

Targeting Diabetes Through Mitochondria



Kumar Sharma
Professor of Medicine, Department of Medicine

CURRENT RESEARCH

Understanding how mitochondria respond to high-glucose to understand diabetes and diabetic complications

Diabetes is essentially taking over the world; what started out as a disease only affecting insulin production in children is now becoming a tremendous global health concern due to the abundance of sugar, fat and excess food coupled with lowering levels of physical activity. It is a major cause of blindness, limb amputations, heart disease and of course, is the number one cause of kidney failure. As it is becoming more prevalent in Latin America and Asia, the number of patients with complications has skyrocketed in just the past decade. Dr. Kumar Sharma, Professor of Medicine at the University of California, San Diego, has developed a new theory for understanding mitochondrial function in the presence of high glucose, the cellular environment characteristic of diabetes. By improving mitochondrial function, Dr. Sharma can reduce inflammation and improve the overall health of organs. This new theory, called mitochondrial hormesis, is now being applied to diabetic complications by his group and is making a huge impact in two major areas: attacking diabetes by manipulating mitochondria (which approaches the disease from its root cause), and identifying human biomarkers to reduce the duration of clinical trials. Dr. Sharma's research is using novel approaches to look at new ways of targeting and treating diabetes with the goal of identifying methods for regulating mitochondrial function in gentle ways and monitoring its health to solicit a healing response.

Dr. Kumar Sharma, Professor of Medicine at the University of California, San Diego, is focused on explaining why cells ultimately fail with diabetes and how he can monitor and improve their health. He is trying to understand at a global and specific level...

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AFFILIATION

-  University of California, San Diego

EDUCATION

- M.D., in Medicine, 1985, Albert Einstein College of Medicine
- B.A., in Biology 1981, Boston University, Brooklyn Polytechnic Engineering

AWARDS

- Plenary Lecture for Australian Society of Diabetes, Melbourne, Australia, 2014
- Outstanding Investigator Award in Diabetes Complications, JAPA, 2009
- Associate Editor, American Journal of Physiology-Renal, 2007-2013
- UO1 Genotype-Phenotype Unit for Animal Mouse Models for Diabetic Complications Consortium-NIH-NIDDK (received top score), 2006-2011
- Research Award, Juvenile Diabetes Research Foundation-International, 2001-2004
- and 4 more...

RESEARCH AREAS

Life Science, Diagnostics, Metabolic / Diabetes, Regenerative Medicine

FUNDING REQUEST

Your contributions will have a major impact in the field of diabetes research through the acquisition of human resources (scientists with proper medical, academic and animal training), animal resources (animals exhibiting different models of obesity, diabetes, and kidney disease), and alleviating of various other laboratory costs (sampling, analysis, and interpretation of patient samples). Funding will also translate basic research into usable tools for developing effective human cures.