, especially if it is a mixed audience with varying levels of experience with the topic. Between her bits of advice and discussion, Dr. Ostrander gave small snapshot presentations of her own scientific talks, providing active examples of how to deliver information in an inclusive and relatable way.

Following her scientific talk at the Annual Workshop, one student remarked that “[other] speakers should model their talks off her more general, yet scientific, speech.” Learning more about Dr. Ostrander’s style and process was the goal for the Skills Workshop. She encouraged the use of scientific data and information, but regularly reminded scholars that brevity and simplicity are critical when talking to an audience. When asked afterward, one student noted that she “didn’t tell us what to do, she gave examples” in order to provide options and advice. It is this kind of guidance and mentoring that marks Dr. Ostrander’s relationship with scholars in the program. Dr. Ostrander believes in graduate training and demonstrates this belief over and over again by offering her time and experience to help scholars become better scientists and leaders in their fields.
One of the challenges for MD/PhD Programs around the country is facilitating continued medical/clinical training during the PhD research portion of dual-degree training. Even as home of the largest research hospital in the country, the NIH is no different. This is one of many reasons that the NIH OxCam Program and the NIH MD/PhD Partnership Training Program has encouraged scholars over the years to host a Clinical Case Studies Series. The Series is organized and driven by the scholars in the program and, after a brief hiatus, has been reinvigorated by two dedicated scholars: Kim Breglio and Casey Rimland.

Kim and Casey were both involved in previous years of the Clinical Case Study Series and felt its importance for MD/PhD trainees during their time at the NIH. Kim cited her more basic research focus and the absence of clinical work as a compelling reason to bring back this series for scholars: “It’s helpful to remember how to think clinically…it’s very different from the research mind-set, especially for people working in more basic science.”

One scholar volunteers to lead each session; the leader selects the case that they will present to the group and leads the discussion. As a group, scholars pose questions and discuss the information they can gather from the elements and facts of the case to develop and debate differentials. Both Casey and Kim encourage any scholars on campus to attend these events, not just those who are in the NIH MD/PhD Partnership Training Program; anyone can benefit. For some, it can offer insight into the skills and discussions they may have if they were to attend medical school in the future; for others, it is a chance to sit and work through a problem with their peers and explore a different type of problem-based learning.

The Clinical Case Series is held the second Thursday of each month and information is available on the Student SharePoint site, under “Events”. If you are interested in presenting a case, please contact Kim Breglio and Casey Rimland.

**WORKSHOP HIGHLIGHT: KEYNOTES**

He shared with scholars his love of space and the experience of seeing our home, our planet, from such a great distance. Dr. Barry also spoke about the importance of the ever-improving technology that has made space travel possible. Despite his overwhelming passion and experience with robotics and the future of artificial intelligence and autonomous robots, Dr. Barry placed significant emphasis on the human element of his work and the essential ability to trust in others and work as a part of a team. His descriptions of his time in space focused on the team of individuals that he relied on in order to make it to the International Space Station and back safely.

One especially memorable moment of his talk (that had many scholars on the edge of their seats), Dr. Barry played a simulation, with actual recorded cockpit audio, of the infamous US Airways Flight #1549, where Captain Chesley “Sully” Sullenberger successfully executed an emergency landing in the Hudson River; Dr. Barry voiced the question that many had following this highly televised incident — was the plane’s autopilot correct? Could they have made it back to the airport to land safely? Dr. Barry suggested, based on his own experiences, that it is in instances like this that the human touch may be what is needed for success. He told scholars that if something goes wrong on your plane, you are going to “want a Sully” to be flying that plane.

These talks engaged scholars by sharing very different approaches to career success: Dr. Rosenthal took risks and progressed through her career by thinking quickly and seizing opportunities as they came her way; Dr. Barry’s career was marked by his passionate determination to achieve his childhood dream of flying in space, and every step was in an effort to accomplish that goal. Both talks, despite their differences, emphasized the power of collaboration and working with teams of like-minded and equally passionate people and both encouraged scholars to follow their passions and not allow fear to stop them from attaining success.