This past year has seen continued increase in size and stature of The Ohio State University Medical Scientist Training Program (MSTP). We are currently 70 students strong, more than double in size from 2011. Let me take this opportunity to welcome this year’s outstanding class: Warren “Alex” Campbell - Gettysburg University, Helen Chen – Northwestern University, Kylene Daily – University of Virginia, Aaren Kettelhut – Hanover College, Matthew Lordo – The Ohio State University, Danielle Tyson – University of Maryland - BC, Walter Wang – University of Pennsylvania, Wenyuan “Ren” Yin – University of Louisville, Joshua Zent – University of Wisconsin - Madison. We are particularly focused on increasing our efforts in diversifying our student body and achieving success.

Our program continues to achieve high success as a result of strong support from university and college leadership, an outstanding esprit de corps among the students and MSTP leadership, a highly innovative and forward thinking medical school curriculum and the institution of new programs that further refine and diversify the MSTP, allowing for more opportunities for our students. I will highlight a few of these.

One nationally recognized benchmark of high performing MSTPs is student academic productivity. In this regard, all of our students are expected to submit extramural and intramural fellowship grants. I am pleased to report that there is a significant uptick in the success our students in garnering these competitive awards. Sixteen students currently have fellowships, including 8 that are NIH-supported.

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Ten more students have competitive scores on grants, several of which will be funded. This tremendous level of achievement is a result of our highly talented and hardworking students as well as a cadre of highly committed and effective faculty mentors.

Another benchmark for highly achieving MSTPs is effective peer and faculty mentorship. I am pleased to report two new programs in this regard. The first was student developed and is a vertical student mentoring program in which students from M1-M8/9 are pre-arranged and then engaged in group meetings three times a year to help students learn how to optimally manage the transition points in the program. The second is a new MSTP Academy of Faculty Mentors. Students complete an Independent Development Plan (IDP) each year in the program. A group of highly committed MSTP faculty members with outstanding mentorship track records have generously agreed to meet with students each year in the program with the IDPs to provide valuable feedback and guidance for the students. These faculty are highlighted on the MSTP website and we will create a plaque with their names to recognize their commitment.

Lastly, we are finalizing efforts to implement a new Advanced Research Competency for M3 and M4 students with significant research experience (both MSTP and selected non-MSTP students). This competency will allow students to complete a well-defined clinical research project and, in addition, have classroom discussion groups on contemporary tools of the trade in executing biomedical research as they look to transition to their residencies.

These are indeed exciting times in the careers of physician scientists. We are working hard to make OSU’s MSTP among the best in the country!

- LSS
We have many different projects in the lab, some of which are collaborative, so I spend a lot of time interacting with different scientists designing experiments, brainstorming new ideas, finishing manuscripts, or working on grant applications. Like many careers that are highly rewarding, sometimes you never really stop working. After the kids go to bed, it is not infrequent for me to spend several more hours in the evening reading papers before finally ending the day.

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I spent most of my first two years of medical school in Dr. Caligiuri’s lab and ultimately completed a one-year Howard Hughes Medical Institute fellowship before switching to an MD/PhD track. Without a supportive mentor like Dr. Caligiuri, my pathway likely would have been very different.

AH: What makes being a physician-scientist so rewarding as a career?
Dr. F: There is so much flexibility in what you can choose to do. Some physician-scientists focus on basic science, others on translational research, while others focus more on clinical investigation. What I really find rewarding is having the ability to combine scientific discovery with direct patient interactions. I spend most of my time in the lab trying to harness the immune system to combat human cancer, which may eventually impact many patients. I also love seeing patients in my clinic once a week where I treat individuals with lymphoma, providing a way to positively impact individual patients’ lives. It’s really the combination of these two facets of being a physician-scientist that makes this career so rewarding.

AH: What is a typical workday like for you?
Dr. F: Clinically, I typically spend one day a week treating lymphoma patients. A few weeks during the year I attend on the inpatient BMT/leukemia service. The rest of my time I spend studying the development and function of natural killer cells. On a typical non-clinic day, I begin my day by first dropping my son off at kindergarten before heading to work to spend the next several hours meeting with different trainees in the lab.

