

# Brain Malformations in Children: Their Mechanisms and Treatments



Gabriella D'Arcangelo

Associate Professor, Cell Biology and Neuroscience

## CURRENT RESEARCH

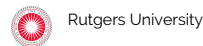
Elucidating the mechanisms that go awry during brain development will help improve therapy for developmental brain disorders

Cortical dysplasia is a group of brain malformations that ensue during the developmental process, causing cognitive disorders and drug-resistant epilepsy in children. This group of disorders includes overgrowth of the entire brain (megalencephaly), one hemisphere (hemimegalencephaly) or localized malformations (focal cortical dysplasia and tuberous sclerosis complex). In cortical dysplasia, some brain cells become excessively large and misshapen, disrupting the anatomical organization and the functional circuitry of the cerebral cortex. Due to a lack of available medicines, children diagnosed with cortical dysplasia often go through surgery to have parts of their brain or an entire hemisphere removed in an attempt to stop the seizures. However, this type of intervention is not always effective, and it is traumatic for the parents and has undesirable side effects for the children. Dr. Gabriella D'Arcangelo, Associate Professor of Cell Biology and Neuroscience at Rutgers University, studies the molecular mechanisms controlling brain development and works to leverage this knowledge to improve the treatment of children affected by developmental brain disorders. By identifying drug targets and specific pathways, Dr. D'Arcangelo hopes to develop pharmaceutical options that will reduce the need for brain surgery.

Through the work of her group and others, researchers now understand that these brain malformations result from the excessive activity of a set of proteins that function together in a signaling cascade. Central to this signaling cascade are the proteins Akt and mTOR, which are well-known to promote cell growth. These proteins are also active in many types of cancers, and FDA-approved drugs that suppress...

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## AFFILIATION



## EDUCATION

- Ph.D. in Neurobiology and Behavior 1993, S.U.N.Y at Stony Brook
- B.S. in Biological Sciences 1986, University of Bari, Italy

## AWARDS

- R21 award "Identification of TSC cellular phenotypes using patient-derived iPSCs", 2014
- Research award, 2014
- Exploration-Hypothesis Development Award, 2012
- Julie's Hope Challenge Award, 2007
- The Rhode Island Award, 2005
- and 2 more...

## RESEARCH AREAS

Life Science, Genomics / Congenital, Neurological / Cognitive

## FUNDING REQUEST

Your contributions will support Dr. Gabriella D'Arcangelo of Rutgers University as she elucidates molecular mechanisms controlling brain development and works to improve the treatment of children affected by developmental brain disorders. Donations will help fund the approximate \$400,000/year required to support personnel, animals, and reagents. With your generosity, Dr. D'Arcangelo will be able to make great strides in making medicine available for children suffering from cortical dysplasia and epilepsy.