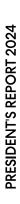
STRONGER TOGETHER

PRESIDENT'S REPORT 2024











From the President

Standing Strong: OUR RESPONSE TO CRISIS



his year the Technion's International Board of Governors meeting takes place in the shadow of a war which continues to affect each and every one of us at the Technion, in Israel, and in Jewish communities worldwide. With our centennial celebrations put on hold, we face the current challenges with the flexibility, resourcefulness, and persistence that characterize the Technion.





TECHNION'S RESPONSE TO OCTOBER 7

Throughout the Swords of Iron War, Technion students and staff have played a significant role in the IDF reserves. Over 3,000 of our 15,000 male and female students were called up for reserve duty, many of them on October 7. In addition, around 500 faculty and administrative staff were called up. Even now, there are still some students and staff on active reserve duty, with many more due to be called for active duty in the coming months. It was, therefore, vital to determine how we should manage this reality and support our students upon their return to academic life.

Ensuring that each of our reservists feels embraced by the Technion community is of paramount importance to us. To this end, in collaboration with Technion supporters around the world, we quickly established the Technion Emergency Fund. The unstinting generosity of our friends from near and far has allowed us to provide our students on reserve duty with scholarships, extended fellowships for graduate students, and exemptions from dormitory and tuition fees.

Upon their return from reserve duty, the Technion offered students a range of academic solutions, including expanded tutoring and personal guidance by mentors, postponement of some exams, replacement of other exams with alternative methods of evaluation, time extensions in exam sessions, priority in registering for courses in the second semester of 2024, and flexibility in changing their schedules and cancelling courses without financial penalties. These and other adjustments made it possible for our reservists to continue their academic tracks without missing a year of studies, and we are proud of this achievement. There is a significant uncertainty about the future, but assuming the situation remains as it is, we believe that our reservists will catch up with their peers by the end of 2025.

October 7 and the war that followed increased the need for our psychological services, with a surge in demand upon the return of our reservists. The Technion has responded by promptly boosting these services and by training our teams to recognize trauma and post-trauma.



Tragically, about 50 faculty, students and other members of the Technion family lost relatives to violence on October 7 or during the conflict. Some still have loved ones held captive in Gaza.

Two Technion students made the ultimate sacrifice: Master Sgt. (Res.) Dov Moshe Kogan and Captain (Res.) Denis Krokhmalov Veksler. Dov Kogan was 32 when killed in combat. He had completed his degree at the Faculty of Mechanical Engineering and was pursuing graduate studies there. Dov had deep roots at the Technion, being the third generation in his family to attend. His father, Meir, was a graduate of the Faculty of Aerospace Engineering, and played a role in developing the Iron Dome, while his grandfather, Avraham, was one of the faculty's founders. Dov is survived by his wife and three children.

Denis Krokhmalov Veksler, also 32 at the time of his passing, was about to begin his studies in the Faculty of Aerospace Engineering. He was tragically killed in action while serving as an officer in the Yahalom combat engineering unit.

In addition, the Technion has lost four of its alumni.

THE TECHNION AT ITS

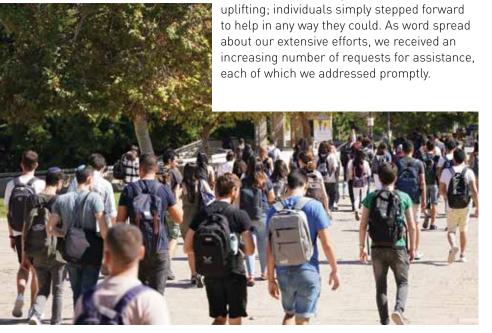
On the morning of October 7, shortly after news broke of the Hamas-led attack on the Gaza Envelope, the Technion set up a situation room. During the initial phases of the conflict, many IDF units required provisions and the Technion served as a logistics hub for them. The Technion Student Association and the academic and administrative staff displayed inspiring solidarity, and substantial quantities of food and medical supplies were dispatched from the campus. The collective spirit of volunteerism was truly remarkable and uplifting; individuals simply stepped forward to help in any way they could. As word spread about our extensive efforts, we received an increasing number of requests for assistance. each of which we addressed promptly.

The 'Give Help, Get Help' center was established at the Technion to support the university community, their families, evacuees from the south and north of Israel, and IDF soldiers. Some of the initiatives remain active today, bolstered by the dedicated efforts of hundreds of student and staff volunteers. Since the campaign's inception, scores of families and individuals displaced from their homes in the north and south found refuge on campus, some of them arriving with nothing but the clothes they were wearing.

Vacant student dormitories and the Forchheimer Guest House were swiftly repurposed into living quarters for the evacuees. The Technion's second-hand shop generously donated essential supplies ranging from clothing to laptops.

Students from the Faculty of Materials Science and Engineering contributed to the "Shelter City" project by organizing shelters in nearby city of Nesher, while graduate students from the Wolfson Faculty of Chemical Engineering joined their Dean in clearing shelters in Haifa. This represents only a portion of the support extended by the Technion community in response to the security challenges faced.

With schools closed from October 8, the Human Resources Division and employee unions opened a daycare facility on campus for pre-school and primary-school aged children. Daycare was provided for the children of employees and students, until schools reopened in Haifa.





CAMPUS

The Technion delayed the opening of the school year until January 14 to allow more reservists to return from their reserve duty, and for us to prepare for their arrival in the best way possible. We have taken effective steps to reduce and mitigate potential tension on campus between resezvists returning from Gaza, students and staff that lost family members, and our Arab students. I'm proud to report that we succeeded in ending the first semester with no major incidents within the student body.

In many countries, we witnessed a surge of anti-Israeli and antisemitic

protests, with unfortunate participation from faculty, student organizations, and labor unions at prominent universities. Given the inadequate response from many presidents of leading universities in North America, Europe, and Australia, it became evident that Jewish and Israeli students and scholars faced physical and verbal threats that hindered their academic pursuits. We initiated a program to swiftly welcome students and faculty from around the world, seeking academic sanctuary. We are working diligently to open a special firstyear program in English, with extensive Hebrew classes, which will Technion.



FORWARD

In parallel to the essential activities taking place on campus since October 7, the Technion has strived to maintain an atmosphere of "business as usual" on the frontiers of sustainability, human health, and in other areas.

Projects that have continued throughout the war include:



Zisapel Electrical and Computer Engineering Building

Construction of the Zisapel Building was completed in 2023. Students and faculty are scheduled to move into the building in the current academic year.

The Stewart and Lynda Resnick Sustainability Center for Catalysis

The Stewart and Lynda Resnick Sustainability Center for Catalysis (RSCC) was established to discover and develop new catalysts and catalytic processes to deal with the enormous challenges the world currently faces. These include carbon dioxide emissions and global warming, green hydrogen production, and plastic waste remediation. The main objective is to create better renewable energy sources and storage methods and to protect and enhance crop production, thereby promoting sustainable technologies with a substantial positive impact on the world. These critical goals will be achieved by harnessing the Technion's outstanding resources in such disciplines as chemistry, biotechnology, physics, biology, computer science, chemical engineering, materials engineering, and food engineering; all within a single facility. Following the completion of the design process, the building's plans were submitted to the Haifa Municipality for approval. The Technion is now awaiting a building permit and hopes to break ground in 2024.







Carasso FoodTech Innovation Center and Sustainable Protein Center

The Technion's Faculty of Biotechnology and Food Engineering is Israel's only source of food engineers and is one of the few faculties in the world that combine the disciplines of food science and technology, bio-engineering, and other life sciences. The Carasso FoodTech Innovation Center is an essential part of the faculty's Bio-Health Technology Innovation Initiative to develop sustainable technologies by providing both academic and private sector entrepreneurs with a pipeline to rapidly accelerate the development of their emerging technologies. The Center's aim is to provide solutions to the unmet challenges of sustainably supplying a healthy, tasty, and nutritious diet to the growing world population. Serving as a hub for entrepreneurs, students, and industry partners, the Center will foster applied and translational research, collaborations, unique hands-on training, and small-scale production using semi-industrial equipment. The Center will also house research being done in the newly established Sustainable Protein Research Center. Construction is in its final stages and is set to be completed by the end of 2024.



It is now clear to both cancer biologists and oncologists that the complex and multifaceted nature of cancer must be addressed via collaborative research initiatives that facilitate and encourage interdisciplinary collaboration, communication, and creativity amongst researchers. The Bruce and Ruth Rappaport Cancer Research Center, which will be housed in the future D. Dan and Betty Kahn Human Health Building, is on the front line of this initiative. Equipped with the resources and collective expertise necessary to break free from the confines of narrowly focused research tracks, the Center is poised to improve outcomes for those affected by cancer. Top-level facilities are indispensable for cancer research, providing state-of-the-art equipment, cutting-edge technologies, and optimal infrastructure to create an environment where innovative experiments can flourish. The new D. Dan and Betty Kahn Technion Human Health Building will be the future home of the Center, with a projected completion date in early 2027.





Rosman High Performance Computer Data Center

The Martin and Grace Druan Rosman High Performance Computer Data Center will place Israel and the Technion well within the world's top 500 High-Performance Computing (HPC) sites. The outreach of the Center will include not only Technion researchers, but also other academic institutions in Israel. Construction started in early 2024.

Computer Science Building

Construction commenced this year. The new building will accommodate the expansion of this growing faculty.

The Technion Center for High-Speed Flight

The Technion's new Center for High-Speed Flight aims to advance hypersonic R&D on multiple fronts, utilizing multidisciplinary teams of experienced researchers and graduate students. The Center will be housed in the state-of-the-art Morton and Beverley Rechler Family Foundation Research Building and other campus locations, featuring top-tier ground-testing facilities and enhanced high performance computing capabilities.



Andrea and Lawrence Wolfe Center for Translational Medicine and Engineering

The Wolfe Center is a joint venture between the Technion and the Rambam Healthcare Campus. The Center will bridge the gap between laboratory research and clinical application, equipped with essential resources such as physician-scientists, shared innovation spaces, clinical data experts, and cutting-edge fabrication services. It will also provide expertise in regulation, ethics, clinical trials, and business development, alongside clinical expertise to test new devices and treatments. The Center aims to be a hub for entrepreneurial-minded professionals seeking to merge clinical practice with advanced research. The project is currently in the advanced planning phase, and construction is nearly completed.



Administrative Development and Planning

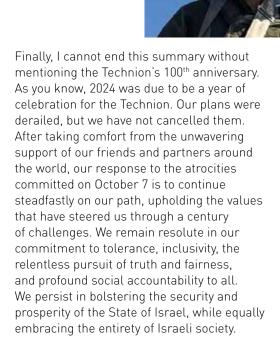
The position of Executive Vice President for Innovation and Industry Relations was created, with Prof. Lihi Zelnik-Manor assuming this role in October 2023. In parallel, Prof. Noam Adir was appointed to the position of Executive Vice President for Research. The recent appointments underscore the Technion's strategic agenda of strengthening the bond between academia and industry. This move stems from the increased focus on industrial research and the recognition of the pivotal role collaborations between academia and industry play in amplifying research and development efforts, thereby enhancing student education and training.

The Executive Vice President for Research oversees all facets of academic research activities at the Technion, including facilities, funding, and national and international research committees. The Executive Vice President for Innovation and Industry Relations focuses on facilitating the transfer of knowledge and technologies developed at the Technion to the industrial sector. This includes identifying industry's research needs, fostering collaborative research endeavors, and commercializing intellectual property.

I would like to take this opportunity to thank the outgoing Executive Vice President for Research, Prof. Jacob Rubinstein, for his dedication, leadership, and unwavering commitment to advancing research excellence. During his tenure, the Technion's collaboration with the industry took a quantum leap forward.

In 2023, we moved to a five-year planning and budgeting program, with each department producing an academic development plan. These plans were then incorporated into a five-year plan for the Technion, enabling us to optimize resource utilization by fostering teamwork between departments and enhancing management support.





SUPPORTING OUR RESERVISTS

IN THEIR TRANSITION FROM SERVICE TO ACADEMIA

n October 7, Israel faced a murderous attack by the Hamas terrorist organization. In response, the country declared a state of emergency and initiated the Swords of Iron War. Over 360,000 soldiers from the reserves were called up, including more than 3,000 combatants and support personnel from the Technion.

Throughout its 100 years of existence, the Technion has been recognized as an academic institution deeply rooted in the community. As an organization with a historic role in Israel's security infrastructure, the Technion acknowledges the determination of its students, faculty, and staff to participate in the ongoing effort to defend the country. This is in the Technion's DNA.

In 1947, when the Carmeli Brigade was formed to defend the northern region, it was comprised of students, alumni, and staff members from the Technion, with the Technion's support. Similarly today, as the Carmeli Brigade defends the country's borders as part of the Northern Command, it does so under the auspices of the Technion.

Since October 7, the Technion management has taken several steps to ensure comprehensive support of all reservists from the Technion community upon their return to classes and research laboratories. It was determined that the start of the 2023-24 academic year would be postponed until the latest possible date to allow soldiers and their partners maximum time to regroup, and "return to routine".

A comprehensive academic adjustment package was prepared for returning students, including:

- Reducing the number of required credit points.
- Expanding the possibility of converting military service into credit points.
- Providing additional time during exams.
- Extending deadlines for submissions.
- Converting some numerical grades into binary grades (pass/fail).
- Offering supplemental instruction and tutoring to all who need it.
- Reducing requirements for class attendance.
- Flexibility in scheduling class hours.
- Strengthening support systems before, during, and after returning to classes.





These academic adjustments were formulated based on an understanding of the unique needs of those returning from the battlefield to the classroom. Throughout the implementation of this unique program, it was ensured that there would be no compromise on the quality of the students' education and training, leading to their graduation as proud Technion alumni.

With the assistance provided by the Technion societies and individual donors, as well as internal funding, eligible students received unprecedented financial benefits, including:

- Full exemption from tuition fees for the first months of active duty.
- Options for deferring tuition and housing payments.
- Assistance with housing and transportation solutions.
- Funding for transportation for disabled war veterans.
- Scholarships for eligible reservists for up to 50% of the tuition cost.
- Establishment of assistance funds.
- Provision of tailored financial solutions.

Technion management and staff aimed to find personalized solutions to every issue raised.

The emotional and psychological difficulties experienced by returning reservists were addressed by the Dean of Students' Office, which established and developed the "Return to Studies" package. Within this program, a number of actions were taken to address issues on both group and individual levels:

Group workshops, support meetings, and talking circles

An empowerment workshop "From Combat to Learning" provided participants with practical tools to cope with the transition between the two spheres. Eighty four workshops have been offered, including guided imagery, occupational therapy, time management, yoga, art therapy, learning strategies enhancement and more. Support meetings and talking circles have been held, in order to process combat experiences with professional quidance and counseling.

Professor Ayelet Fishman, Dean of Students, stated:

"We are doing everything in our power to provide our students with the maximum resources to return to their academic routine in the best possible way through the support system we have developed. Our goal is to allow the students to focus on their studies and fulfill their inherent potential without worrying about environmental factors."



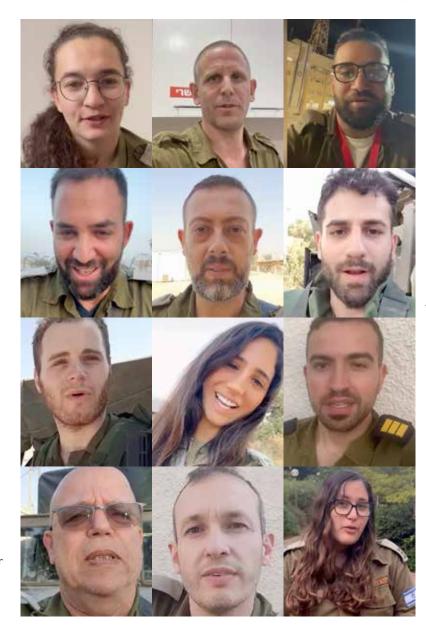
On a personal level, tailored support, assistance, and mentoring are provided by a dedicated and skilled professional team to those dealing with the consequences of the war.