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AH: What are some of the biggest challenges you have faced during your training and career?

Dr. F: One of my biggest challenges was making the transition from a post-doctoral scientist to initiating my own independent laboratory program. It’s a giant step away from what you’re used to doing as a trainee, and the first time you do not have the support of a dissertation advisor or other faculty. While challenging, it’s also very exciting to try to draw on your past training and experiences to do something new and establish your own independent research program. It’s important to always pay attention to every experience that you have in the laboratory and to try to identify the strengths and weaknesses of the situation. This provides a great starting point for your own lab, and you will already know what works best when it comes time for you to face the challenge yourself.

LC: How about advice for our graduating students who are joining the real world?

Dr. H: It is a long road, but each step comes with a mildly improved view. Learn as much as you can from your various mentors, not only about your field, grant writing, clinical medicine, but also about business aspects of lab and practice, finance, economy, interpersonal dynamics within a department, and getting ahead in academia. Don't be scared to consider private practice at some point to weigh all options; do what’s right for you and your family.

AH: What qualities and attributes are found in great mentors?

Dr. F: As a trainee it’s really important to identify great mentors. But you have to look at the whole picture when deciding on whom you want to work with. Accomplishment is one thing, but a great scientist who publishes in Nature and Science can still be bad mentor. More than anything, you really want a mentor that knows you, who is invested in your success, and can lead you to opportunities and connections that will advance your career outside of your scientific project. Something Tim Ley, one of my own key mentors, passed on that really resonated with me was that he always looked at his job as an opportunity to help his trainees reach his/her full potential. So a great mentor is one who can identify what people want to do with their lives, and then help them reach it to the best of their ability. This isn’t always the easiest quality to identify in scientists, though, and it helps to talk to current and prior trainees in the laboratory of potential research advisors, and pay close attention to a PIs mentorship track record.

AH: What factors helped you choose your medical and research specialty?

Dr. F: As a research specialty, I got involved in innate immunity and cancer research very early on in my trainee career and fell absolutely in love with the immune system and its potential to fight cancer and other diseases. I always kept my eyes open to new fields during my training and was ready to follow what I found most interesting, but I always found my way back to immunology. Thus, I knew I wanted to work in a field that integrated the immune system with disease or therapy, and when it came down to Infectious Disease and Oncology, I ultimately chose Oncology due to the research scope and the opportunity to make a dramatic impact on cancer patients’ lives.

AH: What advice would you give to current MD/PhD students?

Dr. F: Do your best to find a field that you’re passionate about. If you’re studying something that does not engage and truly grab your interest, then you’re not going to spend as much time reading, experimenting, and moving that field forward. Hard work is always important, but if you’re not studying what is most exciting to you, then you’re not going to put in that extra effort to accomplish something remarkable. It’s also important to remember that we are always training the next generation of physicians and scientists; this is fortunately embedded in academic research and medicine, so there will always be opportunities to take what you learn and give back to future scientists. We should always strive to help another person achieve his/her goals.

AH: Looking back, would you change any part of your professional training?

Dr. F: Overall I am very happy with my career and where it’s at right now. It’s hard to look back at any single aspect and want to fundamentally change anything.
Thousands of bicycle riders lined the streets on an early Saturday morning in August for Pelotonia 2016. The most recent ride was blessed with sunny weather, open roads, and excited spectators who cheered for riders along the entire course. A grassroots fundraiser, this inspirational bicycle ride across Ohio continues to raise awareness and funds for cancer research at Ohio State. Riders fundraise throughout the year to sponsor their rides spanning 25 up to 180 miles. Numerous volunteers assist throughout the entire weekend, from the opening ceremony on Friday evening, to the final finish line crossed on Sunday. Not only has it become an integral event in Columbus, Pelotonia is grateful for the support from the entire state. Friends and families across the state enthusiastically cheer on the riders as they bike from downtown Columbus through towns such as Pickerington, New Albany, and Gambier. Throughout the weekend, riders are reminded of the impact of Pelotonia. Those with friends and family members affected by cancer, as well as those personally treated here in Ohio, are proud to support the riders of this great cause. All the riders, volunteers, and supporters proudly embrace the Pelotonia motto: One Goal, End Cancer.

