

TRANSITIONS

BOARD OF TRUSTEES

SFI's trustees are drawn from leaders in business, finance, and academia. Here are the newest additions to an accomplished roster:

John Chisholm has three decades of experience as a technology executive and entrepreneur. A pioneer in online marketing research, in 1992 he founded and served as Chairman/CEO of Decisive Technology (now part of Google), publisher of the first online server software; and of CustomerSat (now part of MarketTools), a leading provider of customer feedback systems. He holds an MBA from Harvard, and MS and BS degrees in electrical engineering and computer science from MIT.

A fellow at the Stanford University Graduate School of Business and an accomplished leader and founder of organizations and publications for the arts, **Kay Taylor Burnett** currently serves as the CEO of a small energy development company and the president of a small nonprofit foundation. She also serves on the board of Marfa Public Radio, whose purpose is to help bring public radio to the vast Trans-Pecos region. This is her second appointment to the Board of Trustees.

Henry Lichstein is managing partner of Dryad Partners, his consulting company. He takes interim CEO/CFO roles, consults for technology-based companies, and serves on boards. Educated at MIT with degrees in electrical engineering, economics, and management, he worked for 30 years developing technology, among other duties, for Citibank. He has served on many boards, including ones for Teradata, Lucix, and Intelligent Optical Systems.

Michael Mauboussin and **William Sick** have been reappointed to the Board of Trustees after serving a one-year mandatory hiatus.

SCIENCE BOARD

This group of scientists and educators, drawn from a wide variety of fields, oversees the general direction, integration, and quality of the Institute's research. These are the newest members:

Derek Smith is professor of Infectious Disease Informatics at the University of Cambridge and a senior fellow at the Fogarty International Center at the National Institutes of Health. His



research focuses on pathogen evolution, in particular the evolution of influenza viruses. He examines to what extent this evolution is predictable, and helps determine public and animal health measures against influenza and other evolving pathogens.

Geoffrey West is a distinguished professor and past president of SFI, and a senior fellow at Los Alamos National Laboratory. Perhaps best known for understanding the origins of universal scaling laws that pervade biology from the molecular level up through organisms and ecosystems, he is currently extending these ideas to understand quantitatively the dynamics of cities, corporations, and global sustainability.

Peter Wolynes holds the Francis Crick Chair in the Physical Sciences at the University of California, San Diego. His research focuses on mathematically characterizing energy landscapes that operate in glasses, liquids, and biomolecules, and in protein-folding kinetics. He is beginning to study how these landscapes affect biological processes such as genetic network regulation and gene recognition.

Newly Appointed Co-Chairs:

A professor of biological sciences at Stanford University, **Marcus Feldman** uses mathematical modeling techniques to study problems in evolutionary biology. In addition to his teaching and research, he is editing two journals and working on books about gene culture co-evolutionary theory, niche

construction in evolutionary biology, and the sex ratio issue in China. Feldman often works with fellow SFI researchers to shed light on biological and social phenomena by applying concepts of evolutionary biology in novel ways.

Stephanie Forrest is chair of the Computer Science Department at the University of New Mexico, and has long been a member of the SFI community. Her research interests include computational immunology, genetic algorithms, and biologically inspired approaches to computer security. Her recent work focuses on automated software repair using evolutionary methods.

SCIENCE STEERING COMMITTEE

This group meets bimonthly to advise the SFI administration on science issues. SFI welcomes these new members:

SFI external professor and professor of systems biology at Harvard Medical School, **Walter Fontana** heads a research group whose theory section develops a new formalism and associated computational methods for studying distributed systems of molecular interaction that orchestrate cellular behavior. The experimental section of his group uses the nematode *C. elegans* to determine quantitatively how genes influence life-span distributions and how physiological processes change with age in individuals.

Mimi Koehl is a professor of integrative biology at the University of California, Berkeley, where she studies the physics of how organisms interact with their environments. She aims to elucidate basic physical rules about how body structure affects mechanical function in nature. In her research, she emphasizes field work and laboratory experimentation and combines techniques from fluid and solid mechanics with those from biology.

Melanie Mitchell, a professor of computer science at Portland State University, teaches and researches computation in complex systems. Like others in the complex systems commu-

nity, she is fascinated with commonalities across natural systems such as brains, insect colonies, the immune system, cells, the global economy, and evolution. Her work aims to understand how those systems perform computation, and how to use this knowledge to develop new computation techniques.

Dan Rockmore is a professor of mathematics and computer science at Dartmouth College, where he also chairs the department of mathematics. His research interests include applied and computational harmonic analysis, image processing relative to the study of art, medicine, complex systems, machine learning, financial markets, and the evolution of culture.

Science Board co-chairs **Marcus Feldman** and **Stephanie Forrest** also serve, ex-officio, on the Science Steering Committee.

SFI PROFESSORS

SFI Professors form the backbone of the Institute's research. They are in residence for renewable terms of three to five years.

