



# PUERTO RICO Daily Sun



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UPR professor working  
on national OCD study  
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## UPR collaborating on national OCD study

BY THE DAILY SUN STAFF AND WIRE SERVICES

**D**r. Gregory Quirk, head of the University of Puerto Rico's Fear Learning Laboratory, is among seven key collaborators participating in a five-year, joint effort by six institutions throughout the nation to focus on how deep brain stimulation affects people with obsessive compulsive disorder.

The scientists will be working exploring deep brain stimulation as a potential new treatment for OCD at the new Silvio O. Conte research center established by the University of Rochester Medical School, thanks to a \$10.5 million award from the National Institute of Mental Health. The research center will link the work of more than 50 researchers into the field.

The research project is one of the largest ever undertaken in the search for further understanding and treatment of OCD, an anxiety disorder that affects more than 2 million Americans. While most patients who have OCD find relief either through medication or through behavioral therapy, the disease is life-altering for the approximately 10 percent of patients who don't find relief through any of today's treatments.

Dr. Suzanne Haber — professor of pharmacology and physiology at University of Rochester's Medical School and recognized world leader in the field of deep brain stimulation — is spearheading the effort.

Key collaborators in addition to Haber and Quirk include:

■ Barry Connors, Ph. D., professor and chair of the Department of Neuroscience at Brown University

■ Darin Dougherty M.D., associate professor of psychiatry at Harvard Medical School and director of the Neurotherapeutics Division at Massachusetts General Hospital

■ Emad Eskandar, M.D. associate professor in Surgery at Harvard Medical School and director of Stereotactic and Functional Neurosurgery at Massachusetts General Hospital

■ Anthony Grace, Ph. D., professor of neuroscience, psychiatry, and psychology at the University of Pittsburgh

■ Benjamin Greenberg, M.D., Ph.D., associate professor of psychiatry and human behavior at the Warren Alpert Medical School of Brown University and chief of outpatient services at Butler Hospital

"Obsessive-compulsive disorder is a truly debilitating disease for some patients," Haber said. "While treatment helps most patients lead fulfilling lives, there are a few for whom today's therapies simply don't work. Our center is designed to explore the science and the effects of deep-brain stimulation, which has been effective for some other diseases involving the brain, such as Parkinson's disease."

Previous research conducted by Haber's group on OCD has helped physicians improve deep brain stimulation surgery and lessen its side effects for OCD patients. The latest grant marks a major expansion of the



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previous project, which included many of the same scientists around the country.

The group will look at precisely what happens in the brain when deep brain stimulation occurs and will look for ways to improve the procedure for patients. While deep brain stimulation is an approved treatment for movement disorders such as Parkinson's disease, it's under study for possible use in psychiatric disorders like depression and OCD. The technique is approved by the U.S. Food and Drug Administration for humanitarian use for patients with OCD, but scientists and physicians want to understand the effects of the technique in OCD patients more fully.

### Altering the signals

In OCD patients, surgeons use the technique to alter the signaling in bundles of nerve fibers that connect different regions of the brain much like large super-highways connect large cities. Deep brain stimulation is the equivalent of an intervention to change the flow of "traffic" or information in the brain in an effort to relieve a patient's symptoms.

Learning how to position DBS electrodes precisely to improve the lives of patients with OCD is one aim of the new project.

In addition to Haber's laboratory, which specializes in the anatomy and circuitry of the brain, the team includes experts on OCD, DBS, and the physiology that underlies certain behaviors such as weighing the risks and rewards of actions. The team will study how a person's behavior changes as a result of the technique and will track exactly which parts of the brain are involved in the process.

The center includes a team of physicians

caught in repeated, unwanted and unnecessary behaviors or rituals. An example is a person who becomes so preoccupied with germs that he or she is unable to live a normal life. The person might be unwilling to leave the home or to meet new people, for instance, and holding down a job might be impossible. Or they might be unable to focus during their work day, instead constantly making plans for their next trip to the restroom for a hand-washing ritual that takes place dozens or hundreds of times a day. Other common themes among patients include repetitive, troublesome thoughts involving sexual activity, or an obsession with numbers.

In many ways, Haber says, OCD comes down to a problem with the way the brain balances risk and reward. Among healthy people, some are more prone to take risks, perhaps pushing the gas pedal a little too hard in search of a rush on the highway. Others might be afraid to touch family members or visit the grocery store lest they catch swine flu. Most people are somewhere in between. For every such decision we make, a bevy of brain circuits is hard at work behind the scenes, weighing risks and rewards and sending countless electrical impulses rushing around the brain. Is the risk worth the potential reward?

### Fixated on the risk

"But in patients with obsessive-compulsive disorder, patients somehow become fixated on the risk, and their lives can literally grind to a halt. Their lives become dominated by fear," Haber said.

The new project may do more than improve the lives of people with OCD. The same risk vs. reward system is at the center of conditions such as post-traumatic stress disorder and drug addiction. And the deep brain stimulation procedure itself offers scientists a rare opportunity to closely monitor a person's brain as it's affected by carefully measured, monitored electrical signals. Scientists will use the occasion to learn more about how the brain works, information that will aid the body of knowledge that forms the basis for the treatment of several diseases that affect the brain.

"We are fortunate to have this group of patients and to be able to study them so closely," Haber said. "It's a great example of how a new treatment opens up new research horizons, through which we can then make new discoveries that further improve patient care."

The project also provides funds for undergraduate students, medical residents, graduate students and post-doctoral researchers from the institutions to work on the project, visit laboratories at other institutions and meet twice each summer to swap findings and experiences. Such activity is crucial for keeping young students interested in careers in science and medicine.

The Conte center is named after a former congressman from Massachusetts who championed neuroscience research and the care of the severely mentally ill.



Courtesy

Dr. Gregory Quirk, head of the University of Puerto Rico's Fear Learning Laboratory.

based at Butler Hospital in Providence who are leading a separate study on the effectiveness of deep brain stimulation in OCD patients. In tests so far the procedure seems to help more than half the patients who receive the treatment, a hopeful find in a group in whom no therapy has worked thus far.

OCD is an anxiety disorder where a person can become plagued by unwanted, constant thoughts and consequently becomes