The UCSD Christini Fund 2018

20th Anniversary Celebration

Twenty Years of Discovery and Service

1999-2018: The UCSD Christini Fund at Work

Metabolomics

Pioneering a new technology to help scientists crack the code of mitochondrial dysfunction and complex disease.

The UCSD Christini Fund Committee

Here are just a few of the incredible team that has worked so hard to make each year a special event, both for science, and for everyone who is able to come out and share the day.

Pranathi Rao—Summer Research Intern 2018

Pranathi is an honors engineering student who studied food and water safety, environmental pesticides, and toxicomics.

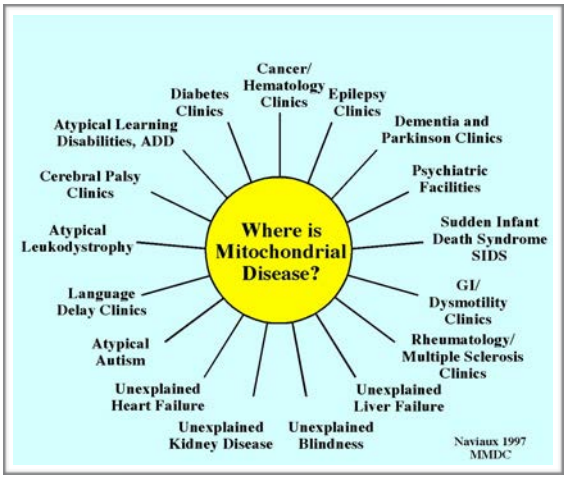
Inspiring Progress in Mitochondrial Medicine

Caylee and Christine Shimizu in 1998

The Naviaux Lab 2017

Christine with Dr. Naviaux in 1997

Dr. William Nyhan and Dr. Richard Haas; Dr. Naviaux's mentors, longtime friends, and colleagues



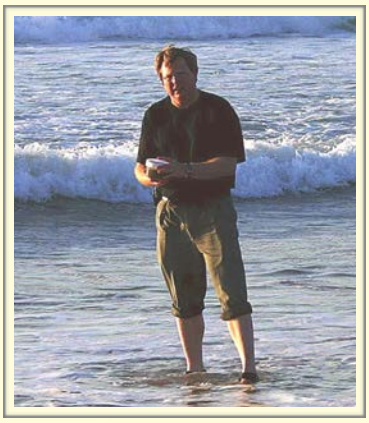
More than Just a Childhood Disease

In 1994-1997, most doctors had never heard of mitochondrial disease, and those who had believed it only caused rare childhood diseases like Leigh or Alpers syndrome.

Back in those early days, Dr. Naviaux drew up the diagram on the left, illustrating how mitochondrial dysfunction can play a role in many common disorders as well, from diabetes, to cancer, from autism to chronic pain syndromes, and to autoimmune diseases. The exciting new field of mitochondrial medicine is changing how doctors think about both the cause and treatment many of the toughest diseases known.

MMDC
UCSD

Mitochondria in Autism, Chronic Fatigue Syndrome, PTSD, Brain Injury, Cancer, Autoimmunity, Aging, and the Engines that Drive Healing.



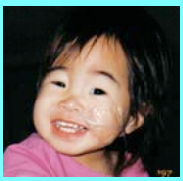
Over the past 10 years, great excitement has developed among scientists regarding the link between mitochondria, autism, diabetes, PTSD, autoimmune disease, cancer, aging, and healing. Mitochondrial function is changed in each of these diseases. Dr. Naviaux's discoveries have led to a a new potential treatment for autism. The research supported by the Christini Fund is helping doctors think in fresh new ways about the connections between human health and disease, and the the health of our water and food chain, and the environment.

Scientific Exploration can lead scientists in unexpected directions. Sometimes to cure a childhood disease, we need to look to the sea, or the rain forests. The answers are waiting for us to discover in threads that connect us to all life on Earth. Dr. Naviaux's team at UCSD has a track record of innovation and discovery that has meant real progress for children with mitochondrial disease for over 20 years. If you are interested in learning more about the research at the MMDC, please go to www.christini.org, naviauxlab.ucsd.edu, or contact UCSD Health Sciences Development, at 858-246-1230, or by email: nbelt@ucsd.edu.

