

EXCHANGE FOR CHANGE

PRESIDENT'S
REPORT
2023





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FROM
THE
PRESIDENT



Looking Ahead



My first term as president of the Technion has seen especially turbulent times. The Covid-19 global pandemic that erupted five months into my term consumed extensive attention. Significant economic and political instability followed, as well as a wide-spread cyber-attack. Nevertheless, we should all look back at these years with a great deal of satisfaction and pride in what we have managed to accomplish,

ensuring that our university continues to expand its research and teaching capacity, to the benefit of Israel and humanity and of education in general.

During these challenging years we have established research centers; we repositioned the Technion in the changing academic-industry ecosystem; we have set up and extended teaching and community outreach programs; recruited the best researchers; won a record number of ERC grants and prizes; and attained even higher standings in the Shanghai and other prestigious rankings.

As we are now preparing to celebrate the Technion's 100th anniversary and as I look ahead to my next term, I envision promoting additional transformative projects. Some of these are already in motion, and all of them will enable our university to enter our second century with confidence, certainty, and determination.

NEW LEARNING AND RESEARCH CENTERS

During the past three and a half years, we established or started setting up no less than 12 new learning and research centers that will substantially stimulate the Technion's already rich research and learning ecosystem. With an overall investment of around \$250 million, some of these new centers are already transforming teaching and serve as multidisciplinary research hubs that boost collaboration among researchers at the various faculties.

As medicine and technology continue to converge, the new André Cohen Deloro Institute for Transformative Biomedical Sciences and Engineering will house state-of-the-art research infrastructure and 28 labs covering all disciplines, while the Wolfe Center for Translational Medicine and Engineering, in collaboration with the Rambam Health Care Campus, will combine engineering and medical research to foster innovative technologies.

Even as we focus on technology, we cannot forget the patients, who remain at the heart of all our medical education. It is for this reason that we have set up the Center for Clinical Skills in the Rappaport Faculty of Medicine, which will position the Technion's medical education and training at the forefront of patient-oriented treatment and promote excellence in clinical skills.

The Technion also provides faculty and students with the most advanced technologies for their work, and researchers will be able to use advanced imaging techniques to conduct multidisciplinary projects in the recently opened May-Blum-Dahl MRI Research Center. Those that require high-performance computing for their activities will benefit from the Martin and Grace Druan Rosman High-Performance Computer Data Center, construction of which will begin this

summer, serving researchers from a variety of sectors, while the National Center for High Speed Flight will be housed in the Morton and Beverley Rechler Family Foundation Research Building, which will provide unique facilities to aid researchers and students in their bid to explore and advance the science and technology of hypersonic flight.

Because of the growing importance of Artificial Intelligence (AI) in research and development and in our daily lives, a newly set up Tech.AI Hub will provide the focus and the beating heart of all the Technion's AI activities, while researchers and students will be able to focus on applied studies in AI in human health and medicine within the Zimin Institute for AI Solutions in Healthcare, making the most of the recent major breakthroughs in the technology.

Sustainability and environmental issues have been the focus of Technion researchers and students since the university's founding some 100 years ago. These efforts will get an added boost as the university prepares to become a leading force in food technologies, to help eradicate world hunger by helping meet the challenge of a growing global population amid dwindling natural resources. The Carasso FoodTech Innovation Center, now under construction, will seek to promote innovative food technologies, while the Technion Sustainable



Human MRI scanning performed at the May-Blum-Dahl MRI Research Center

**The newly-erected Zisapel
Electrical and Computer
Engineering Building
exemplifies Technion growth
and renewal as we enter a
2nd Technion Century.**





(l-r): Technion President Prof. Uri Sivan and his three grandchildren, Shakked, Carmel and Ofri; Mr. Leon Recanati; Yossi Ani, Madatech General Director



Technion and Madatech, National Museum of Science, Technology and Space, mark 100 years since Prof. Albert Einstein, and his wife Elsa planted two palm trees in this same courtyard of the Technion's historic campus where Madatech stands today.

Protein Research Center will serve as a hub for fundamental and applied research in the field of alternative proteins.

Meanwhile, the Stewart and Lynda Resnick Sustainability Center for Catalysis, which is under construction, will aim to empower faculty and students to find new ways to maintain global growth while also confronting the climate crisis and protecting the planet for future generations, while the Israel National Research Center for Electrochemical Storage, now being established jointly with Bar-Ilan University, will focus on the development of new materials and methodologies to help the world transition to alternative energy sources.

To help unleash the creativity of our students and faculty and to increase our interaction with the community, the new Mehoudar Center for Inventors will encourage the participation of innovators from all over Israel, from school children to university students and faculty members, to realize creative engineering designs, to dream and imagine.

In addition to all the initiatives underway, we are continuing to develop the Helen Diller Quantum Center, which supports research in this rapidly growing field, and we plan to establish a Research Center for Simulated Cities, that will lead groundbreaking research to help make cities more resilient and adaptable to social, economic, and environmental change.

MULTI-DISCIPLINARY MEGA FRONTIERS

We have repeatedly seen that a multi-disciplinary approach, with researchers from different sectors working in close collaboration to develop joint solutions, is needed to tackle the massive challenges of the 21st century. This gives a considerable advantage to the Technion, as the university has on its campuses experts in a wide variety of fields, including engineering, science, medicine, architecture, and education. To further maximize this advantage, we have constructed an innovative model, called the “Technion-Wide Frontier,” that brings together a broad spectrum of relevant stakeholders.

Two Technion-Wide Frontier models have already been created: one for Human Health and one for Sustainability. Each of them embraces a variety of academic departments that benefit from managerial support to conduct multi-disciplinary ideation, establish joint research projects and centers, set up infrastructure centers, develop pedagogy, and many other initiatives.

This unique concept was crystallized over a two-year period, with the Human Health Frontier serving as a pilot project. Based on my experience in establishing and managing the Technion’s Russell Berrie Nanotechnology Institute (RBNI), I knew it was essential to connect not only researchers but also academic departments. However, the kind of structure that would work best for our first Frontier was not initially evident. It took a lengthy process of trial and error to attain a conceptual breakthrough, devising a model most suitable for dealing with large-scale multi-disciplinary challenges.

To date, 14 academic departments have already joined the Human Health Frontier. Building on the lessons we learned from the Human Health pilot, the Sustainability Frontier started its activities three months ago.



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ADAPTING TO THE CHANGING ACADEMIA-INDUSTRY ECOSYSTEM

One of the major priorities during our first term was to cultivate strategic collaborations with top companies from the private sector. We did this by encouraging firms to move their R&D centers to our campus and by creating a research fellowship for leading industry researchers.

The U.S. design tools company PTC recently moved its R&D center, along with 100 researchers, to the Gutwirth Industrial Park on the Technion campus. Its researchers are today integrated into academic activities on campus. PTC is now establishing an R&D center that will serve the entire Technion community.

Other examples of recent collaborations with industry include agreements with Verily, the research arm of Alphabet Inc. focused on precision health, semiconductor giant Intel Corp., pharma firm Pfizer, renewable energy firm Doral Group, and others.

To further foster the Technion's close collaboration with corporations, we created the new position of Research Fellow from Industry. The idea is to help integrate scientists from the private sector into academic research, teaching, and mentoring students. Research Fellows from Industry spend one day a week at the Technion and take part in academic activities. The new position has proven to be a success: some 35 researchers have already joined the ranks of the Technion via this path. In addition, we encourage our faculty members to provide consulting services to local industry.

The Technion has also invested substantial resources to improve the commercialization process of ideas developed by the university's innovators and entrepreneurs. As a result, the number of new startup companies emanating from the Technion has tripled; from an average of four companies a year to 14 new companies last year. We plan to further improve our approach to IP commercialization.

UPGRADING EDUCATION AND STUDENT WELFARE

During my first term, we focused intensively on improving academic education and training throughout the Technion. We have dramatically increased our investment in setting up and upgrading teaching labs; bolstered the Center for Promoting Learning and Teaching; opened a studio for digital teaching; developed the Schulich Leaders Entrepreneurship Program for outstanding undergraduate students; promoted tech entrepreneurship and innovation education through our t-hub Entrepreneurship and Innovation Center; established the Mehoudar Center for Inventors and expanded the Social Hub, a flagship social engagement program that facilitates the interaction of faculty members, teachers, and students with local communities.

Recently, we began designing a new state-of-the-art building for the Faculty of Aerospace Engineering and an additional new building for the Henry and Marilyn Taub Faculty of Computer Science.

To bolster creativity and produce well-rounded students equipped with the variety of talents

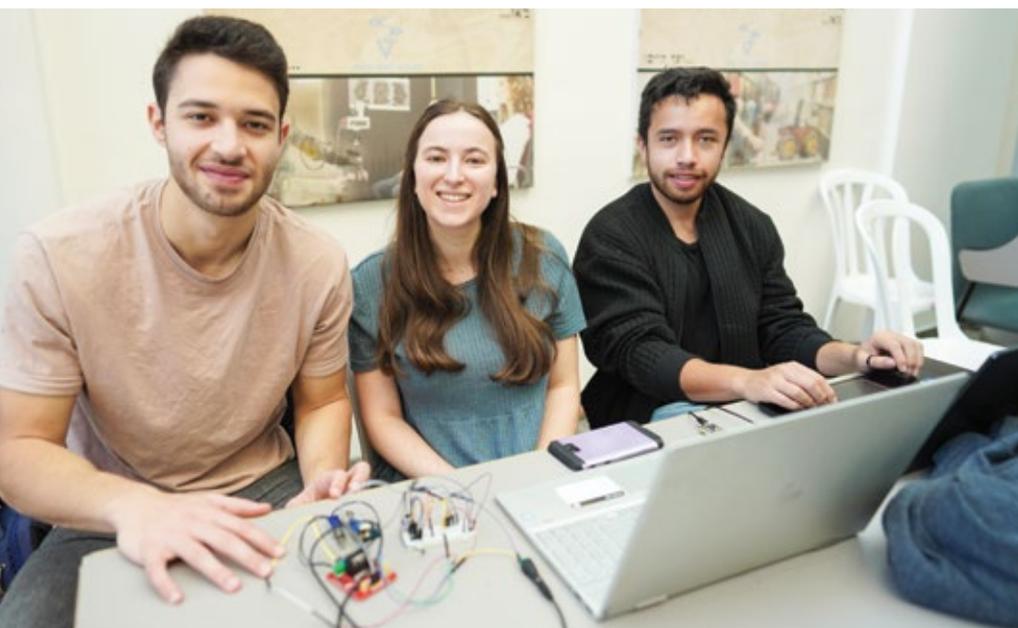
necessary to tackle global challenges, the Technion is in the process of upgrading the Department of Humanities and Arts to expand its activities to research in addition to teaching. We are also boosting artistic activities on campus. As part of this push, we have expanded the presence of artists and art on campus and launched the Sonia Marschak Artist in Residence program, which aims to combine the arts with humanities, sciences, technology, and engineering professions, and create a dialogue between these fields.

Another key priority is to improve the well-being of our students. To do so, we have been working closely with our university deans and the Technion Student Association to make sure our students have easy access to the services they need to promote their physical, social, and mental wellbeing.

We have also expanded the emotional and psychological support services we provide for all students and have opened a new learning center for students with learning disabilities and students that do reserve army duty – Fischer Center for Reservists and Students with Learning Disabilities.

To further boost the wellbeing of our students, we have expanded initiatives and launched a number of new ones: the new Soft-Landing program helps new students adjust to academic life, the highly popular mathematics camp ensures new students arrive better prepared for their demanding first-year classes, and the newly-inaugurated “Broshim” Dormitory has helped house an additional 500 students. We are also gradually renovating the other student dorms, thus enabling the university to provide comfortable homes for 4,600 students, the largest number of students living on campus at any of Israel’s universities..

The Technion has also increased its budget for scholarships and financial aid and has expanded its support for cultural and social activities, including for international students.







IMPROVED SUPPORT FOR FACULTY

The Technion recently launched a series of initiatives aimed at improving support of our researchers, including a pilot program to help reduce the time needed to set up laboratories for new faculty members.

We have shortened and simplified the faculty promotion process and set up a fund with our growing profits from commercialization, which will help us provide our researchers with cutting-edge infrastructure facilities. We have also raised significant funds to establish the Crown Vanguard Award for Science and Technology Fund, which grants our leading mid-career researchers the resources they need to launch new research directions, and we established the Campus Leaders Program, which cultivates managerial leadership among faculty and administrative staff.

I am especially proud of the committee we formed to increase the representation of women in the Technion's faculty and academic management positions. We have implemented the committee's recommendations in full, including the creation of a new position: VP for Diversity and Inclusion. This has led to a significant rise in the number of women on committees, management and key positions, however we are still struggling to boost the number of women among the senior faculty.



FUNDRAISING

After experiencing a drop in donations during the first year of Covid, annual income from donations over the past two years has returned to previous levels and 2023 looks promising.

During our first term we succeeded in securing several transformative donations for the university, an especially gratifying experience given the unfavorable global economy and the difficulties we encountered in meeting donors in person during the pandemic.



(Pictured left): The new "Broshim" student dormitories

LOOKING AHEAD TO MY NEXT TERM

During my first term as president of the Technion, we set out and started implementing a long-term strategic development plan for the university.

The heart of our multi-year program lies in resolving the Technion's fragmented structure and creating an organizational culture based on partnership and a sense of belonging. Indeed, the Technion's unusual organizational structure tends to create a gap in planning between the departments and the senior management. We must thus find ways to better integrate the faculty deans and program heads into the key planning and decision-making processes.

The transition to a five-year planning and budgeting program executed now constitutes an important step in that direction. Each department is preparing a five-year academic development plan which includes personnel requirements, academic positions, teaching, and research infrastructure needs. These plans will be combined to produce a five-year plan for the Technion, enabling it to utilize its resources more efficiently by creating synergies between departments and facilitating better management support.

Looking ahead, I intend to focus on nurturing the Technion's human resources, and especially the administrative and support staff available to researchers and departments. We will also continue developing the campus infrastructure, building labs for new faculty members, expanding computer services, and more.

The Technion-Wide Frontiers now make up a central element in building multi-disciplinary research communities in the fields of human health and sustainability. In the near future we plan to establish a third Frontier focusing on Engineering.

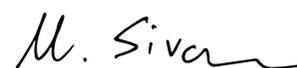
In the next four years, we intend to continue

strengthening the academic-industry cooperation ecosystem; including resolving remaining IP issues, creating more collaborations with companies, and helping found new startups.

All these plans require significant resources, and I believe that the Technion's 100th anniversary presents us with an ideal opportunity to raise the necessary funds. Together with our many friends we are already laying the groundwork for this campaign and I am convinced that we will succeed in conducting large-scale fundraising efforts during the university's centennial year. The need to do so is especially pressing given the expected government budget cuts in higher education.

I cannot end without expressing my deep gratitude to my long-time colleagues in management, and to the faculty and Technion deans, the department heads, center directors, vice-presidents, administrative heads, the hundreds of academic and administrative staff members, the chairperson and deputy chairperson of the Technion Student Association, and our remarkably committed societies of friends around the world without whom the challenging tasks involved in achieving the goals described above could not have been realized.

Last but not least, none of these achievements would have been possible without our many friends and partners around the world. Their commitment and dedication are what enabled the Technion to successfully tackle and weather the crises and to continue developing despite the objective difficulties. Together, we embark on the Technion's second century better prepared, more agile, and more resilient than before.



