
The Peretz Lavie MD/PhD Fellowship Fund 2021-22 Support

2023 Report



AMERICAN
TECHNION
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Dear Friends,

It gives me a great pleasure to again thank you for your generous support of the Peretz Lavie MD/PhD Fellowship Fund. As you know, when I initiated the double degree MD/PhD excellence program in the early 1990s, while serving as the dean of medicine, my vision was to attract some of the Technion's most brilliant students, to excel in both clinical medicine and medical research, and usher in breakthroughs in the medical sciences. My role models were Prof. Hershko and Prof. Ciechanover, our Nobel laureates, both holding an MD/PhD degree.

I am delighted to tell you that the program has borne fruits beyond my expectations. Many of the program's graduates are holding leading positions in the Ruth and Bruce Rappaport Faculty of Medicine at the Technion, and in its affiliated hospitals. For instance, Prof. Lior Gepstein, the chairman of the Department of Cardiology in Rambam Health Care Campus, has made landmark discoveries in regenerative medicine that revolutionized the field; Dr. Goded Shahaf, who specialized in brain electrophysiology in addition to clinical medicine, has founded three start-up medical device companies related to his field of expertise; Dr. Amir Minerby runs the Rambam Health Care Campus Pain Clinic, and has become a world authority on fibromyalgia (chronic pain syndrome); and there are many others.

The success of the program is very gratifying, and your generous support will ensure its continuing success.



With great affection,



Peretz Lavie

Dear Friends,

Thank you very much for the Peretz Lavie MD/PhD Fellowship I received from you.

My name is Aviya; I'm a MD/Ph.D. student at Dr. Suheir Assady's lab, where we research glomerulonephritis (a subtype of kidney disease). Thanks to your fellowship, I can dedicate due efforts to a purpose that has become very important to me, as I explain below.

I was born and raised in Jerusalem as the eldest of four sisters. As a young girl, I was fascinated by the natural sciences, especially astrophysics, and the humanities.

After I graduated from high school, I volunteered for national service in a school at Rambam Medical Center. The school aims to help sick children keep up with their studies during hospitalization, and keep their minds away from their pains and fears as much as possible. After two years of national service, I volunteered in the Dialysis Department at Rambam Medical Center, this time with adult patients. I fell in love with the ward, the medical staff, and the patients themselves. Before my experience at Rambam, I considered pursuing academic studies in math and physics, but my experience directed me toward studying medicine. Later, this experience also pushed me toward researching the field of nephrology.

My research focuses on the first filtration barrier in the kidney, which is located in the glomerulus. The glomerulus is a bundle of blood vessels with high blood pressure that enables the first filtration of liquids and small molecules to a second compartment, which eventually becomes urine. The glomeruli's "filter" is composed of three components: 1) endothelial cells, which create the blood vessel wall; 2) specialized cells called podocytes that wrap the blood vessels; and 3) the glomerular basement membrane—a non-cellular component composed of proteins and other components secreted by endothelial cells and podocytes. The integrity of all three components is needed for the healthy function of the glomerular filtration of the blood.

Glomerular diseases are a central portion of kidney diseases that affect about 10% of the world's population. Many of these diseases are characterized by protein leakage in the urine, which should not happen in healthy individuals. Podocyte injury and altered composition of the glomerular basement membrane are known causes of some of these diseases. In my project, I want to investigate the effect of overexpression of the enzyme heparanase in podocytes. I hypothesize that heparanase over-expression alters their resistance to injury induction and the glomerular basement membrane composition. The enzyme heparanase degrades components of the glomerular basement membrane and affects the protein composition inside cells. I hope to reveal the action mechanism of heparanase in podocytes. I hope these insights will lead us to better understand kidney pathology and maybe even therapeutic new venues.

Laboratory work demands time and energy, and your fellowship is vital because it allows me to dedicate my time fully to that kind of work.



Thank you so much,

אביה לנסקי

Aviya Lensky

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