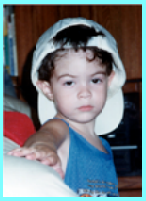
For more info, go to: www.christini.org

Accomplishments

The UCSD Christini Fund
Twenty Years of Discovery and Service
1999-2018



1999--Discovery of the cause of Alpers Syndrome, the oldest known mitochondrial disease, first described in 1931.
2000--Discovery of the first mitochondrial DNA mutation associated with autism (G8363A).
2000--Discovery that triacetyluridine (TAU) is a promising new treatment for mitochondrial diseases.
2001--Awarded the inaugural Kelsey Wright Award for a paper describing the "coding problem" in mitochondrial disease diagnosis.
2002--Discovery of the risks of neurological setbacks with common infections in Leigh syndrome and other mitochondrial diseases.



2002--Organized the first international meetings to develop laboratory diagnostic standards for mitochondrial disease
2003--Discovery of the "new water MRI": technique for metabolic imaging of mitochondrial function.
2003--Worked with the UMDF and held meetings to develop a national registry of patients with mitochondrial disease.
2003--Worked to create the early stages of a North American Mitochondrial Disease Consortium (NAMDC) of 10 centers in the US and Canada.
2004--Publication of the first comprehensive reference text for doctors and scientist on "Mitochondrial Medicine" in *Mitochondrion*, 450 pages.

2005--Helped develop the biocavity laser for rapid diagnosis of mitochondrial disease and cancer.
2005--Discovery that the DNA from millions of species was present on ocean beach sand.
2007--Developed a method to measure mitochondrial DNA mutations by mass spectrometry.
2008--Discovered that extracellular ATP (eATP) could inhibit cancer cell DNA instability and mutations.
2008--Discovered that eATP might be a danger signal that produced the symptoms of autism in some children.
2008--Published one of the first papers describing how mitochondria controlled epigenetics.
2010--Organized the first special conference with the UMDF on the topic of mitochondria and autism.
2012--Discovered that "oxidative shielding" was more common than "oxidative stress".

2013--Discovery of a new class of medicines called "antipurinergic drugs" that hold promise for the treatment of autism, chronic fatigue syndrome, and primary mitochondrial disease.
2014--Discovered and characterized the metabolic features of the cell danger response.
2016--Discovered that chronic fatigue syndrome is an energy conservation program similar to dauer.
2017--Published the results of the first clinical trial of suramin to treat the core symptoms of autism.
2018--Discovered a new model for understanding the cause of hundreds of common chronic diseases.
2018--Published how mitochondria are the engines that drive the healing cycle.
1999-2018--Researchers at the MMDC have published over 100 scientific papers and helped to organize over 25 international medical and scientific meetings. These were made possible by support from the Christini Fund.

