Biosciences Area Review 2015
Lawrence Berkeley National Laboratory
Reviewer Biographies

Janet Braam, Ph.D., Rice University

Janet Braam has a diverse scientific background, being involved in research that spans from translation medical research to basic plant cell biology. She received her PhD in Molecular Virology and Biology from the Sloan-Kettering Division of the Cornell Graduate School of Medical Sciences, elucidating the roles of influenza viral polymerase subunits. She then joined Stanford University School of Medicine as an NSF postdoctoral fellow in plant biology.

Dr. Braam's research at Stanford led to the discovery that plants turn on genes in response to touch and shed light on the importance of calcium signal transduction in mechanical perturbation responses in plants.

In 1990, Dr. Braam joined the faculty at Rice University and rose through the ranks. She has had continual federal grant support and served on diverse grant and advisory panels

Dr. Braam's research contributions include uncovering roles of calcium-binding and cell wall proteins in plant responses to environmental stress, and elucidating aspects of nitric oxide signaling, autophagy regulation, and jasmonate dependent defense. Most recently, her research focus also includes the role of the circadian clock in plant defense, the complex regulation of chlorophyll biogenesis, phytohormone regulation, and autophagy control. Her discoveries in basic plant biology have potential translational application in drug discovery, crop nutrient enhancement, and nanomaterial toxicity analysis in plants.

Charles Craik, Ph.D., University of California, San Francisco

Charles S. Craik is a Professor in the Department of Pharmaceutical Chemistry at the University of California at San Francisco. He is also the founder and director of the Chemistry and Chemical Biology Graduate Program.

He joined the UCSF faculty in 1985 and has published over 280 research articles on various biochemical topics. He has co-authored two books, and served on advisory panels for the National Institutes of Health, the National Science Foundation, the National Academy of Sciences and the Department of Energy. In 2004 he founded Catalyst Biosciences and serves on its Scientific Advisory Board, along with those of CytomX Therapeutics, Protagonist Therapeutics and the Biotechnology and Enzymes Expert Committees of the US Pharmcopeia. He is a Fellow of the American Association for the Advancement of Science.
The current research in the Craik lab focuses on defining the roles and the mechanisms of enzymes in complex biological processes and on developing technologies to facilitate these studies. His study of numerous proteases, their receptors and their endogenous inhibitors has recently found practical applications in translational research in oncology and infectious diseases. The work includes developing

technologies for determining the extended substrate specificity and for selectively inhibiting or monitoring enzyme activity, determining the role of a novel class of membrane bound proteases implicated in various forms of epithelial cancers, targeted inhibition of a family of human herpes virus proteases and monitoring enzymes associated with programmed cell death at the single molecule level. The reagents being developed may provide therapeutic potential in addition to their prognostic value.

Edward DeLong, Ph.D., Massachusetts Institute of Technology

Edward DeLong serves as a Professor in two Departments, Biological Engineering & Civil and Environmental Engineering, at the Massachusetts Institute of Technology.

Professor Delong is the Goulder Family Professor in Environmental Systems at MIT and a member of the U.S. National Academy of Science. He works on developing new approaches for microbial community genomics and systems biology. He serves as a Technical Advisor of Joule Biotechnologies Inc., and Seres Health, Inc. He also served as a Member of Scientific Advisory Board of LS9 Inc.

Ed holds a BS in Bacteriology from the University of California Davis, and a PhD in Marine Biology from the University of California San Diego.

Geoffrey Duyk, M.D., Ph.D., TPG Biotech

Geoffrey Duyk served on the board of directors and was president of research and development at Exelixis where he focused on the discovery and development of small molecule therapeutics, prior to joining TPG Biotech in 2004. Prior to Exelixis, he was one of the founding scientific staff at Millennium Pharmaceuticals. As VP of genomics at Millennium, Duyk was responsible for building and leading the informatics, automation, DNA sequencing and genotyping groups as well as the mouse and human genetics group. Prior to his tenure, Dr. Duyk was an assistant professor at Harvard Medical School in Dept. of Genetics and assistant investigator of the Howard Hughes Medical Institute. While at HMS, Dr. Duyk was a co-principal investigator in the National Institutes of Health funded Cooperative Human Linkage Center.

