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2021 Vilcek Foundation Prizes in Biomedical Science Recognize Immigrant Leaders in STEM

\$250,000 in Vilcek Foundation Prizes awarded to Ruth Lehmann, Mohamed Abou Donia, Ibrahim Cissé, and Silvi Rouskin.

New York, NY, September 8, 2020 – The Vilcek Foundation is pleased to announce the recipients of the 2021 Vilcek Foundation Prizes in Biomedical Science. Awarded annually, these awards—comprising the Vilcek Prize in Biomedical Science and three Vilcek Prizes for Creative Promise in Biomedical Science—honor the contributions of immigrants to scientific research, discovery, and innovation in the United States. These honors are a part of the Vilcek Foundation’s prizes program, which celebrates the contributions of foreign-born persons in the arts, sciences, and humanities.

“The United States has long been a beacon for scientists from around the globe, and many groundbreaking discoveries made in research laboratories in this country have been spawned by immigrant scientists,” said Jan Vilcek, CEO and Chairman of the Vilcek Foundation. “The outstanding diversity of thought and innovation that immigrant scientists bring to the United States cannot be overstated, especially at the present time when immigration is under assault and visas for foreign scientists who would like to work and study here are being denied.”

The Vilcek Prize in Biomedical Science recognizes an immigrant scientist for outstanding career contributions to biomedical science and global scientific research. The prize includes an unrestricted cash prize of \$100,000 and a commemorative trophy. The recipient of the 2021 Vilcek Prize in Biomedical Science is Ruth Lehmann, recently appointed director of the Whitehead Institute and professor of biology at the Massachusetts Institute of Technology. A member of the American Academy of Arts and Sciences and the National Academy of Sciences and a Simons Fellow, she is awarded the Vilcek Prize in Biomedical Science for her outstanding research leadership in the study of the development of germ cells in animals and genomics. Born in Germany, she received her PhD in the laboratory of Nobel laureate Dr. Christian Nüsslein-Voldhard at the Max Planck Institute for Developmental Genetics.

“Ruth Lehmann is being recognized for her contributions to the understanding of the biology of germ cells—the cells that in mammals give rise to eggs and sperm,” said Vilcek. “Her discoveries made over the span of three decades have not only elucidated the processes essential for the perpetuation of life

but have also made important contributions to many related fields.” More recently, Lehmann’s work has suggested mechanisms through which harmful mutations in the DNA of mitochondria are weeded out—work with implications for treating human mitochondrial disorders.

The Vilcek Prizes for Creative Promise in Biomedical Science are awarded to young immigrant scientists whose early-career work represents a profound advance in their respective fields. “This year’s cohort of applicants for the Vilcek Prizes for Creative Promise in Biomedical Science was the strongest we’ve ever had,” said Vilcek. “It is a testament to the value of immigration to the scientific community in the United States.” Each prizewinner receives a \$50,000 cash prize and a commemorative plaque. Mohamed Abou Donia, Ibrahim Cissé, and Silvi Rouskin are the recipients of the 2021 Vilcek Prizes for Creative Promise in Biomedical Science.

Mohamed Abou Donia, an associate professor at Princeton University, has identified drug-like molecules, including antibiotics, produced by the human microbiome. Donia also developed screening methods to reveal with individual-level precision how drugs are metabolized by the human gut microbiome and he mapped microbiome-encoded genes involved in drug metabolism. Additionally, Donia’s work has led to a molecular understanding of the role of chemical defense in the evolution of intricate symbiosis between organisms. Abou Donia was born in Ismailia, Egypt.

Ibrahim Cissé, an associate professor at the Massachusetts Institute of Technology, has illuminated the process by which genes are expressed in cells. Cissé showed that the enzyme RNA polymerase II—a central player in the process by which genes are decoded into RNA—forms transient and dynamic clusters while transcribing genes in living cells. His work also revealed that the enzyme and its co-activator each clusters into condensates resembling liquid droplets. Cissé was born in Niamey in the Republic of Niger.

Silvi Rouskin, principal investigator at the Whitehead Institute, has developed methods to predict and unravel the structure of individual RNA molecules in cells. Rouskin showed how structure influences RNA processing and gene expression in human immunodeficiency virus 1, whose genome is composed of a strand of RNA. Recently, Rouskin uncovered the higher-order structure of the RNA genome of SARS-CoV2—the virus that causes COVID-19—in infected cells at high resolution. Rouskin was born in Sofia, Bulgaria.

The Vilcek Foundation has also announced the recipients of the 2021 Vilcek Prize and Vilcek Prizes for Creative Promise in Filmmaking, and the 2021 Vilcek Prize for Excellence in Public Service. All of the prizewinners will be celebrated at an awards ceremony hosted by the Vilcek Foundation in April 2021.

The Vilcek Foundation

The Vilcek Foundation raises awareness of immigrant contributions in the United States and fosters appreciation of the arts and sciences. The foundation was established in 2000 by Jan and Marica Vilcek, immigrants from the former Czechoslovakia. The mission of the foundation, to honor immigrant contributions to the United States, and more broadly, to foster appreciation of the arts and sciences, was inspired by the couple's respective careers in biomedical science and art history. Since 2000, the foundation has awarded over \$5.6 million in prizes to foreign-born individuals and supported organizations with over \$5 million in grants.

The Vilcek Foundation is a private operating foundation, a federally tax-exempt nonprofit organization under IRS Section 501(c)(3). To learn more, please visit vilcek.org.