![SIEMENS | Foundation]

Siemens Competition
2016 Regional Finals

University of Texas at Austin Judge Bios

Jennifer Maynard, Lead Judge
McMakin Associate Professor
Department of Chemical Engineering
BA Human Biology, Stanford

We develop protein therapeutics and vaccines to address unmet medical needs in infectious diseases. These proteins aim to directly interfere in disease progression or augment essential immune system activities. To do this, we design a candidate protein, with an emphasis on engineering the kinetics with which it interacts with other proteins as well as targeting protein transport to specific tissues in the body. This is followed by protein expression and purification to make the protein; biophysical, biochemical and cellular analyses to elucidate the molecular basis of activity; and, ultimately, in vitro and in vivo experiments to evaluate the protein's ability to prevent disease.

Chun Huh, Ph.D.
Department of Petroleum and Geosystems Engineering
Research Professor

Dr. Chun Huh received his B.S. degree in chemical engineering from Seoul National University in Korea. He then earned his Ph.D. degree in chemical engineering from the University of Minnesota, followed by postdoctoral research in interfacial chemistry at McGill University, Montreal, Canada.

Before joining the UT-Austin faculty in January, 2004, Dr. Huh worked as an Engineering Advisor at ExxonMobil Upstream Research Company in Houston, Texas. Dr. Huh is one of the world's leading experts on surfactant- and polymer-based improved oil recovery (IOR) processes. "Chun Huh equation", which predicts ultralow interfacial tension from microemulsion solubilization, is widely used for the design of surfactant-based IOR processes. He is also the formulator of the "Huh-Scriven paradox", which first demonstrated the singularity generation when fluid-dynamics solutions are attempted for spreading/wetting of fluids on solid. Even though the paradox was published more than 40 years ago, its resolution in various ways is still being actively proposed by fluid mechanics researchers. At UT-Austin, Dr. Huh has started research on use of nanoparticles for a

wide variety of upstream oil industry applications, one example of which is the use of superparamagnetic nanoparticles for efficient removal of various "contaminants" from oilfield produced water. Since joining UT-Austin, he co-authored over 90 publications. Dr. Huh has served as Chairman of the Society of Petroleum Engineers' Reservoir Engineering Journal Editorial Committee; received the SPE IOR Pioneer Award in 2012; and is a SPE Distinguished Member.

Kevin N. Dalby, Ph.D.

Kevin N. Dalby was born in Bedford, England. He obtained a B.Sc. in Chemistry (1st class with honors) in 1988 from the University of Leeds. He received a Doctor of Philosophy in Organic Chemistry in May 1992 from The University of Cambridge. The title of his dissertation was 'Models of Nuclease Activity'. His research advisor was Professor Anthony J. Kirby, FRS. In May 1992 he became a postdoctoral fellow, in the laboratory of Professor William P. Jencks, FRS at Brandeis University. In May 1994 he became a Medical Research Council postdoctoral fellow with Professor Sir Philip Cohen, FRS at Dundee University. In September 1997 he took a tenure-track position as an assistant professor at The University of Texas at Austin College of Pharmacy. He obtained tenure and is currently The Johnson & Johnson Centennial Professor of Chemical biology and Drug Discovery. Dr. Dalby is also director of Ire Targeted Therapeutics Program at UT Austin. His current research interests focus on understanding signal transduction pathways in cancer cells and developing therapeutic strategies to treat cancers.

Karl Gebhardt, Ph.D.
Department of Astronomy Professor

Karl Gebhardt is the Herman and Joan Suit Professor of Astrophysics in the Department of Astronomy at the University of Texas at Austin. He grew up in the snow-filled winters of Rochester, NY. His career has taken him through Michigan State University, Rutgers University (where he received his PhD in 1994), fellowships at the University of Michigan and University of California at Santa Cruz, and eventually to University of Texas in 2000. Dr. Gebhardt works on a variety of galaxy studies, ranging from black holes to dark matter to dark energy. He has won numerous awards, including Northeaster Graduate Schools Dissertation Award (1995), a Hubble

Fellowship from NAS,\ (1997), Teaching Excellence Awards from the University of Texas (2003) and McDonald Observatory Board of Visitors (2004), and a National Science Foundation Career Award. In 2012, he received the Edith and Peter O'Donnell Award in Science from the Academy of Medicine, Engineering and Science of Texas. He works with numerous undergraduate and graduate students, and involves them in all levels of his research.