The following three have been promoted to Professor:

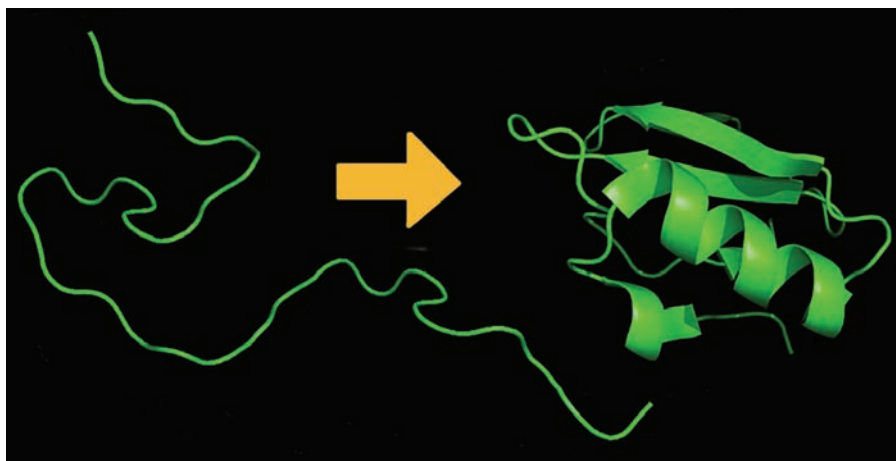
Co-founder of the Pacific Ecoinformatics and Computational Ecology Lab, **Jennifer Dunne** studies the organization, function, and stability of ecosystems in terms of complex species interaction. Her research seeks to identify fundamental patterns and principles of ecological network structure and dynamics at multiple spatial and temporal scales.

Jessica Flack codirects the Construction Dynamics Group at SFI, which seeks to build a computational theory to account for the origins of hierarchy and aggregate structure in evolutionary processes. Research foci include the emergence of multiple time scales in social processes and their role in uncertainty reduction and robustness, conflict and conflict management as drivers of complexity, and heuristics for component estimation of system state.

A cognitive anthropologist, **Paula Sabloff** has conducted research in Mongolia, Mexico, and the U.S. She is currently working on Mongolians' changing ideas about democracy and capitalism, asking whether democracy is a universal goal or a conceit of U.S. foreign policy. She also is collaborating with former Omidyar Fellow Tanya Elliot on a cognitive model that can be applied to populations rather than a single brain.

Also at SFI as a professor:

Geoffrey West, former SFI President, continues his SFI affiliation as Distinguished Professor and Science Board member.



A member of the SFI Science Board, Peter Wolynes researches protein-folding kinetics, among other topics. Here, a polypeptide folds from a random coil into its characteristic and functional three-dimensional structure.

EXTERNAL PROFESSORS

An essential component of SFI's scientific life is its network of external researchers, affiliated with universities and research institutions throughout the world. Here are the most recent additions:

The chair of the Systems and Computational Biology Department at Einstein University College of Medicine, **Aviv Bergman** pursues some of the classic questions of evolutionary biology through his research into complex genetic systems. The research program at his laboratory focuses on the quantitative aspects of evolutionary and developmental biology and uses data from experimental studies in molecular genetics.

David Campbell, a leader in the field of nonlinear science, received the American Physical Society's Julius Edgar Lilienfeld Prize for contributions to complex systems study. Campbell is the founding editor-in-chief of the flagship journal *Chaos* and the current provost of Boston University.

An eminent archaeologist of the American Southwest, **Linda Cordell** is currently a senior scholar at the School for Advanced Research on the Human Experience. Her research interests include archaeological method and theory, the archaeology of settlement dynamics in agricultural communities, and human responses to climate change in arid regions.

Steve Frank is a professor of ecology and evolutionary biology at the University of California, Irvine. His current research focuses on how the dynamics of genetical, biochemical, and cellular mechanisms determine complex phenotypes, such as cancer and parasite virulence.

John Harte, a professor of ecosystem sciences at the University of California, Berkeley, currently has two main research topics. He measures and models ecosystem-climate feedback dynamics, and he applies the MaxEnt principle from information theory to the prediction of patterns in the abundance, distribution, and energetics of species across taxa, habitats, and spatial scales.

The Moffett Professor of Biology and Director of the Center for Biocomplexity at Princeton University, **Simon Levin** researches patterns in ecosystems. He seeks these patterns in evolutionary mechanisms that operate in organisms, in infectious diseases, and in the interface between basic and applied ecology.

Formerly the chief scientific advisor to the UK government and president of the Royal Society, **Lord Robert May** holds professorships jointly at Oxford University in the department of zoology, and at Imperial College London. His current research explores the rates, causes, and consequences of extinction.



Seal of Mongolia: Professor Paula Sabloff researches Mongolians' changing ideas about democracy and capitalism.

An assistant professor at the David Geffen School of Medicine at the University of California, Los Angeles, **Van Savage** uses mathematical models to understand how diversity is organized, constrained, and controlled in biological systems. His research applies to diverse subjects, from the structure of vascular networks in plants, animals, and tumors, to the time scales and purpose of sleep across species, to ecosystem and invasive species' responses to climate change.

John Schellnhuber is the founding director of the Potsdam Institute for Climate Impact Research and a long-standing member of the Intergovernmental Panel on Climate Change. He has contributed to the fields of condensed matter physics, complex systems dynamics, climate change research, earth system analysis, and sustainability science, and is an expert on climatological tipping points.

Physicist **Wojciech Zurek** is most known for developing the quantum theory of decoherence and elucidating its significance for the quantum-to-classical transition. He currently works at the Los Alamos National Laboratory as a lab fellow in the theory division.

POSTDOCTORAL FELLOWS

Several SFI research programs host postdoctoral fellows and researchers. Below is a list of the newest fellows.

To find out about each of them and their research, go to www.santafe.edu/about/people.

Fabio Caccioli
Bryan Daniels
Marcus Hamilton
Hyejin Youn

OMIDYAR POSTDOCTORAL FELLOWS

The Omidyar Fellows Program was established at SFI in late 2008 with a gift from eBay Founders Pierre and Pam Omidyar. Below is a list of the current Fellows. To find out more about each of them, go to www.santafe.edu/about/people.

Rogier Braakman
Nathan Collins
Simon DeDeo
Laura Fortunato
Anne Kandler
James O'Dwyer
Scott Ortman
Jeremy Van Cleave