

Award to Dr. Antonio Barrientos Will Fund Study of Underlying Biology of Neurometabolic Disorder

A University of Miami Miller School of Medicine neuroscientist and molecular biologist is leading a collaborative study that could develop new insights into how cellular processes affect neurodegenerative diseases.



Antonio Barrientos, Ph.D.

With support from a recent grant from the Chan Zuckerberg Initiative (CZI), Antonio Barrientos, Ph.D., professor of neurology and biochemistry and molecular biology, will examine mitochondrial defects related to Leigh's syndrome, a rare neurometabolic disorder that generally begins in infancy.

“Mitochondrial defects are associated with a range of

encephalomyopathies and age-associated neurodegenerative diseases, including Parkinson's disease and ALS," said Dr. Barrientos, adding that the defects prevent the mitochondria in cells from generating energy for normal cell function.

Dr. Barrientos is partnering with Silvia Rouskin, Ph.D., the Andria and Paul Heafy Whitehead Fellow at the Whitehead Institute for Biomedical Research in Cambridge, Massachusetts, for the CZI-funded study, "The Mitochondrial RNA Structurome as Mediator of Neurological Diseases," which begins December 1.

Dr. Rouskin is a researcher whose work focuses on deciphering the structure of messenger ribonucleic acid (mRNA), which carries genetic code for making proteins in the cell. John Conor Moran, an M.D./Ph.D. student at the Miller School, has been working with Dr. Rouskin in Cambridge to analyze cellular samples and has already obtained promising data, according to Dr. Barrientos.

Opening a new field of research

"We aim to reveal a new fundamental level of biological information – the role the cell's structural landscape plays in mitochondrial neurological disease, and how to use it to identify and exploit new therapeutic targets," Dr. Barrientos said. "This is a unique project that we expect will open a new field of research."

CZI recently announced \$4.5 million in funding for its Collaborative Pairs Pilot Project, which involves 18-month grants for 30 pairs of collaborating investigators to explore innovative approaches to neurodegenerative diseases. The

grants represent the next phase of the CZI Neurodegeneration Challenge Network (NDCN), an interdisciplinary collaborative network that brings together computational biologists, physicians, and experimental scientists from diverse research fields – neuroscience, cell biology, biochemistry, immunology, and genomics – to understand the underlying causes of neurodegenerative disorders.

“We are excited to welcome the Collaborative Pairs grantees to CZI’s Neurodegeneration Challenge Network and are hopeful that the discoveries these researchers make help us understand these devastating disorders,” said Cori Bargman, head of science at CZI. “With this collaborative network, we’re also thrilled to support early- and mid-career scientists who bring new approaches and insights to the neurodegeneration field.”

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