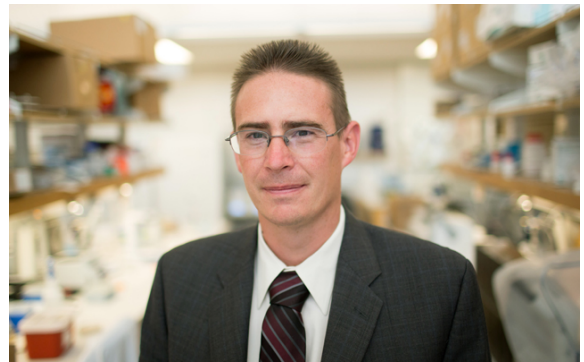


August 09, 2017 | By Heather Buschman, PhD

2017 Massry Prize Honors Microbiome Research Pioneers

Microbiome researchers Rob Knight, PhD, University of California San Diego, Jeffrey Gordon, MD, Washington University School of Medicine in St. Louis, and Norman Pace, PhD, University of Colorado Boulder, will share this year's Massry Prize, splitting the \$200,000 honorarium. These researchers lead a field that works to produce a detailed understanding of microbiomes — distinct constellations of bacteria, viruses and other microorganisms that live within and around us — and methods for manipulating microbiomes for the benefit of human and environmental health.



Rob Knight, PhD, is a professor in the UC San Diego School of Medicine and Jacobs School of Engineering and director of the Center for Microbiome Innovation at UC San Diego.

The Meira and Shaul G. Massry Foundation established the Massry Prize in 1996 to recognize outstanding contributions to the biomedical sciences and the advancement of health. The nonprofit foundation promotes education and research in nephrology, physiology and related fields. Shaul Massry, MD, is professor emeritus at the Keck School of Medicine of University of Southern California. The Massry Prize Lectures, which the winners give every year, are held on the USC Health Sciences campus. This year's lectures are scheduled for October 2017. Twelve Massry Prize recipients have gone on to win Nobel Prizes.

Pace developed a technique to sequence a bacterial gene called 16S rRNA and use that information to produce microbial “read outs” of what’s living in a mixed sample. Gordon found medical applications for the technique, using it to discover links between the human gut microbiome and obesity and malnutrition. Knight figured out how to scale up the approach, allowing researchers to perform high-throughput microbial gene sequencing, and made widely accessible tools that other researchers have now used in thousands of different environments, including the human body.

“I greatly appreciate this recognition for microbiome research — a scientific field that was relatively underappreciated until recent years,” said Knight, professor in the UC San Diego School of Medicine and Jacobs School of Engineering and founding director of the Center for Microbiome Innovation at UC San Diego, part of the White House’s National Microbiome Initiative. “I’m honored and grateful to stand beside Jeff and Norm, true visionaries in the field and valued collaborators and mentors who have changed the way we think about the majority of the cells in our bodies and the vast majority of the cells on our planet.”

Knight’s research group and others are finding that the trillions of microbes living with us are critical contributors to human and environmental health. Allergies, inflammatory bowel disease, obesity and many other conditions have been linked to alterations in the human gut microbiome, for example. Growing evidence suggests gut microbes also influence the brain, potentially affecting mood, behavior and psychiatric illnesses.

Knight’s team has also enhanced our understanding of microbes in environments ranging from the oceans to the tundra, and made high-throughput sequencing techniques accessible to thousands of researchers around the world.

“You would have a hard time finding a department or discipline anywhere on the UC San Diego campus that isn’t collaborating with Rob,” said David A. Brenner, MD, vice chancellor of Health Sciences and dean of the School of Medicine at UC San Diego. “He can make connections between seemingly unrelated topics and the scientific community as a whole has advanced thanks to him. Rob is extremely deserving of this award and I’m proud to call him a colleague and friend.”

Knight’s current research interests include relating the human microbiome to many human diseases and mental illnesses, spatial and temporal mapping of microbial communities on different scales, ranging from our bodies to our planet, and developing new data visualization methods and software tools that help resolve the challenges of microbial “Big Data.”

In one example project that leverages the interdisciplinary expertise provided by the Center for Microbiome Innovation, UC San Diego physicians, microbiome researchers, chemists, genomics experts and bioinformaticians are collaborating to build a 3D map of the chemistry associated with cystic fibrosis and how it shapes the lung microbiome. Their goal is to develop more effective, highly personalized treatments for potentially fatal lung infections that frequently affect people with this disease.

Knight also co-founded the Earth Microbiome Project; the American Gut Project, the world's largest crowdsourced citizen science effort; and the company Biota, Inc., which uses DNA from microbes in the subsurface to guide oilfield decisions. He is a fellow of the American Association for the Advancement of Science and of the American Academy of Microbiology. In 2015, he received the Vilcek Prize in Creative Promise for the Life Sciences.

Knight is the author of "Follow Your Gut: The Enormous Impact of Tiny Microbes" (Simon & Schuster, 2015) and co-author of "Sustainable Shale Oil and Gas" (Elsevier, 2017) and "Dirt is Good: The Advantage of Germs for Your Child's Developing Immune System" (St. Martin's Press, 2017). He spoke at TED in 2014.

Knight received a BSc in Biochemistry in 1996 from the University of Otago in his native New Zealand, a PhD in 2001 from Princeton University in Ecology and Evolutionary Biology, and performed postdoctoral work at the University of Colorado, Boulder before becoming a faculty member in the interdisciplinary BioFrontiers Institute there in 2004, in 2009 becoming a Howard Hughes Medical Institute Early Career Scientist. He moved his lab to UC San Diego School of Medicine in 2015.

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