Dr. Duyk holds a PhD and M.D. from Case Western Reserve University and completed his medical and fellowship training at UCSF. While at UCSF, Dr. Duyk was a fellow of the Lucille P. Markey Foundation and was also awarded a post-doctoral fellowship from the Howard Hughes Medical Institute.

Dr. Duyk, a partner at TPG, co-leads TPG Biotechnology, a health care oriented venture capital group with >$1bn under management. He is also the managing partner for TPG ART (Alternative and Renewable Technologies). He serves on the board of directors of number of companies including Amyris, Genomatica, Elevance and Beta Renewables.

Outside of TPG, he is a member of the Board of Trustees of Wesleyan University and serves on visiting committees at Harvard Medical School and Case Western Reserve University School of Medicine. Dr. Duyk is a member of the Board of Directors for the American Society of Human Genetics. He has also

served on the council of NHGRI and a number of NIH and DOE advisory groups. He is also a member of the SAB of Jackson Labs and the SMA foundation.

Replidyne, Macrogenics, Aerie, FoldRx, Amyris, Galleon, Moksha8, ShangPharma, Agria, Renewco and JCR, council member of the National Human Genome Research Institute at the National Institutes of Health, serves on the scientific advisory boards of the NHGRI DNA Sequencing Advisory Panel, chair of the KOMP (Global Mouse TKO project), ESC (Expressed Sequenced Consortium), co-chair advisory panel Cancer Genome Anatomy Project, Program in Genomics Applications (NHBLI); the Bioethics Advisory Group at Case Western Reserve University; the Spinal Muscular Atrophy Foundation; WIL Laboratories; VLST; and FoldRx.

Dr. Duyk is a former member of the board of directors of Avidia, recently sold to Amgen.

Bradon Fabbri, Ph.D., Monsanto

Brad Fabbri joined Monsanto in 1994, and has worked in a variety of scientific and project leadership roles in the technical arenas supporting Monsanto's biotechnology and nutrition product portfolios. His initial work at Monsanto was in the areas of gene expression and small molecule discovery. He then focused his research efforts on improving the protein and amino acid nutritional quality of maize in support of Renessen LLC, a joint venture between Monsanto and Cargill. Brad then was the founding site lead for Monsanto's Protein Evolution group located in Cambridge, MA, initially a collaboration with Modular Genetics. Since 2007 Brad has been part of the Technology Prospecting Team that continuously looks for innovative technologies that will help build, extend, and support the Monsanto technology portfolio. Brad received a B.S. in Biochemistry from UC Davis in 1983, and after a period of time making and selling wine in Napa Valley California returned to school to earn a Ph.D. in Biochemistry from UC Davis in 1995.

Richard Greene, Ph.D., National Renewable Energy Laboratory

Richard Greene is the director of the Biosciences Center, which focuses on understanding energy conversion phenomena in biological, chemical, and nanoscale systems for generation of renewable energy technologies. The center studies structure, function, and dynamics in natural and human-engineered systems to create efficient and cost-effective solar conversion, hydrogen production, and biomass-to-biofuels technologies.

Prior to joining NREL in April 2013, Dr. Greene was lead for the Photochemistry and Biochemistry Team in DOE's Office of Basic Energy Sciences (BES), and supported research on the molecular mechanisms involved in the capture of light energy and its conversion into chemical and electrical energy through biological and chemical pathways.

Dr. Greene began his research career as a bench scientist at USDA's Agricultural Research Service (ARS) laboratory in Peoria, IL, and ultimately became the leader of the Biopolymer Research Unit from 1990 to 1999. During his tenure there, the unit generated several commercial products from bench discoveries and won two R&D 100 Awards. In 1999, he moved to ARS Headquarters in Washington, D.C., to work in the

Office of International Research Programs, where he became its director in 2003. In 2006, he came to DOE to manage the BES Energy Biosciences Program. When the Energy Biosciences Program merged with the Solar Photochemistry Program to form the Photochemistry and Biochemistry Team in 2008, he was selected as its lead.