Each faculty has a trained team member serving as a point of contact for personal issues. Students are offered therapy services by the Technion's Fried Counseling Center or an external provider.

The Dean of Students representatives maintain regular contact with returning reservists and are attentive to their needs, striving to provide personalized solutions and individual support.

The Technion has risen to the occasion not only for the students and staff. On October 7, the Technion's administration decided to house **over 300 displaced families from the north and south of Israel** in campus dormitories. Additionally, the Technion campus served as the rest and recuperation site for a number of IDF units.

A massive enlistment of volunteers through the "Mutual Responsibility" project provided personal equipment, essential supplies, and food for soldiers and displaced families. Volunteers assisted and provided aid wherever needed. Through the project, the Technion played an active and significant role in strengthening national morale and resilience.





+3,500 students, faculty and administrative staff have been called up for reserve duty, with many still serving



+1,000 returning reservists participated in "Return to Studies" programs and 84 workshops, offered by the Dean of Students' Office



Over 300 evacuated families from the north and south of Israel have been housed in campus dormitories

Flagship Project

PROJECT LJC

WORKING TO TRANSFORM LUNG-CANCER HEALTHCARE

You're an athletic, active woman in your early 40s and a doctor just informed you that you have lung-cancer. In disbelief, a whirlwind of thoughts hits you and you frantically blurt out "How can that be? I don't smoke", "But I feel fine", "This must be a mistake. No one in my family has ever had lung-cancer". Taking a deep breath, you add resignedly "Thank God I went for early screening!".

espite a steep decline in the prevalence of smoking since the 1960s, the incidence of lung-cancer remains stubbornly high and horrifyingly lethal. It is the second most commonly diagnosed cancer and, by far, the leading cause of cancer-related death worldwide. Last year in the U.S., related lung-cancer deaths among women outstripped breast-cancer deaths threefold; three times as many men died from lung-cancer than from prostate cancer.

Lung-cancer related morbidity and mortality rates vary significantly between regions and countries across the globe: although Europe and the U.K. combined represent less than 10% of the global population, they now account for close to a quarter of all new lung-cancer cases and a similar percentage of lung-cancer related deaths; with twice the population, the continent of Africa accounts for only two percent of new lung-cancer cases and death. A person in China is six times as likely as a person of the same age in India, and a person in the U.S. is almost seven times as likely as a person in Mexico to develop the disease.







NOT ALL LUNG-CANCERS ARE THE SAME

For over half a century, it seemed fairly straightforward that smoking causes lung-cancer; disincentivizing smoking and early screening for smokers became the be-all and end-all of lung-cancer healthcare for policymakers worldwide. This oversimplification led to the brutal reality of widespread early-stage underdiagnosis.

Upwards of 15% of lung-cancer sufferers are lifelong nonsmokers; in fact, lung-cancer in non-smokers (LCINS) has become the fifth most frequent cause of cancerrelated mortality worldwide. Even among smokers, lung-cancers present and develop unevenly. We now know that each case of lung-cancer results from a peculiar confluence of a myriad of factors: genetic, environmental and lifestyle. The causes, the symptoms, the affected areas of the lung, and the mechanisms by which lung-cancer progresses are idiosyncratic, diverging between and within populations.

If researchers were to identify and computationally model those factors, patient-customized detection and prevention strategies would be within reach, preempting unwarranted suffering. Quality-of-life enhancing and life-extending, personalized treatment protocols would offer patients new hope.

PROJECT LUCIA – REIMAGINING LUNG-CANCER HEALTHCARE

On an impassioned quest to make a difference, Prof. Hossam Haick from the Technion's Wolfson Faculty of Chemical Engineering took the reins of an ambitious enterprise that could revolutionize cancer healthcare. Since 2022, Prof. Haick has painstakingly assembled an international consortium of 28 partnering entities from six EU countries and three associated countries. This Technion-led multistakeholder initiative – named "LUCIA" – brings together highlevel professionals from academia, hospitals, research and hi-tech associations, industry and NGOs, in an effort to reimagine lung-cancer prevention and treatment. One of five winning proposals (out of nearly 200) submitted to the European Union's Horizon Europe program, LUCIA was awarded a 14.6M euros grant and now plays a central role in Europe's Beating Cancer Plan.

During his opening talk at the kickoff event hosted by Technion in February 2023, Haick said that the "The LUCIA Project is being launched at the right time, with the right partners." Setting the direction of the project he added, "We will be working together for the next four years, applying a multidisciplinary approach, to further the understanding of the disease and develop methods to prevent, diagnose and treat it more effectively. Our work will not focus exclusively on the medical aspects of lung-cancer; rather, we will be assisted by experts on law and ethics and by decision makers to put our findings into effect for the benefit of society as a whole."

Utilizing and expanding their foundation of multidisciplinary lung-cancer (LC) expertise, Haick, Prof. Yuval Shaked from the Ruth and Bruce Rapport Faculty of Medicine, and their Technion colleagues and European partners are aggressively advancing on several interconnected fronts:

- Harnessing vast biomedical, demographic, environmental and other databases providing detailed longitudinal and cross-sectional information for both LC and non-LC populations.
- Innovating the analytical and computational software necessary
 to integrally model the biological mechanisms and genetic
 predispositions, behavioral risk factors and external risk factors
 (climate-related, environmental and social) that influence the
 pathogenesis and progression of lung-cancer.
- Clinically validating new detection and prevention solutions, earlystage medical interventions and later-stage quality-of-life-enhancing measures while researching their ethical, legal and public policy feasibility.



Project epidemiologist Prof. Linda Brown, a senior researcher at RTI International in Rockville, Maryland, sums it up:

"LUCIA IS SET TO REDEFINE OUR UNDERSTANDING OF LUNG-CANCER RISKS AND THE EFFECTIVENESS OF SCREENING PROGRAMS. BY ANALYZING DATA FROM A WIDE RANGE OF SOURCES, INCLUDING ENVIRONMENTAL, GENETIC, AND LIFESTYLE FACTORS, WE CAN DEVELOP MORE PRECISE RISK ASSESSMENT TOOLS. THIS NOT ONLY HELPS EARLY DETECTION BUT ALSO THE CREATION OF TARGETED PUBLIC HEALTH STRATEGIES TO REDUCE THE INCIDENCE OF LUNG-CANCER."

Artificial Intelligence (AI) is being introduced into LUCIA processes and technologies making it possible to attain the highest levels of discernment and predictability in high-impact precision LC prophylactics, diagnostics, and therapeutics.

"The utilization of AI and machine learning in LUCIA is not just about technological innovation; it is about creating a paradigm shift in how we approach lung-cancer screening and diagnosis," said Haick, a highly-respected innovator of non-invasive sensors and diagnostic tools. "By developing AI models that can predict lung-cancer risk with high accuracy; we aim to personalize screening protocols and ensure that high-risk individuals are identified and treated as early as possible."

LUCIA's multidisciplinary scope, comprehensiveness and exceptional uses of AI truly set this project apart from previous enterprises in LC research. The fact that it is launching "at the right time, with the right partners" is an undeniable truth and, for legions of people vulnerable to the many LC risk factors, a source of optimism.



SCIENCE ON EDCE

icture yourself standing at the edge of the physical world, peering into a realm of endless possibilities where the familiar laws of nature no longer have sway. Here, particles can be in two places at once, events occur for reasons beyond our understanding and atoms, even great distances apart, are interconnected by a mysterious force that even rattled the belief system of Albert Einstein. Welcome to the quantum abyss; a place the smallest parts of our universe call home. It is an environment so elusive, even the mere act of observation causes particles to take on different properties and, sometimes, vanish altogether. Now, imagine trying to make sense of this domain, while simultaneously learning how to harness its untold power. It is no small task, but it is a challenge Technion scientists are facing head-on at the Helen Diller Quantum Center (HDQC) where a surge of research activity is currently underway.

There is something bewildering and confusing about quantum mechanics, partly because it addresses phenomena that are very remote from our everyday experiences. It is difficult to imagine the life of an atom

Yossi Avron, HDQC Director, Prof. Emeritus, Physics Department



TECHNION SCIENTISTS CHART NEW TRAJECTORIES IN QUANTUM SCIENCE AND TECHNOLOGY

Avron and his colleagues at the HDQC are at the forefront of quantum science and technology - a field widely considered the next frontier of human knowledge with far-reaching potential for transformative applications in computing, communication, sensing, materials and beyond. In the broadest sense, quantum physicists study and manipulate the characteristics of matter and energy on the smallest scale possible - the quantum scale.

"We want to control the behavior of subatomic particles to an exquisite degree. If possible, we want to control a billion atoms. We want to engineer them in a specific state." said Avron. "It is a tremendous challenge."

The concepts of quantum mechanics are inherently complex, but the field was born from some very basic inquiries into the world around us. It aimed to answer straightforward questions like, "why is the sun yellow and the sky blue?" and "where do these colors come from in the first place?". And while notorious for its mind-bending principles, the field itself is grounded in decades of scholarly research. Quantum physics emerged in the early 20th century, forever altering our perception of the physical world. The first quantum revolution unfolded in the early 1900s, solidifying the conceptual framework needed to apply decades of theoretical understanding to experimental exploration. These monumental advancements gave rise to gamechanging technologies like the MRI machine, transistor and laser. It was an unprecedented leap in scientific discovery.

"Nobody in their wildest dreams thought quantum physics would become an applied science," said Prof. Gadi Eisenstein, who cofounded the HDQC in 2016 alongside Distinguished Professor Moti Segev to accommodate the overflow of pioneering research and untapped potential in quantum science and technology at the Technion. It was a natural step for an institution so deeply tied to the evolution of quantum science, with a history that can be traced back to all-star alumni such as physicists Nathan Rosen and Asher Peres; the fathers of quantum information.

The Age of Entanglement

Today, we are in the midst of the second quantum revolution and Technion scientists are not just contributing to its advancement, they are also directing where it goes.

"Technion researchers are among very few people in the world who set the agenda for the global scientific community," said Eisenstein. "To say we are flourishing is an absolute understatement".

The HDQC is buzzing with the hottest trend in quantum mechanics; a phenomenon known as quantum entanglement. In simple terms, this is when particles are bound to one another so that what happens to one, simultaneously affects the other. And as counterintuitive as it sounds, it doesn't matter how far apart these particles are either. They can even be on opposite corners of the universe. It is a concept Einstein brushed off as ridiculous, famously coining the phenomenon "spooky action at a distance" as the idea clashed with his signature theory of relativity. But after a few decades, there was a major shift in the scientific community. Researchers started thinking maybe entanglement is not a bug, perhaps it is a feature and, if so, maybe it can actually be used for something. This was a defining moment for the second quantum revolution. And here at the Technion, HDQC scientists are successfully engineering these complex quantum states, harnessing the power of entanglement to enable instantaneous connection between distant particles. This spells out profound potential for advancements in ultra-secure communication, superfast computation and future technologies like quantum teleportation.

The Next Big Thing

Walk the halls of the HDQC and you will pass one world-class laboratory after another, where more than 50 researchers are redefining the possibilities of quantum science and engineering, especially where it intersects with photonics – a branch of science that aims to analyze and manipulate photons (particles of light). It is one of the Technion's strongest suits.

"We are an empire in photonics," said Eisenstein. "It is the number one successful field at the Technion, not just because of the quality of our research, but also the unprecedented number of scientists that are involved. You don't see this at many other institutions around the world and definitely not in Israel."

A clear example of this comes out of Prof. Ido Kaminer's lab where an effort is underway to capitalize on quantum entanglement to reimagine the electron microscope (EM); a crucial tool that allows researchers to look at small specimens at incredibly high resolutions. But as incredible as it is, the EM is too invasive to probe the delicate and shy quantum realm where even the slightest move can inspire particles to start a game of hide-and-seek. The EM works by bombarding samples with an electron beam to magnify the detailed images it produces. It is all just too much for quantum particles to handle.

"This is the difficulty with interrogating the quantum world; it plays by its own rules," said Avron. "The measuring tools are always much bigger than the objects we are measuring. It is like an elephant trying to figure out how a tiny ant moves about."

But what if there was a way to use very faint sources of electrons instead? According to Kaminer's findings, the answer to this guestion lies in a harmonious combination of ultra-fast optical pulses and engineered quantum states. Thanks to the bizarre, but useful, characteristics of quantum entanglement, Kaminer's research shows it is indeed possible to enhance the accuracy of high-resolution images without the need for such a high dose of electrons, provided these electrons are entangled. Problem solved, right? Not entirely. The next challenge was figuring out how to harvest entanglement – a tough obstacle to overcome. Despite this, Kaminer developed a way to successfully engineer quantum states with help from a group of particles known as relativistic free electrons, which are basically electrons that move at ridiculously fast speeds. Ultimately, Kaminer and his team will incorporate these features into a modified EM capable of stealthy observation of the quantum world. This tool, fondly known around the HDQC water cooler as "the monster", will be the only one of its kind in the world once complete. Kaminer's research is so groundbreaking, it even led to the creation of an entirely new field of study that focuses on electron-photon interactions.



It Takes Two to Tangle

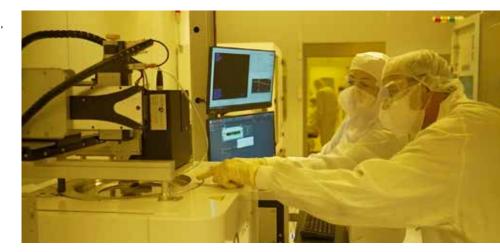
Just down the hall from Kaminer's lab sits Prof. David Gershoni who is also engineering complex quantum states, just tackling the challenge from a different angle. Gershoni and his research team are successfully generating clusters of entangled photons, thanks to the unique properties of semiconductors. These super useful materials form the backbone of modern electronics and are responsible for powering everyday devices like your computers and smartphones.

In this case, Gershoni used semiconductors to develop a novel apparatus that dispenses chains of entangled photons. Think of it like a ray gun that shoots a steady stream of quantum light. It is a significant achievement. Not just because it was done for the first time, but also because of what it means for the future of quantum information processing; a research area fueled by the power of the photon. This means the ability to reliably churn out on-demand clusters of these entangled particles will be significant when it comes to breaking new ground in areas like quantum communication and quantum computing.

The clusters could be used as building blocks of, for example, new technology that could lead to unprecedented levels of speed and security in the way we communicate. Here's how; going back to the concept of entanglement, we now know that what happens to one quantum particle also happens to its entangled partner. So, with this in mind, let's say a line of communication is established between two entangled photons in the quantum realm. Information can now be sent and received instantaneously from one photon to the other, enabling exceptionally fast information transfer. Now, imagine an intruder attempts to get between

these entangled protons to "listen in" on the conversation. This action would immediately disrupt the connection, instantly raising a red flag to the legitimate parties, alerting them to a security breach. Theoretically, this quantum exchange of information would be immune to any kind of hacking attempt. It is just one example of how this kind of technology would change the way we communicate entirely.

"That's why we can be proud, not only of the pure scientific breakthroughs coming out of the Helen Diller Quantum Center, but also for the transformations these findings will lead to in terms of how we turn science into something that will eventually influence the way we live," said Eisenstein.









Faster than Fast

Quantum particles live life in the fast lane and we need the instrumentation to keep up. That's why HDQC researchers are shining quantum light on a field known as attosecond science.