Founded in 2008, Pelotonia supports basic, clinical, and translational research at the Ohio State University’s Comprehensive Cancer Center. Now in its eighth year, Pelotonia has raised over $130 million for cancer research. All the money raised through Pelotonia goes directly to support research efforts at Ohio State. From the generosity of thousands of donors, Pelotonia funds have helped recruit new faculty, purchase scientific equipment, and support research projects. Each year, Pelotonia fellowships are awarded to undergraduate, graduate, and postdoctoral researchers. These research awards fund innovative projects hoping to improve the study, diagnosis, and treatment of cancer. Pelotonia “Idea Grants” are given to research teams at Ohio State in the early stages of a project. These two-year grants allow scientists to work together on ground-breaking ideas that may lead to future discoveries. Pelotonia fellowships have funded multiple MSTP students during their PhD training. As the event continues to grow, Pelotonia embodies its mission of curing cancer. MSTP students are proud to support and represent this tremendous cause.

For more information about Pelotonia, including registration and donations, visit pelotonia.org today.
Warren “Alex” Campbell

I was born in Annapolis, Maryland and attended Gettysburg College, where I graduated with a Bachelor’s of Science in Biochemistry and Molecular Biology and a minor in Neuroscience. While there, I worked as a peer science mentor to help teach general chemistry and cell biology and conducted research with Dr. Frey in the Chemistry Department. The research focused on the biophysical properties of membrane lipids and their role in Huntington’s disease pathology. Following graduation, I conducted research in the National Institute of Allergy and Infectious Diseases in Bethesda, MD working under Dr. Leppla. During that year I developed novel sortase enzyme biochemical applications and engineered enhanced chimeric anthrax toxins to target HER2 positive breast cancers. I was attracted to the MSTP program because I was not satisfied with research alone. Research provides the foundation for biomedical therapeutics in 20 years or more, but I also wanted to help people directly. Being able to work from bench to bedside offers a unique opportunity to transform your medical specialty from the inside-out. I was particularly attracted to OSU because of their commitment to translational science in neurodegenerative diseases, nerve damage, and neuron regeneration. As for other random facts about myself: I self-published a book with my family when I was 12, I enjoy making large sand sculptures, and I produce electronic dance music in remix competitions and have songs on Itunes, Spotify, and more.

Helen Chen

I was born in Cincinnati, Ohio, but grew up in Columbus. I attended Northwestern University for my undergraduate degree, and studied neuroscience and cognitive science. I have always hoped to pursue a career that involves working with the brain in some way; however, as an undergraduate, I had no idea how best to do so. To explore my options, I became involved in research on the mechanisms of learning and memory, particularly as they relate to post-traumatic stress disorder, and found that I truly enjoyed research. However, I also found myself searching for a way to take my research and make my results more clinically applicable, which lead me to consider a career in medicine. After considering both paths separately, I realized that pursuing an MD/PhD was the best option to combine both of my interests in research and in medicine. I am excited for the opportunity to be a part of the OSU MSTP for this reason! Aside from my interests in research and medicine, I enjoy cooking, listening to music, and reading.
Kylene Daily

I was born in Alexandria, Virginia in July 1993 and am the oldest of three girls. I graduated from the University of Virginia in 2015 with a degree in Chemistry with specialization in Biochemistry. At UVA, I worked in the lab of Dr. Alison Criss studying the pathogenic mechanisms of Neisseria gonorrhoeae. Research in the Criss lab is focused on how N. gonorrhoeae is able to evade clearance by the human immune system, a question which needs to be answered as strains of antibiotic-resistant N. gonorrhoeae have appeared. In addition to developing my love for science at UVA, I participated in the service fraternity Alpha Phi Omega. Friends and community partners helped me expand my love for helping others, and taught me how to balance enthusiasm and empathy – a skill which will aid me in a career in academic medicine and research.

