

PRESS RELEASE

Florida State Researcher among First to Get Federal Stimulus Funding

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By Doug Carlson

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*Mohamed Kabbaj, Ph.D.*

A Florida State University College of Medicine researcher is among the first scientists in the country to directly benefit from the American Recovery and Reinvestment Act of 2009 - the stimulus bill. The National Institutes of Health, using new funds provided through the stimulus bill, has awarded Mohamed Kabbaj \$400,000 for a two-year study aiming to answer critical elements of a core question related to depression: What are the molecular mechanisms implicated in chronic stress-induced depression? Kabbaj, an associate professor of biomedical sciences at the College of Medicine, is working to establish biological bases of emotion and stress responsiveness at the genetic and other levels and to identify how those levels are affected by environmental factors. The research could lead to a greater understanding of clinical depression, which affects 340 million people at any one time, according to the World Health Organization. "We believe that by studying the patterns of gene expression in the context of known brain circuits that appear to be associated with particular behavioral tendencies, we will begin to point to some key variables that are relevant to human anxiety disorders and major depressive disorders," Kabbaj said. In order to study the patterns of gene expression and establish important markers relevant to human depression, Kabbaj measures emotional responsiveness and reaction to stress in rats. The mechanism to induce stress is social defeat, created by introducing subordinate male rats to the environment of an aggressive, dominant male rat. Repeated exposure creates chronic social defeat in the subordinate male, which has been found to induce long-term behavioral changes similar to depression. Chronically defeated rats show reduced interest in pleasurable stimuli, reduced exploration and reduced mobility in swim tests. These tendencies are indicators of behavioral despair and a deficit in motivation and collectively provide an appropriate model for depressive disorders. At the molecular level, Kabbaj has shown that these behavioral tendencies are associated with changes in a subset of genes controlled by specific biochemical factors and their DNA sequence. His work has demonstrated that chronic social defeat induced changes to proteins that wrap around DNA and caused long-term alterations in the expression of some genes thought to be relevant to depression. Eventually his work could lead to a greater understanding of the molecular mechanism of depression and a better understanding of how antidepressant drugs work, leading to more precise and effective treatments for people suffering from depression. The NIH grant also will allow Kabbaj to hire a technician and a research associate for work in his laboratory at the College of Medicine.