"We have Technion scientists investigating phenomena on timescales that are so short, it is mind-boggling," said Avron. "The time interval they are interested in relates to the second the same way the second relates to the age of the universe."

Several HDQC research teams are developing the tools and knowledge necessary to observe and control quantum processes on their natural timescale; the attosecond timescale. In one attosecond, light travels the distance of one atom. It is faster than we can even conceptualize, but It is the key to uncovering the secrets hidden within the quantum world. Prof. Oren Cohen is a world-leader in this effort.

Cohen is studying quantum light in the attosecond timescale. It is an area of study that was initiated at the Technion and is currently being moved to the experimental stage by fellow HDQC researchers, including Professors Michael Kruger, Kaminer and Segev.

"Technion broke ground here. It is a field that speaks for itself," said Segev. "In the beginning you have opposition, and everyone is skeptical. Then things start happening, and everyone jumps in," said Segev. "Right now, everyone is jumping in."

Leveraging a solid foundation in advanced laser technology, Cohen and his colleagues are generating quantum pulses fast enough to reveal the innerworkings of atoms with unprecedented precision. It is a crucial step in developing the tools we need to understand and control quantum dynamics, which will ultimately help researchers tap into the untapped potential waiting for us in the quantum realm.

"By the time we get to the 2040s, we'll be able to multiply human intelligence a billionfold. That will be a profound change that's singular in nature. Computers are going to keep getting smaller and smaller. Ultimately, they will go inside our bodies and brains and make us healthier, make us smarter."

Ray Kurzweil





his quote by computer scientist and author Ray Kurzweil envisions artificial intelligence and nanotechnology at the forefront of futuristic innovation, enhancing the human condition by leaps and bounds. Smaller and smarter technologies will make everything in our world – from our bodies to our vehicles, to our food and energy sources, to our leisure activities – more potent and efficient; they'll expand the horizons of exploration and knowledge and introduce new modes of interaction among and between people, machines and the environment.

Indeed, AI will change everything.

At the push of a button, AI can design neverimagined products, write textbooks, compose concertos, or choreograph ballets. It can unerringly guide planes through congested airspace, personalize patient treatments and execute precision surgeries, or streamline an ultracomplex workflow. AI can be used to forecast a business adversary's next move or to deconflict belligerents on a battlefield. With unbridled potential to generate, predict and optimize processes and outcomes of all kinds, AI is transforming the way we frame the world and how we live in it.

AHEAD OF THE AI CURVE

At the forefront of STEM academia in a country awash in high-tech ingenuity, Technion is perpetually ahead of the curve in AI research and education. Year in, year out, CSRankings¹ lists Technion among the world's twenty finest academic institutions in the field of AI; among those situated in Europe, Technion is ranked 1st in AI and 2nd in machine learning. It is fair to say that Technion's singular vision and expertise in artificial intelligence pervade Israel's entire innovation ecosystem, fueling Israel's international prominence in healthcare, defense and homeland security, and aerospace.

Artificial intelligence is a ubiquitous theme on campus. It reverberates throughout the work of our research centers and laboratories; all 18 faculties routinely incorporate AI tools in their projects. **Tech.AI** (formerly, the Center for Machine Learning and Intelligent Systems in the Faculty of Computer Science) is front-and-center in this Technion enterprise to push the envelope of artificial intelligence.

TFCH.AL

Established in 2020 as the university's AI hub, Tech.AI informs, inspires and supports AI research and education efforts of faculty and students from across the entire campus. It pools and disseminates knowledge, encourages collaboration and synergizes activity, and provides necessary resources. With three codirectors – Prof. Assaf Schuster from the Taub Faculty of Computer Science, Prof. Shie Mannor from the Viterbi Faculty of Electrical and Computer Engineering and Prof. Shai Shen-Orr from the Rappaport Faculty of Medicine – Tech.AI's leadership mirrors its multidisciplinary orientation.

Aided by Tech.AI, a vast, diverse network of STEM scholars are now actively developing and/or adapting artificial intelligence technologies in the university's laboratories. "One of the main goals of Tech.AI" said Prof. Shuster "is to serve as a base for constant enrichment for the thriving and ever-growing AI community at the Technion, which today numbers over 150 researchers in various fields of artificial intelligence".

Outward-looking and inclusive, this vibrant, unique culture of Al alliances and information-sharing transcends campus borders. It generates research partnerships, symposia, conferences, and published materials that connect our community to members of industry and other academic institutions, at home and abroad.



Tech.Al's 2023 **Al and BEYOND** conference exemplified this attitude; with the support of Mobileye, Nvidia, Harel Technologies, IBM Research and Technion's Zimin Institute for Al Solutions in Healthcare, 500 high-tech industry executives, academics, students and others gathered to consider opportunities and risks in Al, as well as ways to translate Al theory into useful applications.

Tech.Al codirector Shai Shen-Orr summed it up: "Tech.Al is in the midst of an accelerated development process. We have already established several new centers under the Tech.Al umbrella and many more new initiatives and programs are being set up. The Al and BEYOND Conference gave us an excellent platform to expose Tech.Al's partners to conference participants, and to present Technion's Al capabilities to potential partners."

TAKING AI RESEARCH TO THE NEXT LEVEL

Technion and its allies are progressing on two parallel fronts of AI research:

- Core AI innovating and testing new paradigms in generative AI and predictive AI while extending machine and deep learning methodologies to advance fundamental AI capabilities (such as robotic process automation, computer vision, natural language processing)
- Applied AI applying AI tools to the research and development of smart products and services that elevate human health, productivity and quality of life and that maximally preserve environmental resources.

Tech.Al promotes a "vertical programming" approach to Al research and education, putting a spotlight on vertical domains: biomed and healthcare, energy, transportation etc. Over time, each domain benefits from an accretion of research projects that, complementarily, address all its essential aspects and challenges, resulting in a vertical continuum of innovation.

"The Temerty Center for Artificial Intelligence Research and Education in Medicine (T-CAIREM) of the University of Toronto is very excited to work with the excellent clinicians and researchers from the Technion–Israel Institute of Technology on this highly collaborative and interdisciplinary initiative."

said Prof. Muhammad Mamdani, director of T-CAIREM



Technion – T-CAIREM May 2023 Workshop in Ein Gedi



TECH.AI.BIOMED - AN EXEMPLAR OF AI VERTICALIZATION AT TECHNION

Our Tech.Al.BioMed projects are archetypical of the work performed, and the progress achieved, through Al verticalization at the Technion.

Front-and-center in this effort to create real world impact through academic invention, the Technion's Zimin Institute for Al Solutions in Healthcare is fully engaged in focusing and accelerating Technion innovation to solve major healthcare challenges. It champions Technion partnerships with industry and the formation of startups as indispensable vehicles by which to transform innovative ideas into patient-ready technologies. The Zimin Institute has funded multiple projects focused on medical informatics or Al-driven diagnostics. Among them: learning the relationship between genetic and tissuebased data to improve the accuracy of biopsy-based diagnostics and prognostics (Prof. Yonatan Savir, Rappaport Faculty of Medicine); using DNA optical mapping with advanced image processing to quickly and precisely identify pathogens and plan treatments (Prof. Yoav Shechtman, Faculty of Biomedical Engineering); Al processing of histopathology images to accurately phenotype tumors and predict patient response to alternative treatments (Prof. Ron Kimmel, Taub Faculty of Computer Science).

Partnerships with other universities, industry and healthcare stakeholders are a vital feature of the Tech.Al.BioMed initiative. Case in point, the Temerty Center for Al Research and Education in Medicine (T-CAIREM) at the University of Toronto is collaborating with Tech.Al.BioMed, bringing together faculty and students from both institutions to undertake research challenges of common interest – such as brain-gut interactions. In 2023, the Technion-Rambam Health Care Campus Al in Medicine initiative (TERA) was launched; combining clinical expertise with cutting edge data-science centered on medical informatics, TERA aims to identify early diagnostic markers and treatment decision points in the data and 'close the loop' by putting their impact to the test in clinical trials.

Highly emblematic of what Tech.AI.BioMed does and stands for is the alliance crafted with the Cincinnati Children's Hospital Medical Center. The "Bridge to Next-Generation Medicine" program includes workshops, webinars, faculty / student exchange visits, as well as research programs highlighting AI-enhanced bioinformatics and the use of intelligent big-data analytics in the cultivation of new approaches to clinical pediatric care.



EDUCATORS

elebrating 60 years of accomplishments, the Technion's Faculty of Education in Science and Technology is a hub of groundbreaking educational research and a central player in ensuring that Israel's innovation ecosystem will continue to enjoy outstanding human resources. The Faculty is a hidden gem, on the eastern outskirts of the Technion's campus, surrounded by verdant lawns and blooming gardens. Inside, students enjoy modern learning spaces and state-of-the-art research facilities, designed to enhance the development of educational innovations. The Faculty's vision is to lead the way in undertaking national and global

societal challenges through groundbreaking research and innovative practices in science, mathematics and technology education.

Unlike other departments of education, which often have a general approach to pedagogy, the Technion's Faculty of Education in Science and Technology stands out for its unique focus on integrating advanced educational knowledge and practices, specifically emphasizing science, mathematics and technology education. This specialized focus allows the faculty to offer cutting-edge programs and research opportunities that bridge the gap between theory and practice.



Under the faculty members' leadership, scientific teams engage in research projects, collaborate with renowned researchers, educators, and industry partners, and explore innovative teaching and learning methods that leverage the latest advancements in education. Indeed, the Faculty is unique in that its alumni, students, and faculty act as key players in transforming Israel's educational system to meet 21st century needs and expectations, by developing methodologies to better train future generations of science, mathematics and technology educators.

PROMOTING EDUCATIONAL LEADERSHIP AND EXCELLENCE

Founded in 1964 as an academic department for training Israel's science and math teachers, the Technion's Faculty of Education in Science and Technology received a "Faculty" status in 2015, in recognition of its important contribution to education, research and development in Israel and worldwide. Since then, the Faculty has nurtured and promoted leadership and international excellence in the fields of science, mathematics and technology education. Its faculty include prominent experts in a wide range of specialties.

"Through the application of pioneering research, we educate the next generation of scientists and engineers, by promoting science, mathematics and technology literacy and informed public dialogue", says the Faculty's dean, Prof. Miri Barak. This vision is in line with the Technion's aspiration to be a leading global science and technology research university and to advance Israel and humankind.

Although still relatively small and boasting a friendly and warm atmosphere, the Faculty is growing and becoming increasingly prestigious. It is deeply committed to advancing research, with a special emphasis on improving teaching and learning in diverse fields of study. In recent years, the Faculty's lecturers have consistently been among the highest rated by the Technion students.

GROUNDBREAKING RESEARCH

Similarly to other Technion Faculties, the Faculty of Education is a dynamo of groundbreaking research powered by multidisciplinary collaborations. Researchers frequently partner with colleagues from other Technion Faculties – such as Data and Decision Sciences, Biomedical Engineering, Electrical Engineering, Physics, Chemistry and others – as well as with leading researchers from top universities around the world, including MIT, Columbia, Cornell, Johns Hopkins, Oxford, University of Bologna, EPFL, LMU München and many more.

At the forefront of scientific knowledge, research at the Faculty focuses on cognitive, social and environmental aspects of teaching, learning, and assessment processes in schools and in higher education, in formal and informal environments. Advanced research laboratories and teaching laboratories are used for studying a wide range of disciplinary, multidisciplinary and interdisciplinary research fields, including science communication, sustainability education, assessment methodologies, education policy, educational technologies, Al and robots in education, neuroscience and education. These studies are conducted in sophisticated laboratories, including a brain imaging laboratory, a simulation lab for teaching math, a research lab for teaching physics and learning sciences, a research lab in biology education, and a specially designed escape room that is used as a chemistry teaching lab. Two more labs are in the process of being set up: a mindful learning technology lab and a co-design and interactive learning lab.

The Faculty's researchers regularly publish their findings in prominent international scientific journals. Many of the research projects are funded by American or European grants, including those received from the Spencer Foundation, ERC, EIT and EACEA.



PROFESSIONAL DEVELOPMENT AND SOCIETAL IMPACT

Dean Miri Barak and the rest of the Faculty's staff espouse a worldview whereby research and professional training in science, mathematics and technology education are essential for advancing equal opportunities in Israeli society. They firmly believe that innovative educational research enables Israel to flourish economically and socially. They are, therefore, proud of the accomplishments of the Faculty's alumni, many of whom teach in high schools, conduct research at universities, lecture at education colleges, and hold senior positions in the Ministry of Education and other institutions such as museums and nature reserves.

The Faculty of Education offers diverse education tracks - biology, chemistry, math, computer science, electrical engineering and mechanical engineering – as well as graduate programs with and without a thesis, and PhD options. Students in all of the Faculty's academic tracks acquire a range of important skills, with a special focus on teamwork, critical thinking and complex problem solving. The Faculty offers clinical teaching experience and courses in subjects such as evaluation and assessment, inclusiveness and integration, technological innovation, and science communication. Courses entail using and developing advanced educational technologies, and integrating digital and physical environments using AI, virtual and augmented reality simulations, and social media applications.

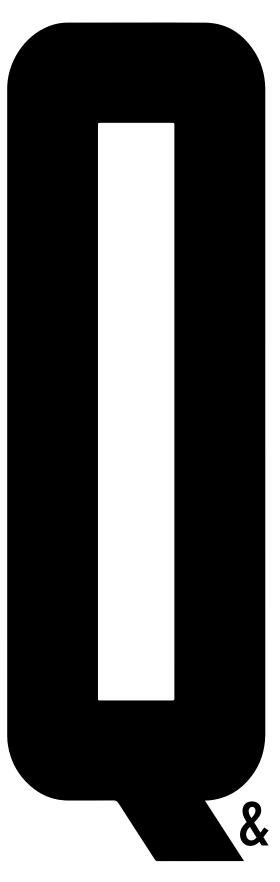
As part of its mission to help upgrade science, mathematics and technology education in Israel, the Faculty launched the **Mabatim (Views) flagship program.**Mabatim is designed for people who already have an academic background in science, mathematics, and engineering. Thanks to this unique program, experienced professionals are encouraged to become educators and play leading roles in transforming Israel's

educational system. Mabatim graduates are integrated in schools all over Israel, as well as in higher education, the high-tech industry (EdTech), the media, and informal frameworks. In the past, Mabatim students received full scholarships from the Technion covering their tuition. Hopefully, this practice will be revived in the future.

"Through the application of pioneering research, we educate the next generation of scientists and engineers, by promoting science, mathematics and technology literacy and informed public dialogue"

says the Faculty's dean, Prof. Miri Barak





INTERVIEW

PROF. LIHI ZELNIK-MANOR EXECUTIVE VICE PRESIDENT FOR INNOVATION AND INDUSTRY RELATIONS

he Office of the Executive Vice President for Innovation and Industry Relations is dedicated to enhancing the collaboration between the Technion and industry by identifying opportunities and maximizing their potential.

In an interview, Prof. Lihi Zelnik-Manor, Executive VP for Innovation and Industry Relations, talks about how Technion researchers have traditionally been at the forefront of cutting-edge technologies, leveraging the university's valuable multidisciplinary approach to create successful partnerships with industry players.



Universitie

How can the Technion create and maintain fruitful collaborations with industry to ensure these make a real and meaningful impact?

Universities have historically focused their efforts on pursuing academic research, while industry has used its resources to manufacture products. Over the past few decades however, we have seen a spurt of collaborative relationships and a fluidity of roles: many academic institutions are facilitating the inception of companies while corporations have started to set up their own research and development centers. As the relationship between academia and corporations intensifies, universities are presented with different needs and challenges.

