



10 August 2007

Ms. Mary Demory
Office of Rare Diseases
National Institutes of Health
6100 Executive Boulevard, 3B-01
Bethesda, Maryland 20892-7518

Dear Ms. Demory,

Mitochondrial Medicine 2007: Riding the Wave of the Future was a great success, thanks in part to support from the Office of Rare Diseases. Enclosed please find the grant closeout report materials you requested.

We are very excited about what the conference accomplished this year and the promise that the 2008 conference holds. If you have any questions or need further information, you can reach me at 412-793-8077 x108 or by email at Stephanie@umdf.org. Thank you once again for your support of the 2007 symposium.

Sincerely,

Stephanie Ritenbaugh
Development Assistant

Plans to publicize the conference results

Videos of select family presentations and audio recordings of most scientific sessions are available at www.umdf.org, where the Office of Rare Diseases is credited as a supporter. The syllabi for both the family and scientific sessions also will be posted on line.

Proposed or effected research activities for rare diseases resulting from the meeting

One aspect of the symposium is highlighting ongoing research through an awards ceremony. This year, UMDF recognized 11 medical researchers who collectively will receive a total of \$1.15 million in research grants from UMDF in the 2007-2008 fiscal year. A list of grant recipients and description of their projects is attached.

The symposium brought together basic scientists, clinicians and families of affected individuals in a venue where each could learn about and discuss research into mitochondrial diseases, clinical therapies and their impact on patients. This setting provides an excellent opportunity for scientists and medical professionals to network and brainstorm ideas. Additionally, the conference is a chance for affected families to meet with others who also struggle with the challenges of mitochondrial disease, as well as scientists and physicians from around the world who work with these disorders. As a result, we expect many new collaborations have been fostered at the meeting between scientists and clinicians to address causes and therapies of mitochondrial diseases.

A perfect example of this is a collaborative project to create diagnosis standards when analyzing samples from patients suspected of having mitochondrial disease. The project will bring together researchers from several institutions, including Moscow State University, the Cleveland Center for Mitochondrial Diseases, the Center for Inherited Disorders of Energy Metabolism, the Cleveland Clinic Foundation and University Hospitals Case Medical Center.

Due to the need for fresh material in these determinations, the preparations are used only on a local basis. The current yearly expenditure for this exceeds \$25,000 and needs to be approved through the Clinical Laboratory Information Act in Ohio.

Moscow State University researcher Andrei Vinogradov, Ph.D. has been using a freeze-dried preparation derived from beef heart mitochondria. These preparations can be used as a quality control sample for oxidative studies in laboratories across the globe and provide an opportunity to evaluate patient data from various laboratories. This collaboration will be a tremendous boost to simplify sharing information and establishing consistency in diagnostic data.

Summary of *Mitochondrial Medicine 2007*

The 2007 UMDF Symposium in San Diego covered a broad spectrum of topics in formats that included both detailed reviews of current knowledge by invited faculty and cutting edge research on mitochondrial function and disease presented by investigators from around the world.

Day One – Mitochondrial Mechanisms and Disease

Topics covered included the role of mitochondrial DNA variation in age-related diseases, a mitochondrial toxin model of Parkinson's disease and molecular mechanisms of Barth syndrome. Detailed explanations of the roles of oxidative stress and ischemia in mitochondrial neuropathies and myopathies were also presented. A noteworthy research presentation was Volkmar Weissig's "Internalization of Isolated Mitochondria by Mammalian Cells," in which he demonstrated that mitochondrial uptake can restore respiration in human cells lacking functional mitochondria.

Day Two – Role of Mitochondria in Diseases of Aging

Insights into the importance of pro-oxidant signaling to metabolism in mitochondria and other cell organelles and also the multi-faceted contribution of mitochondrial polymerase gamma to various diseases were highlights of the invited talks. Wolfgang Sperl's research presentation on "The Relevance of Functional Investigations of Intact Mitochondria in the Diagnosis of Mitochondrial Disorders," held out the possibility of developing diagnostic tests more sensitive in recognizing mitochondria-based metabolic defects than are currently available.

Day Three – Current Options for Treatment of Mitochondrial Disease

The many obstacles to receiving approval for clinical trials of promising drugs for treatment of rare diseases were addressed by one of the faculty, while another surveyed the potential for drugs to increase respiratory function in animal models of mitochondrial disease. Jennifer Barber-Singh's research presentation "Protective Role of ND11 in a Mouse Parkinson's Model" examined the utility of an animal model for assessing the ability of gene therapy to protect against mitochondrial complex I defects in Parkinson's disease.

Day Four – Future Treatment Prospects

The emphasis was on increasing the accuracy of mitochondrial disease diagnosis and of assessment of treatment efficacy through the use of technologies such as computerized or polarographic analyses and high-resolution respirometry. Another presentation detailed the roles of muscle mitochondrial function in type-2 diabetes and chronic obstructive pulmonary disease. Sarah Calvo's research presentation "Systematic Identification of Human Mitochondrial Disease Genes Through Integrative Genomics," disclosed an especially promising means of discovering currently unknown genes that contribute to mitochondrial genes.