Dr. Amelia Gallitano Aims to Improve Treatments for Mental Illnesses

College of Medicine ? Phoenix
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Amelia Gallitano, M.D., Ph.D \[1\], is a physician-scientist whose goal is to improve the treatment of mental illnesses.

It's a difficult task, considering there is no biological test to diagnose a mental illness such as schizophrenia or post-traumatic stress disorder.

"We've got a huge challenge in trying to find the causes of an illness that is poorly defined, that probably encompasses multiple illnesses that change over time and that is not diagnosable with any test," said Gallitano, associate professor of basic medical sciences, psychiatry and neuroscience at the College of Medicine ? Phoenix \[2\].

Part of the problem is that psychological illnesses are not caused by genetics alone, but by genetics and environmental factors, she said, adding that there is still no known cause for psychiatric illnesses.

Gallitano directs a laboratory that investigates a family of genes activated in the brain in response to environmental events.

"These genes are ideally poised to explain the risk for mental illness," said Gallitano, who was interviewed in an Arizona Public Media documentary \[3\] about mental illness and young people that aired in October.

In other words, dysfunction in these genes could give rise to risk.

In 2017, Gallitano received a grant from the Sidney R. Baer Jr. Foundation to develop a rapid, easily administered and inexpensive biologically based diagnostic test that could determine whether an individual has schizophrenia or a specific subtype. The two-year grant totals $175,000.

More recently, she received a two-year grant from the National Institutes of Health for $382,482 to identify the molecular and genetic mechanisms that underlie the therapeutic effects of electroconvulsive therapy.

As a scientist and physician, Gallitano said, her goal is to better understand the biology of mental illness: "By understanding the biology underlying the disorder, we have more opportunities to identify treatments and maybe even prevent the onset of mental illness."

A big portion of Gallitano's research focuses on the pathway of genes that are activated by environmental stimuli. Her hope is to come up with nonpharmaceutical therapies.

In 2017, she published a study showing that, in a particular gene pathway her laboratory has
described, the next gene in the lineup will also play a role in mental illness. "This gene appears to be playing a key role in mediating the risk for schizophrenia and other mental illnesses."

In the study, Gallitano collaborated with Nicholas Breitborde, Ph.D., who founded the Early Psychosis Intervention Center, part of Banner ? University Medicine, in Tucson. Breitborde studied cognitive remediation therapy, in which an individual exercises cognitive skill using brain-training techniques and computer-based exercises that stimulate the cognitive processes.

"Those stimuli were acting in part through the genes I study," Gallitano said. "This study can allow us to identify people in advance that would do well with this type of therapy, but someone else may need more intensive treatment. There are certain types of medication that can boost the function of this genetic pathway, which can help us create a more personalized treatment."

Gallitano discovered her passion for science and medicine in high school. "When I was a junior in high school, I took an AP (Advanced Placement) biology class and was fascinated by a project I did," she said. "We read an article about dreaming, and how there is a connection between your physical body and your mind. I thought this was the coolest thing ever, that your biological state is influencing the contents of your thoughts."

She completed her undergraduate degree at the University of Chicago, then took a year off to conduct research at McLean Hospital in Belmont, Massachusetts. She then completed a combined M.D./Ph.D. program at the University of Pennsylvania.

Gallitano completed her residency in psychiatry at Columbia University and then went to Washington University in St. Louis to do postdoctoral work. Her path eventually brought her to the College of Medicine ? Phoenix.

Outside of her lab, Gallitano volunteers as a psychiatrist every other week for the Phoenix VA Health Care System's PTSD clinic. She's volunteered with the agency since 2008.

"It is a refreshing change because when I go there, I get completely absorbed in it," she said. "The rewards I receive from research are long-term and very slow, so it's nice to have a rapid impact in someone's life."

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