Ever since its formation, the Technion has strived to enrich research and academic development, generate valuable human capital, revolutionize knowledge, and impact the Israeli and global industry around the world. The university's strategic vision emphasizes collaboration with industry, believing it can leave a significant mark on society by transferring the vast amount of knowledge and research it has accumulated within its labs to industry.

Over the years we have formulated and updated collaboration frameworks and plans, to make this knowledge transfer even more effective and impactful, with added productivity. We are formulating one such plan as we speak: we are taking a deep look at what works, what needs to be amplified and finetuned and where resources should best be allocated. All of this is to ensure that the Technion continues to be the leading technological university in Israel, a pillar of its society and a driving force for industry.

What challenges and setbacks are you facing that could hinder collaborations?

To ensure collaborations with industry are successful we need to make sure that the two sides learn how to talk with each other: researchers tend to ask broad questions, look at the larger picture and deliberate issues for extended periods of time. Those who work at corporations are generally product oriented and focused on bringing the development to market as soon as possible.

One of our jobs is to help bridge these differences and match expectations, so that both sides can work with each other and create a collaborative and productive working environment.

People who work in industry are often so focused on developing a product that they can often be unaware of recent research findings that could impact their work. Since our labs are equipped with the latest technologies and are managed by skilled researchers who track global scientific developments, they can quicky update industry partners with this information. This can help modify products to suit the changing reality or help companies to make the necessary tweaks to resolve an even larger challenge.

Today, a significant part of our staff and students are immersed in research projects that could translate into commercial products. This is a source of pride, as the technologies developed in our labs are those that will make an impact on society and the medical world. Intensifying connections with industry, as is happening now, will only boost these results.







What distinct advantages and expertise do Technion researchers bring to collaborations with the industry?

The Technion's multidisciplinary approach to research is what confers upon its scientists an unprecedented and unparalleled level of flexibility when approaching a problem. Our research teams include members from a wide variety of faculties and fields, including chemistry, biology, medicine, and engineering. This enables them to work together to tackle challenges as varied as sustainability and human health and find solutions to a variety of other pressing humanitarian problems.

Artificial Intelligence (AI) is a fast-growing field in which Technion researchers have joined forces over the years. Whereas the study of Al first emerged in the 1950s, we have seen a flourishing of this science only in the last few years, made possible by faster chips and the development of cloud computing.

This has triggered a global AI frenzy, with corporations spending billions of dollars and valuable human resources to get an edge over others and create practical tools to best make use of this technology.

Since the very beginning, the Technion has been at the forefront of Al research. Today, the 120 researchers that work in the university's labs can tap into decades of accumulated experience and experiments to bring that ripe knowledge to the industry that is hungry for new Al-based solutions and applications.

It is the role of the Technion's tech transfer unit to convert these high-scale projects into strong commercial products.

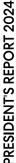
Another advantage of the Technion is the fact that many of its researchers, including myself, have worked in industry at some point during their careers, and are thus able to understand its needs and unique viewpoints. This background enables us to tutor our students and our fellow researchers with the practical knowledge relevant to industry. It also allows our students to successfully blend into the business world after they graduate, providing their new employers with all-rounded and better-prepared force to meet the challenges of the future.

One should not forget that there are many similarities between a talented researcher and a talented entrepreneur. Both need to have the ability to be thorough and pay attention to detail, undertake a comprehensive study of the field they wish to explore, ask the right questions, and think independently.

What will impact the Technion's research going forward?

It has always been in our DNA to perform innovative research and align forces with the industry. This collaboration will expand in coming years, and the ongoing open discussion, flow of information and the sharing of ideas will continue to be beneficial and fruitful for both parties.

We have seen this in the past, we continue to witness it today and we will experience even more of it in the future.





SENIOR EXECUTIVE VICE PRESIDENT

Prof. Oded Rabinovitch

he 2023-2024 academic year opened under the shadow of the October 7 terrorist attack and the ongoing war that broke out in its aftermath. The horrific massacre deeply affected the entire Technion community and impacted nearly every aspect of academic life on campus. During the first three months of the war, the IDF called up more than 3,000 students for reserve duty. Acting in alignment with Technion values and in accordance with our moral code of conduct, a decision was made to suspend all educational activities while such a large part of our community was taking part in the war effort. The Technion administration, including the Office of the Senior Executive Vice President, made and continues to make a concerte effort to accommodate the expanding needs of our reservists.

Prioritizing Academic Support

The academic year started on January 14, 2024 - nearly three months after the originally scheduled date. In cooperation with the IDF's chief reserve officer, the decision to delay the start of the semester meant that about 2,000 reservists were able to return to the classroom and study alongside their peers. However, there were still about 1,000 students on active duty during this time.

Exams that were originally planned for October 2023 were postponed and rescheduled. Students who were still serving in the IDF during this time were granted an exemption from those exams. In this way, all of the students were able to begin the academic year without the need to take exams during the semester.

Student reservists who were on duty for a long period of time during the first three months of war, as well as those continuing to serve during the semester, were allowed to reduce the number of credits required for graduation. Additionally, these students could choose up



to three courses in which their final grade would be determined on a pass/fail basis. These students can also register for new courses without any prerequisite conditions, and are allowed to reduce the total number of assignments.

The Technion's School of Undergraduate Studies, along with the Center for Promotion of Learning and Teaching, developed new academic and pedagogical methodologies to provide the required level of academic flexibility. For example, "shadow" courses were introduced for student reservists returning to academic life after the start of the semester. These special classes begin up to six weeks after the beginning of a course and are designed to support students as they work to catch up on course material and keep their academic careers on track. Special workshops and "crash" courses were also established. These programs are not linked to the academic calendar and can, therefore, be offered at any time to small groups of students.

In addition, we also developed the "lean program" concept. This initiative allows student reservists to reduce the number of required credits and focus on courses that are critically relevant to their studies. Working alongside a faculty consultant, students can build a lighter version of their curriculum. This allows them to successfully finish the semester and move on to the next one with greater ease.

These new concepts and methods were developed after careful deliberations of the Senate Standing Committee for Academic Studies, together with the university departments, including all academic faculties, the Schools of Undergraduate and Graduate Studies, the Center for Promotion of Learning and Teaching, and the Dean of Students Office.

This ongoing cooperation allows us to stay true to the Technion's promise that no student is left behind during these challenging times

A Soft Landing for New Faculty Members

Along with significant wartime efforts, the Office of the Senior Executive Vice President has also made progress in a series of new and ongoing projects.

Major improvements were made to the new faculty absorption process, especially regarding the establishment of research laboratories – an ongoing challenge we continue to address. This academic year, we are finalizing a comprehensive methodological reform to ensure a smooth and effective absorption process. Our main objective is to provide new faculty recruits with state-of-theart labs and all the resources necessary to begin researching and teaching. We formed a special support team dedicated to helping new faculty members turn their academic visions into a functional lab setting. This collaborative effort involves the new faculty themselves, department heads, the lab construction team within the Department of Construction and Maintenance, and the committee for academic absorption.

To facilitate this process, we developed detailed protocols that ensure each step of the process is closely monitored by dedicated team members. We have already received positive feedback from our new faculty members, indicating that we are moving in the right direction.

Planning for the Future

Last year, the Office of the Senior Executive Vice President, together with the Office of the Director General, introduced a new five-year academic planning and budgeting system. We are now moving into the second phase of this initiative. This involves moving the five-year planning window forward, while incorporating the knowledge we gained from last year's efforts.

The five-year planning process accounts for both academic and financial considerations. To facilitate the academic planning, a series of meetings was held between Technion management, department heads, and their teams. The aim of these discussions was to align departmental needs and plans with the broader strategic goals of the Technion. Simultaneously, the Office of the Executive Vice President and the Director General have led the development of a five-year financial planning process. By balancing academic needs with financial considerations, we provide the Technion with the clarity and stability necessary to sustain its success well into the future. This integrated approach ensures that academic and financial priorities are aligned, enabling effective planning and resource allocation to ultimately support the Technion's long-term goals.

New Facilities, Enhanced Learning

A collaborative effort has resulted in the development of a new teaching laboratory serving the Faculties of Biology, Biotechnology and Food Engineering, and Biomedical Engineering. This facility, purposefully designed to meet the expanding teaching requirements of these three faculties, promises to offer students across all programs a cutting-edge, hands-on learning experience.

Inspired by the Strategic Plan of the Technion and the One Technion vision, this integrated teaching facility and the courses it will offer are aligned with the institution's overarching goals and principles. By consolidating resources and expertise, this joint initiative will enhance the quality of education and practical training provided to students in these fields, fostering interdisciplinary collaboration and innovation within the Technion community.

A New Path to Academic Success

In a joint effort between four academic faculties, the School of Undergraduate Studies and the Office of the Senior Executive Vice President, a new track was launched to help students decide which undergraduate degree to pursue. Students accepted to this program are given a special opportunity to get exposed to the following four participating faculties before choosing a degree path: Mechanical Engineering, Civil and Environmental Engineering, Chemical Engineering, and Materials Science and Engineering. All students enrolled in this track will take their first semester together and then decide which faculty best suits their academic needs and aspirations. This trajectory is new to the Technion and other engineering programs in Israel. The first-of-its-kind program embodies the One Technion concept and we hope that with its success, others will follow.









EXECUTIVE VICE PRESIDENT FOR ACADEMIC AFFAIRS

Prof. Naama Brener

he Office for Academic Staff (OAS) handles the appointment, tenure and promotion of faculty and teaching staff. It also manages requests for sabbaticals, vacations and work-related travel. Additionally, the OAS oversees postdoctoral fellowships and academic visits, as well as the distribution of scholarships, honors and awards.

Wartime Challenges

This academic year started with the horrors of the October 7 terrorist attack and subsequent war in Gaza. Technion staff members, along with the entire Technion community and the whole of Israel, were deeply affected by these events. During this time, many research students, staff and faculty were called up for reserve duty in the Israel Defense Forces. Some suffered personal tragedies, while others left the country soon after the war broke out. As a result, research activities and academic life suffered significant setbacks and delays. It took a concerted effort to maintain some level of productivity and sense of normalcy on campus. Despite these unforeseen difficulties, our office managed to continue recruitment and promotion, while simultaneously confronting additional challenges.

The OAS continues to monitor and support our academic staff members in the reserve forces. For those returning from the war, we offer assistance programs, including group retreats and professional counseling. The Technion Senate passed a resolution to allow a one-semester extension of the maximum time period before tenure. Many work-related travel plans and sabbaticals were modified as a result of the war. In response, we offered maximum flexibility and adjusted the academic calendar. OAS personnel also joined the Technion community on several volunteer initiatives to offer support in teaching, lecturing, agriculture and other key areas in need.



Faculty Recruitment

Recruiting the best and brightest faculty members remains a top priority for the OAS. As of March 2024, we welcomed 25 new faculty members, including seven women. Eight more faculty members were expected to join the Technion after March 2024.

We have formalized the process of recruiting experienced industry professionals into academic tracks by recognizing professional achievements as part of our overall acceptance criteria. Several such cases are proving successful and are greatly contributing to engineering education and research.

The number of Technion faculty members has remained stable, with the proportion of women rising to 26%.

Currently, the OAS is well into the recruitment process for the next academic year starting in October 2024.

Academic Staff Training

The OAS successfully upgraded and expanded its young faculty mentoring program which is led by our faculty members in cooperation with industry professionals.

A collaborative effort is also underway between the Irwin and Joan Jacobs Graduate School and the Center for Promotion of Learning and Teaching to set up a workshop focused on mentoring of research students and faculty members at all career stages.

Involvement of Young Faculty in Academic Life

The OAS continues to encourage young faculty to become more involved in various aspects of academic life. Following the changes made in the academic regulations, 40% of the faculties have already appointed associate professors to the preparatory committee. This has been seen as a successful move and we hope more faculties will follow next year.

This year we also modified regulations and processes to unify candidacy submissions for academic prizes irrespective of academic rank.

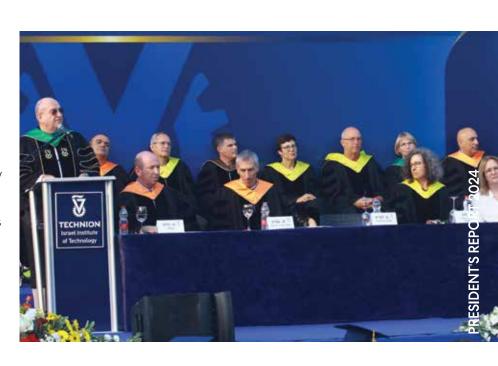
Industry Relations

We continue to recruit industry experts from a wide range of fields as part-time research fellows. This track, launched in 2022, shows great success in key areas such as teaching, mentoring research students and carrying out research projects in important engineering fields that are relevant to our students, but not necessarily covered by our own faculty members.

We also launched a new procedure, in conjunction with Office of the Executive Vice President for Research, to approve external part-time employment for faculty who work in industry. To accomplish this, we had to tackle issues surrounding intellectual property and administrative protocols. This process greatly improved efficiency and speed of approvals.

Maternity Fund for Postdoctoral Fellows

The OAS has established a maternity fund for women postdoctoral fellows at the Technion, offering them financial support during maternity leave. Currently, we have five fellows getting maternity fund support.





EXECUTIVE VICE PRESIDENT FOR **RESEARCH**

Prof. Noam Adir

A RECORD YEAR FOR RESEARCH FUNDING



Research agreements issued by the Research Authority reached an all-time high:

Over\$120 million

in 2022-2023 (an increase of over 10% from 2021-2022)



The number of grants awarded to Technion researchers by the Israel Science Foundation (ISF) increased from

67 to 72

uring the 2022-2023 academic year, Israel and the Technion were challenged by three major crises: political strife, a major cyber-attack and, later in the year, the October 7 attack on the settlements and cities surrounding the Gaza Strip and the northern border with Lebanon.

Thousands of Technion students, staff and faculty were recruited into emergency reserve duty. Prof. Jacob (Koby) Rubenstein's steady hand enabled the Technion to continue functioning throughout. 2023–2024 will certainly be a very challenging year in all aspects of research and development activities. The staff of the Office of the Vice President for Research are hard at work to mitigate the effects of the war.

Funded Research

Research contracts signed in 2022-2023 by the Research Authority amounted to a record of over \$120M. This constituted a sharp rise from \$109M in 2020-2021. The increase extended across almost all sectors of activity, particularly in European Union (EU) competitions. The performance of Technion researchers at all levels in the prestigious ERC competition continues to be outstanding.

Technion researchers submitted 208 proposals to the Israel Science Foundation (ISF) in 2022-2023 and were awarded 72 grants – compared to 198 proposal submissions to the ISF and 67 grants in 2021-2022, and 216 submissions and 73 grants in 2020-2021.

Overall, the success rate of Technion researchers in ISF competitions



PATENTS



First place, in Israel and Europe, in the number of patents approved in the United States



Among the top 20 universities in the world in terms of the number of patents approved in the United States in relation to the number of faculty members

Figure 1: New external research contracts (Thousands USD)

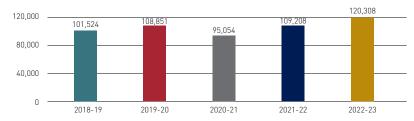
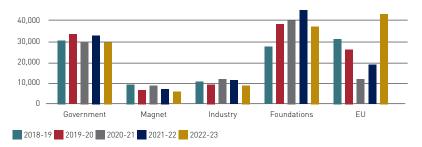


Figure 2: New external research contracts – breakdown into various funding sources (Thousands USD, "Foundations" include all competitive grant agencies except those of the EU).



continues to be higher than the national rate (~35%). Additionally, ISF conferred on Technion researchers three out of its eleven prestigious, national Breakthrough Research Grant (BRG) awards.

