INNOVATION IN HEALTHCARE

RESEARCH MILESTONES IN BIOMEDICAL ENGINEERING

UNIVERSITY of HOUSTON

CULLEN COLLEGE of ENGINEERING

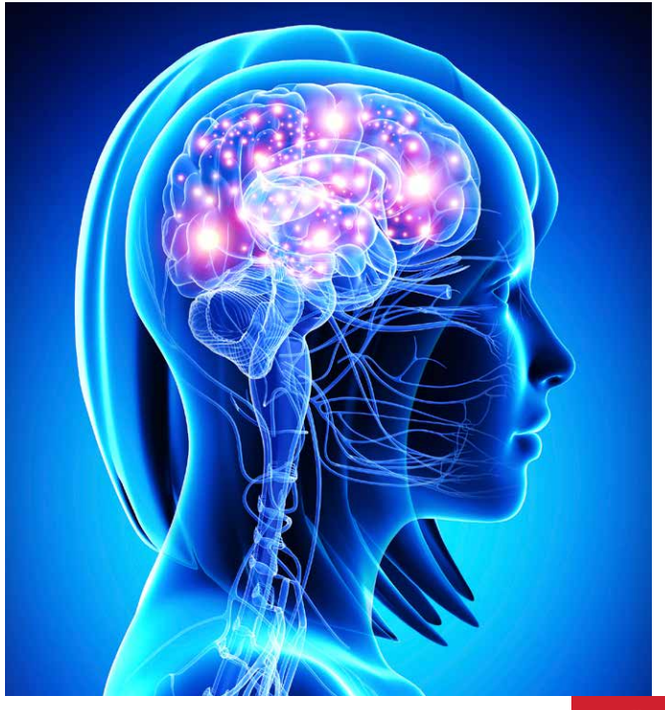
Department of Biomedical Engineering

UNDER THE LENS: Link Between Macular Degeneration and Retinitis Pigmentosa

Muna Naash, John S. Dunn Endowed Professor of Biomedical Engineering, and **Muayyad Al Ubaidi**, Professor of Biomedical Engineering, received a $2.5 million grant from the National Eye Institute to study the link between macular degeneration and retinitis pigmentosa. Their focus is on advancing current knowledge on the role of peripherin2 in outer segment rim and disc formation, and in understanding the pathogenic mechanisms of associated diseases. Naash and Al-Ubaidi will examine how different mutations in prph2 lead to different disease phenotypes; what contributes to variability among patients carrying the same mutation; what role ROM1 plays in these events; and, how to shift prph2-associated severe phenotypes to milder ones.

Kirill Larin Elected to **AIMBE'S COLLEGE OF FELLOWS**

The American Institute of Medical and Biological Engineering (AIMBE) elected **Kirill Larin**, professor of biomedical engineering at the UH Cullen College of Engineering to its prestigious College of Fellows. Election to the AIMBE College of Fellows is among the highest professional distinctions accorded to an engineer working in the medical and biological engineering fields. AIMBE fellows comprise the top 2 percent of medical and biological engineers who have made "impactful contributions to biomedical engineering, research and innovation." Larin's research interests include optics, diagnostic imaging, biosensing, microscopy and classification of tissues. He is best known for his contributions in Biomedical Optics and Biophotonics and development and application of various optical methods for noninvasive and nondestructive imaging and diagnostics of tissues and cells.



UH BME LAB Creates Improved Brain Chip for Precision Medicine

The Akay Lab biomedical research team at the University of Houston is reporting an improvement on a microfluidic brain cancer chip previously developed in their lab. The new chip allows multiple-simultaneous drug administration, and a massive parallel testing of drug response for patients with glioblastoma (GBM), the most common malignant brain tumor, accounting for 50% of all cases. GBM patients have a five-year survival rate of only 5.6%. The new chip generates tumor spheroids, or clusters, and provides large-scale assessments on the response of these GBM tumor cells to various concentrations and combinations of drugs. This platform could optimize the use of rare tumor samples derived from GBM patients to provide valuable insight on the tumor growth and responses to drug therapies. The paper is published in the inaugural issue of the IEEE Engineering in Medicine & Biology Society's Open Journal of Engineering in Medicine and Biology.

NIH-funded Project to Explore

WHETHER GENE THERAPY CAN CORRECT GENETIC DEAFNESS

A world-renowned authority on genetic mutations associated with hereditary retinal disorders from the University of Houston is working with a researcher from Harvard Medical School specializing in the diseases and disorders of the ear, nose and throat (ENT) to advance research involving gene therapy options that could one day expand treatment of patients suffering from Usher syndrome.

Usher syndrome is a genetic disorder characterized by partial or total hearing loss and progressive vision loss. It affects fewer than 0.02% of people in the United States of America – between four and 17 per 100,000 – accounts for about half of all hereditary deaf-blindness cases, according to the National Institutes of Health (NIH). There are three types of Usher syndrome, and each type is associated with a single gene defect.

The NIH awarded a one-year, $354,000 grant for a project titled “Gene Therapy of Usher Syndrome” to Gwenaelle Géléoc, a researcher with Boston’s Children’s Hospital and Harvard Medical School, and Muna Naash, John S. Dunn Endowed Professor with joint appointments at the UH Cullen College of Engineering and the UH College of Optometry. The UH share of the funding is $85,000. The funding will help to establish preliminary data to base future research on. The long term goal is to develop gene therapy that can help Usher patients.

The University of Houston
Cullen College of Engineering

The University of Houston Cullen College of Engineering addresses key challenges in energy, healthcare, infrastructure and the environment by conducting cutting-edge research and graduating hundreds of world-class engineers each year. With research expenditures topping $34 million and increasing each year, we continue to follow our tradition of excellence in spearheading research that has a real, direct impact in the Houston region and beyond.

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