

Report on the Use of COVID Funds at the Technion



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Introduction

In 2020, as the coronavirus spread unabated worldwide, Israel was directly impacted, leading to the closure of its economy along with unprecedented consequences to its society. In response, the Technion had to adjust to a “new normal.” Crucial to sustaining university operations was the establishment of the Technion COVID-19 Student Emergency Fund, the Technion COVID-19 Research Fund and a set of funds supporting projects by individual researchers. We are grateful to our Technion donors from around the world who collectively **raised more than \$2.2 million** and brought this research to the forefront.



Technion student Egor Egorov, who is pursuing an internship in Assoc. Prof. Avi Schroeder's lab, stayed on campus during the shutdown instead of returning home to Russia

The Technion COVID-19 Student Emergency Fund

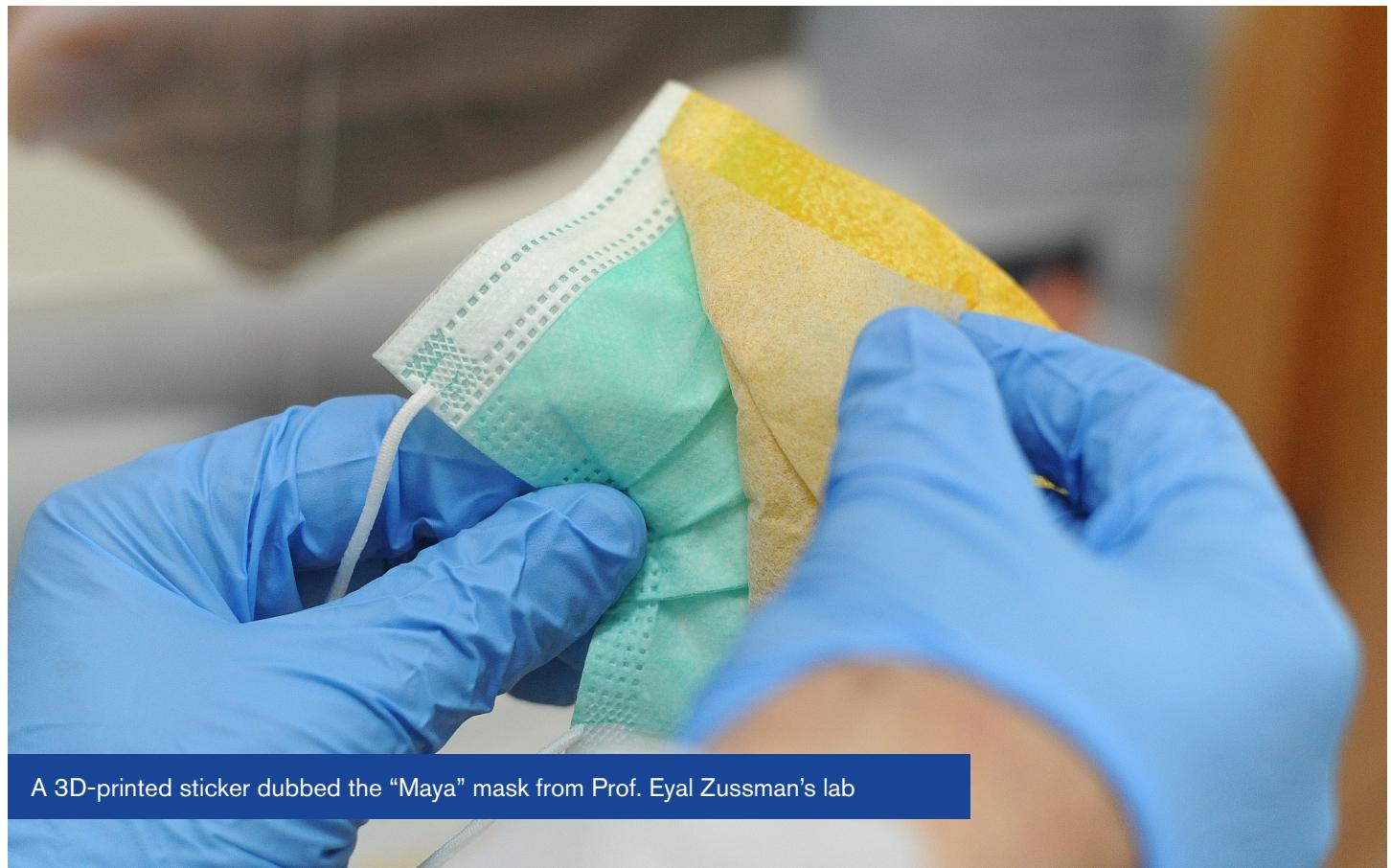
At the Technion, canceling the spring 2020 semester was not an option, as it would have delayed students' academic progress, leading to further disruption of Israel's society and economy. And because many students call the Technion home and rely on the university for needed services, closing the campus entirely would have left students scrambling to find alternate accommodations at the most difficult of times.