The Technion continued to invest heavily in providing new faculty with optimal research infrastructure. We invested more than 61M NIS in new faculty research allocations and lab renovations in 2022-2023, compared to 81M NIS in 2021-2022 and 74.5M NIS in 2021-2022.

Challenges

We continued to improve the level of our European Union ERC grant submissions in 2022-2023. Five Starting grants, five Consolidator grants and two Advanced level grants were awarded. We are, however, aware that future submissions may be affected by Israel's international position in the academic world

External Aid for Research

In addition to the external funding mentioned above, in 2022-2023 the Technion received a total of \$12.3M in contributions from donors for specific individual researchers or for the creation of research infrastructures. This compares to \$18.2M in 2021-2022, \$22.8M in 2020-2021, \$12M in 2019-2020, and \$13M in 2018-2019.

Challenges

Donation grants tend to be focused on specific fields (e.g., health care) and are not available to the general population of principal investigators (PIs). To address this, in 2018, we created the Technion Research Directory, which is a searchable database of brief proposals (articulated in layman's terms) submitted by Technion faculty and used to help donors find topics of interest.

The Executive Vice President for Research and Vice President for External Relations and Research Development work in concert to develop new sources of funding for all areas and disciplines.

International Collaborations

Expanding scientific collaborations with institutes abroad is an important goal for the Technion. A major instance of such collaboration is our membership in Eurotech (https://eurotech-universities.eu/). The Eurotech alliance significantly increased its activity in 2021-2022 and 2022-2023, including a new faculty exchange program. These universities have been highly supportive of the Technion over the past year and continue to support us.

Industrial Collaborations

We attribute great importance to industry collaborations. We believe that industrial contracts contribute to both parties. The Technion enjoys support for research, better education for students and help in providing our faculty with up-to-date knowledge of emerging needs. In exchange, the Technion commits to helping Israel's industry and the nation's economy. In addition to the strategic industry partnerships, industrial contracts in 2022-2023 totaled \$9.3M - as compared to \$11.8M in 2021-2022 and \$12.3M in 2020-2021. Obtaining industrial contracts requires our staff to be continuously proactive in approaching potential companies. In 2021-2022, we started a new project to connect with traditional industry, including food and pharmaceutical companies.

Translation of Research

The Technion Technology Transfer Office (T3), is a branch of the Technion Research and Development Foundation (TRDF) that oversees the domain of knowledge transfer.

Operating under the Technion, the TRDF is a profit-oriented entity with the Technion's Executive Vice President for Research at the helm as CEO. Revenue from licensing and royalties is crucial for funding research activities at Technion, including investments in research infrastructure. A key focus is on transforming scientific breakthroughs into

marketable innovations, thereby nurturing an environment of entrepreneurship and innovation on campus. Moreover, this process of turning research into practical applications is viewed by the Technion as a significant contribution to the Israeli economy. Innovative commercialization strategies implemented by us in recent years, have markedly boosted the Technion's ability to spawn new ventures. Technion faculty members have emerged as leaders in Israel's startup ecosystem, founding one out of every 30 new startups.

In 2023, for the third consecutive year, the Technion maintained its top ranking in Europe and Israel for the number of U.S. granted patents, also securing a place in this category worldwide among the top 20 universities (per faculty member). This achievement highlights the institution's strong commitment to entrepreneurship and innovation.

In 2022-2023, our patent portfolio expanded by three percent, reaching a total of 770 patent families - compared to 744 in 2021-2022. 740 in 2020-2021, and 715 in 2019-2020. This growth comes with a two percent reduction in the average cost per patent family, alongside over 2M NIS in patent reimbursements from commercialization efforts. In the 2022-2023 period, we initiated 37 new commercialization contracts, resulting in the establishment of nine new spinoff companies, along with six term sheets for additional spinoffs. Additionally, we secured four license agreements with industry partners and forged 18 translational research agreements. These endeavors, undertaken as part of advanced research development for Technion spinoffs. were supported by a total budget of 33M NIS sourced from various Israel Innovation Authority programs. Notably, revenues generated included 22M NIS from royalties and 3M NIS from commercial considerations. The Technion ecosystem boasts holdings worth approximately \$260M across 134 companies, whose cumulative value exceeds \$19B. This vibrant network includes nine publicly traded entities and 13 private



companies each valued at over \$100M, collectively raising more than \$4.5B to date. Together, these companies employ over 4,600 individuals with more than half of them based in Israel. In 2023 alone, nine new companies emerged from within this ecosystem, contributing over 20 additional employees to our expanding workforce. Our diverse portfolio includes companies like Aleph Farms, Meatafora and Mealiways (FoodTech), NanoGhost and Tripod Therapeutics (drug development), StarkWare (software), H2Pro and Luminescent Power (energy), Tabnine (software), Qedma (quantum computing), CytoReason (bioinformatics), Deci Al (software), Speedata (chip design), Mana.bio (drug delivery), Tamar Robotics (medical devices), and many more. The TRDF recognizes the importance of investments in research infrastructure. In 2022-2023 we invested more than 5M NIS in this fund to be used as matching funds for external grants (such as VATAT, ISF or others).

The T-Start acceleration program, initiated last year through a partnership between T3 and the Entrepreneurship and Innovation Center, has already seen remarkable success. Among its graduates, two innovative companies focusing on sustainability and energy solutions were launched. Additionally, this year, three participants clinched the top spot in the i4Valley competition held at the Technion Knowledge Center for Innovation, underscoring the program's role in nurturing groundbreaking ventures. Furthermore, the NGT3 incubator established in collaboration with the Technion, is dedicated to the healthcare sector, particularly biotechnology, with a special focus on engaging the Arab population.

In September 2023, the groundbreaking Technion-Rambam summit was held, marking a significant milestone in bridging medical research with clinical innovation. This event facilitated direct interactions between multidisciplinary researchers from the Technion and clinicians from Rambam Hospital, focusing on developing technological solutions for unresolved healthcare issues. The summit served as an invaluable platform for fostering potential collaborations and kickstarting innovative ventures.

Moreover, T3 has played a pivotal role in fostering collaboration between the Technion Sustainability Frontier and PLANETech, a community initiative by the Israel Innovation Authority focused on sustainability, environmental, and climate challenges.

I would like to express my personal gratitude to my predecessor, Prof. Jacob (Koby)
Rubenstein, for his exemplary contributions to all aspects of research in the Technion between the years 2019-2023 as VP for Research and the CEO of the TRDF.





EXECUTIVE VICE PRESIDENT AND DIRECTOR GENERAL

Dr. Rafi Aviram

General

The last year has been influenced by two major events - the cyberattack that was initiated in February 2023 and the October 7 terrorist attack that led to the Swords of Iron War. Many activities were modified due to these unfortunate events, yet we can confirm firmly that the Technion has succeeded in sustaining Consecutiveness Functionality (CF). Retaining CF requires daily basis assessments, constant decision making, and quick information channels across the entire campus. To that end, during such events, the Technion management team operates a situation room, which consists of the major academic and administrative officials. During the cyberattack, the Technion worked closely with the Israel National Cyber Directorate (INCD), and during the ongoing Swords of Iron War, Technion leadership works closely with the Home Front Command of the IDF.

Recovery from the cyberattack required many actions that are further detailed in the computer and IT section below. One of these actions was to recruit a professional Deputy Director General for Computer and IT systems (CIO). Ms. Shoshi Levavi entered the CIO position in February 2024. The cyber arena is a silent threat as cyber attackers continue to target the Technion and many other institutions in Israel. The Computer & IT staff, the experts' team and the external contractors deal constantly with these threats.

The October 7 war has challenged all aspects of life at the Technion. Following the Home Front Command instructions, we initially enabled many employees to work remotely. As the war dragged on, by the start of the first semester in January 2024, employees returned to work on campus. Regular activities have been reinstated, even as we keep a watchful eye on the nearby northern front. We immediately initiated the following steps to improve Technion's wartime preparedness: set up a situation room; opened all the bomb shelters; enacted full-scale civil



defense drills and other wartime-related drills for our management team; we acquired safety equipment and communication devices, and undertook many other initiatives, as described in the sections below.

During the last year, the Administrative Management Forum (AMF), led by the Executive Vice President and Director General. meets frequently to discuss major activities on campus. In its annual meeting, the AMF launched a series of new administrative projects. Among these new programs is the Reducing Bureaucracy Project, which was published to the entire campus in December 2023, the T-Buddy initiative, which was initiated in February 2024, and the Administrative Experts Teams plan, which was launched in January 2024. Many other projects are underway, all of them guided and motivated by the upper administrative echelon of the Technion. Financial support is also provided when required. These projects involve many administrative employees from all ranks of the campus and have been well received by the staff.

Despite all these challenges, our strong campus community combined with support received from our friends worldwide, have enabled the Technion to continue to focus on its primary goals of education and research. The administration's high motivation, its morale and the high quality of our team have yet again proven its ability to confront the most complex and daunting challenges. One of our main goals in years to come will be to continue promoting the development and preparedness of our administrative staff.

Finance

Israel's economy grew by 3.5 percent year over the year between October 2022 and September 2023, but just 2.0 percent for the entire year, amid the outbreak of the October war. An OECD report about the economic impact of the Swords of Iron War forecast a temporary, but significant, slowdown in the growth of the nation's economic activity. The

OECD estimated that Israel's GDP will grow just 1.5 percent in 2024 and recover thereafter. to grow by 4.5 percent year over year in 2025. Due to the war, Israel's cabinet approved a revised 2024 state budget that included several steps to help cover the wartime deficit. One such step was a uniform five percent budget cut across government ministries. However, the amendments have yet to be approved by the Knesset. These and other macroeconomic indicators have a significant impact on the Technion's financial activities. Despite these challenges, we plan to continue the recruitment and onboarding of new faculty members and upgrade our physical facilities to improve the standard of teaching on campus.

Computer and Information Technology

A major cyberattack against the Technion in February 2023 created a significant challenge for our team at the Division of Computing and Information Systems (CIS). Originating in Iran, the attack was among the largest and most severe Israel has seen to date, and can be seen as a terror attack, as its primary goal was to wreak turmoil and serious damage.

The immediate damage-control steps implemented by the team managed to successfully foil the attack. To the best of our knowledge, no information was lost or leaked, nor was any ransom paid. The Technion continued almost seamlessly to fully meet its teaching obligations. The main damage amounted to numerous systems and web sites being unavailable for a few months as well as the considerable resources drained in the recovery process.

Meanwhile, the attack led to numerous cybersecurity upgrades: these included modifying our network configuration; changes in work procedures and the creation of new restrictions; tacking multiple existing vulnerabilities; software updates; activating and implementing a SIEM/SOC solution; and the establishment of an expert committee to decide on medium-term and long-term initiatives. The team also assessed, tested and adopted a variety of new cybersecurity technologies.

We also continued to develop, deploy, and integrate the Student Life Cycle Management (SLCM) project, the Technion's new SAP-based student information system, and activated multiple modules for the first time. Among them: registration and admission; semester planning; student status management; thesis management; grades reporting; scholarships; dormitories; and more. A self-service, cell-phone-accessible portal for students and the experimental my.technion.ac.il portal are notable systems that we developed during the past year.

Operations

The Operations Division handles all the Technion's vast infrastructure functions. It has four units: construction and maintenance; security and emergency; administration and logistics; and safety.

While a string of large projects was initiated during 2023, the October 7 war cut the momentum short. The focus of the Security and Emergency Unit turned to reinforcing the campus' preparedness for highlevel emergencies, like missile attacks, earthquakes, or widespread fires. Our underlying assumption is that in the event of a crisis the campus will have to operate independently over several days. Emergency training videos have already been produced in Hebrew, Arabic and English.

The unit also distributed emergency backpacks containing rescue, protective and first-aid equipment to the faculties. The campus emergency team numbers 200 people, divided into sub-teams for each action area. In accordance with an annual work plan, each sub-team (hazmat team, fire teams, rescue teams, first-aid teams, etc.) completed training and qualification sessions while also upgrading its services through the digitalization of processes. A new earthquake prediction system is also currently being evaluated.

To maintain routine and keep deadlines, the Construction Department completed the construction of two new buildings – the

Zisapel Electrical and Computer Engineering building and the Sagol Center for Composite Materials. There are also several construction projects underway: The Carasso FoodTech Innovation Center is set to be inaugurated later this year; a new water reservoir and a one-of-a-kind operational center for the handling of chemical waste are on track for completion; the Faculty of Aerospace Engineering's main building is undergoing extensive renovation while the Technion's Kislak Park is also undergoing renewal. Building permits were granted for the new Rosman High Performance Computer Data Center and the new computer science building, where site excavations have started. Four other major projects are undergoing statutorily mandated licensing processes: the André Cohen Deloro Institute for Transformative Biomedical Sciences and Engineering; the Stewart and Lynda Resnick Sustainability Center for Catalysis; a new building for the Faculty of Aerospace

The D. Dan and Betty Kahn Human Health Building and the Rappaport Cancer Research Center are now in the planning stage. Despite war-related difficulties, we strive to advance major construction projects to promote the continued expansion of research and the accommodation of incoming principal investigators.

Engineering and renovation of the Technion's

medical student dormitories

Throughout the year, the Safety Unit performed 104 laboratory risk assessments, 11 building safety surveys and recommended the commissioning of 26 new research labs. In addition, the Safety Unit published 14 construction directives and performed detailed, campus-wide asbestos inspections and mapping, as well as environmental surveys. The number of reported work-related accidents during 2022-23 increased by more than 30 percent over the previous year and totaled 58 reports. Given that incident severity was uniformly low, the sharp increase reflects the rising trend in the on-campus "Safety Climate". Last year, the unit trained nearly 7,000 employees and students across 129







training groups. The number of trainees using its courseware programs increased by 34 percent.

Last year, the Administration and Logistics Unit finalized a number of contracts between the Technion and our student association (ASAT) regarding the management of the Zielony Student Union Building. Additionally, the unit finalized contracts with external high-tech and biotech companies residing within the Technion science park, and with the various on-campus eateries and restaurants.

The unit also renewed the Technion's insurance policy and oversaw dozens of insurance lawsuits – including one for cyber damages. An annual budget of 25M NIS has been allocated to laboratory cleaning contracts. A tender process for these has been completed and we expect to finalize them soon.

The Operations Division has also spearheaded a multidisciplinary sustainability plan including the Technion's carbon footprint. Toward the end of 2023, a series of new recycling measures produced significant improvements on campus. In addition, the construction and logistics divisions have invested heavily in improving campus accessibility.

Human Resources

The Human Resources Division attends to wide-ranging aspects of the Technion's worklife balance, while promoting new ways to streamline processes, add flexibility, and ensure the Technion keeps up to speed with the changing reality of the job market. The HR division manages all matters concerning administrative staff and academic faculty, adjunct instructors, student employees and retirees.

The COVID-19 pandemic led to the setting up of a remote-work pilot program at the Technion. At the end of the program, and based on a managers' survey, a committee headed by the Technion's Director General extended the program for an additional year. In recent years, HR has taken

steps to advance digitization and to streamline and improve processes and procedures, among them, K2 - an onboarding portal for new employees, and BI - a visual, data-presentation tool to facilitate advanced gueries and analyses.

To improve "connectedness" in and to the workplace several steps were taken:

The Leaders Program for administrative personnel - trained and promoted workers with managerial potential and provided the tools to qualify them as leaders.

Employee retention and enhanced onboarding – we improved and digitized the onboarding of workers; set up a career management portal; developed an employee retention toolbox. Workplace satisfaction surveys are systematically conducted among administrative staff.