Most of his career has focused on understanding the role that black holes play in the formation of a galaxy. He has measured more black hole masses than anyone in the world. His recent work focused on understanding dark energy with the Hobby-Eberly Telescope Dark Energy Experiment (HETDEX). It was shown a few years ago that the Universe is expanding much faster than what had been expected. Dr. Gebhardt and his colleagues have outlined a unique approach to study dark energy using the Hobby-Eberly Telescope.
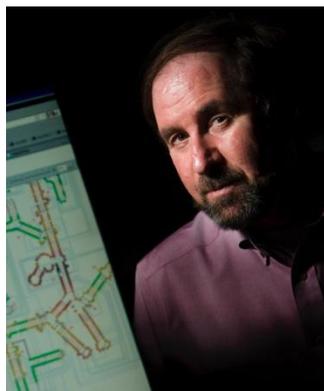
Robin Gutell, Ph.D.

Dr. Robin Gutell was an undergraduate at the University of California, San Diego where he received his B.A. degree in Molecular Biology, Chemistry, and Mathematics, and was a graduate student at the University of California, Santa Cruz, where he received his Ph.D degree in Computational Molecular Biology and Molecular Evolution of RNA, under the guidance of Dr. Harry Noller. He continued these studies as a PostDoc at the University of Illinois, Campaign-Urbana with Dr. Carl Woese. Then utilized these skills at Biotech companies in San Diego (Gen-Probe) and Toronto (Cangene) before returning to academia at the University of Colorado, Boulder and then the University of Texas at Austin.

Dr. Gutell has been a professor at the University of Texas at Austin for 18 years, has 132 publications with more than 15,000 citations, and created and maintains their Comparative RNA Web (CRW} site. His training in RNA structure, molecular evolution and computational analysis with Drs. Harry Noller (one of the first to propose that RNA has catalytic function) and Carl Woese (who proposed the third kingdom of life -the Archaea) has been the foundation for his expertise in computational comparative analysis of RNA structure and evolution. His computational and comparative analysis was used to: 1) predict rRNA secondary structure with near 100% accuracy, 2)identified and characterized RNA structural motifs and several non-canonical base pair types, 3}created novel database systems to enrich the comparative analysis and disseminate data online, 4) studies the evolution of base pairs in RNA secondary structure with implications for Crick's Central Dogma and Darwinian Evolution, and 5} developing a more accurate computer algorithm for the prediction of RNA secondary structure from a single sequence.

John C. Lassiter
Department of Geological Sciences
Associate Professor

Dr. John Lassiter received his BA degrees in Geology and Political Science at Brown University. He then earned his Ph.D. degree in Geochemistry at the University of California at Berkeley, followed by postdoctoral research in mantle geochemistry at the Department of Terrestrial Magnetism, Carnegie Institute of Washington. He then worked as a staff scientist at the Max-Planck Institute for Chemistry, Geochemistry Department, in Mainz, Germany, before joining the faculty at the University of Texas, Austin in 2004.

Nathaniel A. Lynd, Ph.D.
McKetta Department of Chemical Engineering
Assistant Professor

Dr. Nathaniel A. Lynd received his B.S. degree in chemistry and B. A. in German at Michigan State University. He then earned his Ph.D. degree in materials chemistry at University of Minnesota followed by postdoctoral research in polymer materials science at the University of California, Santa Barbara. Later, he was a staff scientist at Lawrence Berkeley National Laboraotry before moving to the University of Texas at Austin in 2015. Dr. Lynd is a specialist in polymer science and has over 50 publications and patents in the following areas: Development of new catalysts for polymerization; polymerization kinetics, synthesis, new methods of polymer functionalization, degradable polymers, polymer properties, polymer self-assembly, and polymer-ice interactions. Dr. Lynd teaches courses in numerical methods, and also on the synthesis and physical properties of polymer materials. He has held a guest professorship at the Eindhoven University of Technology in the Netherlands.

Mikhail V. Matz, Ph. D.
Associate Professor
*Department of Integrative Biology*

Dr. Mikhail "Misha" Matz earned his M.S. and Ph.D. degrees in biochemistry from the Moscow State University and Shemyakin-Ovchinnikov Institute in Bioorganic Chemistry in Moscow, Russia followed by postdoctoral and research assistant

professor positions at the University of Florida. Before coming to UT Dr. Matz have made several important contributions to biotechnology by discovering a family of multi-colored fluorescent proteins from reef organisms and reconstructing their color evolution at the molecular level. The molecular labeling technology utilizing some of the proteins that Dr. Matz has discovered was awarded a Nobel Prize in 2008. Papers from the "fluorescent period" of Dr. Matz career (1999-2010) cover fields ranging from molecular phylogenetics to protein crystallography and have been cited more than 2000 times.