Instead, Technion professors rallied to virtual learning, providing 15,000 students with online education within 10 days. The university also set out to provide additional counseling services and financial support to help students maintain as much normalcy as possible and pay for their living expenses while continuing their studies. Additionally, the Technion Student Association began providing food and other essentials to students and local residents in self-isolation.

Donors from the Technion's 17 international Societies contributed almost \$1 million to the Technion COVID-19 Student Emergency Fund, providing equipment for remote learning and direct monetary support for students.

The Technion COVID-19 Research Fund

While the Technion needed to shut down most of its campus, its faculty channeled their energy and expertise into critical research for addressing the pandemic. More than 50 laboratories focused on COVID-19, in areas that included personal protective equipment, diagnostics, assistive technologies for healthcare providers and, most importantly, medical treatments along with vaccine research. These projects would not have moved forward as rapidly as they did without the philanthropic support of donors around the world who provided more than \$1.3 million to advance this work.



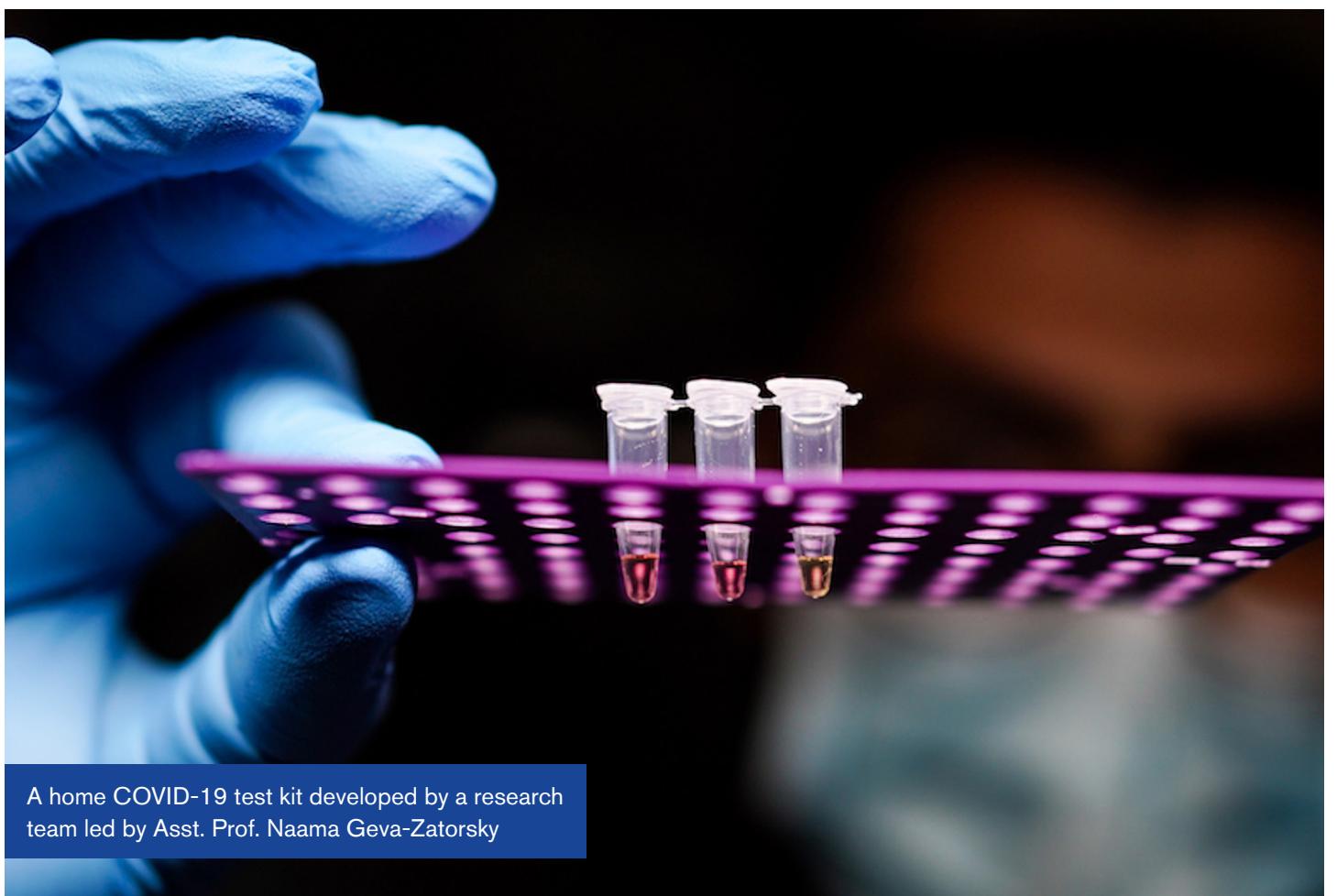
A 3D-printed sticker dubbed the "Maya" mask from Prof. Eyal Zussman's lab