Prof. Uri Sivan

President of the Technion

CLIMATE
CHANGE

ALL HANDS ON DECK: Battling the Climate Crisis

Israel's most esteemed institute of science and technology, the Technion is a global innovator of climate change technologies, pioneering solutions for a sustainable future





TAKING
CARE OF
OUR PLANET

12
RESEARCH
CENTERS

200
FACULTY
MEMBERS

RESEARCH
FOCI

ENERGY
TRANSPORTATION
HEALTH
AGRICULTURE
FOOD
MATERIALS
AND MORE

Since its founding nearly 100 years ago, the Technion's world-class scientists have focused on developing innovative and cutting-edge technologies crucial not only for Israel's economy, society, and security, but also for humanity.

Well before climate change became a buzzword on the lips of many, the university's researchers prioritized solutions to promote sustainability and help reverse our planet's grim prognosis. In March, United Nations' Secretary-General António Guterres warned that "the climate time-bomb is ticking," after a report cautioned that the world faces an even tighter deadline to avoid catastrophic climate change disruption.

At the Technion, a wide range of activities and resources are directed towards improving sustainability across a spectrum of sectors including energy, transportation, health, agriculture, food, materials and more. To oversee and coordinate all these different activities in a more efficient manner, the Technion recently set up its Sustainability Frontier: a central body tasked with coordinating and expanding the university's

numerous programs that work to mitigate climate change.

Headed by Prof. Avner Rothschild from the Department of Materials Science and Engineering, the aim of the Sustainability Frontier initiative is to further relevant research in almost every Technion department, promote academic courses and other educational projects, foster entrepreneurship and technology transfer while forging collaborations with both the public and private sectors.

CROSS-CAMPUS RESEARCH

By harnessing its excellent resources in fields such as chemistry, biotechnology, physics, biology, computer science, chemical engineering, materials engineering, food engineering, civil and environmental engineering, architecture, and town planning, the Technion is well positioned to nurture research that can help solve environment-related global problems. The scope of "green" research projects at the Technion campus is vast. Approximately 200 faculty members and hundreds of graduates, doctoral and post-doctoral students are tackling a vast variety of challenges. These include: converting solar energy into clean, storable hydrogen and electricity; designing biodegradable foams for packaging; utilizing micro-biological additives to engineer "self-healing" concrete; applying big data analytics to optimize indoor energy consumption behavior; generating electricity from seaweed; and innovating nanofiber catalysts for the conversion of CO₂ into alternative fuel.

Many of these projects are driven by the Technion's culture of multidisciplinary research, which encourages scientists from different areas of expertise to join forces. In fact, the Technion has established more than a dozen research centers that focus on different facets of climate change mitigation and adaptation. Among them: the Grand Technion Energy Program, the Grand

CLIMATE CHANGE

Technion's alliance with the Israel Innovation Authority's "PLANETech" climate tech community is a singularly unique collaborative enterprise.



Water Research Institute, the Israeli Smart Transportation Research Center, the National Building Research Institute, and the Food and Health Innovation Center.

Two new multidisciplinary research centers have recently been added to this list. The Lynda and Stewart Resnick Center for Sustainable Processes and Catalysis, inaugurated last year, is dedicated to advancing sustainable production processes by developing new types of catalysts – i.e., substances that trigger or speed up chemical reactions and play a key role in the production of foods, drugs, materials, energy, and other products. The Carasso FoodTech Innovation Center, which will soon open on campus, will serve as a multidisciplinary hub for developing alternatives to animal-based foods that will be healthier, more sustainable, and animal-considerate.

FROM IDEAS TO REAL-WORLD IMPACT

The new Sustainability Frontier platform will also spur the process of transforming scientific breakthroughs emanating from the Technion's labs into actual products and technologies that can be applied in the real world. Many inventions have the potential to make a real difference in the battle to mitigate the global climate crisis, but scientists are not necessarily always capable of translating their innovations into startup companies.

The Technion's technology transfer office, T3, is an important link between academia and industry and has a proven track record in helping budding entrepreneurs commercialize sustainable, high-impact inventions. In fact, some of the ClimateTech startups that were born at the Technion and nurtured by T3 are today successful companies whose cutting-edge products are reaching markets around the world.

The Technion is using its vibrant community as a large “living lab” to assess new technologies that aim to reduce consumption and save energy.

One example is H2Pro, a pioneering startup that uses innovative green energy technology invented at the Technion to produce hydrogen in an efficient, inexpensive, and safe manner, heralding a new era of green hydrogen production. H2Pro was founded in 2019 by Technion researchers Prof. Gideon Grader of the Wolfson Department of Chemical Engineering, and Prof. Avner Rothschild and Dr. Hen Dotan of the Department of Materials Science and Engineering, in collaboration with entrepreneur Talmon Marco. The company, which received an exclusive

license from T3 to commercialize the technology, has raised more than \$100 million and its R&D center in Caesarea employs more than 100 people, many of whom are Technion alumni.

Aleph Farms is another example of a successful startup nurtured by T3 that addresses the climate crisis. The company is a pioneer in the field of cultivated meat, having developed the world’s first cell-based ribeye steaks produced through bioprinting. The novel technology, invented in the lab of Prof. Shulamit Levenberg of the Technion’s Faculty of Biomedical Engineering, provides an excellent solution to the challenge of producing sustainable food that can feed the world while preserving the planet. Aleph Farms has also raised more than \$100 million.



GREEN CAMPUS

The Technion’s commitment to promoting sustainability is visible throughout the beautiful campus on Haifa’s Mount Carmel. Every effort is made to reduce energy consumption and waste throughout the university, and the Technion recently conducted a comprehensive survey to assess its total carbon footprint. The study not only analyzes electricity and water use, but also food, transportation and other sectors that impact the environment. “We are actively working to reduce our carbon footprint,” explains Prof. Rothschild, adding that, “last year, we stopped purchasing all disposable plastic dishes. The step was a big success.”

The Technion is also using its vibrant community of nearly 15,000 students, several thousand employees, and almost 600 faculty members, as a large “living lab” to assess new technologies that aim to reduce consumption and save energy. The university’s dorms, for example, have been used to test new ways to decrease electricity consumption.

An important part of the Technion Sustainability Frontier’s platform is to foster outreach programs with the community at large. “We work with the Haifa Municipality, the Haifa Port, local industry, government agencies and others to promote an agenda of sustainability in Haifa, Israel and worldwide,” elaborates Rothschild.

Just as it has done for the past 100 years, the Technion is determined to continue to forge new ways to pioneer innovation while striving to improve the world.

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A HUB OF HYPERSONIC FLIGHT RESEARCH

TECHNION SETS UP A CENTER FOR HIGH-SPEED FLIGHT

✕ Imagine traversing the oceans and back in a few short hours or, within a single day, flying to and from an orbital hub as a space tourist or a spacelab research assistant. Hypersonic flight is key to these and other human ambitions in space and on earth. Aerospace engineers have been grappling with the challenges of high-altitude hypersonic flight since the 1960s – when the United States' North American X-15 research aircraft achieved an astounding 6.7 times the speed of sound (also referred to as Mach 6.7), hitting an altitude of 354,200 feet or 67 miles above sea level.

Six decades later, efficient, reliable, and safe hypersonic travel is within reach. Next-generation advances in hypersonic technology will enable practical, aircraft-like access to space and could eventually lead to much faster commercial air travel across the globe. Inasmuch as all spacecraft entering another planet's atmosphere fly at hypersonic speeds, they will be critical to NASA's planned Moon to Mars initiative. For a country like Israel, ardently threatened by strategic foes near and far, hypersonic technologies constitute



hypersonic flight requires a revolution in every aspect of aircraft design – in materials and structures, propulsion and aerodynamic design.”

- Prof. Dan Michaels

a vital “rapid-response” component to national security. The U.S., China, Russia, India, Japan, Australia, France, and the UK have all invested in the research and development of hypersonic technologies, as has Israel.

Israel is already at the forefront of aerospace technologies, and is one of a handful of countries with an independent capacity to launch satellites and place them into orbit. Technion graduates, who today work in industry and government, are leading Israeli aerospace innovation while collaborating closely with researchers at our Faculty of

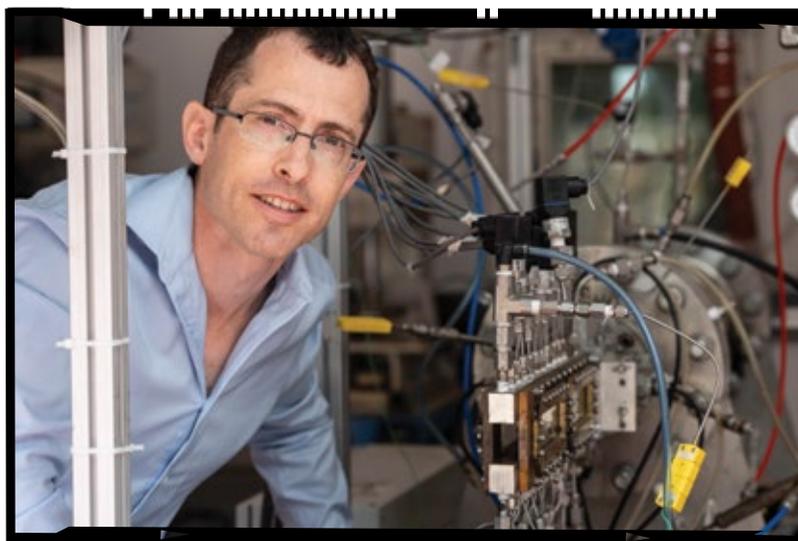
Aerospace Engineering, the only academic faculty of its kind in Israel. In concert with industry, Technion is now poised to tackle stubborn challenges to hypersonic flight head-on.

UNPARALLELED FLIGHT CONDITIONS

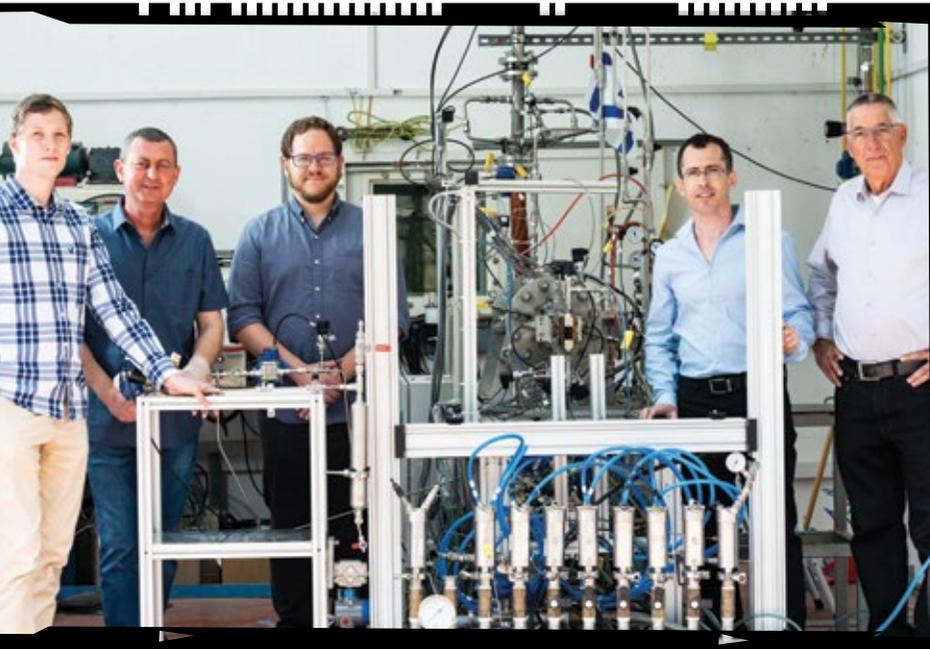
Even as safe, economical hypersonic flight is a dream within our grasp, significant obstacles remain. Numerous, divergent, and dynamically fluctuating forces act on hypersonic aircraft, with little warning and variable effects. The properties of air, and the resulting airflow dynamics, undergo sudden radical change as the vehicle accelerates, transitioning from subsonic to supersonic then hypersonic speeds. At increased speeds, the air becomes compressed, and pressure piles up ahead of each part of the aircraft, until shock waves form and interfere with the airflow; the lifting effectiveness of the wing and tail surfaces lessens, drag forces become more pronounced, and the airplane stability is compromised. Friction caused by the airflow along surfaces generates heat extreme enough to melt standard aircraft structures, while it simultaneously affects surrounding air molecules in a way that changes the magnitude of forces exerted on the vehicle.

According to Prof. Dan Michaels of the Faculty of Aerospace Engineering at the Technion, hypersonic flight conditions necessitate sweeping changes to aircraft. “Hypersonic aircraft will be completely different from any aircraft today. It cannot be overemphasized that hypersonic flight requires a revolution in every aspect of aircraft design – in materials and structures, propulsion and aerodynamic design.”

In short, high-speed flight approaching Mach 10 at altitudes



Prof. Dan Michaels of the Faculty of Aerospace Engineering



(l-r): Joel Van Der Lee, Ph.D. Student, Aerospace Engineering; Rudy Kaner, Engineer, Aerospace Engineering; Prof. Joseph Lefkowitz, Aerospace Engineering; Prof. Dan Michaels, Aerospace Engineering; Amnon Harari, Head of TeCHFlight

as high as the outer edge of the earth's atmosphere will depend on researchers' ability to anticipate the totality of aerodynamic, thermodynamic, and chemical phenomena and to account for them in the design of hypersonic airframes, their physical geometries and the materials used, and propulsion technologies.

GETTING OVER THE BUMP

Given the uncertain aerothermodynamics of ultra-high-speed travel and the costs of failure, flight testing full-scale prototypes is a prohibitively risky proposition. The lack of flight testing has often been an Achilles' heel impeding the development of hypersonic technologies, as has the tendency to take on multisystem phenomena one system at a time – rather than synergistically moving forward on multiple fronts of research and development.

Overcoming these difficulties, Technion's new Center for High-Speed Flight (TeCHFlight) will have all the components necessary for rapid advancement of hypersonic systems. Headed by Israel Defense Prize recipient Amnon Harari, it will boast comprehensive state-of-the-art ground-testing facilities, together with computational fluid dynamics (CFD) simulation capacity enabled by Technion's new high-performance-computing program.

"We are taking an approach that integrates unique experimental facilities and state-of-the-art diagnostic techniques to build a dynamic center, open to researchers in Israel and abroad," notes Prof. Joseph Lefkowitz, a member of the Faculty of Aerospace Engineering who is heavily involved in the center. "Together with advanced CFD methods and development of novel high-temperature materials, we aim to close the gaps in our understanding of hypersonic systems. This is needed to develop the next generation of aircraft, and the next generation of engineers to build them."

Multidisciplinary teams of Technion researchers from different faculties will work in tandem with Israel's aerospace industries. Compared to colleagues abroad, many of the scientists and engineers on these teams are uniquely qualified – as they have real-world experience in aerodynamics and high-speed flight, as pilots or technical engineers in Israel's air force.

From within dedicated facilities at the Morton and Beverley Rechler Family Foundation Research Building, the center will progress in six areas of expertise.

SIX
AREAS
OF
EXPERTISE



1 **Flight Performance**

Maximizing flight performance by optimizing the configurations of the airframe and other vehicle components, and innovating new guidance, navigation, and control (GNC) methods

3 **Structures & Materials**

Researching the elasticity of structures under extreme aerothermal conditions, developing materials, and 3D printing of structures that can withstand extreme hypersonic conditions

5 **Thermal Management**

Focusing on heat transfer in the flow field along the surface of the vehicle, characteristics of heat loss using ablative materials, and novel schemes for active thermal management

2 **Hypersonic Aerodynamics**

Studying aerodynamic forces, and their interactions, at different altitudes and speeds, including changes in the molecular structure of the surrounding air and its effects on the vehicle

4 **Propulsion & Combustion**

Studying and modeling the physics of "air breathing" scramjet engines. These are characterized by the compression of supersonic airstreams drawn into the engine inlet by the forward motion of the vehicle and combusted using injected fuel ignited by a flame. Issues include fuel composition, injection strategies, flames, ignition development, and more

6 **Measurement Methods**

Innovating and implementing new measurement methods to enhance the quality of research in the other five areas of expertise.

