

PHD PATHFINDER|

Medsci316qc

October 22-26, 2018
Harvard Medical School, Boston MA

Syllabus

Monday: 3:30-7:00PM

Tuesday-Friday: 5:00-7:00PM

Networking each night from 7:00-8:00 PM

In this course, Ph.D. Pathfinder, students will learn about the many career paths available to people with advanced degrees in biomedical research including academia, biotech, patent law, science writing/publishing, consulting/business, education, and science policy/regulation.

A Ph.D. education provides students with fundamental knowledge about the principles and practice of the scientific method and promotes development of problem-solving skills in ways that are quite useful for many different professions. Students will have the opportunity to learn from experienced professionals representing each of these paths, to learn about strategies for career development, curriculum enrichment, and networking opportunities that will make them competitive for their career of choice.

The course is open to all Ph.D. students interested in learning about the range of career options available to biomedical Ph.Ds. The course includes talks, didactic sessions, workshops and networking events to promote interactions between students and invited speakers. There will be a special emphasis on helping students with their own skill self-assessment to assist in career and professional development. After each session there will be a small networking reception for both the students and lecturers.

The last session of this course will be the launch for the new DMS Paths Certificate Program. DMS students who have successfully completed the pilot program will present their Capstone presentations.

Note: Students are required to attend all five sessions for course credit.

Monday: Academia & Education, MODELL 100A

Tuesday: Nonprofit & Biotechnology, MODELL 100A

Wednesday: Science Communication & Science Policy, CANNON ROOM

Thursday: Entrepreneurship & Patent Law, MODELL 100A

Friday: Consulting & DMS Paths Certificate Program Launch, MODELL 100A

Academia & Education

Joe Arboleda, Ph.D.

I am extremely committed to teaching and mentoring the next generation of scientists. Serving as a mentor to research associates and assistants, graduate and medical students, and postdoctoral fellows is extremely rewarding to me, and has helped me substantially in the establishment of my independent laboratory and career at Harvard. As proof of my commitment, I have already directly trained more than twenty individuals with diverse backgrounds and career goals. In addition, I have taken on leadership roles at Harvard Medical School as the Faculty Director of the Paths program to assist graduate students in the process of enriching their curriculum in ways that prepare them for their professional careers in academia or outside. In addition, for over two years, I have served as the Class Mentor for the Society of Neuroscience Scholars and Associates Program to mentor a diverse community of trainees including graduate students and postdoctoral fellows using online tools and live chats. More recently and thanks to a nomination effort by my former trainees I was awarded the “Young Mentor” award from Harvard Medical School.

With my background in both clinical medicine and basic science research, I have gained substantial expertise in molecular, genetic, and biochemical studies relevant to human disease with an emphasis in vascular biology. My work both in the clinic and at the bench has given me substantial experience in translational and collaborative research that uses insights from both human and animal studies to better understand the pathobiology of human conditions.

I joined the Schepens Eye Research Institute of Mass Eye and Ear in 2010. I currently hold the position of assistant scientist at this institution and assistant professor in the department of ophthalmology at Harvard Medical School.

Natalie Karagodsky, Ph.D.

Natalie Karagodsky is an Assistant Professor of Biology at Emmanuel College. She holds a B.S. from Brown University and a Ph.D. from Harvard University. Her research focus is on understanding the regulation of SKN-1/Nrf, a conserved transcription factor important for countering oxidative stress. She is currently looking at the role of nuclear transporters and fatty acids in mediating SKN-1 in longevity and stress resistance, using the model organism *C. elegans*. She has several undergraduate students working in her lab, and has a close collaboration with the Blackwell lab at Harvard University.

Academia & Education

Josef Kurtz, Ph.D.

Dr. Kurtz is currently the Chief Academic Officer and Vice President of Academic Affairs at Emmanuel College in Boston, MA, as well as a Professor of Biology. He is also a Clinical Instructor of Surgery (Immunology) at Harvard Medical School and an Assistant Immunologist at the Massachusetts General Hospital in the Vascularized Composite Allotransplantation Laboratory of the Center for Transplantation Sciences. Dr. Kurtz received his undergraduate degree in Biology from the Massachusetts Institute of Technology and his Ph.D. from Harvard Medical School in the Program in Immunology. He is co-Director of Immunology Workshops, a company that provides consulting and educational workshops for the biotech and pharmaceutical industries, and has worked with the Bill and Melinda Gates Foundation. In addition, Dr. Kurtz served as the Chief Science Officer for Aquatrove Biosciences, Inc., a company founded to improve human health by applying new biotechnological discoveries to the design and delivery of unique over-the-counter products, including a proprietary next-generation water-based moisturizing and cell-preserving agent.

Nonprofit & Biotechnology

Melissa Wu, Ph.D.