Dr. Greene received his A.B. in biochemistry from Cornell University. His Ph.D. was also awarded by Cornell University in biochemistry for studies on light-driven transport reactions in Archaea. He is the author of more than 80 peer-reviewed journal articles and patents.

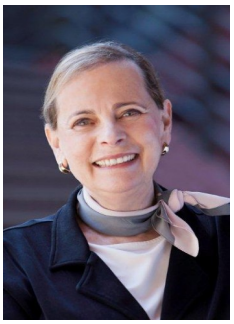
John Pierce, Ph.D., British Petroleum

John Pierce joined BP as Chief Bioscientist in April 2010, where he is working to develop strategies on how the company should position itself to gain maximum benefit from the application of biosciences to BP's worldwide businesses.

Prior to that time, he had a long career at DuPont commencing in 1982 as a research scientist in Central Research and Development and culminating as Vice President for DuPont Applied BioSciences and Director of Biochemical Sciences & Engineering where he had responsibility for DuPont's biotechnology research and development efforts in the production of fuels, chemicals, and materials.

Throughout his career, Pierce has focused on the integration of biological approaches with chemistry, engineering, and material sciences to create biotechnological applications in agricultural chemistry, plant genetics, and industrial chemistry. He led the move of DuPont into industrial biotechnology in the mid-90s, and has long been involved in a variety of public policy activities associated with public acceptance and governmental support of biotechnology.

Lucy Shapiro, Ph.D., Stanford University



Lucy Shapiro employs a bacterial model system to probe fundamental aspects of developmental biology. Following her graduate studies in molecular biology and biochemistry, she went on to make major advances in understanding the genetic and molecular decision-making process that directs an asymmetric cell division yielding cells of different cell fates, akin to the process carried out by stem cells in higher organisms.

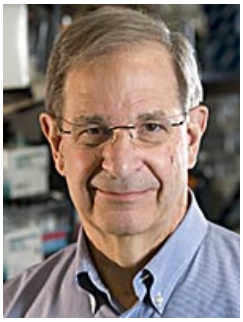
Dr. Shapiro's research aims to integrate the dynamic spatial organization of the cell into the complete genetic circuitry that defines cell specification and the cell cycle in *Caulobacter*. Likening the bacteria's regulatory network to the act of "playing three-dimensional chess," Shapiro and her colleagues pioneered a systems biology approach to show that the transcriptional circuitry is interwoven with the 3-D deployment of regulatory and morphological proteins. Dr. Shapiro's studies have revealed a striking similarity between the organization of cell cycle behavior in bacteria and more evolutionarily advanced organisms.

Dr. Shapiro is a professor in the Department of Developmental Biology and Ludwig Professor of Cancer Research at the Stanford University School of Medicine. Dr. Shapiro received a PhD in molecular biology from the Albert Einstein College of Medicine. Her many honors include election to the National Academy of Sciences, the Institute of Medicine, the American Academy of Arts and Sciences, and the American

Philosophical Society. She is the recipient of the Waksman Award from the NAS, the Gairdner International Award, the Abbott Lifetime Achievement Award, the Horwitz Prize, and the United States National Medal of Science.

NIGMS has supported Dr. Shapiro's research since 1986.

James Tiedje, Ph.D., Michigan State University



James Tiedje is University Distinguished Professor of Microbiology and Molecular Genetics and of Plant Soil and Microbial Sciences, and is Director of the Center for Microbial Ecology, one of the original NSF-funded Science and Technology Centers. His B.S. degree is from Iowa State University and his M.S. and PhD degrees are from Cornell University.

His research focuses on microbial ecology, physiology and diversity, especially regarding the nitrogen cycle, anaerobic processes and biodegradation of environmental pollutants. His group has discovered several microbes that live by halorespiration on chlorinated solvents and is now using genomics to better understand microbial diversity and function. He served as Editor-in-Chief of Applied and Environmental Microbiology. He was President of the American Society for Microbiology (ASM), the International Society of Microbial Ecology, and shared the 1992 Finley Prize from UNESCO for research contributions in microbiology of international significance. He is Fellow of the AAAS, the American Academy of Microbiology, the Soil Science Society of America, and a member of the U.S. National Academy of Sciences.