BRINGING
ABOARD
NEW TALENT

The center's multidisciplinary research regime and its vast network of partners in the Israeli industry, along with its high-level labs – the Aerodynamics Laboratory, Hypersonic Compression Tunnel Laboratory and Advanced Optical Diagnostics Laboratory – will grant it world-class status among universities studying hypersonic technologies.

Offering endless research possibilities, the Technion's Center for High-Speed Flight is set to become a magnet for faculty recruitment and trigger collaborations with elite research institutes and universities overseas.

Because they will have the incomparable opportunity to train and work at the center, Technion graduates will garner higher professional capabilities that will give them a significant edge on peers entering the industry at the same time.

"Hypersonic flight is one of the few 'not yet discovered' remaining frontiers of aeronautic engineering," said Harari, summing up the pioneering nature of the center and its anticipated impact on new generations of researchers and innovators. "The field poses significant scientific and practical challenges to the community of researchers, making it attractive to every young academic who is looking for a career in an area of great potential. We believe that the knowledge generated at the center will not only be significant for the basic goal of enabling and supporting high-speed flight but may open new horizons in parallel, also in not related topics that could make use of the discoveries, the methods and the materials developed at the center."



AT THE TOP **OF THE** **FOOD CHAIN**

TECHNION RESEARCHERS ARE CHANGING
WHAT THE WORLD WILL EAT



As global researchers join hands to address the looming threat of hunger, amid a growing global population and dwindling natural resources, Israel has positioned itself as a powerhouse in food technology with the Technion at the center of this remarkable success.

Technion's president, Prof. Uri Sivan, with attendees of the Taste of the Future conference from academia and industry

Increasing the global food supply while protecting the environment is one of the world's most pressing challenges. Technion is heavily invested in meeting this challenge, perpetuating Israel's dominant position in the FoodTech revolution.

"Eradicating world hunger and improving food security are among the main challenges facing humanity in the 21st century, as defined by the UN's Sustainable Development Goals," notes Technion President Prof. Uri Sivan. "The Technion has the only faculty in Israel for research in food engineering, a faculty that leads the Israeli FoodTech industry."

The Faculty of Biotechnology and Food Engineering at the Technion is also one of the few in the world that combines bioengineering, technology, food sciences, and life sciences. Its researchers and educators are among global pioneers that are developing cutting-edge food technologies to help provide the planet with food that is nutritious, environmentally friendly, and economical.

A RANGE OF ACTIVITIES ON CAMPUS

The Technion's leadership in developing sustainable food products stems from the variety of activities it has on campus, including an accelerator program, symposiums, and the partnerships it has forged with international and local innovation and industry partners. This leadership is set to get an added boost from the construction of the new Carasso FoodTech Innovation Center, which will serve as a multidisciplinary hub for researchers from 11 Technion faculties and other institutions.

The Center, now under construction, will include an R&D facility for industrial production, a packaging laboratory, an industrial kitchen, and spaces for teaching and research, as well as a visitors' area to expose high school students to the world of FoodTech. The Center has been



Prof. Marcelle Machluf of the Faculty of Biotechnology and Food Engineering

The Technion has partnered with the European Institute of Innovation and Technology (EIT)... to encourage project-based learning

made possible by the generosity of the Carasso Family and Carasso Motors.

Since 2016, the Technion has partnered with the European Institute of Innovation and Technology (EIT), which is supported by the EU, to encourage project-based learning in FoodTech among students while helping meet challenges raised by the food industry. Through the one-year EIT Food Solutions project, teams of students from the Technion and other European universities develop innovative food products that address a

specific challenge while gaining entrepreneurial skills, from ideation to solution pitch.

Technion students won both the gold and silver medals in the 2022 EIT Food Solutions competition, with the gold going to a team of graduate students for their OmeleTofu, an instant

vegan omelet produced using a freeze-drying process. In previous years, Technion teams have won prizes for innovations such as soy-based yoghurt, low-sugar chocolate cake, and spirulina-enriched falafel.

Under the auspices of EIT, the Technion's Food Accelerator Network fosters young entrepreneurs from Israel and around the world, giving them the skills needed to nurture their enterprises. Several promising startups have emerged from this accelerator, including Redefine Meat, a maker of 3D printed plant-based meat, which last year raised \$135 million to fund global expansion plans.

Last November, the Technion also hosted the Taste of the Future symposium, attended by global FoodTech leaders.

To stay abreast of developments on the ground, the Technion has always prioritized forging ties with partners in the industry. To this end, researchers at the Faculty of Biotechnology and Food Engineering collaborate with both Israeli and multinational food companies, and other key industry players. A collaborative framework recently finalized with Tnuva, one of Israel's largest food producers, will further facilitate sponsored research at the Technion.



(Pictured right) Members of the OmeleTofu team with their mentors

CUTTING-EDGE RESEARCH

Technion researchers are already changing what the world will eat in the future. Their research projects are part of an extensive list of inventions set to help shape the future of the global food industry.

Recent high-potential breakthroughs include:



Personalized nutrition

Using simulated digestive systems, Prof. Uri Lesmes and his team have identified differences in the way men and women digest food that could help tailor healthier food solutions by gender.



Cultivated meat

Prof. Marcelle Machluf, a world-renowned FoodTech innovator, is at the forefront of the global race to produce high-quality cultivated meat. Her team has already created cultured minced meat and sausages based on scalable cellular building blocks. The startup Meatafora, which was set up based on this novel technology, has reportedly raised some \$5 million from investors.



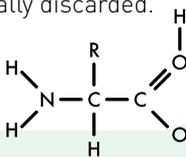
Healthier edible oils

Prof. Maya Davidovich-Pinhas has developed new assemblies that mimic the natural behavior and texture of fat in various animal-derived food products and has succeeded in reducing total oil and fat content, including unsaturated fats. This yields products that are healthier and – importantly – with a texture that is not compromised.

Alternative protein from plant sources

In the Lab of Biopolymers for Food and Health, Prof. Yoav D. Livney and his team are developing alternative, sustainable proteins from new sources.

They have successfully extracted proteins from microalgae and are producing alternative proteins from the parts of plants that are usually discarded.



Bioplastic material from renewable sources

Prof. Maya Davidovich-Pinhas recently submitted a patent for a unique bioplastic material made from cellulose. This holds immense potential for meeting the demand for food packaging made from bioplastic materials.



VCSELS: A model for industry– academia partnership

These technologies are considered “the cradle of the flourishing Israeli electronics industry.”

Researchers from the Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering together with the staff of the Micro and Nano Fabrication Unit (MNFU) at the Sara and Moshe Zisapel Nanoelectronics Center, have developed unique vertical cavity surface emitting lasers, known as VCSELS, to be used in chip scale atomic clocks. Because of their extremely small size – roughly 1000 of them could fit in a grain of salt – VCSELS are highly energy efficient, a crucial property for the battery-driven, mobile atomic clocks.

Atomic clocks are the most precise man-made machines, and have major impacts on fundamental science and numerous applications, including GPS navigation, synchronization of communication

and computing systems, as well as defense systems including Iron Dome, to name but a few. The most precise clocks are very large systems, found only in a few national laboratories around the world. Such a clock would miss one second in a time longer than the life of the universe. The so-called cesium fountain clock is somewhat more abundant and is used universally to define one second. Small chip scale atomic clocks were developed to enable very small, inexpensive, and mobile, yet accurate, time measurement. These battery-driven clocks would lose one second in 10,000 years. At its heart is a special VCSEL that was recently developed by the Technion.



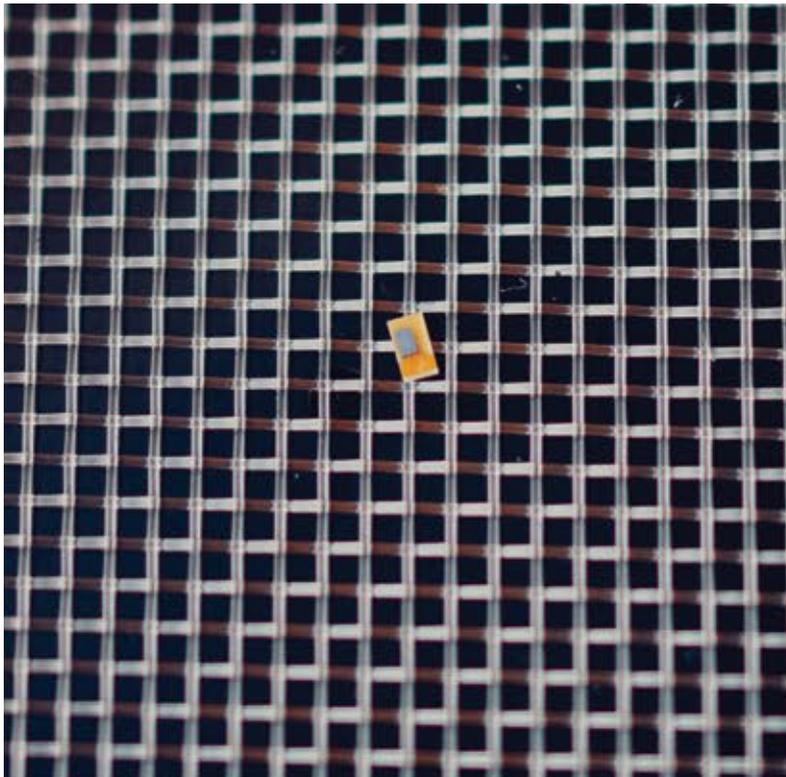
Prof. Meir Orenstein (c) with team members

and computing systems, as well as defense systems including Iron Dome, to name but a few. The most precise clocks are very large systems, found only in a few national laboratories around the world. Such a clock would miss one second in a time longer than the life of the universe. The so-called cesium fountain clock is somewhat more abundant and is used universally to define one second. Small chip scale atomic clocks were developed to enable very small, inexpensive, and mobile, yet accurate, time measurement. These battery-driven clocks would lose one second in 10,000 years. At its heart is a special VCSEL that was recently developed by the Technion.

This particular VCSEL has many characteristics



The VCSEL development project was part of an industry-academia consortium initiated by the Israel Innovation Authority (IIA)



A fabricated Vertical Cavity Surface Emitting Laser (VCSEL) device

that are difficult to implement, including very high accuracy of their light emission color, shape, and polarization, as well as the ability to operate at extremely high temperatures. The Technion successfully developed such VCSELs, that even outperform the best commercially available competitors.

The VCSEL development project was part of an industry-academia consortium initiated by the Israel Innovation Authority (IIA). It includes, in addition to the Technion, commercial companies such as NVIDIA, SCD, Civan, Accubeat, and PCB, and the Hebrew University of Jerusalem. The roots for establishing the VCSEL development lie in the vision of the IIA for the significance of VCSELs to the

The consortium is developing other types of VCSELs, in addition to those for atomic clocks

Israeli industry, and in a long-term collaboration between the Technion and the Israeli branch of NVIDIA (formally Mellanox). However, the most important contribution to the success is the Technion itself whose scientific and technological excellence enabled this major breakthrough.

The Technion researchers within the consortium include Professors Meir Orenstein, Gadi Eisenstein, and Mordechai (Moti) Segev from the Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering. Professor Eisenstein, the director of the Russell Berrie Nanotechnology Institute and the head of the MNFU explains that the key figure in this project is Prof. Orenstein, a well-known expert in VCSEL technology. He designed the material structure and the device processing procedures and supervised their fabrication in the MNFU. The excellent MNFU staff, led by Director Aya Cohen, showed unequivocal capability in developing state-of-the-art devices that rival those fabricated by commercial manufacturers.

The consortium is developing other types of VCSELs, in addition to those for atomic clocks. NVIDIA leads a working group on high speed VCSELs for data communication and SCD is responsible for high power VCSEL arrays. The latter has two parts. Prof. Orenstein is developing one based on his invention of a coherent VCSEL array, a light source composed of hundreds of VCSELs working in conjunction to produce a high brightness light beam. The second solution is an array of topological VCSELs, which are unique in that they are immune to external disturbances, developed by Distinguished Prof. Mordechai (Moti)



(Pictured above):
Distinguished Prof.
Mordechai (Moti) Segev (l)
and Prof. Gadi Eisenstein

Segev – the inventor of the topological laser.

The field of microelectronics was brought to the Technion in the early 1970s by Professor Izhak Kidron. Semiconductor device fabrication started after the 1973 war when the Technion took it upon itself to develop a solution

to a crucial deficiency: infrared detection systems that no country was willing to supply Israel with. The successful development of those devices marked the starting point of microelectronics in Israel. Micro – and later nano – electronics activities at

the Technion have continuously grown ever since and are considered “the cradle of the flourishing Israeli electronics industry.”

The present Technion fabrication facility is the MNFU, which boasts 700 m² of cleanrooms, making it the largest center of its kind in any Israeli university. It is a shared research and development facility supporting numerous academic researchers, graduate students, and industrial researchers. The Center offers a complete set of micro- and nano-fabrication tools, as well as process and prototype developments led by its excellent engineering staff. This combines the best of two worlds: academic expertise, flexibility, and creativity together with the high-performance standards required by the industry.



DRIVING INNOVATION FOR IMPACT

A NEW ERA IN
TECHNOLOGY
TRANSFER

INTERVIEW WITH T3 GENERAL
MANAGER, RONA SAMLER

Traditionally, technology transfer has been associated with the translation of academic research into the language of industry. However, in recent decades, a major transformation has taken place in the role universities play in research and development and entrepreneurship. This shift has called for a new multidisciplinary, holistic approach to innovation implementation. Rona Samler, General Manager of Technion Technology Transfer (T3) at the Technion R&D Foundation, offers a new perspective on technology transfer leadership and its impact.

T3 IN
NUMBERS

#1

**PATENT-PRODUCING
UNIVERSITY IN
ISRAEL**
(2021-2022)

100

**COMMERCIALIZATION
AGREEMENTS / YR**

50M (NIS)

**TRANSLATIONAL
RESEARCH / YR**



T3 sets up some 15 new start-ups per year with more than 150 spinoffs valued at over \$23 billion. The Technion was ranked first in Israel for the number of U.S. granted patents in 2021 and 2022”

TECHNION-
FOUNDED
COMPANIES
IN NUMBERS

\$ **22.8B**
VALUATION

\$ **4.2B**
INVESTMENTS

150
SPINOFFS

9
PUBLIC
COMPANIES

INNOVATION VEHICLES

GRANTS

GOV &
INDUSTRY

T-START
ACCELERATOR

T3
TECH
TRANSFER

DRIVE
ACCELERATOR

NGT
INCUBATOR

AMIT
HEALTH

TIOF

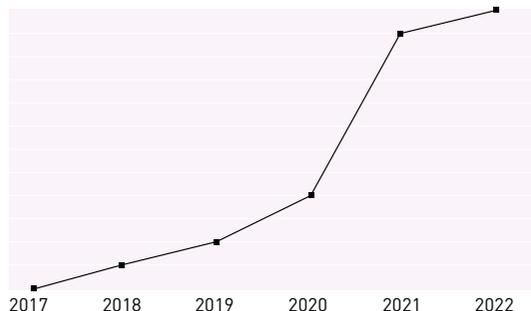
IDEATION
IDEA TO POC

ENTREPRENEURSHIP
PROTOTYPE &
COMMERCIALIZATION

ACCELERATION
PRE-SEED

VALORIZATION
FROM SEED/A TO B

TECHNION PRIVATE
COMPANIES VALUED
\$100M AND ABOVE



Can you talk about this new era of technology transfer and the approaches that it calls for?

