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Siemens Competition
2016 Regional Finals

Massachusetts Institute of Technology Judges

Dr. Sonal Jhaveri (Lead Judge)

Dr. Jhaveri's early training was in Physics and Math (BS Physics, M.I.T. '70), after which she moved to graduate work in Psychology (MS, M.I.T., '72) and Neuroscience (PhD Anatomy, Harvard University); she was *Senior Research Scientist* at MIT, with an interest in Developmental Neuroscience. Currently, she is a *Senior Lecturer* in the Department of Brain and Cognitive Sciences and *Director of Building 46 Postdoc Affairs*, at M.I.T., and *Science Program Director* in the Postdoctoral and Graduate Student Affairs Office at the Dana-Farber Cancer Institute. Dr. Jhaveri has many years of experience with free-lance medical and science writing and editing, teaches writing and science communication to graduate and medical students as well as to postdocs, and oversees professional development training for postdoctoral fellows at the Dana-Farber Cancer Institute.

Dr. Ali Khademhosseini

Dr. Ali Khademhosseini received his Ph.D. in bioengineering from MIT (2005), and MASc (2001) and BASc (1999) degrees from University of Toronto both in chemical engineering. His numerous national and international appointments include Professor of Medicine at Harvard Medical School; Director of the Biomaterials Innovation Research Center at Brigham and Women's Hospital; Associate Faculty at the Wyss Institute for Biologically Inspired Engineering.. He is a leader in combining micro- and nano-engineering approaches with advanced biomaterials for regenerative medicine applications, and has pioneered numerous technologies and materials for controlling the architecture and function of engineered vascularized tissues. Dr. Khademhosseini's interdisciplinary research has been recognized by more than 40 major national and international awards, including the Presidential Early Career Award for Scientists and Engineers, the highest honor given by the US government for early career investigators. He is a fellow of the American Institute of Medical and Biological

Engineering (AIMBE), Biomedical Engineering Society (BMES), Royal Society of Chemistry (RSC), Fellow of Biomaterials Sciences and Engineering (FBSE) and American Association for the Advancement of Science (AAAS). Read more at: http://www.tissueeng.net/.

Dr. Stuart Licht

Dr. Stuart Licht is a laboratory head in the Biochemistry and Bioanalytics group within the Translational Sciences division of Sanofi. His lab studies the mechanism and drug sensitivity of enzymes involved in cancer. Dr. Licht previously worked at Novartis, where he was a lab head in the Biologics group in Cardiovascular and Metabolic Diseases; his lab at Novartis focused on the design, expression, and purification of protein drug candidates and tool proteins for small-molecule drug discovery. Prior to joining Novartis, Dr. Licht was an assistant professor in the Department of Chemistry at MIT, where his research focused on mechanistic studies of energy-dependent proteases and biophysics of ligand-gated ion channels. Dr. Licht did his doctoral work in chemistry at MIT and carried out postdoctoral studies in single-molecule biophysics at UC Berkeley, Scripps, and the State University of New York, Buffalo.

Dr. Ky Lowenhaupt

Dr. Ky Lowenhaupt is Laboratory Manager of the Lu Lab in the Synthetic Biology Center at MIT. The lab uses the tools of synthetic biology to address problems in medicine, materials science, and DNA computing. Prior to that, Dr. Lowenhaupt was a Research Scientist working with Alexander Rich on the identification and characterization of the Zα family of proteins, which co-complex with DNA and invoke an innate immune response. Dr. Lowenhaupt is a Freshman Advisor, and has mentored students in MIT's Research Science Institute, as well as the Undergraduate Research Opportunities Program (UROP). Dr. Lowenhaupt received her doctorate from the University of Cincinnati Medical School, and did Postdoctoral work at Harvard and MIT.

