



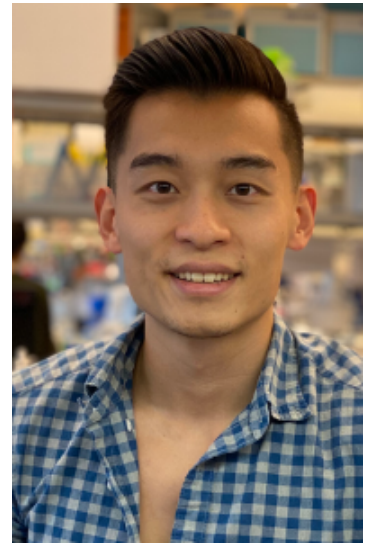
2021 Elsas Award Recognizes Three Outstanding Young Researchers

Three University of Miami Miller School of Medicine students were presented with the Elsas Award, which honors the work of the late Louis J. “Skip” Elsas, M.D., a geneticist who served as the first director of what is now the Dr. John T. Macdonald Foundation Department of Human Genetics.

The 2021 winners of the Elsas Awards span epigenetics, blood brain barrier proteins and tumor metabolism research. Their work has implications for treatment for certain types of breast cancer, HIV-related stroke risk, and brain tumors. Elsas Award winners each receive \$2,000 to support their work.

Yusheng Zhang, M.D./Ph.D. candidate in 2023

Yusheng (Eric) Zhang has devoted his research to epigenetics, the exploration of how cells interpret and apply their underlying genetic material.



Yusheng (Eric)
Zhang

“It’s a relatively under-explored field that has been gaining a lot of attention recently due to the huge implications it has on how we understand biology and investigate disease processes,” he said.

His research centered on how RING1B – a chromatin modifier important in stem cell biology and development – takes on novel functions in breast cancer to drive cancer growth. He found that RING1B interacts functionally with key oncogenic transcription factors to enable breast cancer cell growth in response to stimulatory signaling. This research may provide the groundwork for therapeutic targeting of RING1B.

“Eric did amazing work during his Ph.D. studies, and I could not be prouder of his accomplishments. He has a bright future ahead of him,” said his mentor, Lluís Morey, Ph.D., Assistant Professor of Genetics and head of the Morey Lab.

“I’m extremely grateful and happy to have been named an Elsas award winner,” Eric said. “This prestigious award shows me



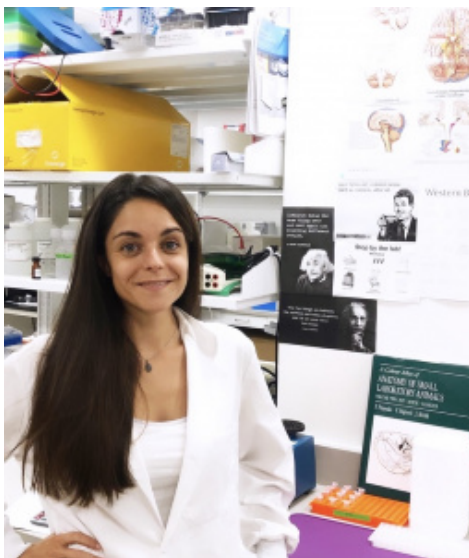
that my efforts and hard work are being recognized. It serves as a motivating factor for me to keep moving forward in my pursuit of becoming a leading physician scientist.”

Eric Is hoping to use the Elsas award funds to attend bioinformatics workshops to further his training in his field.

“Additionally, I’m hoping to attend conferences to present the results of my graduate studies,” he said.

Silvia Torices del Val, Ph.D., Postdoctoral scholar

Dr. Silvia Torices del Val joined the Toborek Laboratory at UM, working to understand how the HIV virus crosses the blood brain barrier in these patients, who are at increased risk of cerebral ischemia. Understanding the molecular mechanisms underlying how the BBB breaks down in this population, causing stroke, may change preventive care, influence medication decisions and change in-hospital treatment strategies for this population.



Silvia Torices del Val



“The ultimate goal of this research is to find drugs that prevent the virus from penetrating the BBB so stroke risk is lower,” said Dr. Michal Toborek, Professor and Vice Chair for Research in the Department of Biochemistry and Molecular Biology and Dr. Torices’ mentor. “Silvia discovered a novel mechanism by which HIV can infect the cells of the blood-brain barrier. The mechanism is based on previously unrecognized protein-protein interactions in pericytes.

“She is an outstanding and highly motivated scientist, he added. “She is very friendly to talk to and always helps other students. It is a great pleasure to mentor her.”

Dr. Torices’ aim is to make significant contributions to the scientific community that can ultimately translate into medical advances.

“As a researcher with a background in genetics and molecular biology, my goal is to become an independent investigator in neuroscience at an academic research institution,” she said. “This award will afford me the opportunity to strengthen my research skills and support my ambition to explore underlying causes of strokes at the genetic and molecular levels.”

Specifically, she plans to use her funds to share her research at several neuroscience conferences.

Frederic Vallejo, Third-year medical student

Inspired by his brother’s illness with Stage IV neuroblastoma in infancy, Frederic Vallejo is fighting to help others with brain tumors benefit from treatments that eradicate cancer cells with low peripheral toxicity.



Frederic Vallejo

Vallejo is a third-year medical student pursuing a dual M.D./M.Sc. He has worked in a neuro-oncology lab for the past six years, investigating therapies to target tumor metabolism, novel drug discovery and nanoparticle drug conjugation.

Much of this research has focused on a mitochondrial protein, UCP2, which plays a critical role in metabolic pathways, as well as apoptotic and immune modulation pathways. Vallejo has probed how this protein increases in cancer cells and may be largely responsible for their high demand for sugar.

Vallejo says this project has huge implications for adults and children not only with glioblastoma, which is known to be highly glycolytic, but theoretically for any brain tumor that would light up on a PET-scan. Ultimately, it could lead to a blood test that checks the status of someone's tumor by measuring the level of circulating UCP2. These levels may also drive therapy decisions by highlighting cancers that are best treated by drugs that curb sugar uptake.

"Receiving the Elsas Award is a pivotal step both in my career development and in longitudinal research project on neuro-oncologic tumor metabolism," he said. "This grant will provide



critical insight into the potential this protein may carry for brain tumor patients. Better surveillance would mean a potentially better way to monitor therapeutic response, disease progression, and best therapies for each unique individual.”

“Freddy is truly a rising star and is on track to become an outstanding physician-scientist,” said his mentor Dr. Regina Graham, research assistant professor in the Department of Neurological Surgery. “By focusing on the metabolic differences between cancer and non-cancer cells, he has identified a potential biomarker which could ultimately lead to cancer patient stratification for metabolically targeted therapies,”

Frederic plans to use the award funds on equipment that performs genetic assays to measure UCP2 levels in the blood.

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