Once the main purpose of scientists was to do research, publish papers and teach. Today they are encouraged to work closely with businesses and boost their research and development (R&D) efforts. Industry representatives now often have a physical presence on campus, they hold study groups with researchers and students, and collaborate on projects. There is a consensus that this joining of forces leads to a burst of innovative creativity.

The quantum leap of the Technion's scientific excellence and the groundbreaking technologies it has fostered, which have helped shape Israel's national resilience in this century, are the major propelling forces that are the basis for the scientific and entrepreneurial ecosystem of the university. Such an ecosystem is contributing to the proximity between industry and academia, both in commercial and geographic terms.

To ensure in-depth collaboration and cross pollination with the industry, departments within campuses must work together to forge collaborations with businesspeople, while the scientific and entrepreneurial ecosystem within the academia must also provide guidance to its researchers who wish to pursue entrepreneurship and take their research to market.

How are these new developments changing the relationship between academia and entrepreneurship? What challenges remain?

There is a transformation in how we approach commercialization. Today, more and more academics are setting up enterprises based on future intellectual property (IP) rather than on existing patents. As a result, Technology Transfer Organizations (TTOs), searching for new profit-generating avenues, seek to tighten their partnerships with industry at the very initial phase of research. Simultaneously, academic institutions are churning out more and more companies that contribute to the ecosystem.

These new developments are paving the way for new models of cooperation with the industry, which require proactive approaches to campus education, academic research, and startup creation.

There are however challenges in the journey to successful technology transfer. Unfortunately, academia and industry still do not fully see each other as equal partners. For example, there are discrepancies in the industry's perception of intellectual property (IP) ownership and the commercial considerations that need to be paid to the academia. At the same time, it is of great importance that both academia and industry fund basic research and preserve the freedom of researchers and their projects, regardless of the short-term considerations and profitability.



ARTIST IN
RESIDENCE



ART SCIENCE

INSPIRATION

*(Pictured) Dr. Elad
Shniderman*

✕ The ancient Greeks believed that artistic training and experience are essential to the human spirit and the development of creative minds. So did Renaissance thinkers, and so does Technion President Uri Sivan. Indeed, since 2020, the Department of Humanities and Arts has expanded its mission to include new research and additional teaching initiatives in history, philosophy, ethics, music and arts. As part of this expansion, Prof. Sivan this year established the Artist in Residence program, generously sponsored by Mrs. Sonia Marschak.



The Sonia Marschak Artist in Residence program aims to combine the humanities, sciences, technology, and engineering professions, and create a dialogue around the interfaces of these fields. The participating artists teach a course in their area of expertise, perform and create on campus, and conduct joint research with faculty and students of the Technion research community.

One of the initiatives of the Artist in Residence program is the “Music, Science, Inspiration” series of concert lectures, set up and hosted by pianist Dr. Orit Wolf. The series brings together leading Technion scientists, international guest artists and



Dr. Orit Wolf
and Prof. Alex
Bronstein

student musicians, combining all the elements of the expanded mission of the Department of Humanities and Arts. As part of the series, scientists and artists share their experiences of seeking creative solutions, dealing with mistakes and struggling with ethical questions. They discuss and demonstrate the many ways in which science and music interact: from AI's ability to recognise performers to how a pianist can empower motoric rehabilitation. The concerts, which also feature live performances by guest artists and by some guest scientists, have gained considerable popularity on campus, attracting large crowds of students, faculty, and administrative staff.

Dr. Wolf also teaches two courses on the canon of western classical music repertoire, and leads masterclasses for students who are also musicians. This has created a prolific and supportive musical community within the Technion that enables students from all majors to get one-on-one mentoring and experience live performances in front of an enthusiastic, receptive audience.

As part of the Artist in Residence program, in the first semester of this academic year, Dr. Elad Shniderman, a multidisciplinary sound artist, led a workshop for B.Sc. students, focusing on sound as an artistic medium. Having learned about sound components from scientific, technical, and artistic standpoints, the students then created sound artworks of their own. "I tried to share my difficult journey into panic attacks. I combined sounds of marine animals with background noises," student Dana Guma said, explaining her project.

Dr. Shniderman collaborated with Dr. Lior

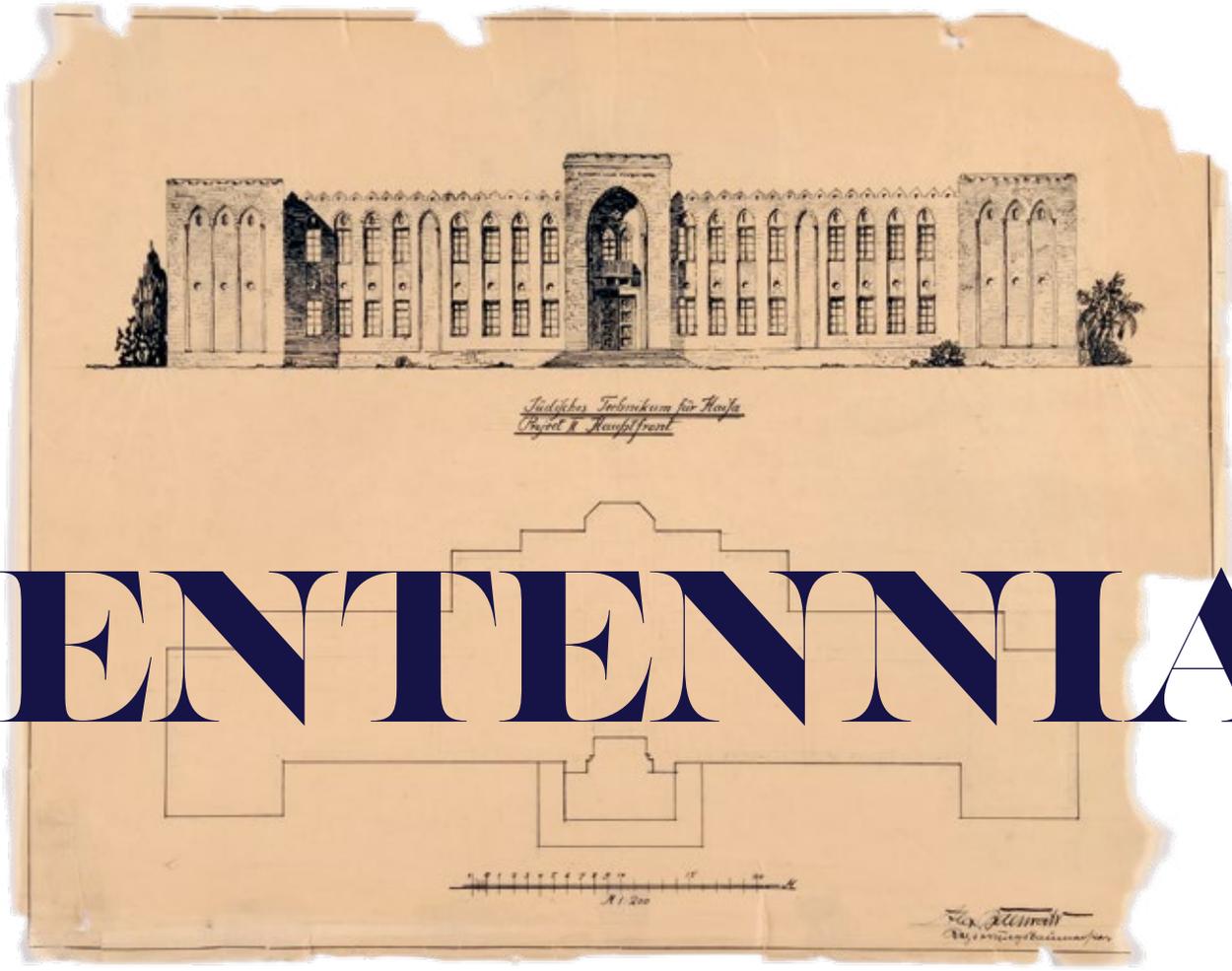
Arbel from the Industrial Design Program of the Faculty of Architecture and Town Planning to create a sound installation, which is now on show at the Pyramida Center for Contemporary Art in Haifa. He also received an invitation to propose an artistic / scientific project with the Technion to the international Outset Contemporary Art Fund.

During the spring semester, sculptor Nardeen Srouji led a workshop to teach students about art history and the various art movements, and how science and technology shape art. Based on the knowledge the students acquire, they will submit a final project focusing on position and location in sculptural art.

The Artist in Residence program provides our Technion students with the thrill of having the opportunity to combine scientific and artistic expression, applying their professional knowledge in different ways, and learning about the unexpected manners art and science can blend. Creativity, going off the beaten path to find new answers and ask new questions are skills essential to good scientists and good engineers – which is what the Technion students aspire to become. These are the skills the Artist in Residence program nurtures. Program registration for the next academic year is already open, and we can't wait to see the increasingly interesting projects and collaborations this initiative will bring.



Ms. Nardeen Srouji



CENTENNIAL



The 2023-2024 academic year marks the 100th anniversary of Technion's inaugural class, nearly a quarter of a century before the establishment of the State of Israel in 1948. With a century-long history of originative education and research, our university has played a vital role in transforming Israel into an epicenter of global innovation while achieving preeminent status in STEM academia worldwide.

Our graduates assume leadership positions in government and industry, and stand out as exceptional innovators and entrepreneurs in Israel's rapidly expanding high-tech sectors (Microelectronics, Health-Tech and Med-Tech, Food-Tech, Cyber, Aerospace, and more). Indeed, Technion ambition and ingenuity has left a deep, indelible mark on fields as varied as computer science and artificial intelligence, optoelectronics, nanotechnology, high-speed aeronautics and satellite technology, biorobotics, and reaction engineering and applied catalysis.

The Technion's centennial celebration will pay homage to faculty, staff, and students, past and present; it will tout their magnificent accomplishments and salient impacts on Israel's economic growth and social progress. A natural crossroad, centennial events will also look to the future; platforming new strategies and practices in institutional branding, industry engagement and tech-transfer, alumni engagement, donor outreach

and academic networking. On the backdrop of ever-evolving challenges facing Israel and the world, the Technion's centennial will kick-off processes of infrastructural renewal and herald new strategic alliances at home and abroad. The Technion's ethos of maximum relevance in the service of human well-being, social cohesion and economic development will be the undercurrent theme connecting past, present and future.



First professors and students in 1924



The following are but a few of the planned celebratory events:

Opening Ceremony

This festive event in October 2023 will launch the centennial academic year, bringing together students, faculty and alumni to recount a century of extraordinary achievements in science and technology and take pride in momentous contributions to the state and people of Israel.

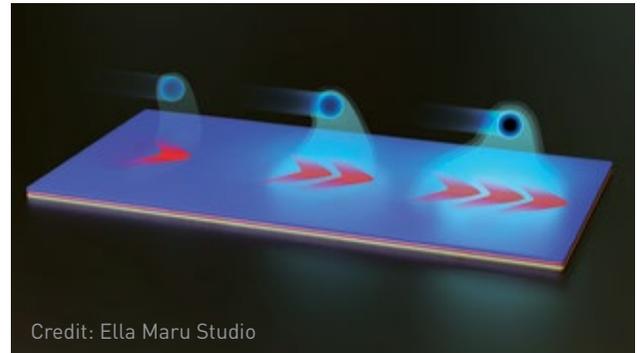
Dedication Ceremony

Committed teams of administrative and academic professionals are indispensable to the Technion enterprise; Technion success hinges on their ability to identify, and support the realization of, educational and research opportunities and untapped student potential. In October 2023, we will hold a dedication ceremony to honor those who have excelled in their work at the Technion. At this ceremony, retired and active personnel will come together to pay tribute to the honorees' efforts and contributions on behalf of the Technion community.

EcoTech Conference

In January 2024, the Technion will hold an international conference titled "EcoTech", focusing on engagement and collaborations mechanisms between academia and industry. The conference will explore the ways in which universities and industries may work together to enhance research and promote the development of technologies. Lecturers from high-tech industries and academia will take center stage at the conference's plenary sessions, followed by panel discussions involving industry leaders and distinguished academic figures.

A single free electron propagates above the special layered structure that the researchers engineered, only a few tens of nanometers above it.



Flow of Intellectual Property Conference

Scheduled for April 2024 in New York City, this conference will focus on the flow of intellectual property from the university to investors and industry. The conference will cover mechanisms used by the Technion and other universities to transfer intellectual property. These and other alternative mechanisms will be examined and differentiated on the basis of their relative advantages and disadvantages.

Board of Governors Meeting

Technion's centenary will culminate with the Board of Governors events in June 2024. Attended by dignitaries from around the globe, the meeting will feature Technion contributions to Israel and the world over the past 100 years.

Other centennial highlights include a retrospective documentary film on 100 years of Technion history, the placing of a time capsule on campus grounds to be opened in 2124, special centennial hackathons, commemorative media, and more.



FROM THE
PRESIDENT





**Our students work hard
but they also play hard**

Prof.
Oded
Rabinovitch
Senior
Executive Vice
President

The Office of the Senior Executive Vice President aims to create a strong academic foundation on campus and provide extensive support for learning, teaching, and research. We work towards fostering a vibrant academic atmosphere focused on research and education.

At the core of our initiatives to provide our students with cutting edge education, we endeavor to introduce new learning and teaching styles and diversify the academic environment. We are focusing on learner-centered educational methods, as well as establishing alternative evaluation methodologies to cater to the varied current and future needs of our students.

By harnessing the expertise of the Technion's Center for the Promotion of Learning and Teaching's in-house education specialists, we have been working to integrate faculty-level initiatives that promote innovative learning and student engagement.

Simultaneously, we are developing expanded Humanities and STEM cross disciplinary educational clusters beyond our undergraduates' primary fields of study, providing them with a broader education and a more comprehensive understanding of the intricate complexities associated with real-world challenges.

The Office of the Senior Executive Vice President takes important actions to enhance Technion's research infrastructure by providing support to newly recruited faculty members. We ensure that new faculty members are fully prepared from day one to fulfill their roles as researchers and scientists, as well as educators and mentors. Additionally, on a campus-wide scale, we are working closely with each department to develop a multi-year academic development plan aimed at ensuring that academic progress is planned and evaluated based on long-term vision, goals and needs integrated with the Technion's strategic vectors and the development of the campus.



Strengthening the Foundations of Learning

Over the past year, under the auspices of the Office of the Senior Executive Vice President, the Center for the Promotion of Learning and Teaching has been work-

ing with the academic units to maximize the academic achievement, learning experience, and personal development of our students and faculty. The Center, together with the Deans and the academic and administrative staff in the departments, has developed an innovative and non-conventional mode of operation for providing comprehensive support to faculty members and teaching assistants, equipping them with the necessary knowledge and tools to enhance the learning experience and effectively evaluate students' comprehension and retention of course material.

The Center, led by Education Specialists in many of the Technion departments, has worked closely with instructors to optimize course structures and curriculum resources for better learning outcomes and experiences. The Specialists, who all hold a PhD in their field of science or engineering expertise and are affiliated with the specific department (as well as the Center), are passionate about excellence in education, and possess up-to-date knowledge of educational technologies, teaching practices, and their respective academic disciplines. They encourage the use of advanced tools like the Center's state-of-the-art lightboard equipment, recording studios, digital learning solutions, and a multimedia classroom suitable for interactive learning with both small and large groups of students. With their guidance, a modern, technology-mediated learning environment is being created, combining face-to-face interactions and mentorship with ground-breaking methodologies and concepts for maximum impact.

