SUTER SCIENCE SEMINARS 2020-21

Nuclear Lamina and Fatty Liver Disease

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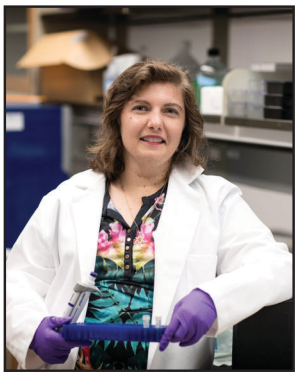

Wednesday, November 11, 2020
4:15 - 5:15 p.m.

Metabolic syndrome, a collection of symptoms that are associated with increased risk of developing type 2 diabetes mellitus, affects 60% of the U.S. population over 50. Non-alcoholic liver disease (NAFLD) is highly prevalent in type 2 diabetes and its incidence has increased rapidly with the obesity epidemic. NAFLD is becoming a world-wide health crisis and its progression to end-stage liver disease is the number one cause of liver transplantation. Old livers also accumulate lipids, which leads to hepatic steatosis. Our studies suggest that there are remarkable similarities in the nuclear lamina dysfunctions that occur in hepatocytes in aging and in metabolic disease such as NAFLD. Changes in expression of lamin A lead to nuclear shape abnormalities and redistribution of lamin B1-asociated heterochromatin at the nuclear envelope, leading to activation of previously repressed genes and development of hepatic steatosis in aged mice. We also observe dramatic changes in nuclear shape in mice that develop diet-induced steatosis, corresponding to significant alterations in nuclear morphology reported in patients with NAFLD. We are pursuing the mechanism relating changes at the lamina to metabolic dysfunction in patients with NAFLD.

Irina Bochkis, PhD, came to biology from an engineering background and values the importance of a multidisciplinary approach to solve biomedical problems. She completed her PhD training in Genomics and Computational Biology at University of Pennsylvania, where she studied transcriptional regulation in liver metabolism. For her postdoctoral fellowship, she trained at the Broad Institute, applying computational analysis of high-throughput data to epigenetic mechanisms in aging liver. Irina is currently an Assistant Professor of Pharmacology at University of Virginia School of Medicine.In addition to science, she enjoys outdoor biking and Zumba dancing.

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