PRAIRIE VIEW A&M UNIVERSITY

UMA Research Hybrid Lecture Series

Lecture Title: The Genomic Fabric of Our Heart

Date: 10/13/2023, 12:00-1:00 pm

Location: Harrington Science Bldg. Rm. 305. Online also via Zoom

Abstract

What are the molecular mechanisms responsible for the four-chambers making and the two-circuits functioning of the mammalian heart and what kind of alterations of these mechanisms can be held accountable for the cardiac diseases? Why does our diet, particularly the salt and sugars added to the food, affect the heart function? Is there any relationship between snoring or living at a high altitude and heart failure? How to "read" the expressions of the heart genes and how to infer the remodeling of their networks in chronic disorders? How much information one can get from a gene expression experiment? Why same-sex transplant is preferable to getting a heart from the opposite sex? Do the genes talk to each other differently in a woman's heart than in a man's? How does transplanting one's own stem cells cure the lethal Chagas disease? Can we have a spare heart to replace the diseased one? These questions, partially answered by Dr. Iacobas' studies, will be discussed in his lecture "The Genomic Fabric of Our Heart". In addition to basic experimental and computational details, he will present the results of his group from profiling the gene expression in the walls of the four chambers of male and female mice at several ages and subjected to chronic constant or intermittent oxygen deprivation, law-salt or high fructose diet, infection with *Trypanosoma cruzi* that induces Chagas cardiomyopathy, and repairing fibrosis by transplanting stem cells.

Speaker

Dr. Dumitru Andrei Iacobas, Research Professor and Director of the Personalized Genomics Laboratory within the Texas Undergraduate Medical Academy is an expert in both experimental and computational genomics. Trained as a biophysicist (PhD of the University of Bucharest, Romania), he was a member of the faculty body at medical schools from Romania (1981-2001) and NY (Albert Einstein College of Medicine-**Neuroscience** 2001-2013, New York Medical College-**Pathology** 2013-2017). Funded by multi-million research grants from federal agencies, Dr. Iacobas's Lab was home to numerous students and visiting young scientists from several USA and foreign (Australia, Brazil, Georgia, Germany, Italy, Israel, Romania, UK) academic institutions. In addition to surgically removing (kidney, prostate, thyroid) cancer tumors from humans, Iacobas' group explored the genomic characteristics of various regions from the brain, heart, spinal cord, and lungs of animals (mouse, rat, rabbit, chicken, and dog) models of human diseases. The 275 Iacobas' publications cover various genomic aspects of cancers, neurological, cardiovascular, and infectious diseases, as well as experimental and computational refinements of the genomic and biophysical studies. Together with Dr. Xi, Professor of Cardiology at Virginia Commonwealth University, he is guest-editing for "Frontiers in Bioscience-Landmark" the Special Issue "Genome, Transcriptome and Proteome Remodeling in Chronic Diseases."

(https://www.imrpress.com/journal/FBL/special_issues/genome_remodeling).

Most recent cardiogenomic publications are (***trainees***):

- Mathew, R.; Iacobas, S.; ***Huang, J.;*** **Iacobas, D.A.** Metabolic Deregulation in Pulmonary Hypertension. *Curr. Issues Mol. Biol*. **2023**, 45, 4850–4874. https://doi.org/10.3390/cimb45060309. **IF: 3.1. Open access**.

- Iacobas, D.A.; Xi, L. Theory and Applications of the (Cardio) Genomic Fabric Approach to Post-Ischemic and Hypoxia-Induced Heart Failure. *J. Pers. Med.* **2022**, *12*, 1246. https://doi.org/10.3390/jpm12081246. **IF: 3.508. Open access**

- *Kertowidjojo E*, **Iacobas DA**. Insulin resistance and the metabolic syndrome severity – a mathematical model. *Academy of Romanian Scientists Annals – Series on Biological Sciences* **2022,** *11*(1), 91-103, https://doi.org/10.56082/annalsarscibio.2022.1.91. **Open access**