In addition to improving learning and teaching methodologies, our Office is actively working to broaden the scope of studies to include courses in the Humanities and Arts along with the classical fundamentals of science and engineering. Currently, undergraduate degree programs in all faculties at the Technion require courses in mathematics, physics, chemistry, and computer science. However, the challenges presented by complex, 21st-century issues in science and engineering often involve a broader foundation and, in particular, societal and moral considerations. Consequently, an ongoing evaluation is taking place to explore the practicality and advantages of adding new courses to the curriculum, with some already in development. These courses would focus on topics like data and decision sciences and life sciences as well as philosophy, ethics, and the history of science and engineering.

Developing Academic Infrastructure

Critical to our teaching, research, and service mission, the development of academic resources and infrastructure is a top priority of this office. We are continuously evolving the underlying processes of resource and infrastructure development to make it more efficient and responsive to the needs of our faculty and students. This past year has seen marked progress on two parallel fronts: (1) personalized start-up packages for new faculty members; (2) multi-year academic development planning at the faculty level.

Technion's onboarding process for new faculty aims at their success right from the beginning. Our program includes customized start-up packages that align with each individual's academic profile, needs, and long-term goals as an educator and researcher. The Office of the Senior Executive Vice President, along with the faculty dean and the new faculty member, collaboratively designs these packages to provide the necessary

resources for success in teaching, mentoring, and research. Support includes assistance in pedagogical development, purchasing of research equipment, and setting up laboratories.

In order to plan ahead for success, every faculty is now obliged to prepare a five-year academic development plan, consistent with its vision, objectives and needs as well as the ones outlined in the Technion's strategic development plan. Academic development planning at the faculty level reflects the department's expectations and academic goals for the coming five-year period in a range of areas including faculty and student recruitment; objectives in research and education; educational and research collaborations and other joint initiatives with on-campus partners, other universities, and industry. Integrated, multi-level long-term development planning will leverage the way Technion operates, reduces uncertainty, and streamlines the management of processes essential to the university's continued academic excellence.

The Office of the Senior Executive Vice President remains committed to advancing the educational foundations and bolstering the academic infrastructure on campus. As we approach the Technion's centennial year, our office's goal is to continue to foster the growth of successful and well-rounded students while providing unwavering support to faculty members, enabling them to excel as educators and researchers.

**Prof.
Naama
Brenner**

*Executive Vice
President
for Academic
Affairs*



The Office for Academic Staff handles the appointment, tenure and promotion of faculty and teaching staff, sabbaticals and vacations, trips abroad, the appointment of post-docs and academic visitors, scholarships, honors and awards. Major facts and initiatives are described below.

New faculty recruitment

As of March 2023, the Technion recruited 24 new faculty members, of which five are women. Note that seven of the faculty who joined the Haifa campus are non-Israelis. Currently, we are deep into the process of recruitment for the next academic year (starting October 2024). The number of faculty members at the Technion has remained stable, with the proportion of women faculty remaining at around 20%. We are also happy to welcome the first Arab-Israeli female faculty member out of approximately 600 Technion faculty members and we are working diligently to increase representation for this sector of Israeli society.

Research fellows track

This new track launched in 2022 is continuing to develop. Its purpose is to enable part-time involvement of experts from industry in research and education at the Technion. Within a short period, we successfully recruited 35 fellows. Many more are expected to join us over the coming years.

Postdoctoral fellows

In the 2021-22 academic year there were 390 post-doctoral fellows, of whom 256 were from overseas (compared to 418 in the previous year, of whom 262 were from overseas). One of our goals in the coming years is to increase the number of excellent post-docs, both from Israel and abroad.

Representation of women in major promotion committees

We continue in our efforts to increase the representation of women in major academic committees. In the two main senate committees that handle the hiring, tenure and promotion of senior Technion faculty, more than a third of the committee members are women.

Representation of young faculty in preparatory committees

In accordance with an amendment to the Academic Bylaws approved during the year 2022, unit heads may appoint additional members to the Preparatory Committee from among the associate professors in the unit – provided that their number does not exceed one-fifth of the number of professors on the committee. The purpose of said amendment was to increase the involvement and influence of younger faculty in major decisions. Implementation of the amendment started in the 2022-2023 academic year in four out of Technion's eighteen academic units.

Refugees

We're sad to witness the war in Ukraine and offer our support by hosting researchers who seek an academic home for a short term; Ukrainian refugees, as well as Russian dissidents who voice their opposition and seek a safe academic shelter for a while.

Prof. Jacob Rubinstein
Executive Vice
President
for Research



The year 2022 marked the recovery from the Covid pandemic. The Technion substantially increased the number of new research grants with a record total of \$109M. We also continued our strong performance in tech-transfer. The School of Continuing Education increased its activity in each of its sectors of operation.

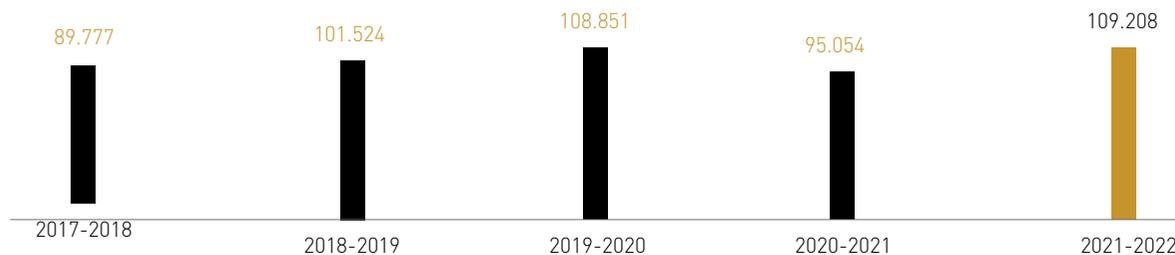
above the excellent result of \$108M of 2019/20. The increase is across almost all sectors of activity, particularly in the EU competitions. The performance in the prestigious ERC competition was outstanding.

Funded research

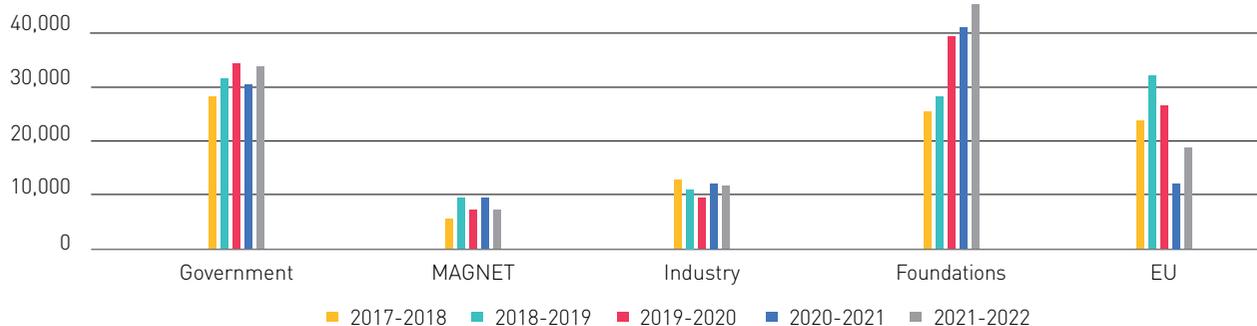
Research contracts signed in 2021/22 by the Research Authority amounted to a record \$109M. This constitutes a sharp increase from \$95M in 2020/21 and it is, even,

Technion researchers submitted to the ISF 198 proposals in 2021/22 and won 67 grants – compared to 216 proposals to the ISF and 73 grants in 2020/21, 180 submissions and 69 grants in 2019/20, and 192 submissions and 82 grants in 2018/19. Overall, the success rate of Technion researchers in ISF competitions continues to be higher than the national rate. In addition, we won 1 out of the 4 new prestigious Mapatz grants of the ISF in science and technology.

New external research contracts
(Thousands USD)



New external research contracts – breakdown into various sources
(Thousands USD, “Foundations” include all competitive grant agencies except those of the EU)



**Prof.
Jacob
Rubinstein**
*Executive Vice
President
for Research*

We continued in 2021/22 to enhance our contacts with industry. We signed a multi-year strategic partnership with Pfizer concentrating on AI methods for drug development. In addition, we signed multi-year contracts with Google and its subsidiary Verily, and with the Israel Aviation Industry.

The Technion continued to invest heavily in providing new faculty with optimal research infrastructure. Thus, we invested 81M NIS in new faculty research allocations in 2021/22, compared to 74.5M NIS in 2020/21 and 70.5M NIS in 2019/20.

Challenges:

2021/22 was a very good year for us in EU competitions. We can already state that 2022/23 is going to be even better. However, the political crisis in Israel might pose risks regarding our future standing at the EU.

External Aid for Research

In addition to the external funding mentioned above, in 2021/22 the Technion received a total of \$18.2M in contributions from donors for specific individual researchers or for the creation of research infrastructures – compared to \$22.8M in 2020/21, \$12M in 2019/20, and \$13M in 2018/19.

Challenges:

Donation grants tend to be focused on a specific field (health care) and are not available to the general population of PIs. To address this the Technion Research Directory was constructed in 2018, which is a searchable data base of brief proposals (in layman's terms) submitted by Technion faculty and used to help donors find topics of interest.

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 – an alliance of six leading European technological schools that in addition to the Technion, includes: TUM (Munich); EPFL (Lausanne); DTU (Copenhagen); Ecole Polytechnique (Paris); and TU/e (Eindhoven). The Eurotech alliance significantly increased its activity in 2021/22, including a new faculty exchange program.

We have joint projects with the University of Michigan (together with the Weizmann Institute) and the University of Waterloo. Furthermore, we continued our long-term partnership with the Universities of Aachen and Julich. Joint research projects with Tokoshima University in Japan (along with Nichia Corp. who supported this collaboration) were successfully completed and this program is expected to double in the coming years. We are also starting collaboration with the Albert Einstein Hospital (Sao Paulo, Brazil) and the Cincinnati Children Hospital.

Industrial Collaborations

We attribute great importance to collaboration with industry. We believe that industrial contracts contribute to both sides. The Technion enjoys support for research, better education for students and help in providing our faculty with up-to-date knowledge of emerging needs. On the other side the Technion is committed to help Israeli industry and the country's economy in general. In addition to the strategic partnerships mentioned above, total industrial contracts in 2021/22 amounted to \$11.8M, compared to \$12.3M in 2020/21 and \$9.5M in 2019/20. Obtaining industrial contracts requires continuous proactivity of our staff, approaching potential companies. In 2021/22 we started a new project to connect us to traditional industry, including food and pharma.

Translation of Research

The general topic of knowledge translation is handled by the Technion Technology Transfer (T3) Office, which is a division of the Technion Research and Development Foundation (TRDF). TRDF is a for-profit company owned by the Technion, with the Technion Executive Vice President for Research serving as the CEO of TRDF. Income from licenses and royalties plays an important role in supporting research at the Technion, including the purchase of research infrastructure. We emphasize the commercialization of scientific discoveries also to foster an ecosystem of innovation and entrepreneurship at the campus. Furthermore, the Technion sees such translation as an important contribution to the State of Israel.

The new commercialization models that were launched by us three years ago continue to help expand the Technion's deal flow. In fact, we reached a state whereby Technion faculty are now founding one out of every thirty startups in Israel!

The Technion was ranked first in Europe in granted US patents in 2020/21. This parameter is considered a main indicator of entrepreneurship and innovation. Our patent portfolio increased in 2021/22 to 745 –compared to 740 patent families in 2020/21, 715 in 2019/20, and 635 in 2018/19.

Sixty-two new commercialization contracts were signed during 2021/22, compared to 57 in 2020/21. We launched 15 new spinoff companies last year – compared to 12 in 2020/21, 14 spinoffs in 2019/20, 6 in 2018/19 and a similar number in 2017/18.

The significant increase in our deal flow is now reflected in the total holdings of the Technion, reaching over 130 companies in diverse areas. For instance, our private spinoffs include Aleph Farms (foodtech), Xact Robotics (medical devices), Starkware (software), H2Pro (energy), Tabnine (software), Qedma (quantum

computing), Cytoreason (bioinformatics), Deci.AI (software), Speedata (chip design), Luminiscent Power (energy), Mana.bio (drug delivery), Mealiways (foodtech), Tamar Robotics (medical devices), and many more.

The TRDF recognizes the importance of investments in research infrastructure. Therefore, in 2019/20, we established a new internal fund for this purpose. We invested 10M NIS in this fund in 2021/22, compared to 8M NIS in 2020/21 and 6M NIS in 2019/20. The fund was used to match outside grants (VATAT and ISF), to support the pre-clinical authority and the Technion's Martin and Grace Druan Rosman High Performance Computer Data Center, and to aid certain specific projects of groups of faculty members. This fund is fully financed by our success in commercializing Technion technologies.

We took important steps in 2021/22 to further strengthen the innovation and entrepreneurship ecosystem on our campus. We joined the NGT incubator as partners, supported by the Israel Innovation Authority. NGT is a Jewish-Arab incubator, operating in northern Israel, specializing in med-tech. We also won a contract with the Israel Ministry of Science to launch T-Start. Each year, this operation identifies a few promising ideas at various Technion labs and helps the lab staff, advance the technology, along with providing them with courses on business and innovation, including creating business plan for their invention.

**Dr. Rafi
Aviram**

*Executive Vice
President
and Director
General*



First and foremost, the Technion community would like to deeply thank the former Executive Vice President & Director General, Prof. Boaz Golany, for his many years of service and achievement. In mid-January 2023, I entered my position as the Executive Vice President & Director General after more than a decade of work in administrative positions in the field of higher education. This past year ushered in the post-pandemic period; most of the Technion's regular on-campus activities have been reinstated. Some lessons have been learned: For instance, enabling one remote-work day for administrative staff, zoom-remote meetings, etc. In mid-February 2023, the Technion suffered a serious cyber incident. Fortunately, we may now report that most of the affected IT systems have been restored to normal operations. Even so, a thorough investigation is required to understand the source of the cyber incident and to identify those actions that should be taken to minimize additional cyber incidents in the future.

Finance

Israel's economy grew 5.8% over the 12 month period ending September 2022. The indicators continued to show solid growth, but the most recent data showed a slight decline in the growth rate. There are increasing signs of a global economic slowdown which is similarly liable to leave its mark on Israel's economy. Compared to previous years, the second half of 2022 was characterized by an environment of high inflation. The consumer price index in Israel rose by 5.3% in 2022, up from the 2.8% increase recorded a year earlier; this increase was driven by the rising cost of energy, housing, transportation, communication, and food. The higher than expected GDP growth, together with the high inflation figures, support a rate hike of 0.1% to 3.75% in 2022 by the Bank of Israel Monetary

Committee. The above-mentioned and other macroeconomic indicators exert significant influence on the financial activity of the Technion. The main challenges and emphases for the next several years will continue to be the recruitment and absorption of new faculty members, elevating the quality of teaching and upgrades to physical facilities.

Human resources

Over the past twelve months, we have taken significant steps to improve non-faculty pay and working conditions and, thus, guarantee the university's ability to attract quality people – while achieving greater efficiency and flexibility in the management of workers. A recently signed multi-year contract agreement with the engineers union gives Technion engineers parity with their counterparts in the private sector. In November 2022, another agreement was formalized providing enhanced job security to a broad swath of Technion administrative personnel, support staff and project workers.

In the course of last year, we embarked on a project to systematically reevaluate the job classifications for Technion's administrative staff positions; workers and managers are being consulted throughout the university to validate job descriptions in light of present realities and needs, and to revise them accordingly. Down the line, this project will positively affect the quality of job interviews, performance assessments and internal workforce training programs at the Technion. In a separate matter, a number of faculties and selected units participated in a six-month "Remote Work from Home" pilot project. By years end, the pilot was extended to include the rest of the university. The pilot project was founded on a clear definition of the tasks that may be executed remotely from home and on measurable performance goals, and was accompanied

by a real-time audit of relevant processes within the participating faculties and units. Status meetings with managers were conducted as a tool to assess project success and draw appropriate conclusions. During the year, we integrated the "K2" cloud-based digital process automation solution enabling us to digitally process the HR information of new workers; all of the documents in existing personnel files were scanned and entered into the SAP-compliant Documentum System (a document management software).

