FAU Receives $1.2 Million from Florida Department of Health to Develop New Stroke Treatment

Article ID: 649786

Released: 15-Mar-2016 8:25 AM EDT

Source Newsroom: Florida Atlantic University

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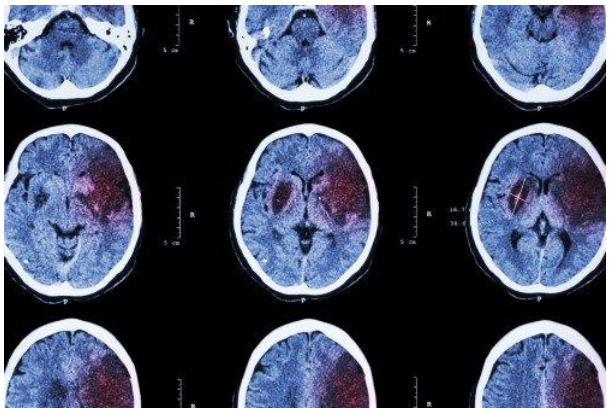
Credit: Florida Atlantic University

Jang Yen (John) Wu, Ph.D., principal investigator and a senior Schmidt fellow and distinguished professor of biomedical science in the Charles E. Schmidt College of Medicine at FAU.

- 

In a new stroke study, researchers will preserve and restore brain function by protecting the brain against stroke induced injury. They also will stimulate neurogenesis to replenish new brain cells using granulocyte colony-stimulating factor (GCSF), an FDA-approved drug used to enhance blood cellular development.

Newswise — A biomedical scientist in the Charles E. Schmidt College of Medicine at Florida Atlantic University has received a $1.2 million grant from the James and Esther King Biomedical Research Program, Florida Department of Health, to develop a new and innovative approach to treat stroke.

Jang Yen (John) Wu, Ph.D., principal investigator and a senior Schmidt fellow and distinguished professor of biomedical science in FAU's College of Medicine, will use a two-pronged approach to treat stroke in the study. He will preserve and restore brain function by protecting the brain against stroke induced injury, and also will stimulate neurogenesis to replenish new brain cells using granulocyte colony-stimulating factor (GCSF), an FDA-approved drug used to enhance blood cellular development. "Many drugs that are designed for stroke intervention and treatment are based on their anti-oxidative properties or blockers of calcium channels or glutamate receptors," said Wu. "However, no clinically effective therapeutic intervention for stroke has yet been developed. Furthermore, no non-invasive in vivo procedure is available for monitoring the progression of the treatment for stroke."

Wu and his collaborators will use gene therapy and a unique non-invasive MRI monitoring system they developed to observe the delivery and expression of GCSF, as well as the progression of ischemic strokes using rodent models of the disease.

"Targeted MRI is highly sensitive and specific when it is coupled with nanoparticles containing specific oligonucleotide probes and can be used to track neural progenitor cells in vivo after gene therapy or stem cell therapy in preclinical and perhaps even clinical disease models," said Wu. "Using targeted MRI we will be able to evaluate the expression of trans genes and brain repair non-invasively within a living organism."

Wu anticipates that as a neuroprotectant GCSF can potentially be a powerful growth factor because it is able to preserve the central nervous system using several overlapping mechanisms that not only activate cell survival pathways together with suppression of cell death/apoptotic pathways, but also elicit neurogenesis and angiogenesis.

The Centers for Disease Control and Prevention estimates that stroke kills almost 130,000 Americans each year, and on average one American dies from a stroke every four minutes. Approximately 87 percent of all strokes are ischemic strokes, when blood flow to the brain is blocked. Stroke is the leading cause of serious long-term disability and costs the U.S. an estimated $34 billion each year for healthcare services, medications, and missed days of work.

"The short- and long-term impacts of having a stroke can be devastating for the individual as well as his or her family," said Arthur J. Ross, III, M.D., M.B.A., interim dean and professor in FAU's College of Medicine. "We are extremely proud of Dr. Wu's research and we are very grateful for receiving this grant from the James and Esther King Biomedical Research Program. With this grant, Dr. Wu will be able to develop a novel way to potentially prevent and treat strokes not only for Florida residents but world-wide."

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