Since joining the UT faculty in 2006 Dr. Matz concentrated on the subject called "ecological genomics": he is studying how natural populations adapt to their environment at the genomic level. His lab focuses reef-building corals, combining experiments with corals on the reef with genomics and bioinformatics. His lab also continuously develops novel methods for genomic analysis applicable to all sorts of non-standard study organisms, from biofuel plants to sea cucumbers. Dr. Matz and his graduate students teach these methods to researchers from all over the world in intensive workshops called Methods in Ecological Genomic Analysis (MEGA) in the Florida Keys, every summer (http://ecogeno.weebly.com/).

Curiously, Dr. Matz has even published a single but highly cited paper in paleontology, in 2008. An entirely serendipitous occasion led him to discover giant motile protozoans in the deep sea, the kind of which might have been responsible for the earliest biological trace fossils known on this planet (1.8 billion years old).

Dr. Matz has served on review panels of the National Science Foundation (evolutionary ecology and biological oceanography) and as an associate editor for PLoS ONE and BMC Genomics. At UT, the classes he teaches are Invertebrate Zoology, Evolution, and Ecological Genomics.
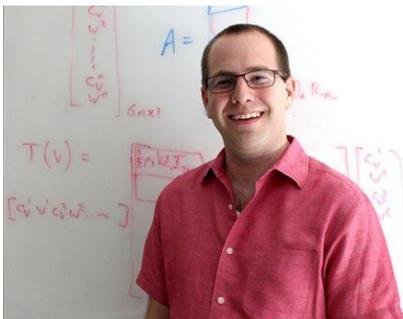
Etienne Vouga, Ph.D.
Department of Computer Science
Assistant Professor

Dr. Etienne Vouga received his Ph.D. at Columbia University in 2013 under Eitan Grinpsun and spent a year as an NSF Mathematical Sciences Postdoctoral Fellow at Harvard, working with L. Mahadevan. His research is at the intersection of computer graphics, computational mechanics, and mathematics, and his specific interests include physical simulation of everyday materials like cloth, hair, and paper; algorithms for detecting and resolving collisions that arise during animations; and using geometry processing algorithms and discrete differential geometry to solve design problems such as creating masonry buildings that stand up under their own weight, or origami patterns that compact into a small volume and deploy into large curved shapes. Special effects studios Disney and Weta Digital have used his work on cloth and hair simulation in movies such as Tangled and The Hobbit.

Janet Zoldan, Ph.D.
Assistant Professor
Biomedical Engineering

Dr. Zeidan received her BSc degree in chemistry from the Hebrew University, and then pursued her master's degree and doctorate in the Technion-Israel Institute of Technology, Department of Materials Engineering, specializing in polymer science. In Her postdoctoral training, she expanded her research base and entered the growing field of tissue engineering. She first joined Dr. Shulamit Levenberg's Lab at the Technion and delved into stem cell biology. Receiving both the Aly Kauffman Fellowship and the Technion's Outstanding Woman Scientist in Engineering Award allowed her to join Dr. Robert Langer's lab at the Massachusetts Institute of Technology. In the Langer lab, she focused on nucleic acid delivery to human embryonic stem cells and protein microfluidic delivery. During her last year at MIT, and in parallel to her post doctoral research, she established, and served as director to, a new research facility for nano-scaled material characterization that combines research disciplines from biology with engineering. In 2013 Dr. Zeidan joined The University of Texas at Austin as an assistant professor. Research in the Zeidan lab focuses on human induced pluripotent stem cells (iPSCs) as a model system to explore key principles underlying vascular tissue formation processes and regenerating ischemic tissue. Understanding these processes and controlling them with material design and microfluidic protein delivery are critical for treating a broad spectrum of pathological conditions (e.g. heart failure, ischemic stroke, congenital defects). Specifically, she is interested in unraveling how biochemical cues lead to changes in cellular organization and cell behavior. She has recently received the prestigious Scientist Development Grant from the American Heart Association to develop minimally invasive personalized reatment to patients suffering from peripheral arterial disease. Dr. Zeidan is dedicated to train and mentor the next generation of female engineers. The majority of her lab members are females. Dr. Zeidan teaches classes devoted to Tissue Engineering and Stem Cells in Tissue engineering.