Safety Unit (SU)

Throughout the year, the Safety Unit performed on campus 134 laboratory risk assessments and nine building safety surveys, and recommended the commissioning of 44 new principal investigator labs. In addition, the SU has also published 30 construction directives and performed very detailed, campus-wide surveys as relates to asbestos, compressed gas systems (cylinders and tubing) and corrosion safety. Due to continuous improvement of the safety culture in the various Technion faculties, the number of work-related accidents reported in 2021-22 was 44. Forty-three percent of those work-related accidents resulted in at least a 3-day leave of absence. There were 19 'near-miss' reports last year – many of which were investigated thoroughly. The SU has trained almost 10,000 employees (up almost 20% from the previous year), in 147 training cycles (up nearly 16% from the previous year). The number of trainees using the SU coursewares increased last year by 72%. The unit manages a 6 million NIS annual budget for safety improvement projects. This includes specific budget grants allocated for asbestos evacuation, advancing business licensing processes for various buildings around campus, and digitization projects affecting the entire scope of operations at the Technion.

Security

Well aware that in times of emergency the campus may be forced to act on its own, the Security and Emergency Unit continued shoring up campus emergency preparedness for earthquakes, fires and missile strikes. This year, two new emergency teams were established, briefed and trained:

> **The Resilience Team** – whose role is to offer emotional support and reassurance during multiple casualty events, to respond to special-needs communities affected by an emergency, and to activate volunteers;

> **The Information and Communications Team** – tasked in emergencies with providing situation reports to the campus community, supporting Technion workers and their families, giving individuals special approval to work despite a decision to close down the campus, manning and enhancing the service capacity of an emergency call center. It is additionally responsible for communicating with nearby municipalities, and implementing uniform messaging across Technion media platforms and other communications channels.

These new teams join the other existing teams that deal with rescue activities, fire extinction, hazardous and toxic materials, and medical first aid. Over the past year, the Security and Emergency Unit attended to technological facets in relation to 27 construction projects: entrance control, security cameras, public address (PA) systems, and alarm systems. The unit secured some eighty-seven events and happenings taking place on Technion's various campuses. Our security personnel handled 3,500 incidence reports relating to fires, maintenance issues, medical events, situations endangering public order or public safety. This year the unit painstakingly introduced a *security cameras* protocol, ensuring that the use of cameras accords with the law and statutory regulations – Israel's Privacy

**Dr. Rafi
Aviram**

*Executive Vice
President
and Director
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Protection Law and the Privacy Protection Regulations (promulgated by the Ministry of Justice). We mapped 1,012 cameras on campus and, in conjunction with the Division of Computing and Information Services, we ironed out all matters concerning the cameras' installation. A work process was delineated (including, areas of responsibility and the sequence of actions assumed by the Division of Computing and Information Services, the Security and Emergency Unit, camera suppliers and telecommunications contractors). We began incorporating security camera guidelines throughout the campus – using an updated procedure including new online forms. Approximately one half of the existing cameras have been connected to the Security and Emergency Center which monitors them 24/7.

Computers and Information Technology

During the 2021-22 academic year, CIS invested heavily in advancing the *Student Life Cycle Management* (SLCM) project, thereby modernizing our student and campus information systems. CIS also provided support for integrating the Technion into the national *Current Research Information System* (CRIS), which will be used by the government in the budgeting process to evaluate Israeli universities' academic output. Significant efforts were also invested in continuing the migration of computing services to the cloud. In the area of *High Performance Computing* (HPC), a major effort to refurbish the campus datacenter transformed it into a state-of-the-art facility. We additionally implemented major hardware renewal and upgrades – including the installation of the strongest AI-cluster in Israeli academia. As in previous years, CIS applied a significant portion of its annual budget to protecting the Technion against imminent cyber threats.

Construction and Maintenance

The 2022-23 academic year is characterized by a return to routine in all of our activities on campus, while demonstrating sensitivity to educational and research needs in the execution of construction projects. This year researchers took possession of 52 new laboratories. Building of the Broshim Dormitories was completed, and 360 students moved into 143 residential apartments. The Aviva and Andrew Goldenberg Architecture Studio Pavilion structure was completed and handed over to the Faculty of Architecture and Town Planning. Work on the Zisapel Electrical and Computer Engineering Building that is now being concluded includes an additional parking facility and full rehabilitation of the central promenade on campus. A new structure for the Faculty of Materials Science and Engineering is currently under construction. Similarly, a new structure for the Faculty of Biotechnology and Food Engineering is currently under construction. We also replaced some 10 heating, ventilation, and air conditioning systems (HVAC) across the campus. We added hundreds of feet of fire suppression lines, and executed numerous jobs involving the sealing of roofs and renovation of classrooms and teaching facilities in every part of the campus.

Five new buildings are currently under design: the Andre Cohen Deloro Building for Transformative Biomedical Sciences and Engineering; the Resnick Sustainability Center for Catalysis; an additional building for the Ruth and Bruce Rappaport Faculty of Medicine; a second building for the Henry and Marilyn Taub Faculty of Computer Science; a new main building for the Faculty of Aerospace Engineering;

Administration and Logistics

The Administration Logistics Unit is an operative arm whose work pertains to certain operational and administrative domains that cut across the organization. This past year, several processes were given particular emphasis:

- > Activities that advance collaboration and the introduction of new companies to the campus, and the bolstering of companies that have new cooperation agreements with Technion;
- > Building a multi-year plan of action to enhance sustainability practices, including varied areas – such as streamlining energy use, waste disposal policies, green construction, the water system, public information and more – in conformity with Technion's policy of making strides on the sustainability front;
- > The establishment and consolidation of a professional unit serving the insurance needs of the entire campus;
- > The completion of a comprehensive, multi-domain plan to make Technion facilities fully accessible to all who come on campus.



Prof. Adi Salzberg
Vice President
for Diversity
and Inclusion



The Technion Office for Diversity and Inclusion was established in June 2022 with the goal of promoting human diversity and nurturing 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 helps in the development of human capital and of social and intellectual leadership in the spirit of Technion's vision throughout Israeli society.

Recently established, the Office for Diversity and Inclusion is focusing in its first year on formulating a coherent institutional vision about gender equality and other aspects of diversity and inclusion, on developing a strategic plan for its activity, and on better integration of the many different Technion initiatives and activities aimed at advancing diversity, equity and inclusion. At the same time, the office continues to implement recommendations made by the 2020 Technion Ad Hoc Committee for Gender Equality that examined ways to increase the representation of women in Technion senior academic faculty, influential committees, and management.

Gender diversification

Currently, women are still under-represented among the senior academic personnel in many of the Technion faculties. Overall, the proportion of women faculty continues to increase slowly but steadily, reaching

20.5% in October 2022. The representation of women at the level of full professors has increased significantly to 16% (Figure 1). The major challenge in this respect is to reach a steady rate of >25% women in the recruitment of entry level tenure track positions.

Unlike women's representation rate in the senior academic faculty, the representation of women among our student body has dramatically improved in recent years. The overall percentage of female undergraduate students continued to rise, from 40% in 2021 to 41.5% in 2022. This upward trend continues into 2023, in which female students constitute 46% of new admissions to the Technion. As for the graduate student body in 2022, female students comprised 38.2% of all master's students and 44.6% of all doctoral students (compared to 37% and 44%, respectively, in the year before). The distribution of women across the different faculties is highly uneven.

In order to address the low representation rate of women, especially in the high-tech oriented faculties,



a comprehensive plan continues to be implemented. The various activities are directed at all stages of the academic career. As a technology research institute founded almost entirely on the STEM disciplines, the Technion faces unique challenges. Only a small proportion of female high-school students graduate with high levels of proficiency in math, physics, and computer science. Lacking appropriate high-school credentials, a girl would have little chance of continuing on to higher education in a STEM field. Thus, a major challenge is to help increase the pool of high-school students with the appropriate credentials while reaching out to all candidates who have the required qualifications.

One example of activities aimed at these goals is the TechWomen Event (supported through the Rosalyn August Girls Empowerment Mission), which this year brought to the Technion 700 outstanding high school girls for the purpose of exposing them to the beauty of science and engineering and to the ample opportunities for interesting and rewarding careers that STEM studies can afford them.

Another example of an activity that took place this year is bringing middle-school educators (homeroom teachers) to the Technion in order to expose them to the beauty of the scientific and engineering professions, to possible career tracks and to female role models from academia and industry, and to turn them into agents of change who encourage middle-school female pupils to choose a science-oriented curriculum in high-school. This event was conducted in collaboration with a high-tech company (KLA) and the Ministry of Education and was hosted by the Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering.

A major blind spot that we have regarding women's academic career track is the stage/period between the end of their PhD and the application for a tenure track position. We do not know how many of Technion graduates pursue a postdoctoral training and how many

of them apply for a tenure track position. We do know however that this is the stage in which the representation of women drops dramatically. It is therefore our goal/interest to fill in this gap in our knowledge by systematic data collection.

Promoting equal opportunities for minority groups

Even as we welcomed the first Arab women to the Technion faculty in 2022, gender disparity in the senior academic faculty coincides with a much greater underrepresentation of the Arab community (less than 4%). We aim to reduce this underrepresentation, which likely reflects a combination of cultural, societal and historical factors.

In contrast to their percentage in the senior academic faculty, the representation of Arab minority students among Technion undergraduate students exceeded 25% in 2022; and their proportion in the large high-tech oriented faculties of Computer Science and of Electrical and Computer engineering was around 30%. In 2023, Arab representation amongst Technion's newly admitted students has reached a peak of 30%.

The challenges concerning our Arab students include: the facilitation of academic achievements and reducing dropout rates; increasing the sense of belonging to the Technion community; increasing the number of Arab students that pursue master's and doctorate degrees; supporting the integration of students approaching graduation into the job market via the Career and Employment Counseling Unit; and strengthening the social and collegial connection between Arab and Jewish students.

Prof.
Wayne
Kaplan

*Vice President
for External
Relations and
Resource
Development*

Technion is the principal cultivator of STEM talent in a country known for high-tech innovation and entrepreneurial ingenuity. Figuring prominently in Israel's vaunted startup ecosystem, companies founded by our graduates attract \$2.5 billion in venture capital annually; Technion trained men and women populate the boardrooms and laboratories of the nation's leading corporations and hold leadership positions in multinationals. Our faculty members are among the world's most oft-cited researchers in numerous engineering disciplines, chemistry, mathematics and more – placing Technion among the top 100 in the annual global rankings of universities.

Our institution is unique in its capacity to turn out frontline innovators. Technion's confident "no problem is too big to solve" campus culture, transdisciplinary approach to education and research, and top-tier faculty provide sure footing for student growth and development. Taking theoretical science to the applied level, we train our students in the nuanced application of engineering fundamentals to overcome real-world technological challenges. They are taught to integrate distributed resources and diverse competences through focused collaboration and multidisciplinary teamwork. These research and development skills are refined through experiential learning opportunities, as students assist in laboratories, intern at partnering companies, and participate in mentored research; they further practice those skills within t-hub programs, cross-campus competitions and community engagement programs. Upon graduation, our alumni hit the ground running from day one, ready to push the envelope of innovation – in healthcare, energy and environment, civil construction, transportation and much more.



**Communicating the
Technion Message**

Technion's many partners at home and abroad already recognize its singular qualities and achievements. Still, we acknowledge the need to extend our reach and refresh our messaging – throughout industry, academia, government, science and funding entities, and with the public at large. A reimagined marketing and communications (MarCom) strategy will be key to the university's continued ability to draw the "best and brightest" students, recruit new generations of noted faculty talent, expand its donor base and enhance its international footprint. If it is to be effective, the new MarCom strategy must put Technion exceptionalism at the very front and center of public discourse on technology and innovation.

Having engaged a strategic marketing firm in the run up to the centennial celebrations, and after consulting with the American Technion Society, the Division of Public Affairs and Resource Development (PARD) recently set forth and began implementing a plan of action to operationalize critical MarCom objectives vis-à-vis the Technion, as follows:

> Visibility – heightening general awareness of the university, its global standing in STEM education and research, and its vital role in Israel's prosperity and security. We will revitalize our website and buttress our social media presence, creating new touchpoints for effective engagement and messaging. Promotional videos will highlight Technion's values and mission; feature length documentaries will spotlight the compelling stories and personalities standing behind a hundred years of leading-edge scientific discovery and technological invention. Quality wearables and gifts items bearing the Technion name and logo will help promote

brand recall locally, while high-profile Technion-hosted international conferences focusing on the intersection of industry and research universities bolsters Technion brand recognition worldwide.

> **Positioning** – creating a distinctive identity in the eyes of key stakeholders, by differentiating the Technion's brand from those of the world's other elite technological universities. The Technion will pointedly convey its *unique value proposition* in a series of meetings and events involving scientific funding entities (EU, NSF, ISF, etc.), government agencies, industries

and within the academic world. Stakeholders' awareness of our UVP guarantees that engagement with the Technion is the first and most obvious option that comes to their mind in the areas where Technion outshines other universities. Allied with or representing many of the stakeholders, Technion alumni will be enlisted as advocates and active participants in the process.

We view the centennial celebrations as an inflection point that naturally accommodates the introduction of these long-term shifts in branding and communications.



