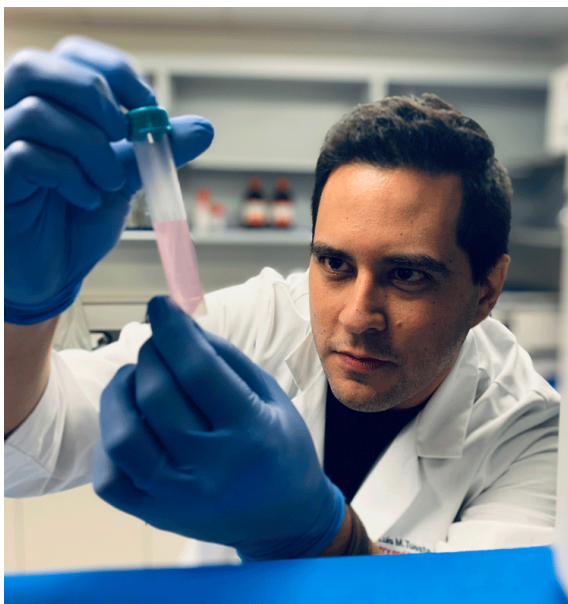


Miller School Researcher Wins NIH Avenir Award to Pursue Innovative Opioid Addiction Research

Luis M. Tuesta, Ph.D., assistant professor in the Department of Psychiatry and Behavioral Sciences at the University of Miami Miller School of Medicine, has been awarded the Avenir Award from the National Institute on Drug Abuse, part of the National Institutes of Health, to study the epigenetic mechanisms of microglial activation and their role in shaping the behavioral course of opioid use disorder. The goal is to find new therapeutic targets to prevent opioid relapse and achieve long-term abstinence.



Dr. Luis M. Tuesta

Dr. Tuesta and the Miller School will receive \$2.3 million over five years from the NIH. He is one of four researchers in the country to receive the award grant in 2020. Dr. Tuesta joined the University's medical faculty in 2019 following a postdoctoral fellowship at Harvard Medical School.

A Prestigious Grant

"This is one of the very best and most prestigious grants that a young researcher can receive," said Claes Wahlestedt, M.D., Ph.D., associate dean for therapeutic innovation at the Miller School. As a former chair of the NIH Avenir Award Committee, Dr. Wahlestedt recognizes the distinct honor of receiving this competitive award.

Dr. Tuesta explained his lab's novel approach to understanding opioid addiction.

"Throughout the history of addiction research, the neuron has usually played the protagonist role," he said. "We are now setting our sights on the brain's supporting cast of cells and how these can shape drug craving and relapse."

Namely, he and his lab are studying microglia, the resident immune cell of the brain.

"Opioids can hijack the very tools that microglia use for sounding the alarm in case of a physical, chemical or biological injury," Dr. Tuesta explained. "This artificial state of alarm can lead to neuroinflammation and shape the way we crave for opioids, ultimately leading to relapse. We believe epigenetic regulation in microglia plays a fundamental role in orchestrating this chain of events."

“Epigenetics” refers to factors that determine how genes are expressed without involving changes in the DNA sequence itself. Dr. Tuesta’s team will explore how microglial genes become “open and closed for business” across various phases of opioid addiction, and how specific epigenetic remodelers can contribute to this regulation.

Exploring New Therapeutic Avenues

Results from these studies have the potential not just to broaden our understanding of the epigenetic mechanisms underlying opioid use disorder, but also to push the field of addiction epigenetics beyond the neuron and explore a cell type that could yield exciting and completely different therapeutic avenues for the treatment of this devastating disease.

Ideally, a treatment drug would reverse changes in microglia brought on by opioids and curb the intense craving associated with opioid abstinence and withdrawal. Such an approach could help reduce the likelihood of relapse in recovering individuals.

“Ultimately, we want to manipulate the root of the craving with a drug to change the behavioral course of addiction,” Dr. Tuesta said.