COVID-19-related research projects at the Technion include:

- » Led by Assistant Professor Naama Geva-Zatorsky, a research team has developed a [home kit](#) that would enable people to be quickly and inexpensively tested for the coronavirus, without the need for elaborate lab equipment. The kit has successfully identified the virus in saliva samples, which unlike swab tests, do not require expertise. The researchers say the kit is 99% accurate.
- » Led by Professor Yair Ein-Eli, researchers from the Faculty of Materials Science and Engineering have developed a self-disinfecting, reusable protective [face mask](#). The disinfection process occurs when a layer of carbon fibers in the mask is heated using a low-current source, such as a mobile phone charger.

- » A [3D-printed sticker](#) that attaches to surgical masks, where it adds a layer of protection against COVID-19, has been greenlighted by the government for a pilot study at one Israeli hospital. Dubbed "Maya," the sticker is comprised of nanometric fibers coated with disinfectants, and enhances the containment of nanoparticles and effectively neutralizes viruses as they touch the mask. The technology behind the sticker was developed by Faculty of Mechanical Engineering Professor Eyal Zussman, in conjunction with the Galilee Medical Center.
- » Led by Associate Professor Gil Yudilevitch of the Faculty of Aerospace Engineering, students and alumni of the FIRST Robotics program from Haifa's Reali School are designing [a robotic platform to be operated remotely by medical staff](#), reducing their risk of infection by COVID-19. Dubbed COROBOT, the platform will be used in Rambam Health Care Campus' new Coronavirus Department.
- » Assistant Professor Shady Farah is developing [disinfectants that destroy the coronavirus](#) and remain effective over time on surfaces including floors, fabrics and metals. With the coronavirus surviving for up to five days, a long-lasting disinfectant could be a game changer in safely opening schools, transportation systems, restaurants and other public places.

Read more about COVID-19-related projects at the Technion at: ats.org/covid-19-news-and-updates.