NEW GIVING

GUARDIANS 2022

Technion Guardians have made the highest level of commitment to the Institute

Joy Balkind
Sydney, Australia

Elbit Systems Ltd.
Haifa, Israel

KLA Corporation
Migdal Ha'emek, Israel

Senator Paul and
Sandy Steinberg
FL, USA

Harry Bloomfield
(Eldee Foundation)
Montreal, Canada

Dr. Semyon and
Janna Friedman
FL, USA

Marianna and Eddie
Rabinovitch
FL, USA

Andrea and
Lawrence Wolfe
MI, USA

Murray Dalfen
Montreal, Canada

Marc Hamon
CA, USA

Joel and Jeri Rothman
IL, USA

Ron Zeff, Diana Zeff
Anderson, Dana Zeff
CA / CO, USA

Gifts 2022-2023

Ruth **Alon** (Galil) Gift for the
Uzia Galil Memorial Fund

Ilse **Blumenfeld** Fund for the
First Steps Program

Elbit Systems Ltd. Gift for the
Uzia Galil Memorial Fund

Ella **Galil** Gift for the Uzia
Galil Memorial Fund

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

Don and Linda **Brodie** First
Steps Fund

Farkas Family Center for
Anatomical Research and
Education

Glazer Foundation Faculty
Fellowship Fund

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

Davison Family Main
Entrance/Garden of the
New Faculty of Aerospace
Building

Prof. John **Finberg** and
Family Education Services
Complex

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

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

Sylvia **Davison** Fund for
the Faculty of Aerospace
Engineering

Semyon and Janna **Friedman**
Family Foundation Fund for
Technion Center for Clinical
Skills

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

Ruth **Eisenberg** Endowed
Faculty Recruitment
Fellowship

Michal and Gil **Frostig** Seed
Fund for MD/PhD Program

Jerome **Hankin** Fund for the
Mini Amphitheater and the
Technion Donors Map Wall

George **Elbaum** and Mimi
Jensen Fund for Aerospace
Engineering

Michal and Gil **Frostig**
Fund for Rosman High
Performance Computer Data
Center

Irving & Barbara **Levy** First
Steps Fund

Kenneth and Gloria **Levy**
Student Innovation and
Entrepreneurship Fund

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

Bernard **Lublin** Fund for
the Ubiquitin-Proteasome
System and Heart Diseases

Milner Fund to Support
Ukrainian Refugee
Researchers

Pearlstone Family Fund for
the Faculty of Aerospace
Engineering

Prof. Miron **Prokocimer** Gift
for Dr. Hannah Seligmann-
Prokocimer Chair in Medical
Education

Rabinovitch Fund for Fire
Safety: Dorms and Student
Services

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

Rosenbloom Fund for the
CSST Multi Autonomous
Swarm Searching Targets

Satell iTrek Fellows at
Jacobs Technion-Cornell
Institute

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

Norman **Seiden** Faculty Prize
for Academic Excellence

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

Shatz Fund to Support Our
Soldiers

Dr. Bob **Shillman** Research
Fund under Dist. Professor
Mordechai Segev

Abe **Shrekenhamer** Fund
to Support Technion Space
Initiatives in the Faculty of
Aerospace Engineering

Avinadav **Siev** Classroom
in the Rabin Building in
the Faculty of Civil and
Environmental Engineering

Albert **Sweet** Program
for Targeting Cancer by
Modulating Protein Dynamics

Michael **Veloric** Faculty of
Aerospace Engineering Fund

Whizin Fund for the Faculty
of Biotechnology and Food
Engineering

Wolfe Center for Engineering
and Medicine

Moshe **Yanai** Support for the
Annual Scientist Night

Zimin Institute for AI
Solutions in Healthcare

Scholarships 2022-2023

Biosense Webster Ltd.
Scholarship Fund, Israel

Melvyn H. **Bloom** Endowed
Scholarship Fund, CA, USA

David A. **Cohen** Family
Scholarship Fund, CA, USA

Ernest and Ursula **Elovic**
Endowed Undergraduate
Scholarship Fund, FL, USA

Zachary **Fromberg**
Scholarship Fund, MD, USA

Alfred and Virginia **Gerd**
Scholarship Fund, FL, USA

Moses P. **Halperin**
Scholarship Fund, FL, USA

Gitta and Saul **Kurlat** CJP
Scholarship Fund, MA, USA

Edmond de **Rothschild**
Partnerships Scholarship
Fund, Israel

Ephraim and Joan
Sales Endowment Fund for
Student Support, CA, USA

Schwarz Foundation
Undergraduate Scholarship
Fund, NJ, USA

Iris **Wolifson** Scholarship
Fund, Israel

Yuval **Yaakobi** Gift for
Orly Hetzroni Memorial
Scholarship Fund, Israel

Fellowships 2022-2023

Philip and Daniele **Barach**
Doctoral Fellowship Fund,
NY, USA

Bar-Shalom Family Endowed
Graduate Fellowship in
Electrical Engineering, CT,
USA

Brodie Family Fellowships
for PhD Students, PA, USA

Julis Romo Rabinowitz
Family Fund for K-12 Pilot,
Master's and Postdoctoral
Fellowships, CA, USA

Robert and Ellen **Kaplan**
Doctoral Fellowship, MA,
USA

Kenneth and Gloria **Levy**
Graduate Fellowship Fund,
CA, USA

Alvin S. and Elaine S. **Mintzes**
Endowed Fellowship Fund,
MD, USA

Neubauer Doctoral
Fellowship Fund for Minority
Students, PA, USA

Robert and Irene **Russel**
Doctoral Fellowship, MD, USA

Harry, Mae, Martin and
Jeannine **Schetzen** Endowed
Fund for Fellowships, NY,
USA

Dr. Shulamit **Schlick**
Endowed Master's
Fellowship, MI, USA

Edith and Robert L. **Zinn**
Endowed Phd Student
Fellowship ,TX, USA



Technion Guardians through the generations

A

Menachem and Carmela Abraham, MA, USA
 Adelis Foundation, France
 Dr. Miriam and Sheldon G. Adelson Medical Research
 Foundation, MA, USA
 Catherine and Frederick R. Adler, NY & FL, USA
 Nathan Adler Stier, Argentina
 Alon Family Foundation, CA, USA
 Paul and Sherry Altura, CA, USA
 Maurice Amado Foundation, CA, USA
 Amdocs Ltd., Israel
 Annenberg Foundation, PA, USA
 Carl and Iris Barrel Apfel, FL, USA
 Applied Materials Foundation, CA, USA
 Sarah and Avie Arenson, Jerusalem, Israel
 Eng. Paul S. Arieli (Goldschmidt)
 and Dr. May Arieli, Israel
 Arison Foundation, FL, USA / Tel Aviv, Israel
 Lester Aronberg Foundation, IL, USA
 Norman and Helen Asher, IL, USA
 Avraham and Patricia Ashkenazi, VA, USA
 Victor and Efpichia Asser, Athens, Greece
 Automatic Data Processing, Inc., NJ, USA
 Florette and Henri Avram, Paris, France
 Itice Avram, Paris, France
 David and Stephanie Azrieli, Montreal, Canada

B

Joy Balkind, Sydney, Australia
 Morton and Selma Bank, FL, USA
 Bank Hapoalim, Israel
 Ovadia Barazani Foundation, Haifa, Paris, London
 Samuel Barliant Family, IL, USA
 Daron and Ron Barness Family, AZ, USA
 Matilda and Gabriel Barnett, CA, USA

Dr. Euval and Olga Barrekette, NY, USA
 Syd Barrel, FL, USA
 Bar-Nir Bergreen family, PA, USA
 Claire S. Behar, CA, USA
 Bellock Family - Florence and Jack, Madeleine Morrison
 and Chuck, Emily and Steven, FL / CO / MI, USA
 Hilda and Manasche Ben-Shlomo Foundation,
 Liechtenstein
 Miriam B. and Louis J. Benjamin, FL, USA
 Yoda Leon and Luna Benozziyo, Lausanne, Switzerland
 Dr. Irving and Jeanette Benveniste, CA, USA
 Beracha Foundation, Jerusalem, Israel
 Evelyn Berger, PA, USA
 Ilene and Steve Berger, PA, USA
 Ruth Berkowitz, Switzerland
 Randy L. and Melvin R. Berlin Family, IL, USA
 Russell Berrie Foundation, NJ, USA
 Helena and Berek Bigos, MN, USA
 Jerry and Evelyn Bishop, NY, USA
 Scott M. Black, MA, USA
 Desirée and Max Blankfeld, TX, USA
 Dahlia and Ilan Blech, CA, USA
 Neri and Bernard Bloomfield, Montreal, Canada
 Harry Bloomfield (Eldee Foundation), Montreal, Canada
 James D. Blum, MD, USA
 Harold and Penny B. Blumenstein, MI, USA
 Richard C. and Carol Blumenstein, MI, USA
 Simon and Tekla Bond, NY, USA
 Octav Botnar, Switzerland
 Samuel and Millicent Broadwin, FL, USA
 Frances Brody, CA, USA
 Dita and Yehuda Bronicki, Yavne, Israel
 Jack Buncher Foundation, PA, USA
 Bundesrepublik Deutschland, Bundesministerium
 für Bildung und Forschung, Bonn / Berlin, Germany
 Paul and Rodica Burg, CA, USA
 Marshall and Marilyn Butler, NY, USA

C

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Justice Moshe Landau, 1996
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Samuel Neaman, 1997
Bruce Rappaport, 1998
Haim Rubin, 1997
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Leonard Sherman, 2005
Ben Sosewitz, 2008
Henry Taub, 1998
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Lewis Weston, 2008
Yehuda Zisapel, 2022
Zohar Zisapel, 2022
Mortimer B. Zuckerman, 2016

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Sir Patrick Abercrombie, 1953
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MK Moshe Arens, 1986
Ing. Paul S. Arieli (Goldschmidt), 2003
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B
Justice Aharon Barak, 1998
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Zahava Bar-Nir, 2009
Prof. The Honourable Dame Marie Bashir AD CVO, 2016
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David Ben Gurion, 1962
Louis Benjamin, 1993
Miriam Benjamin, 1991
Gen. (Res.) Avihu Ben-Nun, 2006
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Prof. E. D. Bergman, 1955
Angelica Berrie, 2008
Prof. Sir Michael V. Berry, 2006
Dr. A. Biram, 1965
Ilan Biran, 2013
Prof. Joan S. Lyttle Birman, 1995
Dr. Joel Birnbaum, 1999
Prof. R. Byron Bird, 1993
Scott Black, 2007
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Arthur Blok, 1972
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Bernard M. Bloomfield, 1978
Neri J. Bloomfield, 1990
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Prof. David Bohm, 1992
Dr. Niels Bohr, 1958
Dr. Zeev Bonen, 2004
Dr. Carl de Boor, 2002
Dr. Albert Bourla, 2022
Prof. Haim Brezis, 1998
Dr. Andrei Zary Broder, 2014
Frances Brody, 2002
Lucien Bronicki, 2007

Yehudit Bronicki, 2007
Prof. Bernard Budiansky, 1995
Marshall Butler, 2001

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Arie Carasso, 1988
Prof. Srulek Cederbaum, 2012
Prof. Malcolm Chaikin, 1991
Stanley Chais, 2008
Prof. Herman Chernoff, 1984
Prof. Alexandre Joel Chorin, 2003
Winston S. Churchill, 1997
Dr. Lillian Chutick, 1997
Dr. Joseph Ciechanover, 2017
Prof. Jacob Willem Cohen, 1988
Prof. Morris Cohen, 1979
Prof. Karl Taylor Compton, 1954
Sydney C. Cooper, 1992
Elizabeth Corob, 1993
Sidney Corob, 1986
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Lester Crown, 1996

D
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Prof. David L. Donoho, 2017
Gen. Yaakov Dori, 1967

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Carol B. Epstein, 2019
Dr. Moshe Epstein, 2011
Prof. Paul Erdos, 1983

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Yekutiel Federmann, 1989
Israel Feldman, 2003
Dr. Stuart I. Feldman, 2019
Harry F. Fischbach, 1971
Edith Fischer, 2005
Max M. Fisher, 1991
Dr. F. Julius Fohs, 1957
Dr. William Fondiller, 1949
R. J. Forbes, 1953
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Alan Forman, 2011
Prof. Stephen R. Forrest, 2018
Dr. J. Franck, 1953
Reinhard Frank, 2009
Thomas L. Friedman, 2008
Dr. Dov Frohman, 1995
Prof. Gilbert F. Froment, 1984

G
Uzia Galil, 1977
Dr. Jacob M. Geist, 1987
Mark Gelfand, 2011
Raya Genster, 2002

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Arthur Gilbert, 1999
Emmanuel Gill, 1994
Benno Gitter, 1991
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Alexander Goldberg, 1975
Edward R. Goldberg, 1990
Dr. Emanuel Goldberg, 1957
Gary Goldberg, 2012
Joan Goldberg Arbuse, 1987
Prof. Jose Goldemberg, 1991
Prof. Andrew and Aviva
Goldenberg, 2018
Prof. Richard Goldstein, 1994
Dr. Sydney Goldstein, 1969
Prof. Solomon W. Golomb,
2011
Prof. Graham C. Goodwin, 2006
Dr. Bernard Gordon, 2005
Stephen Grand, 2010
Prof. Harry B. Gray, 2022
Doreen Brown Green, 2014
Joseph Gruss, 1989
Joseph Gurwin, 2004
Dr. Nahum Guzik, 2018

H

Prof. Peter Haasen, 1993
Homer Harvey, 1989
Dr. George H. Heilmeier, 1997
Michael Heller, 2010
President Chaim Herzog, 1987
Sandy Hittman, 2015
Dr. Christian Hodler, 1998
Dr. Nicholas J. Hoff, 1980
Dr. Alan Hoffman, 1986
Prof. Roald Hoffmann, 1996
Prof. Robert Hofstadter, 1985
Gen. (Res.) Amos Horev, 1984
Dr. F. Houphouet-Biogny, 1962
Eli Hurwitz, 1990

I

Isin Ivanier, 1981
Gen. (Res.) David Ivry, 1996

J

Lawrence S. Jackier, 2004
Dr. Irwin M. Jacobs, 2000

Ludwig Jesselson, 1988
HE David Johnston, 2016
Prof. Joshua Jortner, 2005
Prof. Michel Jovet, 1991

K

D. Dan Kahn, 2011
Prof. Thomas Kailath, 2011
Dean Kamen, 2015
Sanford Kaplan, 1995
Dr. Shlomo Kaplansky, 1950
Dani Karavan, 2009
Prof. Marcus Karel, 1991
Prof. Samuel Karlin, 1985
Prof. Theodore von Karman,
1951
Prof. Richard M. Karp, 1989
Prof. Alfred Kastler, 1983
Prof. Ephraim Katzir, 1983
Martin Kellner, 1985
Michael Kennedy Leigh, 1983
Moshe Keret, 2000
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Philip E. Klein, 2004
Prof. Leonard Kleinrock, 2010
Prof. Sir Aaron Klug, F.R.S.,
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Teddy Kollek, 1994
Prof. Karl Ludwig Kompa, 1995
Sidney Konigsberg, 2002
Yaacov Kotlicki, 2011
Theodore H. Krenzel, 2001

L

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Justice Moshe Landau, 1980
Prof. Rolf W. Landauer, 1991
Prof. Robert S. Langer, 1997
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David Laskov, 1975
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Gustave Leven, 1991

Hubert Leven, 2005
Prof. Michael Levitt, 2015
Kenneth Levy, 2022
Prof. Jacques Lewiner, 2016
Emanuel Zvi Liban, 2017
Robert L'Hermite, 1960
Israel Libertovsky, 1987
Arch. Daniel Libeskind, 2008
Eric Lidow, 1984
Prof. Anders Lindquist, 2010
Sir Ben Lockspeiser, 1952
Lorry I. Lokey, 2007
Dr. Walter C. Lowdermilk,
1952
Prof. Robert E. Lucas, Jr., 1996

M

Ruth and Robert Magid, 2022
Prof. Thomas L. Magnanti,
2007
Alexandre Mallat, 2002
Prof. Stéphane Mallat, 2019
Alfred E. Mann, 2005
Galia Maor, 2010
Harold Marcus, 2012
Inge Marcus, 2018
Prof. Rudolph A. Marcus, 1998
Dr. Herman F. Mark, 1975
Prof. Krzysztof
Matyjaszewski, 2015
Dr. Dan Maydan, 2001
Raphael Mehoudar, 2014
Zubin Mehta, 2013
Etia Meilichson, 1997
Chancellor Dr. Angela
Merkel, 2021
Prof. Angelo Miele, 1992
Dr. Hyman Mitchner, 2010
Gen (Res.) Amram Mitzna,
2010
Dr. A. I. (Ed) Mlavsky, 1994
Dov Moran, 2016
Martin Paul Moshal, 2017
Prof. Klaus A. Müllen, 2018
Prof. Benno Müller-Hill, 2000
Peter Munk, 2001
Dr. J. Fraser Mustard, 1995

N

Avinoam Naor (Aharonovich),
2008
Ruth Leventhal Nathanson,
2010
Samuel Neaman, 1982
Dr. Yuval Ne'eman, 1966
Shlomo Nehama, 2006
Robert Neter, 1999
Joseph Neubauer, 2017
Dr. Carroll V. Newsom, 1958
Itzhak Nissan, 2012
M. Novomeysky, 1957

O

Harry Oppenheimer, 1989
Dr. Eli Opper, 2012
Prof. Simon Ostrach, 1986

P

Prof. Amnon Pazy, 2006
Lois Peltz, 2006
Dr. Arno A. Penzias, 1986
Shimon Peres MK, 1985
Prof. Lev Pitaevskii, 2010
David Polak, 2009
Israel Pollack, 1993
Rachel Pollack, 2005
Manes Pratt, 1968
Dan Propper, 1999