Scientific Discovery

...Give a Child Hope and Smiles

Medical Education

The UCSD Christini Fund--20 Years of Service

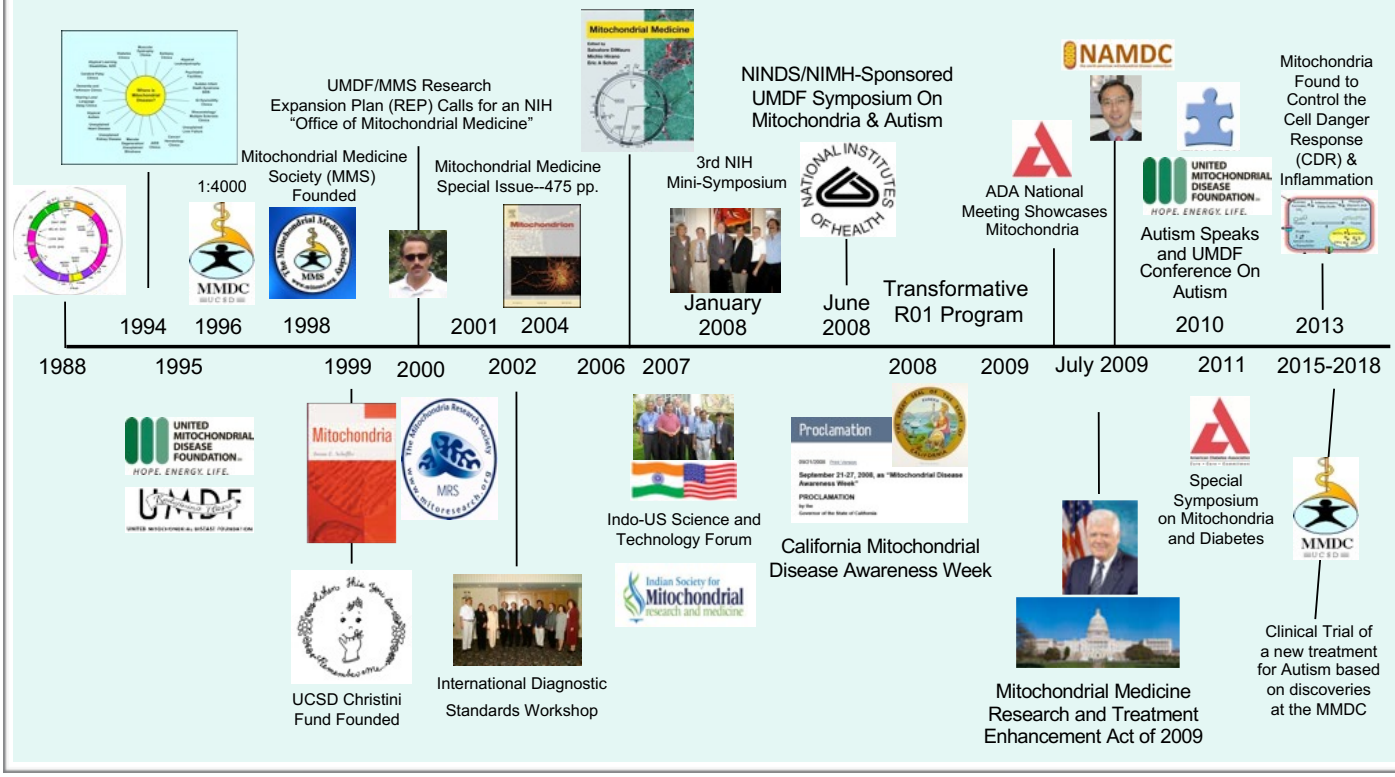
We have been overwhelmed with the generosity of the people of San Diego who have come out each year to help support research for mitochondrial disease. The panel above lists just a few of the accomplishments that have been made in the past 20 years. These have ranged from a new gene test that has become the gold standard for diagnosing Alpers syndrome, to the discovery of a new class of medicines to treat mitochondrial dysfunction in autism and several other neurological disorders. Physician education has been a major goal in the first decade, to help doctors learn to recognize mitochondrial disease. In 1994, the average child with mitochondrial disease was seen by an average of 12 different doctors before they were referred for expert care at the MMDC. By 2004, after some 10 international medical meetings organized by Dr. Naviaux and his colleagues, a child with mitochondrial disease was seen by just 2-3 other doctors before it was recognized the child might have a mitochondrial disease.

Mrs. Debbie Shimizu, Founder

The Beginnings of a New Medical Discipline

Mitochondrial Medicine

The First 30 Years,1988-2018



The UCSD Christini Fund

Christine Shimizu lived only to her 2nd birthday, but her memory lives on today, bringing hope and smiles to children around the world. Her life stands today, as it did 20 years ago, as a lighthouse and guiding light, leading the way to hope and a better life for children and families touched by mitochondrial disease.

Footprints on the Moon and Mitochondria

In 1969, Neil Armstrong left this footprint on the moon. This iconic image bears a striking resemblance to a mitochondrion. It is fitting that the greatest scientific exploration effort ever launched--the landing of a man on the moon--has left us with a reminder to inspire us to explore the next frontier in medicine; the mitochondria in our cells. Mitochondria are the future of medicine. They help us to move and think, to love and play. Your support has helped us to make a difference.

Thank You!