

Tackling Vascular Inflammation in Diabetes



Kaustabh Ghosh

Assistant Professor, Department of Bioengineering, and Program in Cell, Molecular, and Developmental Biology

CURRENT RESEARCH

Integrating the principles of physics, biology, and nanotechnology to combat chronic vascular inflammation associated with diabetic retinopathy and cardiovascular diseases

In the age of technology, we now enter an era in which diabetes is a rapidly increasing global epidemic. As a result, chronic vascular inflammation—a common feature and major determinant of many diabetic complications such as retinopathy and cardiovascular diseases—is escalating. By further understanding how chronic vascular inflammation occurs, Dr. Kaustabh Ghosh, Assistant Professor of the Department of Bioengineering at University of California, Riverside is developing new therapies so that the ever-expanding population of diabetics may have a better chance at living a quality life, without the debilitating effects of chronic vascular inflammation.

Common anti-inflammatory therapies used to treat diabetic complications, such as retinopathy (which leads to vision loss) and cardiovascular diseases, exhibit serious adverse effects, which include nausea, liver and kidney damage, and cataract formation. To address the lack of effective anti-inflammatory therapies currently on the market, Dr. Ghosh and his team are identifying a new class of molecular targets and developing superior nanotherapeutics that have minimal to no side effects.

As high glucose—the major risk factor for vascular inflammation in diabetes—circulates in the blood, it interacts with proteins and cells in the vessel wall and alters their function. Studies in large vessels, such as the aorta, show that high blood glucose in diabetes correlates with an increase in vessel stiffness. Yet, whether the increase in vessel stiffness actually causes vascular inflammation associated with diabetes has remained unknown. With an emphasis on diabetic retinopathy, Dr. Ghosh and his team are the first to demonstrate that high glucose leads to the...

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AFFILIATION

 University of California, Riverside

EDUCATION

- Ph.D. in Biomedical Engineering, 2001-2006, State University of New York at Stony Brook

AWARDS

- Hellman Fellowship, 2014
- University of California Regents Faculty Fellowship, 2013
- Postdoctoral Training Grant, NIH/NIBIB (T32) Interdisciplinary Research Training Program, 2008
- President's Award to Distinguished Doctoral Students, SUNY Stony Brook, 2006
- Graduate Student Scholarship, New Jersey Center for Biomaterials, 2004
- and 1 more...

RESEARCH AREAS

Life Science, Immunology / Inflammatory, Metabolic / Diabetes, Nanotechnology

FUNDING REQUEST

Your contributions will support the continued research of Dr. Ghosh at the University of California, Riverside, as he explores novel ways to treat vascular inflammation in diabetic patients. Funding will support the annual budget of \$350K required for postdoctoral fellows, students, reagents, animals, consumables, core services, and equipment. By providing this support, you will accelerate the pace of his basic and translational research, leading to immediate and large-scale applications in medicine.

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