The OSU MSTP is a place for me to continue to unfold my passion for immunology and microbiology, and become an effective and thoughtful physician-scientist. I want to fully understand how to translate between bench and bedside, and learn to be a leader in making medicine better. To keep myself balanced and prepared for an exciting career, I enjoy spending time outside and on the water, going to concerts, cooking and baking, playing the piano, and playing and watching sports (especially college basketball - go Wahoos!).

Aaren Kettlehut

Life Motto: "Be fearless is the pursuit of what sets your soul on fire."

I was born and raised in Villa Hills, Kentucky. I have two sisters, a step-brother, and two nieces who I love dearly. I obtained my Bachelor's degree at Hanover College in Hanover, Indiana in Chemistry and proceeded to get my Master's in Public Health at the University of Cincinnati. Over the course of my education, I have done a variety of research including the correlation of IL-6 levels with severity of Mastocytosis in pediatric patients, and the epidemiology based risk factors for Hepatitis C. My love of research first stemmed from the moment I stepped into the world of chemistry at Hanover College. However, I also have a strong dual interest in Infectious Disease. My father, a physician in Allergy and Asthma, introduced me to the idea of an MD/PhD program when he learned of my conflict. After researching the nation for MSTP programs, I instantly fell in love with the atmosphere and community of OSU. The individuals were engaging, the environment was warm, and not only learning, but also teaching was evidently a top priority for the school. Through this program, I hope to become a physician scientist specifically in the field of Infectious Disease. Outside of academics, I also enjoy activities including hiking, swimming, dancing (usually when no one is around), reading, board games, and visiting with family and friends.
Matt Lordo

I was born and raised in Worthington, Ohio and attended the Ohio State University for undergrad where I majored in biomedical science. I was raised in a family where both of my parents had PhDs, so the scientific method was instilled in me from an early age. I have a younger sister diagnosed with both Autism and Down's syndrome. My experience growing up with a mentally disabled sibling also helped shape me into the person I am today. For my undergraduate research thesis, I worked in the collaborative labs of Dr. Gustavo Leone and Dr. Sarmila Majumder. My project focused on understanding how an important tumor suppressor is regulated (or dysregulated) in healthy versus cancerous cells. This project led to a Pelotonia fellowship, two poster presentations, and a thesis. I was also able to shadow a surgical oncologist at the James Cancer Hospital who collaborated with the research group by providing clinical samples. The experience of seeing both the clinical and research aspects of my project solidified my interest in pursuing a dual MD/PhD after graduation. For my graduate work, I hope to work in the field of cancer immunology and have rotated with two leading physician scientists working in this area at OSU. The project I will likely take the lead on as a graduate student attempts to utilize oncolytic viruses specific for brain cancer to activate natural killer cells, enhancing tumor clearance. One of the reasons I decided to stay here for my graduate training was due to the huge sense of community among cancer researchers here at OSU with efforts like Pelotonia. I hope to one day practice as a pathologist or oncologist, maintaining both a clinical practice and research lab along with administrative responsibilities. Outside of academia, I am actively involved in the music community here in Columbus. I play baritone in the 5th ranked brass band in the country, the Dublin Silver Band. During my first semester of medical school, I spent a week and a half touring with this group throughout the United Kingdom. I also play in the professional school orchestra here at OSU.