Refining employer branding – we started collaborating with a public relations firm to boost the Technion's image as an employer and strengthen our connectedness to the workplace and prevent employee attrition. This process has been temporarily put on hold because of the war.

With the outbreak of the October 7 war, Technion's training and welfare units undertook initiatives to aid Technion workers, providing lectures and other activities to empower them and their families at the time of crisis.

At the same time, our HR division initiated a range of activities, including the establishment of a Mutual Responsibility Center. As part of its activities and in a show of campus resilience, teams of volunteers, including workers, faculty and students, aided evacuees, and the families of hostages from war-affected areas. At its peak, the number of volunteers at the center stood at 411. The center also provided support to workers who were called up for active military reserve duty and for their spouses and families.



VICE PRESIDENT FOR DIVERSITY AND INCLUSION

Prof. Adi Salzberg

he purpose of the Technion Office for Diversity and Inclusion is to promote human diversity and foster fair gender representation at every level of the institution, while safeguarding quality and egalitarian academic standards.

Human diversity is important for enhancing creativity and innovation within the Technion itself. However, given Technion's considerable impact on Israeli society, its importance goes well beyond the campus. Diversity at the Technion directly affects diversity in the Israeli high-tech industry; it is critical to the development of human capital and of social and intellectual leadership in the spirit of Technion's vision, throughout Israeli society.

When thinking about diversity and inclusion, our task goes beyond mere numbers. We do strive for fair representation of students and faculty from different groups in Israeli society. However, more importantly, we would like to make human diversity a built-in component of the Technion experience and help create a sense of "Technion togetherness" while preserving the unique identity of each group. The academic arena could become a place where social connections are formed between people from the different groups, the different ethnicities in Israeli society. Considering the increasing factionalism within the Israeli society, this goal is becoming more urgent than ever.

Teaching in wartime on a diverse campus

After the horrific massacre by Hamas on October 7, 2023, it became clear that the 2024 academic year would be different from anything we had experienced before and that the shadow cast by the Swords of Iron War will hang over us and our activities. We were all asking ourselves, how can we maintain an academic routine in this unusual and



60 of the campus leaders have attended a meeting to raise needs and concerns about Jewish-Arab complexities in the classroom



Subsequently, over / UU academic and administrative staff members participated in diversity and inclusion training, aimed at maintaining a harmonious academic routine



traumatic reality? How can we cultivate and restore the Arab-Jewish relations on campus, given the severe upheaval that affected them as a result of the tragic events?

The human diversity and complexities that characterize the Technion community, a microcosm of Israeli society, posed a significant challenge to maintaining a harmonious academic routine in such a charged reality. In the 2024 academic year, Jewish and Arab students – including reservists, people grieving the loss of friends or family, and those who were evacuated from their homes - were expected to sit together in classrooms on campus. Teaching in a tense, charged atmosphere, required dedicated preparation and training of the teaching and administrative staff. To achieve this, several proactive measures have been taken by the Office for Diversity and Inclusion to ensure the preparedness of the academic and administrative staff.

To better understand the needs and concerns of the academic and administrative staff, and to get the leadership of the Technion's community involved in nurturing its resilience, we gathered for a one-day seminar in which 60 of the campus leaders (management, deans, heads of administration etc.) discussed the challenges, possible ways to deal with them, and the way each one of us can contribute to this complex task. In addition, we interviewed the management of each department to learn about their unit's specific needs for counseling and training.

Subsequently, a series of training webinars and face-to-face workshops were initiated, tailored to the needs of each group, including senior and junior faculty members and various administrative staff (such as librarians, dormitory staff members, lab-managers etc.). Over 700 academic and administrative staff members participated in this type of training before the academic year commenced, with ongoing support provided throughout the year as needed. We have no doubt that this concerted intense effort contributed significantly to the successful opening of the academic year.





DAVID AND JANET POLAK VISITORS CENTER IN NUMBERS

CONFERENCES

37

2,228

Number of Conferences Number of Visitors

₩ VID VISITS

219

1,913

Number of Visits

Number of Visitors

GENERAL PUBLIC VISITS

504

8,554

Number of Visits

Number of Visitors

760
Total Number of Visits

12,695
Total Number of

Visitors

VICE PRESIDENT FOR EXTERNAL RELATIONS AND RESOURCE DEVELOPMENT

Prof. Wayne Kaplan

he academic year 2022-2023 marked my inaugural year as vice president for external relations and resource development at the Technion and heralded a significant investment in reorganizing the structure of the public affairs and resource development division (PARD). This reorganization effort introduced new roles, including the director of the division, the head administrator of the division, and several department heads specializing in marketing and public relations.

A targeted effort was made in marketing and public relations to enhance the Technion's capability to attract new cohorts of students and to bolster its presence both locally and internationally. This initiative involved issuing tenders for a marketing firm, and afterwards a public relations firm. These firms are managed by department heads and their teams, who coordinate the marketing and public relations endeavors for the Technion.

The extra investment and support that PARD provided in marketing and PR was evident by an enhanced presence across various platforms. In the 2022-23 academic year the number of LinkedIn followers in English increased by 30%, Technion's Hebrew Instagram page reached 20,000 followers, and over 3M people were exposed to content on the Facebook page. Despite initial challenges such as a cyber-attack affecting website access, collaborative marketing and recruitment initiatives led to a successful enrollment of 2,081 new students, marking a significant achievement. Additionally, an open-day organized in collaboration with all faculties, attracted around 2000 interested participants, further bolstering engagement and outreach efforts.



relations efforts in the United States, which included organizing events in cities such as Miami (March 2023), San Francisco (January 2024), Los Angeles (January 2024), New York (April 2024), and Boston (April 2024), featuring the participation of former Prime Minister Naftali Bennett. These events proved instrumental in improving the Technion's profile and introducing the institution to new potential supporters in the U.S. The insights gained from coordinating and analyzing these events led to the decision to adopt a similar approach in the future with other distinguished personalities, including celebrated author, Saul Singer.

The 2022-2023 academic year also witnessed enhanced collaboration between PARD and its network of international Technion societies. Regularly scheduled Zoom meetings and semiannual society meetings, both at the Board of Governors meeting and mid-year, facilitated more effective coordination and increased the on-campus presence of society representatives. This year, there was also an augmented focus on developing working plans with PARD for various international societies, including those from the U.S., Canada, France, the United Kingdom, and Brazil. Plans are in place to continue this detailed planning with other societies in the coming year.

Additionally, the Polak Visitors Center, also under the auspices of PARD, welcomed nearly 13,000 local and international visitors during this period, which included more than 700 visits of VIP guests and the general public.

The Center also held more than 30 conferences.

The subsequent 2023-2024 academic year underwent significant alterations due to the horrific events of October 7 and the ensuing conflict. As a result, all of the centennial celebrations, both at the Technion and internationally, were delayed by a year, and are now set to commence in October 2024. These events were intended to celebrate the Technion's achievements, elevating the visibility of the Technion and enhancing its positioning globally.

The period following October 7 saw the



2,081 new students enrolled at the Technion



330 girls from all over the country met with female engineers and scientists, as part of the TechWomen event



5,000 potential undergraduate students participated in the Open Day, a 68% increase compared to last year

immediate establishment of the Technion Emergency Fund to meet the unique needs arising from the conflict. The fund emphasized philanthropic support for enhanced campus safety and security measures (including communication equipment, security vehicles, emergency shelters, and supplies), financial aid for students serving in the military, psychological counseling for returning students, extended tutoring for reservists, and fellowship extensions for graduate students. At the time of writing this report, the primary focus is on raising funds for fellowship extensions.

PARD made it a top priority to commemorate and honor our fellow citizens who fell victim to the atrocities of October 7 and held a commemorative ceremony on the thirtieth day of the war. We also organized a rally calling for the release of the hostages held in Gaza. We ensured that a large poster of all hostages was displayed prominently for all to see on our central library entranceway and that a large Israeli flag was draped over the Senate building.

We hosted two events for the Iron Dome Unit of the IDF and held a president's opening-of-the-year event with guest speakers, marking the war.

The Polak Visitors Center refocused its efforts on supporting recruited soldiers and their families, some of whom were accommodated at the Technion. Furthermore, the Center organized programs to uplift families relocated from the border with Gaza and Northern areas, including musical events and workshops. From the start of the war and until the end of 2023, the Technion intensified its social media presence, sharing over 300 posts across platforms, including 100 in English. These posts focused on community engagement, support for the home front, and fostering pride among its members, facilitated by collaborations between the marketing department, faculties, Technion units, and the student union. Dozens of videos showcased the institution's weekly activities and its societal contributions in Hebrew and English. Additionally, the Technion led a nationwide campaign to illuminate buildings in blue, symbolizing solidarity and boosting morale.

As PARD looks ahead to 2024 and to the next 100 years, the division is dedicated to further enhancing the Technion's visibility in the public sphere, ensuring the dissemination of its successes and scientific and technological advancements worldwide. It also remains committed to promoting the Technion's central role in the development of the State of Israel.

SPOTLIGHT ON RESEARCH CENTERS AND PROGRAMS

Bruce and Ruth Rappaport Cancer Research Center

The Bruce and Ruth Rappaport Cancer Research Center is scheduled to move to the soon-to-be-designed D. Dan and Betty Kahn Human Health Building. This center will be the essence of a new and vital interdisciplinary approach to tackling cancer, one of the leading causes of mortality in the Western world

"The Technion is the best place to establish interdisciplinary cancer research because all the disciplines necessary to battle cancer exist within the Technion"

Aaron Ciechanover, Distinguished Research Professor, Rappaport Faculty of Medicine



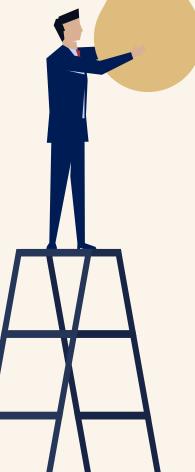


Technion Excellence Program

The Technion Excellence Program is a unique academic framework, personally tailored to each participant. Its purpose is to nurture curiosity, creativity, and in-depth academic inquiry among students with leadership potential. Since it was established, more than 300 students have completed the Program, and many of them now serve in prominent leadership positions in academia and industry. Twelve members of the Technion faculty are alumni of the Excellence Program, and many other graduates went on to become researchers and faculty members at other universities in Israel and around the world. There are currently 50 students enrolled in the Program.







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SPOTLIGHT ON BREAKTHROUGH STUDIES

Chasing Light in the Ice: Ariel Hazan's Search for Microbial Rhodopsins

Doctoral student Ariel Hazan from the Faculty of Biology exchanged the warm laboratory at the Technion for the snowy landscapes of Antarctica for a month and a half. In the cold of -38° C and difficult conditions, he collected and modeled data for the research he is conducting under the guidance of Prof. Oded Beja on microbial rhodopsins – unique proteins that allow microorganisms to produce energy from sunlight.

Living Micro-organisms Can Play a Significant Role in Reducing the Carbon Footprint of the Construction Industry

Asst. Prof. Shany Barath and Prof. Yechezkel Kashi won the Climate Solutions 2023 Israel Breakthrough Research Prize.
Their research on Cyanobacteria-powered 3D printing of carbon-efficient building components is a collaboration between the Faculty of Architecture and Town Planning and the Faculty of Biotechnology and Food Engineering. Together, they are developing methods to cultivate building materials for 3D printing. These materials actively capture carbon dioxide during production and induce the precipitation of calcium carbonate, thereby solidifying the components.









GIFTS 2022-2023

Apple Inc. Fund for the VLSI Laboratory Improvement

Applebaum Foundation for the Early Prognosis of Metastatic Risk in Gastrointestinal Cancers by Prof. Daphne Weihs

Artist Capital, Inc. for the Uzi Arad Grand Strategy Project

Gift of the Joy **Balkind** Estate for the Naming of the 5th Floor and Lobby in the André Cohen Deloro Building

Philip & Danielle **Barach**Family Foundation Fund for the
Neurodegenerative Disease Research
in the Prince Center

Sondra and Robert **Berk** Fund for the San Diego Chapter Project for the Allen & Jewel Prince Center for Neurodegenerative Disorders of the Brain

Bley Stein Foundation Fund for the Graduate Students' Participation in International Conferences

Linda & Don **Brodie** Floor within the Carasso FoodTech Innovation Center

Jack **Buncher** Foundation for the Emergency Student and Security Support Fund

Carson Family Charitable Trust Health Innovation Fund

Yoram **Cedar** for the Prof. Israel Cederbaum High Speed Digital Systems (HSDSL) New Project Development Laboratory

Charina Endowment Fund for Renovation of the Horace W. Goldsmith Biology Building

Joyce Croft First Steps Faculty Fund

Crown Family for the Emergency Fund – Technological Solutions

Elbit Systems Ltd. Gift for the Uzia Galil Memorial Fund

Daniel B. **Feller** for the Daniel and Sharona Feller FoodTech Fund

Manuel and Nettie **Fisher** Family Fund for the Allen & Jewel Prince Center for Neurodegenerative Disorders of the Brain

Raphael D. and Francine S. **Friedlander**, and Max and Frances **Elkon** Elyachar Library Study Area

Raphael and Francine **Friedlander**Ground Floor Cafeteria in the Zisapel
Research Building in the Viterbi
Faculty of Electrical and Computer
Engineering

Martin **Furman** Fund for the Ultrasound in Medical Training

Rosalinde and Arthur **Gilbert**Foundation-Krengel Family
Fellowship for the Recruitment of
Female Faculty Grant

Sol **Glasner** for the Rosman Atidim Program

Horace W. **Goldsmith** Foundation for Renovation of the Horace W. Goldsmith Biology Building

Allan S. **Gordon** Foundation for the Fund for the Faculty of Aerospace Engineering

Solvin W. **Gordon** for the Computer Science Restrooms Project

Nahum **Guzik** Fund at the President's Discretion

Nahum **Guzik** Fund for the Renovation of the Biology Teaching Laboratories

Marc **Hamon** Anières House in the Undergraduate Student Village

Marc **Hamon** Fund for the Nachshon Program: the Technion Nachshon-Anières Classes

Rabbi Dr. Roger **Herst** Endowed Faculty Recruitment Grant

Jon and Randy **Hirschtick** for the Fund for the New Computer Science Building

Keren Or Caesarea Gift for the Emergency Student and Security Support Fund

Lasko Family Foundation for the Rosman Atidim Program

Scott and Susie **Leemaster** for the Emergency Student and Security Support Fund

Trudy Mandel **Louis** Charitable Trust for the Technion Hypersonic Research Program

Gift of Trudy Mandel **Louis** Charitable Trust for Seed Funding for the CSST Technion Underground Infrastructure System

Gift of Trudy Mandel **Louis** Charitable Trust for Seed Funding for the CSST Multi Autonomous Swarm Searching Targets

Lewis and Joan **Lowenstein**Foundation Entry Lobby in the Polak
Visitors Center

Macks Family Foundation, Inc. for the Naples Chapter Project for the Allen & Jewel Prince Center for Neurodegenerative Disorders of the Brain

Marcus Family Biology Teaching Laboratory

Maydan Family Fund For The Technion Excellence Program For Gifted Undergraduate Students



Robert Meisel, Joanna Golden & Family for the Allen & Jewel Prince Center for Neurodegenerative Disorders of the Brain

Edna S. Minkin for the Departmental Library in the D. Dan & Betty Kahn Mechanical Engineering Building

Anthony & Sylvia **Munisteri** Fund for the Plaza at the Undergraduate Student Village

Pearlstone Family Fund for the Faculty of Aerospace Engineering

David and Janet **Polak** Foundation for the Emergency Student and Security Support Fund

