SIEMENS | Foundation

Siemens Compeition
2015 Regional Finals
California Institute of Technology

Richard C. Flagan, Lead Judge

Richard Flagan received his B.S. in mechanical engineering from the University of Michigan, and his S.M. and Ph.D. from the Massachusetts Institute of Technology, also in mechanical engineering. He is the McCollum/Corcoran Professor of Chemical Engineering and Professor of Environmental Science and Engineering at the California Institute of Technology, where he also serves as Executive Officer for Chemical Engineering. Flagan has published over 300 scientific papers, a textbook: "Fundamentals of Air Pollution Engineering," and has 19 patents. He has served as the President of the American Association for Aerosol Research and as Editor-in-Chief of its journal, "Aerosol Science and Technology." He has received numerous awards for his aerosol research, including the David Sinclair Award of the American Association for Aerosol Research.

Mario Blanco

Mario Blanco's research career has been centered on the assembly and function of ribonucleoprotein (RNP) complexes. His undergraduate experience as a Biochemistry major at Florida State University involved solving high resolution structures of an RNA modifying RNP and utilizing ensemble fluorescence measurements to identify substrate recognition and positioning. For graduate work he enrolled in the Cellular and Molecular Biology program at the University of Michigan. His thesis focused on understanding the role structural dynamics play within spliceosome assembly and catalysis. To accomplish this, he developed novel experimental and analytical tools to measure spliceosome structural dynamics using single molecule fluorescence microscopy techniques. Currently, he is a postdoctoral scholar in Mitch Guttman's lab at Caltech, investigating RNA-protein interactions on a recently identified gene product long noncoding RNAs (lncRNAs). RNA-protein interactions are mediated by a variety of factors, RNA sequence and structure being among the most important. The lab is leveraging the power of high throughput sequencing

techniques to create comprehensive maps of structural and sequence binding specificities for lncRNA binding proteins.

Marianne Bronner

Dr. Marianne Bronner received her Sc.B. in Biophysics from Brown University and her Ph.D. in Biophysics from Johns Hopkins University in 1979. She was on the faculty at University of California, Irvine, from 1990 - 1996, and subsequently moved to Caltech where she is the Albert Billings Ruddock Professor of Biology and Biological Engineering. From 2001-2003, she was Chair of the Faculty at Caltech. Dr. Bronner has a long-standing interest in how complex organisms develop from single cells. Her research centers on the early formation of the nervous system in vertebrate embryos. Her goal is to unravel the molecular and cellular signals underlying their formation and evolution.

Alex Cunha

Alexandre Cunha is a computational scientist with the Center for Advanced Computing Research at Caltech. He is a member of Caltech's Center for Integrative Study of Cell Regulation, where he works developing algorithms and tools for bioimaging processing and for computational plant simulation. He has a doctoral degree in computational science and engineering from Carnegie Mellon University, Pittsburgh, Pennsylvania, and has done postdoctoral work at the Center for Computational Biology at the University of California, Los Angeles. His research interests are in developing fast and effective algorithms for image processing, geometry extraction from images and computer simulations.

Majid Hadian-Jazi

Majid Hadian-Jazi is a Scott Russel Johnson Research Assistant Professor in the Department of Mathematics at Caltech since 2014. Majid completed his PhD, under the supervision of the Fields medalist Prof. Dr. Faltings, at Max-Planck Institute for

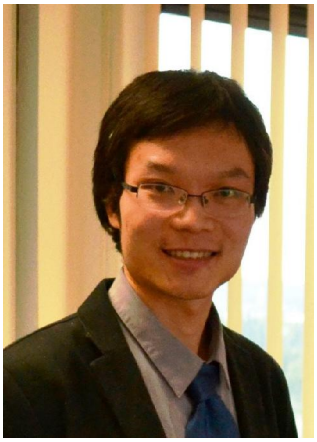
Mathematics in 2010, and he has held research positions at University of Duisburg-Essen, University of Illinois at Chicago, and Caltech since then. His research interests lie in the area of Arithmetic and Algebraic Geometry.

Daniel Kim

Daniel Kim is a Beckman Fellow at Caltech, working with Prof. Barbara Wold on the development and application of single-cell RNA-sequencing technology to investigate the molecular mechanisms involved in reprogramming somatic cells into induced pluripotent stem (iPS) cells. He received his B.S. in biology from Caltech and his Ph.D. in molecular biology from the Beckman Research Institute/City of Hope National Medical Center, working with Prof. John Rossi on small noncoding RNAs, where he received the Cozzarelli Prize for scientific excellence and originality from the National Academy of Sciences. He also trained with Prof. Jeannie Lee at Harvard Medical School/Massachusetts General Hospital as a Damon Runyon Fellow, working on long noncoding RNAs and epigenetic regulation.

Zuli Kurji

Zuli Kurji did her undergraduate work (in Chemistry and Biology) at Cornell University and received her PhD in Chemistry at Caltech in 2013. She is now a joint postdoctoral scholar with the Physics department at Washington State University and the Chemical Engineering Department at Caltech. Her long-term research goals reflect her interest in using soft materials, including liquid crystal polymers, as sensors and actuators. She has mentored many undergraduate and high school students in original laboratory research and loves to see high schoolers so engaged in science.



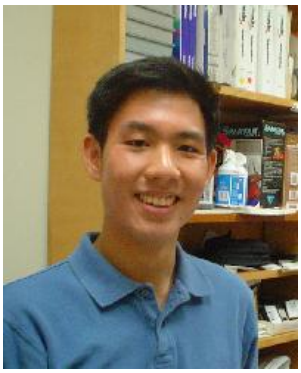
Haowen Ruan

Haowen Ruan received his PhD in Biomedical Imaging from the University of Nottingham. His research focuses on the area of biomedical imaging and its translation to clinical studies. He is currently researching the development of novel imaging techniques

combining light and ultrasound, aiming to tackle the challenges of imaging inside the optical scattering biological tissue. He is particularly interested in ultrasound modulated optical tomography, time reversal deep tissue imaging based on optical phase conjugation, photoacoustic imaging, ultrasonic imaging with nonlinear ultrasound and contrast agents, and biomedical instrumentation.

Zak Staniszewski

Zak Staniszewski is an instrument systems engineer at NASA Jet Propulsion Laboratory, and a former postdoctoral scholar at Caltech. He is currently working on new astrophysics satellite experiments at NASA to explore the early Universe and to test inflation and Big Bang scenarios. He came to Caltech as a Moore fellow in 2009 to work on the Keck Array with Jamie Bock and Andrew Lange in their observational cosmology group. He helped design and build two telescopes at the South Pole station in Antarctica and spent a full winter season running one of them. He specializes in telescope design and assembly, detector development and data analysis. He received his Ph.D. in physics from Case Western Reserve University, where he worked on the South Pole Telescope with Prof. John Ruhl. His Ph.D resulted in the first ever discovery of galaxy clusters using a millimeter wave telescope.



Julius Su

Julius Su graduated from Caltech with degrees in biology (B.S. 1998), physics (B.S. 1999), and chemistry (Ph.D. 2007). As a scientist, he creates methods to compute the dynamics of complex chemical and biological systems. During his Ph.D. studies, he developed a way to model highly excited materials containing millions of electrons (electronforcefield.com), useful for studying the composition of planetary interiors, the nature of plasmas produced by shock waves and etching processes for next generation semiconductors. Currently he is combining adaptive learning algorithms with molecular dynamics to bridge the gap between our understanding of how individual atoms move and interact, and our observation of emergent biological phenomena.