Danielle Tyson

I was born and raised in Raleigh, North Carolina where I lived with my parents and two sisters. Growing up I had a lot of experiences with sick family members that led me to be interested in medicine and the sciences but I did not have many role models in those fields to show me my options. By some chance during my sophomore year of high school I was recommended for a summer research program, and I can honestly say it helped lead me to where I am today. During this experience, I did a translational research project using dogs as a model to identify biomarkers for sepsis. This project introduced me to the idea of research being able to literally move from bench to bedside. After that experience I decided I wanted to pursue an MD/PhD so I chose to attend the University of Maryland, Baltimore County as a part of the Meyerhoff Scholars program. Throughout undergrad I did a variety of research experiences at both UMBC and Yale University to explore my interests. Cancer was the disease that got me interested in science and I ultimately decided to pursue that field for my MD/PhD research. Ohio state is huge in cancer research and I am looking forward to taking advantage of all that it has to offer. I am also excited to finally have a football team to root for! When all is said and done, I hope to work in an academic center where I can practice medicine and conduct research, but I also want to be heavily involved in advocacy and outreach programs as I feel they were significant factors in getting me where I am today. Outside of school I enjoy spending time with friends and family, shopping, and trying new foods.
Walter Wang
I was born and raised in Columbia, MO. I attended the University of Pennsylvania for undergrad, where I was a member of the Vagelos Scholars in Molecular Life Sciences. I graduated in 2016 with a double major in biochemistry and biology, as well as a Master’s degree in Chemistry. My interest in research began when I was in high school, where I worked in a lab at the University of Missouri’s Department of Medical Pharmacology and Physiology for 4 years doing research on ischemia reperfusion injury. At Penn, my interest shifted to lung cancer, more specifically the role the retinoblastoma protein pathway plays in tumorigenesis and whether it would prove to be a target for therapy. I thoroughly enjoyed utilizing molecular tools such as the CRISPR/Cas9 system to study the intricacies of the retinoblastoma protein pathway and the role each component plays in promoting tumorigenesis and metastases, but also wanted to see real-world applications in patients. My goal for my education is to learn what it means to be a physician-scientist that integrates the fields of research and medicine. When I’m not doing schoolwork or research, I enjoy cooking, hiking, games, tennis and generally doing nothing. I look forward to my time here at OSU and Columbus, and can’t wait to see what new experiences await!

Wenyuan “Ren” Yin
I was born Pingyao, a small town in the Shanxi province in China. When I was five years old, I moved to Louisville, KY. I attended the University of Louisville for my undergraduate degree, where I received my Bachelor’s in biology with a minor in psychology. Both of my parents were involved in research at the university, which piqued my interest in research as a career. As an undergrad, I conducted research in oncology with my thesis work focusing on molecular targeting of pancreatic cancer. However, I have always been fascinated by the brain and behavior, so I decided to pursue my PhD in the neurosciences. I am so excited to be a part of the Medical Scientist Training Program at OSU because the environment here is energetic and supportive. I believe that the training I receive here will help me make a positive impact on not only the lives of my patients, but also medical knowledge. Outside of school, I love weightlifting, archery, cooking, and baking (especially if I get to eat some of my creations!) I also spend as much time as I can outdoors with my friends, whether it be hiking, boating, or just strolling around a park during the warmer months.

Josh Zent
I was born in Cape Town, South Africa and my family immigrated to the United States when I was nine months old. We had to move around a lot to stay in the country and I spent my childhood in Chicago, Little Rock AR, and Rochester MN before going to school at the University of Wisconsin - Madison to get my undergraduate and masters degrees in biomedical engineering. It took me until the end of my master’s degree to fully decide I wanted to go to medical school. In my earlier college years I found that I really enjoyed the research/engineering design process, and wasn’t fully willing to give it up – but I wanted the worldview intimate relationship with medical care required of a physician. Luckily, the MSTP programs seemed a perfect blend of these two features. I worked in hematology and vascular surgery labs in college, completed my masters in a biophotonics lab, and worked at the NIH last year in a TGF-B lab focusing on cancer-matrix biology and imaging techniques. My interests are split between the development and implementation of low-cost and broadly applicable biophotonics devices, the development of tissue engineering techniques to augment myofibroblast proliferation in vasculature, and investigating the role of scarring in cancer metastasis. Outside of medical school, I enjoy training for marathons, mountain biking, sailing/windsurfing, skiing/snowboarding, hiking, and hanging out with friends. I am also really interested in world history and economics, and have made a hobby of following economic trends.
The 2016 annual MSTP summer retreat took place on July 21-22 and, as expected, was filled with a perfect combination of learning, honest feedback, and student bonding. The first night of the retreat began at the gorgeous Park of Roses, whose natural beauty was amplified by the sunny evening weather. Following a short introduction and programmatic highlights by Dr. Larry Schlesinger, the students received an important and applicable talk on burnout and resilience by Dr. Steven Gabbe, Director of the Ohio State Wexner Medical Center. Using Ohio State’s beloved coach Urban Meyer as a real-life example, Dr. Gabbe impressed upon the students the importance of finding peace and balance in one’s own life, emphasizing the value of always turning off cell phones during meetings with colleagues. The first night culminated with the 8th annual competition for the highly coveted Larry Award. This year’s theme was composed entirely of the musical contents of Dr. Kirschner’s personal iPod, which included an eclectic ensemble of both past and modern day hits.