Marianna & Eddie Rabinovitch Emergency Student and Security Support Fund

Leonid **Raiz** for the First Steps: Faculty Recruitment Fund

Ravitz Foundation for the Technion-Ofanim Program Extension

Stewart and Lynda **Resnick**Sustainability Center for Catalysis

Benjamin **Reznik** Fund for Applied Technology Development for the Defense & Security of Israel

Sunny & Abe **Rosenberg** Foundation Inc. for the Fund to Support the Carasso FoodTech Innovation Center

Rosenbloom Fund for the CSST Multi Autonomous Swarm Searching Targets

Martin and Grace **Rosman** Fund for the Emergency Student and Security Support Fund

Rosman Fund for the Technion-Cincinnati Children's Hospital Medical Center Collaboration

Edward **Satell** for the Emergency Student and Security Support Fund Rina & Avner **Schneur** Charitable Giving Fund for the Rina & Avner Schneur Center of Diabetes Research

Joan and Arnold z"l **Seidel** Family Study Area

Arnold and Joan **Seidel** Conference Room in the New Aerospace Engineering Building

Norman and Barbara **Seiden** Lobby in the New Computer Science Building

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Seniel Ostrow, 1982

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Mikhail Gorbachev, 1992

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Prof. Harry B. Gray, 2000 Prof. David J. Gross, 2000 Prof. Stephen E. Harris, 2007 Prof. Peter Hegemann, 2016 Prof. Wayne A. Hendrickson, 2004 Prof. Eric Kandel. 1993 Prof. Michael Karin. 2010 Prof. Richard Karp, 1998 Prof. Marc Kirschner, 2015 Prof. George Klein, 1975 Prof. Jon M. Kleinberg, 2013 Dr. Donald Knuth, 1995 Prof. Willem J. Kolf, 1972 Prof. Roger D. Kornberg, 1997 Prof. Hans W. Kosterlitz, 1981 Prof. Eric Lander, 2012 Prof. Robert Langer, 2003 Prof. Paul C. Lauterbur, 1986 Prof. Philip Leder, 1983 Prof. Bernard Lewis, 1978 Prof. Saul Lieberman, 1976 Sir James Lighthill, 1981 Prof. C. Walton Lillehei, 1996 Prof. Jacques-Louis Lions, 1991 Dr. Benoit B. Mandelbrot, 1989 Prof. Herman F. Mark, 1976 Prof. Tobin J. Marks. 2017 Prof. Benjamin Mazar, 1986 Prof. Raphael Mechoulam, 2019-2020 Prof. Shuji Nakamura, 2009 Prof. Christos Papadimitriou, 2018 Prof. Judea Pearl, 2011 Prof. James E. Peebles, 2001 Prof. Jacob Polotsky, 1982 Prof. Alexander M. Polyakov, 2010 Prof. Michael Rabin, 1980 Prof. Ephraim Racker, 1979 Prof. James R. Rice, 2020-2021

Prof. Barnett Rosenberg, 1985 Prof. Franz Rosenthal, 1984 Prof. Bert Sakmann, 1991 Prof. Gershom Scholem, 1974 Prof. Claude E. Shannon, 1972 Prof. Barry Sharpless, 1998 Prof. Carla J. Shatz, 2017 Dr. Peter Sorokin, 1984 Prof. Edward Teller, 1975 Prof. Kip Stephen Thorne, 2016 Prof. Bert Vogelstein, 2001 Prof. Isaak Wahl, 1978 Prof. Alvin Weinberg, 1982 Prof. Robert A. Weinberg, 1994 Prof. Rainer Weiss, 2016 Prof. Drew Weissman, M.D., Ph.D., 2021-2022 Prof. Edward Witten, 2005 Prof. Amnon Yariv, 1992 Prof. Eli Yablonovitch, 2012 Prof. Ada E. Yonath, 2002 Prof. Richard Zare, 1993 Prof. Feng Zhang, 2018

LEADERSHIP



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Diversity and Inclusion



Prof. Wayne KaplanVice President for
External Relations and
Resource Development



Prof. Lihi Zelnik-Manor Executive Vice President for Innovation and Industry Relations

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Dean of the Jacobs Graduate School **Prof. Uri Peskin**

Dean of the Azrieli Division of Continuing Education and External Studies Clin. Prof. Stavit Allon-Shalev

Dean of Students

Prof. Ayelet Fishman

Academic Heads

Faculty of Aerospace Engineering **Prof. Daniella Raveh**

Faculty of Architecture and Town Planning **Prof. Guedi Isaac Capeluto**

Faculty of Biology
Prof. Michael Glickman

Faculty of Biomedical Engineering

Prof. Haim Azhari

Faculty of Biotechnology and Food Engineering

Prof. Sima Yaron

Wolfson Faculty of Chemical Engineering **Prof. Simon Brandon**

Schulich Faculty of Chemistry

Prof. Efrat Lifshitz

Faculty of Civil and Environmental Engineering

Prof. Shlomo Bekhor

Henry and Marilyn Taub Faculty of Computer Science **Prof. Danny Raz** Faculty of Education in Science and Technology **Prof. Miriam Barak**

Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering Prof. Idit Keidar

Department of Humanities and Arts **Prof. Ohad Nachtomy**

Faculty of Data and Decision Sciences **Prof. Rann Smorodinsky**

Faculty of Materials
Science and Engineering

Prof. Gitti Frey

Faculty of Mathematics
Prof. Ehud Moshe
Baruch

Faculty of Mechanical Engineering

Prof. Alon Wolf

Ruth and Bruce
Rappaport
Faculty of Medicine
Prof. Ami Aronheim

Faculty of Physics **Prof. Adi Nusser**

Guangdong Technion-Israel Institute of Technology Vice Chancellor **Prof. David Gershoni**

Director of Joan & Irwin Jacobs Technion-Cornell Institute

Prof. Israel Cidon

Jacobs Program Head at Technion

Prof. Ariel Orda

Technion Program for Excellence

Assoc. Prof. Eitan Yaakobi

Center for Pre-university Education **Prof. Noam Soker**

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Deputy Senior Vice President for Engineering and Life Sciences and Medicine **Prof. Noam Ziv**

Deputy Senior Vice President for Sustainability

Prof. Avner Rothschild

Deputy Vice President for Pre-clinical Research **Prof. Jackie Schiller**

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Deputy Executive Vice President & Director General for Safety Affairs

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Keren Berko

Deputy Director General for Human Resources **Ariel Hazan**

Deputy Director
General for Operations
Zehava Laniado

Deputy Director General of Computing and Information Systems Shoshi Levavi



FACULTY

New Faculty Appointments

Chemical Engineering

Assistant Professor Lucy Liberman-Solomon

Chemistry

Assistant Professor Nir Hananya

Civil and Environmental Engineering

Assistant Professor Lior Rubanenko Assistant Professor Georgios Hadjidemetriou

паијиетнештои

Associate Professor Sigal Kaplan

Computer Science

Assistant Professor David Wajc Assistant Professor Brit Youngmann Assistant Professor Or Litany Assistant Professor Naday Amit

Data And Decision Sciences

Assistant Professor Gal Mendelson

Education In Science and Technology

Professor Miri Yemini

Electrical and Computer Engineering

Assistant Professor Pavel Sidorenko Assistant Professor Naama Ben-David Assistant Professor Haggai Maron Assistant Professor Efrat Shimron

Humanities and Arts

Assistant Professor Enrico Piergiacomi

Mathematics

Assistant Professor Amir Sagiv

Mechanical Engineering

Assistant Professor Evgeniy Boyko Associate Professor Morel Groper

Medicine

Assistant Professor Hadas Benisty

Physics

Assistant Professor Ben Ohayon Assistant Professor Shmuel Bialy Assistant Professor Ram Adar Assistant Professor Ilya Svetlizky Assistant Professor Ido Schwartz

Medical Staff

Clinical Lecturer (Educator)

Tatiana Dorfman Kochava Toledano Yuval Turm Ayol Samuels Dean Keren Dror Karni Shereen Shehadeh Amani Beshara Huda Jubran Rimma Geller

Senior Clinical Lecturer (Educator)

Alexander Brodsky Jamal Daghash

Senior Lecturer

Shahar Shelly Ofrat Beyar Katz

Shlomit Yehudai-Reshef

Rotem Lapidot Hagay Orbach Clinical Lecturer

Inna Bleicher

Mohammad Hammad Saied

Karin Yaacoby-Bianu

Arnon Lavi Milena Pitashny Omri Falik Nativ Elena Chertok Roni Nasser Guy Feldman Ilan Klein

Sheikh-Ahmad Mohammad

Senior Clinical Lecturer

Dana Baron Shahaf Haggai Bar-Yoseph Yaniv Mayer Ahmad Mahamid Dekel Shilo Dany Epstein Keren Ginat

Ariel Zilberlicht Amir Haddad Myroslav Lutsyk Emad Matanes Ayelet Shai

Clinical Associate Professor

Assaf Zeltzer

ACADEMIC FACULTY 2023-2024*

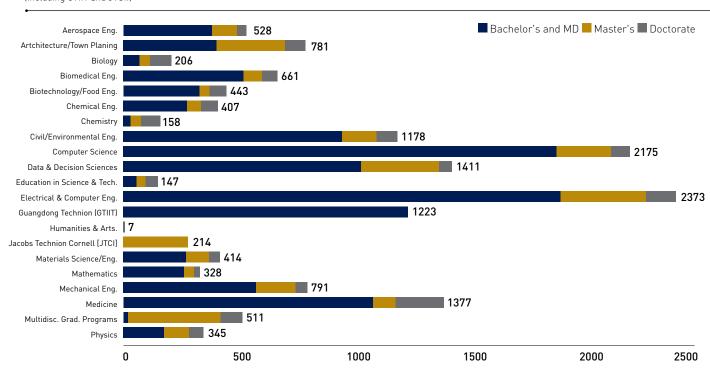
Faculty	Individuals	Full Time Equivalents (FTEs)
Professor	233	233
Associate Professor	185	185
Assistant Professor	147	147
Lecturer	3	3
Others	5	5
Total	573	573
Research Fellows	48	16.95
Clinical Track Appointments	431	97.5
External Adjuncts	672	281

^{*}Due to the Swords of Iron War, the 2023-24 academic year started several months late; hence, unlike in previous President's Reports, this table reflects the academic faculty as of the end of the fall semester, rather than the end of the spring semester.

FACTS AND FIGURES

NUMBER OF STUDENTS 2023-2024*

(Including GTIIT and JTCII)



^{*} Due to the Swords of Iron War, the 2023-24 academic year started several months late; hence, unlike in previous President's Reports, this table reflects the number of students in attendance as of the end of the fall semester, rather than the end of the spring semester.

DEGREES AWARDED (GRADUATES)

	2022	2023
Bachelor's	1,993	1,916
MD	134*	152
Master's	886	849
PhD	212	264
Total	3,225	3,181

TOTAL STUDENT POPULATION

	2019/20	2020/21	2021/22	2022/23	2023/24
Bsc	10,174	10,779	10,504	10,436	10,267
MD	529	517	539	323	513
Masters	2,873	2,990	2,633	2,399	2,913
PhD	1,158	1,295	1,320	2,314	1,427
Total	14,734	15,581	14,996	14,472	15,120

TOTAL DEGREES AWARDED (1924 - 2023)

Bachelor's	92,517
MD	3,585
Master's	27,078
PhD	6,711
Total	129,891



FISCAL OVERVIEW

OPERATING BUDGET - 2023/2024

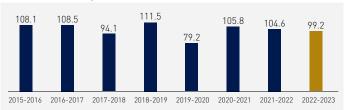
October 1, 2023 - September 30, 2024

Income	Thousands of NIS	%
Government Allocation	1,190,089	70.8%
Tuition Fees	142,000	8.4%
Technion Societies	42,200	2.5%
Self Income	258,000	15.3%
Reserve Fund	50,784	3.0%
Total Income	1,683,073	100.0%
Expenditure		
Staff Emoluments	859,948	51.1%
Pension Payments	350,360	20.8%
Student Aid	138,924	8.3%
Maintenance	123,112	7.3%
Operating Expenses	210,729	12.5%
Total Expenditure	1,683,073	100.0%

(*) The actuarial liability of the Technion as of September 30, 2023 was NIS 5.3 billion. The consolidated liability (Technion and TRDF) is NIS 5.7 billion.

TOTAL INCOME FROM TECHNION SOCIETIES

October 1, 2022 - September 30, 2023



The relevant SUS exchange rate for the period = 3.60 NIS

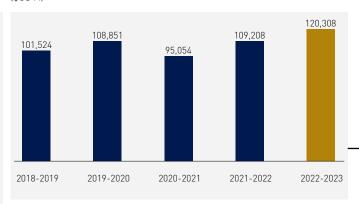
DEVELOPMENT EXPENDITURE

(\$US M)



SPONSORED RESEARCH FROM EXTERNAL SOURCES

(\$US M)



TECHNION INVESTMENT - 2022/2023

October 1, 2022 - September 30, 2023

	Million of NIS	%
CPI linked investments	3,649	45%
Foreign Currency investments	7	0%
Shekel Unlinked investments	1,355	17%
Stocks	3,140	38%
Total	8,150	100%

DEVELOPMENT EXPENDITURE - 2022/2023

October 1, 2022 - September 30, 2023

	Thousands of \$US	%	Thousands of NIS
Buildings, renovations & infrastructure	28,998	61.0%	103,152
Multidisciplinary Research Centers	3,800	8.0%	13,669
Laboratories & Equipment	14,763	31.0%	53,436
Total	47,561	100.0%	170,258

EXCEPTIONAL AWARDS AND PRIZES



Israel Young Academy Elected Member Associate Professor Daniel Soudry Andrew and Erna Viterbi Faculty of

Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

Daniel Soudry was born in 1983 in Haifa, Israel, He received a BSc. in Electrical Engineering and BSc in Physics at the Technion in 2008, and a PhD in Electrical Engineering at the Technion in 2013. He then conducted his postdoctoral research in the Department of Statistics and the Center for Theoretical Neuroscience at Columbia University, and was there until 2017. Currently, he is an associate professor in the Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering at the Technion. He is a recipient of the Schmidt Career Advancement Chair in Al.

Daniel Soudry is working in the areas of machine learning and neural networks. Assoc. Prof. Soudry recent works focus on resource efficiency and implicit bias in neural networks.



Israel Academy of Sciences and Humanities Elected Member Yad Hanadiv Rothschild Prize in Engineering

Professor Michael (Micky) Elad Henry and Marilyn Taub Faculty of Computer Science

Michael Elad holds a BSc (1986), MSc (1988) and DSc (1997) in Electrical Engineering from the Technion. After several years of industrial research, he served as a research associate at Stanford University in 2001-2003. Since 2003 has held a permanent faculty position in the Henry and Marilyn Taub Faculty of Computer Science at the Technion. Prof. Elad also holds a courtesy appointment in the Technion's Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering.

Prof. Elad works in the fields of signal and image processing and machine learning, specializing in particular on inverse problems, sparse representations, deep learning, and generative models. He has authored hundreds of technical publications in leading venues, many of which have had an exceptionally high impact.



Yad Hanadiv Rothschild Prize in Physics

Distinguished Professor Mordechai (Moti) Segev

Faculty of Physics, Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

Moti Segev is the Robert J. Shillman Distinguished Professor of Physics and Electrical Engineering at the Technion. He received his BSc and PhD from the Technion in 1985 and 1990. After conducting his postdoctoral research at Caltech, he joined Princeton as Assistant Professor (1994), becoming Associate Professor in 1997, and Professor in 1999. Subsequently, Prof. Segev returned to Israel, and in 2009 was nominated Distinguished Professor (the highest academic rank at the Technion, held only by 4 other active faculty members).

