

The Mitochondrial Nexus Behind Chronic Illness



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CURRENT RESEARCH

Debilitating Conditions May Have a Common Cause


The Naviaux Lab, led by Dr. Robert Naviaux of University of California San Diego (UCSD) School of Medicine, was founded in 1996 to help children and adults with mitochondrial disease. Mitochondrial disease was once considered a specific group of genetic illnesses that affect less than 50,000 adults and children in the United States. We now know that mitochondria are essential for the healing process itself, and virtually all chronic complex diseases are associated with a novel kind of mitochondrial dysfunction that blocks healing and recovery.

Thanks to metabolomics (the precise measurement of the chemicals in our blood that our cells use to communicate with each other), we know that diseases like diabetes, heart disease, Parkinson, Alzheimer, mental health disorders like bipolar disorder, major depression, and post-traumatic stress disorder (PTSD), autoimmune diseases like lupus and multiple sclerosis (MS), and childhood disorders like autism, ADHD, asthma, and many more all have a kind of mitochondrial dysfunction that blocks the cellular steps needed for healing.

Mitochondria in the body serve two primary purposes. The first is to serve as a powerhouse. The second is to defend the body against environmental threats (viruses, pathogens, toxins, etc.). When mitochondria are in threat mode, they go through three phases before they return to their powerhouse state. In the first stage of the cell danger response (CDR1), cells contain threats and provide damage control. In CDR2, damaged cells are replaced. In CDR3, cells are re-educated and re-integrated in a kind of 'cellular bootcamp' to re-establish normal organ function. Completion of all three stages of the CDR is needed for wound healing...

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AFFILIATION

 University of California, San Diego

EDUCATION

- MD/PhD; Indiana University School of Medicine

AWARDS

- Hailey's Wish Foundation, 2008
- Thomson ESI, 2007
- Best Abstract Award, 2007
- Honored in a Non-Fiction Book

RESEARCH AREAS

Health & Wellness, Wellness, Aging Research

FUNDING REQUEST

The Naviaux Lab is currently seeking \$800,000 a year. This is the amount needed to cover the salary and benefits for six MD and PhD research scientists (\$600,000), as well as \$200,000 for metabolomics research equipment, associated supplies, bioinformatic analysis and computational modeling.