Melissa P. Wu, PhD, is Senior Vice President of Operations at Seeding Labs. Seeding Labs is a non-profit organization with the mission of empowering every scientist to transform their world. By partnering with industry, government, and non-profit groups, Seeding Labs helps scientists in developing nations gain access to the tools, training, and opportunities they need to advance their research. Melissa's role at Seeding Labs includes overseeing operations and global partnerships, including managing the team administering the flagship Instrumental Access program. As a graduate student, she joined Seeding Labs (then a Harvard student club) and was part of the team that formed it as a nonprofit entity.

Throughout her career, Melissa has been passionate about increasing access to scientific research. As Workshops Program Director for the BioBuilder Educational Foundation, she helped high school teachers integrate synthetic biology into their curriculum. At the Office for Diversity Inclusion and Community Partnership at Harvard Medical School, she mentored young scientists. As a copy editor for the Journal of Emerging Investigators, and through her previous work at American Journal Experts, she aided scientists in communicating their scientific results for publication. Melissa obtained her PhD in cellular and developmental biology from Harvard University for work in muscle development at Boston Children's Hospital and holds an SB in biology from the Massachusetts Institute of Technology.

Dodzie Sogah, Ph.D.

Dr. Dodzie Sogah has served as Vice President, Corporate Development and Strategy since March 2018 and joined Scholar Rock in 2016. He has significant experience in leading scientific, corporate, and business strategy at early and late-stage biotechnology companies. Prior to joining Scholar Rock, Dodzie was Senior Director of Corporate and Business Development at Vertex Pharmaceuticals, where he was responsible for leading the sourcing, evaluation, and negotiation of licensing and acquisition opportunities. Prior to Vertex, Dodzie worked at Alnylam Pharmaceuticals in program and alliance management, and was a management consultant at Bain and Company. Dodzie received his Ph.D. in Cell Biology from Harvard Medical School. He also holds an A.B. in Biochemical Sciences and M.A. in Molecular and Cellular Biology from Harvard University.

Science Communication & Science Policy

Jennifer Tsang, Ph.D.

Jennifer Tsang is the science communications and marketing coordinator at Addgene, the nonprofit plasmid repository. She has completed a Ph.D. in microbiology at the University of Georgia and studied antimicrobial resistance as a postdoctoral fellow at Beth Israel Deaconess Medical Center. During this time, she started to explore writing and started a microbiology blog called The Microbial Menagerie. Since then, she has written for the American Society for Microbiology, the Marine Biological Laboratory, and Massive Science.

Scott Chimileski, Ph.D.

Scott Chimileski is a microbiologist, photographer and author based in the Kolter Lab at Harvard Medical School. Scott is a guest curator of the Microbial Life exhibition at the Harvard Museum of Natural History, coauthor of *Life at the Edge of Sight: A Photographic Exploration of the Microbial World* (Harvard University Press, 2017) and Associate Blogger at Small Things Considered. He received a Passion in Science Award in Arts and Creativity from New England Biolabs in 2016 and the FASEB BioArt award in 2016 and 2017. Scott's images have been published in many popular outlets, including TIME, WIRED, The Atlantic, STAT, NPR, Scientific American and Smithsonian Magazine.

John Randell, Ph.D.

John Randell is the John E. Bryson Director of Science, Engineering, and Technology Programs at the American Academy of Arts and Sciences, where he also serves as Senior Program Director and Advisor to the President. He joined the Academy in 2009 as a Hellman Fellow in Science and Technology Policy and has led the Science, Engineering, and Technology program since 2014. John was the staff director for the 2014 Academy report *Restoring the Foundation: The Vital Role of Research in Preserving the American Dream*, and coordinated extensive congressional outreach activities following the report's publication. He was also the staff director for a report on public trust in childhood vaccinations as well as a study of the social and behavioral factors governing the diffusion of clean energy technologies. Current work includes a study on public perceptions of scientific research and a new Academy project on the barriers to international scientific collaborations. John received undergraduate degrees in mathematics and microbiology from the University of Iowa, and a Ph.D. in Virology from Harvard's Division of Medical Sciences. His Ph.D. thesis investigated the biochemistry of viral DNA replication. From 2003-2009 he was a postdoctoral fellow at the Massachusetts Institute of Technology, where he studied the initiation of eukaryotic DNA replication. In 2001 he was a visiting assistant professor of microbiology at Kathmandu University Medical School in Nepal. He serves on the steering groups for two national science policy coalitions: Engaging Scientists and Engineers in Policy (ESEP; www.science-engage.org) and Innovation: an American Imperative (www.innovationimperative.org).

