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MORTIMER B. ZUCKERMAN MIND BRAIN BEHAVIOR INSTITUTE

Columbia Scientists Awarded $1.5M From Chan Zuckerberg Initiative to Build Cell Atlas to Combat Disease

~ Columbia researchers will work to advance broad-scale efforts to treat spinal cord injury and disease ~

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Even simple movements of the body, such as extending a hand or taking a step, require the synchronized efforts of millions of specialized nerve cells called neurons in your spine. These neurons have an entourage of other, non-neuronal cells that nourish and protect them. But scientists do not yet know the complex role these distinct cell types play in the healthy body, nor what happens to them when things go wrong in neurodegenerative illnesses such as amyotrophic lateral sclerosis (ALS) or with injury.

This is why a team at Columbia's Zuckerman Institute is focused on understanding the complexity of every cell in the spinal cord at the level of individual cells. Selected today to join the Chan Zuckerberg Initiative (CZI) Seed Networks for the Human Cell Atlas, the researchers will receive $1.5 million over three years to develop sophisticated techniques and computational tools that will be used to create a data resource, or reference guide, for the spine. This guide will serve as a platform for basic spinal cord studies, and help others develop technologies that lead to effective treatments for those who are paralyzed from injury or suffering from ALS.

As a member of the Seed Network, the team will develop more robust strategies for characterizing the molecular "fingerprint" of individual cells of each spinal cord cell type. They will also expand computational efforts to analyze, organize and distribute their findings to fellow CZI Seed Networks members and the scientific community at large.

In 2017, CZI awarded this same Columbia team a pilot grant to begin developing an atlas of the genetic activity of all cells in the human spinal cord. The team's research focus is one piece of CZI's support for the global, scientist-led Human Cell Atlas project, a larger effort that aims to map the function of all 37 trillion cells in the human body.

In the video above, we invite you to hear from team member Abbas Rizvi, PhD, associate research scientist in the Maniatis lab at Columbia's Zuckerman Institute, as he shares his vision for an open resource that brings together scientists from across the university and the world.

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This grant is titled: "A Multimodal Strategy for a Single Cell Atlas of the Human Spinal Cord."

Award amount: $1,500,000 over three years

Grant co-investigators:

Tom Maniatis, PhD, Isidore S. Edelman Professor of Biochemistry and Molecular Biophysics at Columbia's Vagelos College of Physicians and Surgeons; Principal Investigator at Columbia's Zuckerman Institute

Liam Paninski, PhD, Professor of Statistics and Neuroscience; Principal Investigator at Columbia's Zuckerman Institute

Abbas Rizvi, PhD, Associate Research Scientist in the Maniatis lab at Columbia's Zuckerman Institute

Raul Rabadan, PhD, Professor of Biomedical Informatics (in Systems Biology) at Columbia's Vagelos College of Physicians and Surgeons

Columbia University's Mortimer B. Zuckerman Mind Brain Behavior Institute *brings together a group of world-class scientists and scholars to pursue the most urgent and exciting challenge of our time: understanding the brain and mind. A deeper understanding of the brain promises to transform human health and society. From effective treatments for disorders like Alzheimer's, Parkinson's, depression and autism to advances in fields as fundamental as computer science, economics, law, the arts and social policy, the potential for humanity is staggering. To learn more, visit: zuckermaninstitute.columbia.edu.*

About the Chan Zuckerberg Initiative
Founded by Dr. Priscilla Chan and Mark Zuckerberg in 2015, the Chan Zuckerberg Initiative (CZI) is a new kind of philanthropy that's leveraging technology to help solve some of the world's toughest challenges — from eradicating disease, to improving education, to reforming the criminal justice system. Across three core Initiative focus areas of Science, Education, and Justice & Opportunity, we're pairing engineering with grant-making, impact investing, and policy and advocacy work to help build an inclusive, just and healthy future for everyone. For more information, please visit www.chanzuckerberg.com.