The Fluid Mechanics of Vascular Diseases and Targeted Therapeutics

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Dr. Korin is an Associate Professor at the Faculty of Biomedical Engineering at the Technion- Israel Institute of Technology and the head of the Cardiovascular NanoMed Engineering lab. Prior to joining the Technion, Dr. Korin was a Wyss Technology Development Fellow and a Research Associate at the Wyss Institute for Biologically Inspired Engineering at Harvard University. He received a Bachelor's degree in mechanical engineering, a Master's and a Ph.D. in Biomedical Engineering from the Technion, Israel. Dr. Korin has also won several honors and awards including The Melvin and Caroline Miller Innovation Award, a Wyss Technology Development Fellowship, Outstanding Paper Award ASME NEMB, the International Society for Clinical Hemorheology (ISCH) Travel Award as well as authored several patents which serve as core technology patents in startup companies.

The cardiovascular (CV) system is a highly dynamic system where the interplay between vascular physiology, hemodynamics, and transport phenomena plays a dominant role in health and disease. Abnormal features of local blood flow (e.g., low/high shear stress, eddies, etc) have been associated with a variety of vascular diseases including atherosclerosis, brain and aortic aneurysms, stroke, heart valve disease and arterial thrombosis. Unraveling the biophysical features of abnormal flow and their role in vascular diseases may be valuable for understanding the etiology of these pathologies and can be leveraged to develop innovative therapeutic and diagnostic approaches. In this talk I will describe our recent work on pathological hemodynamic and targeted drug delivery to high-risk brain aneurysms and on human reconstructed blood vessel in vitro models recapitulating vascular diseases including thrombosis.