Science Communication & Science Policy

Erica Kimmerling, Ph.D

Erica Kimmerling joined the American Academy as a Hellman Fellow in Science and Technology Policy in July 2017 and will continue her Hellman Fellowship into 2019. As a Hellman Fellow, she helps manage the Public Face of Science initiative, which examines the underlying factors that shape attitudes toward science. She received her Ph.D. in Biomedical Engineering from Tufts University and a B.E. in Biomedical Engineering from Stony Brook University. As a NIH Pre-Doctoral Fellow, her research focused on designing new approaches for the three-dimensional culture of human kidney cells in order to gain a better understanding of kidney development and disease. She is currently a member of the leadership team for ComSciCon (<https://comscicon.com/>), a national series of communicating science workshops organized by graduate students for graduate students, focused on empowering graduate students to effectively communicate science to a diverse range of audiences. Erica is also the director of operations for a STEM education spinoff of ComSciCon, BiteScis (<https://bitescis.org/>), that pairs educators with graduate students to design lesson plans inspired by research and tied to science standards.

Entrepreneurship & Patent Law

Nathaniel Roquet, Ph.D.

Nate is co-founder and CTIO of CATALOG, a Boston-based biotech company that is developing and commercializing technologies for storing digital information in DNA. Prior to CATALOG, Nate received his BA in Physics from Princeton University and his PhD in Biophysics from Harvard University. During graduate school, Nate worked in the synthetic biology lab of Tim Lu, building molecular systems for recording and computing with chemicals. His path into the startup world began when he and a colleague applied to the Indie Bio accelerator program in San Francisco.

Dan Mandell, Ph.D.

Dan received his Bachelors degree from Stanford University in 2002 and a Master's degree in Artificial Intelligence from the University of Edinburgh in 2003. His Ph.D. work at UCSF coupled inverse kinematics techniques from robotics with protein modeling and design to allow prediction of flexible protein structures to atomic accuracy, earning him the Julius R. Krevans Award for Most Outstanding Dissertation in 2010. As a HHMI Postdoctoral Fellow of the LSRF in George Church's lab at Harvard, Dan combined computational protein design with genome-wide codon reassignment to engineer essential enzymes that require synthetic amino acids to function, producing the first organisms that require a synthetic amino acid for survival. As CEO of GRO Biosciences, Dan leads an effort to apply computational protein design with nonstandard amino acids in organisms with expanded genetic codes to produce a new class of protein therapeutics.

Michael Belliveau, Ph.D.

Michael's practice combines his legal training with his scientific experience to help identify commercially relevant solutions for his clients. Michael advises clients pursuing inventions in various fields of biotechnology, including gene, cell, and mRNA therapies, cancer therapeutics and diagnostics, infectious disease therapeutics, and molecular diagnostics.

As an experienced patent prosecutor, Michael is adept at obtaining strong global patent protection that provides commercial advantages in the marketplace. Michael represents many start-up biotechnology companies, helping them build a strong IP position from inception. Michael also provides counseling on infringement issues and post-issuance proceedings. Additionally, Michael has performed numerous IP due diligence analyses for acquisition and funding purposes, as well as for marketing and manufacturing clearances for biopharmaceutical products.

Michael's doctoral research in Connie Cepko's laboratory at Harvard Medical School focused on the intrinsic and extrinsic factors directing the cell fate choices of stem cells and progenitor cells.

Entrepreneurship & Patent Law

Diana Sanchez, Ph.D.

Diana is Senior Alliance Manager at the Harvard Office of Technology Development (OTD). In her role, Diana manages industry sponsored research collaborations, providing project management support to a team composed of scientists from the Industry Partner and from Harvard. Diana closely works with the project team to keep track of the status of the scientific progress at all times, and facilitate that projects move forward at a steady pace, in alignment with the aims of the project, so that the final goals and deliverables are met, both for the industry partner and the academic team.

Prior to joining OTD in 2017, Diana was a postdoctoral fellow at the Schepens Eye Research Institute / Mass Eye and Ear, where she ran a project for the development of a novel in-vitro model of the neurovascular unit. Prior to Schepens, Diana pursued doctoral studies in the fields of biomaterials and tissue regeneration, focused on the development of an extracellular matrix-based vascular graft to regenerate arteries. Diana also participated in business plan competitions to commercialize medical devices, and worked as a Patent Engineer at an IP Law firm. Diana earned her B.E. in Mechanical Engineering, M.Sc. in Biomedical Sciences, and Ph.D. in Biomedical Engineering from the Universidad de los Andes in Colombia, and was a visiting fellow at the University of Pittsburgh and the Georgia Institute of Technology, where she conducted portions of her doctoral work.

Consulting

Tilman Kispersky, Ph.D.

Tilman is currently an Engagement Manager at McKinsey & Co. in Boston, MA. He has a Ph.D. in Neuroscience from Boston University. The focus of Tilman's work with McKinsey has been in the Pharmaceutical and Biotech sectors. He has advised Pharmaceutical clients on mergers and acquisitions, merger integrations, transformation programs, and growth strategy.