

Modeling Brain Development and Diseases



Alysson Muotri

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CURRENT RESEARCH

Discovering the history behind modern human evolution by growing "mini brains"

Dr. Alysson Muotri, Associate Professor in the Departments of Pediatrics and Cellular & Molecular Medicine at the University of California, San Diego, is focusing his research on solving one of life's greatest mysteries: What is it that makes us uniquely human? Research tells us that one of the most influential characteristics of modern humans is our sophisticated brains, and all of the abilities that its complexity grants us. Our unique social brains are one of the key distinguishing factors between humans and other primates. We are even very different from our closest relatives, the Neanderthals, whose brains were limited in their ability to create technology, art, imagination and overall culture. Dr. Muotri is studying the brain from an evolutionary and developmental perspective, differentiating stem cells to recreate "mini brains" in the controlled setting of a lab.

This work has implications for the generation of human disease models by determining the molecular and cellular mechanisms driving neurological complex disorders, such as autism. It is also creating opportunities for identifying and testing novel therapeutic approaches; the nature of this work reduces the amount of time required for moving new drugs to clinical trials. Gaining a clearer understanding of human brain evolution is crucial for interpreting human genetic variants which lead to disease. Some of the evolutionary properties that make us uniquely human and allow us to live the advanced lifestyle we enjoy are also a root cause for a number of disorders. Our brain grants us far greater processing power than any other species, but a complex brain came with a cost: it increases the opportunity for neurological diseases. Thus,...

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AFFILIATION

 University of California, San Diego

EDUCATION

- Ph.D., in Genetics 2001, University of São Paulo, Brazil
- B.Sc., in Biological Sciences 1995, State University of Campinas, Brazil

AWARDS

- Surugadai Award (Tokyo University, Japan), 2014
- UCSD/FMP Outstanding Mentor Award, 2014
- NARSAD Independent Investigator Award, 2014
- EUREKA NIMH Award, 2013
- Winner of Pride Autism Brazil, 2013
- and 7 more...

RESEARCH AREAS

Life Science, Genomics / Congenital, Neurological / Cognitive, Regenerative Medicine

FUNDING REQUEST

Your contributions will allow Dr. Muotri to recruit the highly motivated personnel that make his research possible, as well as purchase necessary supplies and equipment. Disease modeling in mini brains has already revealed new drugs to treat autism which are now on the verge of entering clinical trials. Funding will be instrumental in supporting these trials. Creating Neanderthal neurons has never been attempted before and will lead to a new perspective of the human brain.