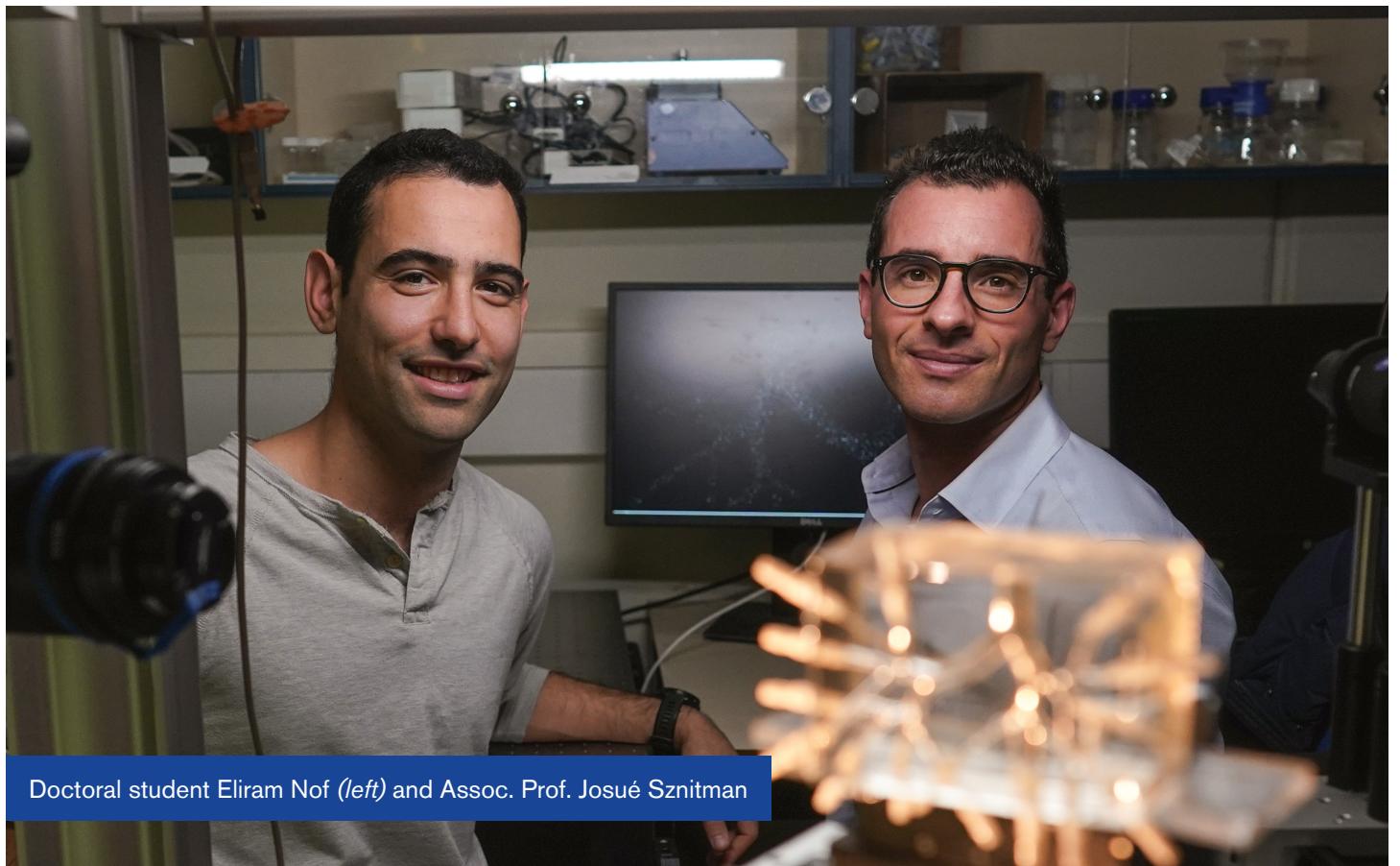


A home COVID-19 test kit developed by a research team led by Asst. Prof. Naama Geva-Zatorsky



Assoc. Prof. Avi Schroeder with researchers in a Technion lab

» **Assoc. Prof. Josué Sznitman** and his team have developed an [innovative technology](#) that could dramatically improve the efficacy of existing drugs for treating Acute Respiratory Distress Syndrome, a deadly complication common to those hospitalized due to COVID-19. The patent-pending technology, known as Liquid Foam Therapy (LIFT), is intended to dramatically improve the distribution of surfactant across the lungs. More generally, it is a radical new method for pulmonary drug delivery with the potential of delivering therapeutics homogeneously into the lungs and, importantly, in large doses.



Doctoral student Eliram Nof (left) and Assoc. Prof. Josué Sznitman

Individual COVID-19 Research Funds

Three researchers—Assoc. Prof. Moran Bercovici (Faculty of Mechanical Engineering), Assoc. Prof. Avi Schroeder (Wolfson Faculty of Chemical Engineering) and Assoc. Prof. Josué Sznitman (Faculty of Biomedical Engineering)—each received individual funds for COVID-19-related research. Specifically:

- » **Assoc. Prof. Moran Bercovici** is conducting microfluidics research that could lead to [point-of-care testing to detect the coronavirus](#). A team led by Assoc. Prof. Bercovici, head of the Microfluidic Technologies Laboratory in the Faculty of Mechanical Engineering, has developed methods for direct detection of biomarkers, without requiring time-consuming sample cleanup and amplification. They are now applying these methods to detecting the coronavirus, with the aim of creating a test that could be completed, from sample to answer, in minutes.
- » **Assoc. Prof. Avi Schroeder** is developing a [vaccine for coronavirus](#) based on an additive he developed, which is added to water to keep shrimp healthy. It is being commercialized by his Technion startup ViAqua Therapeutics. Viruses infect people by multiplying inside human cells, and to do this, the virus produces proteins; this approach stops the production of these proteins inside the body.

The COVID-19 pandemic has spotlighted the Technion's extraordinary ability to act effectively as a community in the face of adversity. It has demonstrated agility in adapting to unique and unforeseen circumstances, as well as ingenuity in pursuing its research programs. In addition, the Technion has found that some of the initiatives that were implemented quickly over the past year have had a positive impact on teaching and learning, and will become a permanent part of the curriculum.

The **American Technion Society** supports visionary education and world-changing impact through the Technion - Israel Institute of Technology. Based in New York City, we represent thousands of U.S. donors, alumni, and stakeholders who invest in the Technion's growth and innovation to advance critical research and technologies that serve the State of Israel and the global good. Since 1940, our nationwide supporter network has funded new Technion scholarships, research, labs, and facilities that have helped deliver world-changing contributions and extend Technion education to campuses in three countries.

For more than a century, the **Technion - Israel Institute of Technology** has pioneered in science and technology education and delivered world-changing impact. Proudly a global university, the Technion has long leveraged boundary-crossing collaborations to advance breakthrough research and technologies. Now with a presence in three countries, the Technion will prepare the next generation of global innovators. Technion people, ideas, and inventions make immeasurable contributions to the world, innovating in fields from cancer research and sustainable energy to quantum computing and computer science to do good around the world.



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