Dr. Denis Martynov

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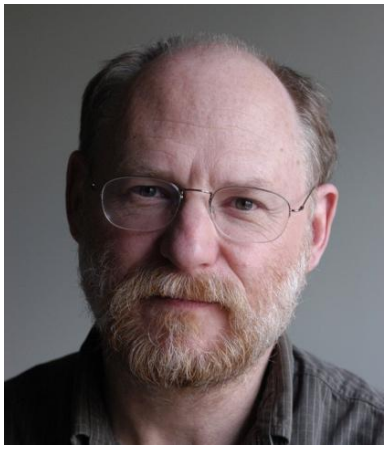
Dr. Denis Martynov obtained his PhD from the California Institute of Technology (Physics/Mathematics and Astronomy), where his thesis was focused on the detection of gravitational waves from distant astrophysical sources, with the LIGO (Laser Interferometer Gravitational-Wave Observatory) group. He then moved to MIT's Kavli Institute for Astrophysics and Space Research as a postdoctoral scholar. His current work involves precision measurements made with the use of lasers, experimental research on detection of gravitational waves, and use of radiowaves to probe cosmic dust (21cm astronomy).



Dr. Haynes Miller

Dr. Haynes Miller received his PhD in 1974 from Princeton University and has been at MIT since 1986. His field of research is Algebraic Topology, and he has published numerous articles on the subject and served in a variety of editorial capacities, including editor-in-chief of the Bulletin of the American Mathematical Society (1994-1999). He has directed 25 PhD theses. His undergraduate teaching has included ten editions of the major MIT undergraduate differential equations course. He led the creation of the Project Laboratory in Mathematics – a course in which student teams engage in controlled research experiences – and served as Mathematics Education Officer and Associate Head between 2004 to 2013. Recognition of Professor Miller's educational efforts include a MacVicar Faculty Fellowship and School of Science Graduate teaching award. He serves on the Faculty Advisory Board of MIT OpenCourseWare, and on a variety of national committees including the Technical Advisory Committee for the American Association of University's STEM education initiative. He is a leader of the MIT-Haiti Initiative, an alliance that has taken him to Haiti five times.

Dr. Michael Prerau

Dr. Michael Prerau is an Assistant Professor of Anæsthesia at Harvard Medical School, Faculty of the Harvard Medical School Division of Sleep Medicine, Assistant of Biomedical Engineering and Neuroscience at the Massachusetts General Hospital Department of Anesthesia, Critical Care, and Pain Medicine, and a Research Affiliate at MIT in the Department of Brain and Cognitive Science. He received his Ph.D. in computational neuroscience from Boston University and holds both a Masters in Biomedical Engineering (2003) and a B.S. in Computer

Science and Artificial Intelligence (2002) from Columbia University. Dr. Prerau's laboratory focuses on understanding the neural correlates of consciousness in humans—specifically how sleep affects the brain. Dr. Prerau's current research centers on developing novel statistical modeling, machine learning, and signal processing algorithms for the analysis of neural data during sleep, with direct applications to basic science, biomarker discovery, and medical device development.

Dr. Michelle Tomasik

Dr. Michelle Tomasik works on physics education at Massachusetts Institute of Technology where she develops online classes both for EdX and for on-campus use, assists with education research, and teaches introductory physics. She received her Ph.D. in physics from MIT, where her thesis was on the use of density functional theory to understand interface energy level alignment in potential photovoltaic materials. For many years, she judged the undergraduate poster session at the American Physical Society (APS).

Dr. Pawan Sinha

Dr. Pawan Sinha has earned a variety of academic and industry honors, including the Pisart Vision Award from the Lighthouse Guild, the PECASE – US Government's highest award for young scientists, the Troland Award from the National Academies, the inaugural Asia GameChangers Award from Asia Society, the Oberdorfer Award from ARVO Foundation, and the Distinguished Alumnus Award from the Indian Institute of Technology, New Delhi. He received a B.Tech. from IIT Delhi, and then came to MIT for his M.S., Ph.D., and post-doctoral training. He joined the MIT faculty in 1999. Sinha is an inventor, and an accomplished cartoonist, who penned an award-winning comic strip called "Tumbleweed Garden" for the MIT student newspaper. Research in his lab seeks to understand how the brain learns to recognize the patterns and scenes we see around us. To do this, his group not only uses computers to model the processes of the human brain, but also studies human subjects, some of whom are seeing the world for the very first time and can tell them about the experience as it happens. They find these unusual subjects through the humanitarian branch of their research, Project Prakash.

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