On the second day of the retreat, the students were introduced to our new incoming class of MD/PhD students as well as to Aaron Thomas, our new MSTP/SUCCESS Office Associate. After many laughs shared with our fantastic new group of family members, students broke out into small groups for the first ever session of the new MSTP Vertical Mentoring program. Here, students from every stage in the program met in small groups to discuss common challenges and seek advice from some of the older students. Most importantly, students had an opportunity to further connect and grow as colleagues and friends. Next, students shared aloud their opinions and concerns during the annual MSTP program review, which resulted in the unanimous decision to begin a new M4 sendoff ceremony within the program set to begin in the spring of 2017. Finally, the retreat ended with the presentation of the prestigious Larry Award, which was bestowed upon winner Sean Reiff for successfully harboring “the musical tastes of a middle-aged Endocrinologist.” As always, this year’s summer retreat was an enjoyable and immensely rewarding time spent among friends and colleagues, and a true reflection of the strength of our program: the students.
Student Awards and Achievements

- Jae-Hoon has been awarded the American Heart Association Predoctoral Fellowship
- Kirsten Johnson has been awarded $1,000.00 Travel Award from BSGP
- Kelly Regan has been awarded the Ray Travel Award for $1,000.00
- Matt Lordo and Kevin Blum have been elected to the Pathology Student Interest Group 2017 e-board. Kevin was elected president and Matt vice-president.
- Jillian Liu has been awarded ASIP 2017 Histochemical Society-Sponsored Trainee Travel Award
- Sankalp Malhotra was invited to give an oral presentation at the 2017 Mid-Atlantic Microbial Pathogenesis Conference (Wintergreen, VA). His presentation is entitled “Mixed communities of mucoid and non-mucoid Pseudomonas aeruginosa exhibit enhanced resistance to host antimicrobials
- MSTP Leadership and Academic Achievement Award Winners
  - Warren “Alex” Campbell
  - Kylene Daily
  - Aaren Kettelhut
  - Matthew Lordo
  - Ken Okoye
  - Lisa Dorn
  - Davin Packer
  - Max Yano

Recent Student Publications

- Retooling Laser Speckle Contrast Analysis Algorithm to Enhance Non-Invasive High Resolution Laser Speckle Functional Imaging of Cutaneous Microcirculation
  Next Generation XP01 inhibitor shows improved efficacy and in vivo tolerability in hematological malignancies
  Leukemia. 2016 Jun 21
  NKp80 Defines a Critical Step during Human Natural Killer Cell Development
  Cell Rep. 2016 Jul 12
  Roles and Regulation of Protein Phosphatase 2A (PP2A) in the Heart
  Lubbers ER, Mohler PJ
  Mol Cell Cardiol. 2016 Nov 7
  Drug Repurposing Hypothesis Generation Using the "RE: fine Drugs" system
  Regan K, Moosavinasa S, Payne P, Lin S
  J Vis Exp. 2016 Dec 11
  HDAC10 as a potential therapeutic target in ovarian cancer
  Islam MM, Banerjee T, Packard CZ, Kotian S, Selvendiran K, Cohn DE, Parvin JD
  Gynecol Oncol. 2017 Jan 7

Upcoming Events

- February 25, 2017 – MSTP Winter Retreat
- March 19, 2017 – 1st Annual MSTP Post-Match Celebration
- April 13, 2017 – Annual OSUWMC Trainee Research Day