

2013

Susan Brantley, professor of geosciences, received the Physical Sciences Medal. A Penn State faculty member since 1986, Susan Brantley is recognized for her pioneering work in applying chemical and physical principles to geological processes at the earth's surface, including weathering and erosion. Her research has had a "profound and transforming impact on the field of geochemistry," one nominator wrote. Her recent work has provided a framework for understanding biological and atmospheric weathering reactions in the Critical Zone, the surface region of the planet between the solid earth and the atmosphere that sustains human life. The quantitative reactive transport models that she has developed represent a breakthrough for modeling weathering in the Critical Zone on the geological time scale, a nominator said, and her results have "broad implications" for understanding the role that weathering plays in soil formation, the fate of contaminants and the sequestration of anthropogenic carbon dioxide.

Claude dePamphilis, professor of biology received the Life and Health Sciences Medal. Claude dePamphilis researches the evolution of polyploidy and evolutionary diversification in plants that he and his colleagues have studied through the Floral Genome Project he coordinates. This work suggested that these ancestral genome duplication events resulted in the evolution of regulatory genes important for seed and flower development and therefore contributed to the eventual dominance of seed plants and, in particular, angiosperms. Nominators described his research as "remarkable," "seminal," "extraordinary" and having "lasting impact" on how scientists think about the evolution of complex traits in plant evolutionary lineages. His work led to a publication in the journal *Nature* that describes the discovery of genome duplication events that preceded the diversification of seed plants and angiosperms. His efforts on the Floral Genome Project have resulted in nearly 100 publications, including several in the top journals in his field.

Tony Jun Huang, associate professor of engineering sciences and mechanics received the Engineering Medal. Dr. Huang has achieved the most notable success in the area of acoustofluidics. His recent work on "acoustic tweezers" allows the on-chip, dexterous manipulation of microparticles, cells and organisms with low power, avoiding damage in sensitive biological materials. One nominator called him the "leading researcher in the nascent field of acoustofluidics," and another said, "I am sure that we will continue to find that he is one of the most creative engineers of his generation." Over the past five years, Dr. Huang's publications have included 94 authored or coauthored papers in journals including *Advanced Materials*, *Nature Reviews in Drug Discovery* and the *Proceedings of the National Academy of Sciences*. He is the Focus editor of the journal *Lab on a Chip* and is an editorial board member of eight other journals.

Judith Kroll, distinguished professor of psychology, linguistics, and women's studies, received the Social and Behavioral Sciences Medal. A Penn State faculty member since 1994, Dr. Kroll is director of the Penn State Center for Language Science. She is honored for her scholarship in the area of second-language acquisition and bilingualism. "Her contributions are particularly impressive in the multifaceted nature of the research," one nominator said. She has developed a foundational theoretical model of how language is represented cognitively. Together with her students, she has carried out key empirical research on bilingualism and has complemented these contributions to basic research with work on the advancement of women in cognitive sciences. A nominator said, "The past five years have seen a remarkable convergence of all of Dr. Kroll's achievements. Her research expanded into neuroscience methods, making it one of the leading labs in the world investigating the cognitive neuroscience of bilingualism."

Helen O'Leary, professor of art, received the Arts and Humanities Medal. She is recognized for her ability to integrate innovation and theoretical acuity with traditions of memory and handicraft encountered in basic living situations of rural Ireland. One nominator wrote that her work is characterized by a mix of "intelligence, poetic vision, resilience, tactility and insight," which are then "combined with a deep knowledge of theory and its function in the visual arts." Another nominator praised her as a "painter of international significance," noting that her paintings "benefit from considerable intellectual ballast and emotional resonance." She collaborates across both disciplines – as with a current opera project – and cultures. In 2012, she was named a fellow of the Institute for the Arts and Humanities. She also received both the Culturel Irlandaise and Guggenheim fellowships.