Moti's interests are mainly in photonics, lasers, and quantum electronics. He has won several major awards, including the 2007 Quantum Electronics Prize of the European Physical Society, the 2009 Max Born Award of the Optical Society of America, the 2014 Arthur Schawlow Award of the American Physical Society, and the 2014 Israel Prize and the 2019 EMET Prize. He is a member of the Israel Academy of Sciences and of the National Academy of Science (NAS) of the USA. However, beyond his numerous awards, he takes pride in the success of his graduate students and postdocs, among them are currently 25 professors in the USA, Germany, Taiwan, China, Croatia, Italy, and Israel.





Israel Academy of Sciences and Humanities Elected Member Rappaport Prize for Excellence in the Field of Biomedical Research

Professor Ashraf Brik Schulich Faculty of Chemistry

Professor Ashraf Brik completed his undergraduate studies in Chemistry in 1996 at the Ben-Gurion University of the Negev. He completed his PhD. in 2001, and subsequently started his postdoctoral position with Professor Chi-Huey Wong at the Taiwan Semiconductor Research Institute (TSRI). During this time, Prof. Brik developed methods to facilitate the discovery of inhibitors against various enzymes.

In 2015, Prof. Brik moved to the Schulich Faculty of Chemistry at the Technion where he holds the Jordan and Irene Tark Academic Chair.

His research involves the development of novel chemistries and approaches for the chemical synthesis and semisynthesis of post-translationally modified proteins (e.g. ubiquitinated, glycosylated and phosphorylated proteins) for biochemical, biophysical and biological studies. His group is also interested in the design and synthesis of modulators based on small molecules, peptides and peptidomimetics for enzymes which are involved in various diseases.



2023 Stanisław Lem European Science Prize

Associate Professor Ido Kaminer

Andrew and Erna Viterbi Faculty of
Electrical and Computer Engineering

Ido is a Professor at the Technion. In his PhD research, he discovered new classes of accelerating beams in nonlinear optics and electromagnetism, for which he received the 2014 American Physical Society (APS) Award for Outstanding Doctoral Dissertation in Laser Science. Ido was the first Israeli to win an APS award for his PhD thesis. As a postdoc at MIT, he established the foundations of macroscopic quantum electrodynamics (MQED) for photonic guasiparticles and used it to enable forbidden electronic transitions in atoms. As a faculty member, Ido created a paradigm shift in the understanding of free-electron radiation, connecting it to the field of quantum optics, establishing the area now known as free-electron quantum optics. He performed the first experiment on electron microscopy with quantum light, demonstrating that the quantum statistics of photons can be imprinted on the electron. For his achievements as a faculty member, Ido was elected to the Israeli Young Academy, which includes 30 young Israeli faculty members below the age of 45.



National Academy of Inventors Fellow

Professor Shulamit LevenbergFaculty of Biomedical Engineering

Professor Shulamit Levenberg is the head of the Stem Cell and Tissue Engineering Lab at the Technion Faculty of Biomedical Engineering and the director of the Technion Center for 3D Bioprinting. She earned her PhD at the Weizmann Institute of Science and pursued her postdoctoral research at MIT in the lab of Professor Robert Langer. Prof. Levenberg's groundbreaking discoveries involve in vitro vascularization of engineered tissues where, upon implantation, the engineered vessels anastomose with the host vasculature, improving survival and perfusion of engineered grafts. Prof. Levenberg was the first to engineer vascularized tissue flaps, offering novel reconstruction techniques using engineered tissue constructs. Her pioneering work also demonstrated bioprinting of perfused tissue constructs with multiscale vessels. She is the founder and CSA of three start-up companies spearheaded from her lab in the areas of cultured meat, spinal cord regeneration, and nanoliter arrays for rapid antimicrobial susceptibility testingTechnion.

ISRAELI AWARDS AND HONORS

Israel Chemical Society (ICS) Gold Medal

Professor Zeev Gross

Schulich Faculty of Chemistry

Israel Chemical Society (ICS)
Excellent Young Scientist Prize
Associate Professor
Nadav Amdursky

Schulich Faculty of Chemistry

The Beloved of Haifa Medal for 2021

Professor Emeritus

Daniel HershkowitzFaculty of Mathematics

The Aufzien Family Center for the Prevention and Treatment of Parkinson's Disease (APPD) Prize

Professor Emeritus Moussa Youdim

Ruth and Bruce Rappaport Faculty of Medicine

Weizmann Prize for Exact Sciences

Professor Asya Rolls

Ruth and Bruce Rappaport Faculty of Medicine

INTERNATIONAL AWARDS AND HONORS

Foundation Charles Defforey -Institut de France and the French Academy of Sciences 2023 Grand Prix Scientifique

Professor Gideon Grader

Wolfson Faculty of Chemical Engineering

European Academy of Sciences and Arts Elected Member

Professor Daniel Rittel

Faculty of Mechanical Engineering

The National Institute of Scientific Research (INRS) – University of Québec Honorary Doctorate

Distinguished Professor

Mordechai Segev

Faculty of Physics, Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

Beilby Medal and Prize by the Society of Chemical Industry (SCI)

Assistant Professor Charlotte Vogt Schulich Faculty of Chemistry

EuroTech Future Award

Assistant Professor Charlotte Vogt Schulich Faculty of Chemistry

American National Academy of Sciences (NAS) Elected Member

Distinguished Professor Emeritus

Dan Shechtman

Faculty of Materials Science and Engineering

American Chemical Society (ACS) C&EN 2023 Talented Twelve

Assistant Professor

Charlotte Vogt

Schulich Faculty of Chemistry

The Budapest University of Technology and Economics Honorary Doctorate

Professor Alon Wolf

Faculty of Mechanical Engineering

Academia Europaea Elected Member

Professor Daniel Rittel

Faculty of Mechanical Engineering

Design Educates Awards

Assistant Professor Shany Barath

Faculty of Architecture and Town Planning

INCOSE Pioneer Award

Professor Emeritus Dov Dori

Faculty of Data and Decision Sciences

Honorary Doctorate, Karunya Institute of Technology and Sciences

Professor Israel Cohen

Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

Association for Computing Machinery (ACM) Fellow

Professor Seffi Naor

Henry and Marilyn Taub Faculty of Computer Science

Association for Computing Machinery (ACM) Distinguished Members

Professor Oren Kurland

Faculty of Data and Decision Sciences

American Institute of Aeronautics and Astronautics (AIAA) Fellow

Professor Daniella Raveh

Faculty of Aerospace Engineering



TECHNION PRIZES AND FELLOWSHIPS

TECHNION EXCELLENCE PRIZES

Hilda and Hershel Rich Technion Innovation Award

Mr. Yoav Sterman
Faculty of Architecture
and Town Planning

Dr. Dana SolavFaculty of Mechanical
Engineering

Professor Avner RothschildFaculty of Material Science
and Engineering

Associate Professor Aaron Sprecher

Faculty of Architecture and Town Planning

Dr. Tamar NixFaculty of Architecture and Town Planning

Associate Professor Youri Gendel

Faculty of Civil and Environmental Engineering

Dr. Erez Ruck

Faculty of Civil and Environmental Engineering

Associate Professor Yoav Shechtman

Faculty of Biomedical Engineering

Dr. Reut Kedem

Faculty of Biomedical Engineering

Norman Seiden Faculty Prize for Academic Excellence

Associate Professor Daniel Soudry

Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

Morton and Beverley Rechler Prize for Excellence in Research

Professor

Alexander M. Bronstein

Henry and Marilyn Taub Faculty of Computer Science

Associate Professor Eitan Yaakobi

Henry and Marilyn Taub Faculty of Computer Science

Professor Anat Levin

Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

Professor Erez Hasman Faculty of Mechanical Engineering

The Diane Sherman Prize for Medical Innovation for a Better World

Associate Professor Tzipi Horowitz-Kraus

Faculty of Education in Science and Technology

Professor Hossam Haick

Wolfson Faculty of Chemical Engineering

The Cooper Award for Excellence in Research

Associate Professor Graham de Ruiter

Schulich Faculty of Chemistry

Associate Professor Ariel Rapaport

Faculty of Mathematics

Uzi and Michal Halevi Innovative Applied Engineering Awards and Research Grant

Associate Professor Amir Rosenthal

The Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

Professor Yoav Schechner

The Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

Associate Professor Vadim Indelman

Faculty of Aerospace Engineering

Crown Vanguard for Science and Technoly

Associate Professor Meirav Aharon

Faculty of Architecture and Town Planning

Associate Professor Semion Zhutovsky

Faculty of Civil and Environmental Engineering

Professor Peleg Hasson

Ruth & Bruce Rappaport Faculty of Medicine

American National Academy of Sciences (NAS) Elected Member

Distinguished Professor Emeritus Dan Shechtman

Faculty of Materials Science and Engineering

CAREER ADVANCEMENT CHAIRS

Brenda & Russell L. Frank Endowed Faculty Recruitment Fellowship

Assistant Professor Nili Krausz

Faculty of Mechanical Engineering

Dr. Natalie Shaffer Faculty Recruitment Fellowship

Professor Vassilios Theoflis Aerospace Engineering

Assistant Professor Ori Green Schulich Faculty of Chemsitry

David and Inez Myers Career Advancement Chair in Life Science

Assistant Professor Avner Wallach

Faculty of Biology

TCE Fellow (supported by the Center for Computer Engineering at the Technion)

Assistant Professor Naama Ben-David

Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

Robert J. Shillman Career Advancement Chair Assistant Professor

Haggai Maron
Andrew and Erna Viterbi
Eaculty of Electrical and

Faculty of Electrical and Computer Engineering

LEADERS IN SCIENCE AND TECHNOLOGY

Horev Fellow (supported by the Taub Family Foundation)

Assistant Professor Ilya Svetlizky Faculty of Physics

Assistant Professor Efrat Shimron

Faculty of Biomedical Engineering and the Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering

Taub Fellow

Assistant Professor David Wajc

Henry and Marilyn Taub Faculty of Computer Science

Assistant Professor Ori Litany

Henry and Marilyn Taub Faculty of Computer Science

COMMUNITY ENGAGEMENT



rom the creation of the State of Israel, the Technion has played a vital role in shaping Israeli society. Deeply embedded in the unique character of the Technion, this connection to society continues to guide the university in the pursuit of its mission today. Breaking out of what are often seen as the traditional boundaries of academia, Technion faculty members, students and administrative staff take part in a myriad of community engagement activities, transforming the university into a force for social good. Through the diverse programs offered by the Technion, collaboration, innovation and social commitment converge

to create meaningful impact. The blending of academic studies with community activities helps bridge theory and practice: students and faculty members share their knowledge with the wider public to address real-world challenges together.

There is a variety of community engagement activities at the Technion, from coursework and co-curricular activities (e.g. hackathons), to public events, special programs for target populations and initiatives. Programs are run in collaboration with a variety of partners including non-profit organizations, local authorities, the Madatech science museum in Haifa, schools, and philanthropic foundations. Over 25 faculties and units at the Technion (including all academic departments) take part in community engagement activities which involve students, academic faculty and administrative staff. These activities can be categorized into three areas: education and training,



knowledge-based solution development and support, and volunteering programs.

Education and training activities expand the scope of the Technion's educational mission beyond the campus. Reinforcing its educational mission, the Technion operates a plethora of youth programs. More than 40 programs focus on STEM education and are aimed at gifted and talented children, disadvantaged youth as well as the general public. As part of these initiatives, hundreds of middle and high school students a year, from all over Israel, get the opportunity to learn from leading Technion professors and advanced graduate students. They can attend innovative workshops and summer camps, and compete nationally in science and technology Olympiads. Mentoring programs provide vital academic support by Technion undergraduate students to struggling or disadvantaged local high school pupils. Several initiatives focus on diversity, including promoting STEM education for girls. In addition, faculty members and graduate students run teacher training programs, exposing teachers to cutting-edge research in their field, and thus equipping them with innovative teaching tools.

Besides the education outreach initiatives, the Technion commits to community engagement by also providing knowledge-based solutions and support for real-life societal challenges. Technion faculty and students apply their expertise and knowledge to solve community problems as well as provide services, technological consulting and guidance to the community. A significant portion of this activity is conducted as part of the Technion curriculum. Over 800 undergraduate and graduate students enroll in some 35 servicelearning courses per year. Almost all of these courses are supported by the Planning and Budgeting Committee of the Council for Higher Education in Israel through the Technion's Social Hub, its flagship social engagement program.



As part of the initiative, NGOs, schools and local municipalities partner with lecturers and the Social Hub, to provide the framework for the courses. The Social Hub is also in charge of identifying community cooperation opportunities. As part of the courses, Technion students and faculty members work with disadvantaged communities, NGOs and government ministries, to tackle community and environmental challenges; plan urban renewal initiatives and community centers and provide health services to disenfranchised populations.

Hackathons, organized by Technion faculties and campus actors, are another way to promote knowledge based solutions for the service of society. Students are challenged to develop solutions to problems facing sectors



Volunteering activities





828 888

411 Administrative and academic staff volunteered of society within an allotted time frame (from six hours to three days). Non-profits and businesses also collaborate with the Technion on the hackathons, to ensure their relevance to the target populations and the applicability of the solutions developed. Last year, hackathons were held on topics such as autism, technology to assist people with disabilities, Al for suicide prevention, and preparing for extreme weather conditions.

Lastly, across campus, individuals from all faculties and units engage in general volunteering activities, organized by the faculties themselves, the Dean of Students, Technion HR, the Technion Student Association and others. Some faculties, such as the Faculty of Computer Science,

promote community service by providing their students with awards for social excellence and outstanding volunteer work. Students can also receive academic credits for volunteering through a program run by the Dean of Students in which over 120 students participate each year.

Since October 7, the level of volunteerism at the Technion has surged: faculty members, students and administrative staff have joined hands to support those affected by the war. This support takes various forms including hosting evacuees from the North and the South; cleaning out bomb shelters; assisting farmers with their crops, and preparing packages for reservists, soldiers and their families. All of these initiatives underline the Technion's unwavering commitment to serving society and the nation in times of need.

Looking to the future, the Technion remains steadfast in its commitment to community engagement and societal impact. As it continues to nurture the next generation of leaders, the university strives to expand its reach and deepen its connections with the public, while remaining at the forefront of fostering positive change and shaping a brighter tomorrow for all.



ANGUISHED AND GRIEF-STRICKEN

The Technion Community grieves the loss of the lives of the infants, children, young and elderly, women and men and the whole families that were murdered on October 7, as violent terrorists attacked peaceful civilian homes. We also mourn the death of our soldiers, police officers and paramedics who fell in the line of duty, defending our precious homeland.

Our hearts constrict with sorrow and concern for the fate of those who are still held hostage or are missing.

Our thoughts and prayers are with our friends and colleagues who lost their loved ones on that tragic war, and also with the families of the hostages and of the wounded, in body and in spirit.

We send our heartbroken condolences to them and to the Jewish people worldwide. May those who fell in battle and those who were murdered be of blessed memory and may all of our hostages return home to the warm embrace of their families.



STUDENTS



Dov Moshe KoganFaculty of Mechanical Engineering



Dennis Krahmalov WexlerFaculty of Aerospace Engineering

ALUMNI



Yoram Bar-SinaiFaculty of Architecture and Town Planning



Hagit Rafaeli MishkinFaculty of Education in Science and Technology



Yakov Nedlin Faculty of Mechanical Engineering



Eliran YegerFaculty of Mechanical Engineering
Graduate School

TECHNION SOCIETIES

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Austrian Technion Society / Österreichische Technion Gesellschaft Seilerstaette 10/21, A-1010 Vienna Tel: +43 1 971 7448 peter@p.wein.at www.technion.at

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