Cerebral Palsy: Wayne State University Giving Hope In a Small (Nano) Way

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Scientists in Wayne State’s College of Engineering and School of Medicine are creating a novel drug-carrying nanodevice for the treatment of cerebral palsy and other neuroinflammatory diseases.
Wayne State University giving hope in a *small (nano)* way

A wide variety of neurological diseases are very difficult to treat due to lack of technology able to target the affected regions in the central nervous system. “We believe that our novel drug-carrying nanodevice will offer solutions for treatment of such conditions by delivering drugs to the specific target,” Dr. R. Kannan added.

Dr. Sujatha Kannan has established an animal model of inflammation that results in a phenotype of cerebral palsy. She, in collaboration with Dr. Diane Chugani, professor of pediatrics and radiology in the School of Medicine, and the Positron Emission Tomography Center, has shown that the presence of neuroinflammation can be detected at a very early stage using noninvasive imaging by Positron Emission Tomography. Clinical translational studies for the detection of neuroinflammation in at-risk newborns are ongoing.

“The PRB has established a unit to develop applications of nanotechnology in perinatal medicine under the leadership of Dr. R. Kannan because we are convinced that this approach will enhance early diagnosis of inflammation *in utero* as well as treatment,” commented Dr. Romero.

“Dr. Sujatha Kannan and Dr. R. Kannan have explored potential mechanisms to prevent and treat inflammation-induced cerebral palsy. Application to humans requires new methods for diagnosis and drug delivery into the amniotic cavity. Such goals could be accomplished using nanotechnology and, hence, the partnership between Dr. Kannan and the Perinatology Research Branch,” Dr. Romero added. The PRB nanotechnology lab now has six postdoctoral researchers and two graduate students with broad research expertise ranging from chemistry, engineering, neuroscience, pharmacology, cell biology, animal model development and imaging.

This novel and high-risk research was initially funded by the Ralph Wilson Medical Research Foundation, which provides money for cutting-edge research in the hope that a breakthrough will be made to find a cure for devastating conditions such as cerebral palsy. Rapid advancements in maternal-fetal medicine have been enabled by the support from the PRB. Through the technology being developed by the Kannan and PRB team, there soon may be a more effective and safe treatment method for treating the fetus/newborn for cerebral palsy and a variety of neurodegenerative conditions that are difficult to treat.

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