R

Dr. I. I. Rabi, 1963
Yitzhak Rabin MK, 1990
Prof. Seymour Rabinowitz,
1991
Bruce Rappaport, 1979
Irith Rappaport, 2022
Ruth Rappaport, 2014
Dr. Johannes Rau, 2000
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Arnold Recht, 1999
Prof. L. Rafael Reif, 2017
Heather Reisman and Gerald
Schwartz, 2023
Prof. James R. Rice, 2005
Hershel Rich, 1998
Dr. L. A. Richards, 1952

Louis B. Rogow, 1988
Barrie Rose, 2000
Daniel Rose, 2013
David Rose, 1961
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Maurice M. Rosen, 1978
Prof. Azriel Rosenfeld, 2004
Prof. Alvin E. Roth, 2013
Joel S. Rothman, 2015
Baroness Ariane de
Rothschild, 2018
Sir Evelyn de Rothschild, 1982
Lord Rothschild, 1968

S

Rabbi Lord Jonathan Sacks,
2018
Moshe Safdie, 2019
Lily Safra, 2018
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Dr. Henry Samueli, 2005
George Sarton, 1953
Ed Satell, 2016
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Dr. M. Schiffer, 1972
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Michael Schor, 1985
Seymour Schulich, 2007
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Al Schwimmer, 1968
Joan Seidel, 2012
Norman Seiden, 1986
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Prof. Richard E. Smalley, 2004
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Michael Sobol, 1980
Jonathan Sohnis, 2008
Ben Sosewitz, 1999
Prof. Jason L. Speyer, 2013
Dr. Philip Sporn, 1960
Prof. Günter Spur, 2012
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Harry J. Stern, 2000
Prof. Eli Sternberg, 1984
Ing. Isaac (Eddie)
Streifler Shavit, 2003
Prof. Werner Stumm, 1989
Prof. Nam Pyo Suh, 2007
Dr. Avraham Suhami, 1981
Albert Sweet, 2014
Gerard Swope, 1957
Joseph Szydlowski, 1984

T

Joseph Tanenbaum, 2007
Henry Taub, 1983
Marilyn Taub, 2014
PM Margaret Thatcher, 1989
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Laurence A. Tisch, 1989
Gen. Dan Tolkowsky, 1982
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Prof. Barry M. Trost, 1997
Abraham Tulin, 1957

U

Jacob W. Ullmann, 1980
Dr. Harold C. Urey, 1962
Prof. Heinrich Peter Klaus
Ursprung, 1996

V

Dr. Yossi Vardi, 2009
Dr. Andrew J. Viterbi, 2000

W

Dr. Selman A. Waksman, 1966
Eyal Waldman, 2016
Prof. Arie Warshel, 2015
Sanford I. Weill, 2015
Prof. Felix J. Weinberg, 1990
Aharon Weiner, 1971
Nina Avidar Weiner, 2019
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Prof. Charles Weissmann,
2015
Dr. Chaim Weizmann, 1952
Eitan Wertheimer, 2011
Stef Wertheimer, 1992
Lewis Weston, 1996
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Lord Leonard Wolfson, 1995
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Dr. Robert B. Woodward, 1966
J. W. Wunsch, 1955

Y

Prof. Rosalyn Sussman
Yalow, 1989
Moshe Yanai, 2012
Elisha Yanay, 2013

Z

Prof. Daniel Zajfman, 2022
Dr. Felix Zandman, 1997
Prof. Anton Zeilinger, 2022
Prof. Bruno Zevi, 1990
Stanley Zielony, 2003
Zvi Zilker, 2000
Yehuda Zisapel, 2001
Zohar Zisapel, 2001

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Giora Ackerstein, 2010
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Dr. Kenneth Alberman, 1995
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Yosef Ami, 1990
Sarah Arenson, 2019
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Victor Asser, 2009
Drora Avissar, 2012

B

Alfred J. Bär, 1995
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Zahava Bar-Nir, 2004
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Sarah Baruchin, 1986
Albert Ben-David, 1990
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2015
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Burstein-Inbar, 2008
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Joan Callner Miller, 1984
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Leona Chanin, 2004
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Alexander Coler, 1988
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Jeffery Cosiol, 2012

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Jeannette Dankner, 2005
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André Deloro, 2009
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Draugelates, 2002
Max Dresher, 1985
Jerome Drexler, 1999
Melvin Dubin, 1991
Zvi Dvoretzky, 1993
Dr. Isaac Dvoretzky, 2006

E

Louis Edelstein, 1995
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Anna Tulin Elyachar, 1983
Col. Jehiel R. Elyachar,
1953
Rita Emerson, 2016
J. Steven Emerson, 2008
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Carol B. Epstein, 2009

Alex J. Etkin, 1995
Aaron Etra, 2004
Joseph K. Even, 1991

F

Yekutiel Federmann, 1978
Israel Feldman, 1992
Rod Feldman, 2014
Irwin Field, 2022
Elias Fife, 1955**
Ruben Finkelstein, 1985
Fausta Finzi Carli, 2011
Edith Fischer, 2001
Ruth Elaine Flinkman-
Marandy, 2012
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Rudolph Forchheimer, 1997
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Reinhard Frank, 2004
Benjamin Free, 1991
Joseph Freed, 1998
David Friedman, 2001
Jerry Friedman, 1993
Michael Frieze, 2000
Michael Fuerst, 2010
Dr. Hiroshi Fujiwara, 2018
Samuel Fryer, 1959

G

Mark Gaines, 2017
Dr. Terry Gardner, 2017
Mark Gelfand, 2008
Samuel Geltman, 1998
Raya Gensler, 1994
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Gary Goldberg, 2005
Nathan Goldberg, 1977
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Salomon Gottesfeld, 1985
Ben-Ami Gov, 2010
Salman Grand, 1986
Doreen Green, 2000
Irving Greenberg, 1990

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Coleman Kenneth
Greidinger, 2006
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Irwin L. Gross, 2007
Josef Gruenblat, 1979
Joseph Gurwin, 1996
Dipl. Ing. Helmut Gutmann,
1994
Aaron Gutwirth, 1978

H

Gal Haber, 2022
Uzi Halevy, 2014
Dr. Harry Handelsman, 2011
Tamara Handelsman, 1998
Robert Hanisee, 2016
Burt I. Harris, 1987
Louis Harris, 1988
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Alexander Hassan, 1975
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Michael Heller, 2002
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Ruth Hoenich, 2001
Zeev Holtzman, 2016
Charles Housen, 1997

I

Ivoncy Ioschpe, 1997
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Ing. Shaul Ivtsan, 2006

J

Joseph H. Jackier, 1985
Lawrence Jackier, 2000
Jacobs K. Javits, 1973
Martin Jelin, 1985
Ludwig Jesselson, 1973
Anatol Josepho, 1980
Mitchell Julis, 2019
Prof. Eliahu I. Jury, 2001

K

D. Dan Kahn, 2006
Shmuel Kantor, 1989
Eyal Kaplan, 2016
Daniel Karp, 1994
Dr. Albert A. Kaufman, 1991
Dorothy Kellner, 1999
Leon Kempler OAM, 2008
Adelaide Kennedy Leigh, 1991
Michael Kennedy Leigh, 1975
Avi Kerbs, 2015
Nathan Kirsch, 1984
Michael Klein, 2010
Philip E. Klein, 1998
Stephen B. Klein, 2016
Sidney Konigsberg, 1997
Alexander Konoff, 1949**
Richard Aaron Koplów, 1992
Yaacov Kotlicki, 2006
Linda Kovan, 2019
Abba Kramer, 1988
Theodore Krenzel, 1984
Reuben Kunin, 1991

L

Yeshayahu Landau, 1992
Ing. Zvi Langer, 1981
Dr. Stephen A. Laser, 2003
Ron Lazarovits, 2013
Scott Leemaster, 2009
Sidney Lejfer, 2011
Prof. Yossi Leshem, 2017
William Lester, 1991
Avraham Lev, 1976
Ruth Leventhal Nathanson,
2007
Charles Levin, 2010
Prof. Jacques Lewiner, 2006
Leon Lidow, 1976
Prof. Asger Lindegaard-
Andersen, 1995
Louis L. Lockshin, 1979
Trudy Louis, 1994

M

Louis Bernard Magil, 1983
Alexandre Mallat, 1997
Hal Marcus, 2006

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William Marcus, 1996
Dr. Shlomo Markel, 2016
Dr. Moshe Marom, 2018
Sonia Marschak, 2015
Justice Roy Matas, 1981
Frank G. Meyer, 2002
Pearl Milch, 1980
Raphael Mishan, 2012
Dr. Hyman Mitchner, 2003
Andre Molleson, 1989
Monte Monaster, 1989
Mark Moshevicz, 1983
Prof. Burkhard Müller, 2001
Ing. Gen. Robert Munnich,
1985

N

Ernest Nathan, 1982
Albert Nerken, 1992
Tzvi Neta, 2009
Albert Newman, 1989
Yehezkel Nussbaum, 1996

O

Seniel Ostrow, 1982

P

Daniel Peltz, 2014
Lois Peltz, 2000
David Polak, 2001
Robert Polak, 2022
Herbert W. Pollack, 2004
Allen Prince, 2015
Miriam Pushkar, 2000

R

Judge Leonard Rabinowitz,
1984
Rona Ramon, 2018
Norbert M. Rand, 1997
Bennett Rechler, 2009
Hannah Rechler
Rabinowitz, 2009
Arnold Recht, 1994
Frank Resnek, 2019
Hershel Rich, 1992
Eugene N. Riesman, 1986
Joseph Riesman, 1976

Morris Rochlin, 2002
Louis Rogow, 1983
Prof. Gerd-Volker
Röschenthaler, 2012
Maurice M. Rosen, 1972
Howard Rosenbloom, 2010
Dr. Martin and Grace
Rosman, 2018
Shmuel Rotem, 2005
Joel Rothman, 2010
Gyora Rubinstein, 1997
Joshua and Julia Ruch, 2016

S

Nina Sabban, 2004
Eliyahu Sacharov, 1973
Edmundo Safdie, 1991
Ed Satell, 2011
Prof. Dr. Thomas Scheper,
2019
Stefanie Sonia Schreier, 1984
Dorothy Schussheim, 1992
Alf Schwarcbbaum, 1983
Arnold Seidel, 2017
Joan Seidel, 2005
Norman Seiden, 1979
Les Seskin, 2018
Emanuel Shachar, 1990
Uriel Shalon, 1982
William Shamban, 1997
Andy Shapiro, 2014
Eugene and Marlene
Shapiro, 2019
Dr. Stephen Shapiro, 1993
Dr. Zalman M. Shapiro, 1988
Maurice Meir Shashoua,
2012
Paul M. Shatz, 2011
Max Shein, 1978
Irving A. Shepard, 1988
Harry Sheres, 1989
Beatrice Sherman, 1982
Leonard H. Sherman, 1987
Nate Sherman, 1977
Norton Sherman, 1996
Barnett Shine, 1972
Stanley Shirvan, 1999
David Silbert, 1984

Gerald Silbert, 1993
Ramie Silbert, 1988
Peter Simon, 1993
Cindy Sipkin, 2008
Rafael Sirkis, 2011
Jack Skodnek, 2006
Esther Smidof, 2005
Jonathan Sohnis, 2001
Ben Sosewitz, 1990
Eugene Stearns, 1976
Dr. Gideon Stein, 2019
Louis Stein, 1982
Senator Paul B.
Steinberg, 2012
Sir Louis Sterling, 1956
Harry Stern, 1993
Harry J. Stern, 1996
Ivan Stern, 2010
Haim Stoessel, 1999
Harold M. Stone, 1989
Ing. Isaac (Eddie) Streifler
Shavit, 1989
Henri Strosberg, 1986
Louis Susman, 1980
Stanley Sussman, 2011
Albert Sweet, 2011
Janey Sweet, 2007
Richard Swig, 1995
Mariane Szego, 2008
Sandor Szego, 2008

T

Victor Tabah, 1973
Joseph Tanenbaum, 2000
L. Shirley Tark, 1979
Henry Taub, 1980
Ira Taub, 2022
Isaac Taylor, 1977
Dov Tirosh, 1997
Gen. Dan Tolkowsky, 1975
Sam Topf, 1983
Benjamin B. Torchinsky, 1999
Col. Yitzhak Turgeman, 2003

U

Jacob W. Ullmann, 1972
Yona Uspiz, 1994

V

Clément Vaturi, 1993
Lauren and John Veronis, 2019
Dan Vilenski, 2005

W

Dr. Arthur Wein, 1998
Naomi Weiss Newman, 2014
K. B. Weissman, 1997
Eli Welt, 2002
Irving Wenger, 1991
Mary Werksman, 1996
Lewis M. Weston, 1987
Alexander Whyte, 1972
William Wiener, 2005
Irma Wigdor, 1984
Dan Wind, 1996
Ben Winters, 1991
Roma Broida Wittcoff, 1992
Sidney Wolberg, 1989
Sir Isaac Wolfson, 1956
The Hon. Laura Wolfson
Townsend, 2012
Abel Wolman, 1972
Joseph W. Wunsch, 1946**
Susan Raymer and
Benjamin Wygodny, 2017

Y

Solm Yach, 1980
Elisha Yanay, 1998
Chaim Yaron, 2009

Z

Shlomo Zabledowitz, 1984
Samuel Zabner, 1992
Boris Zimin, 2021
Yehuda Zisapel 1998

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Israel
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Stef Wertheimer, Israel
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Robert Zinn, USA

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Alexander Katzaf
Emanuel Zvi Liban

Israel Academy of Sciences and Humanities

Prof. Joseph Kost

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Aliza Blasberg

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Liby Manash

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Alon Argaman
Omer Sabach

* Technion Council member

HARVEY PRIZE

The Harvey Prize, established in 1971 by Leo M. Harvey of Los Angeles, is awarded annually at the Technion for exceptional achievements in science, technology, and human health, and for outstanding contributions to peace in the Middle East, to society and to the economy.

Prof. James P. Allison, 2014

Prof. Vladimir I. Arnold, 1994

Dr. Arthur Ashkin, 2004

Prof. Robert Aumann, 1983

Prof. Sir David Baulcombe, 2009

Prof. Wolfgang P. Baumeister, 2005

Dr. Charles H. Bennett, 2008

Prof. Charles L. Bennett, 2006

Prof. Seymour Benzer, 1977

Prof. Elizabeth H. Blackburn, 1999

Prof. Immanuel Bloch, 2015

Prof. Sydney Brenner, 1987

Dr. John Cahn, 1995

Prof. Pierre Chambon, 1987

Prof. Emmanuelle Charpentier, 2018

Prof. Claude Cohen-Tannoudji, 1996

Prof. Paul B. Corkum, 2013

Sir Alan Howard Cottrell, 1974

Prof. George B. Dantzig, 1985

Prof. Karl Deisseroth, 2016

Dr. Robert H. Dennard, 1990

Prof. Peter B. Dervan, 2002

*Prof. Joseph Mark DeSimone,
2019-2020*

Prof. Jennifer Doudna, 2018

Prof. Ronald Drever, 2016

Prof. Freeman John Dyson, 1977

Prof. David Eisenberg, 2008

Prof. Ronald M. Evans, 2006

Prof. Sir Richard Friend, 2011

Prof. Hillel Furstenberg, 1993

Prof. Robert G. Gallager, 1999

Prof. Pierre-Gilles de-Gennes, 1988

Prof. Reinhard Genzel, 2014

Prof. Shlomo Dov Goitein, 1980

Mikhail Gorbachev, 1992

Prof. Michael Gratzel, 2007

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. Kolff, 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. Gershon 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. Edward Witten, 2005

Prof. Amnon Yariv, 1992

Prof. Eli Yablonovitch, 2012

Prof. Ada E. Yonath, 2002

Prof. Richard Zare, 1993

Prof. Feng Zhang, 2018

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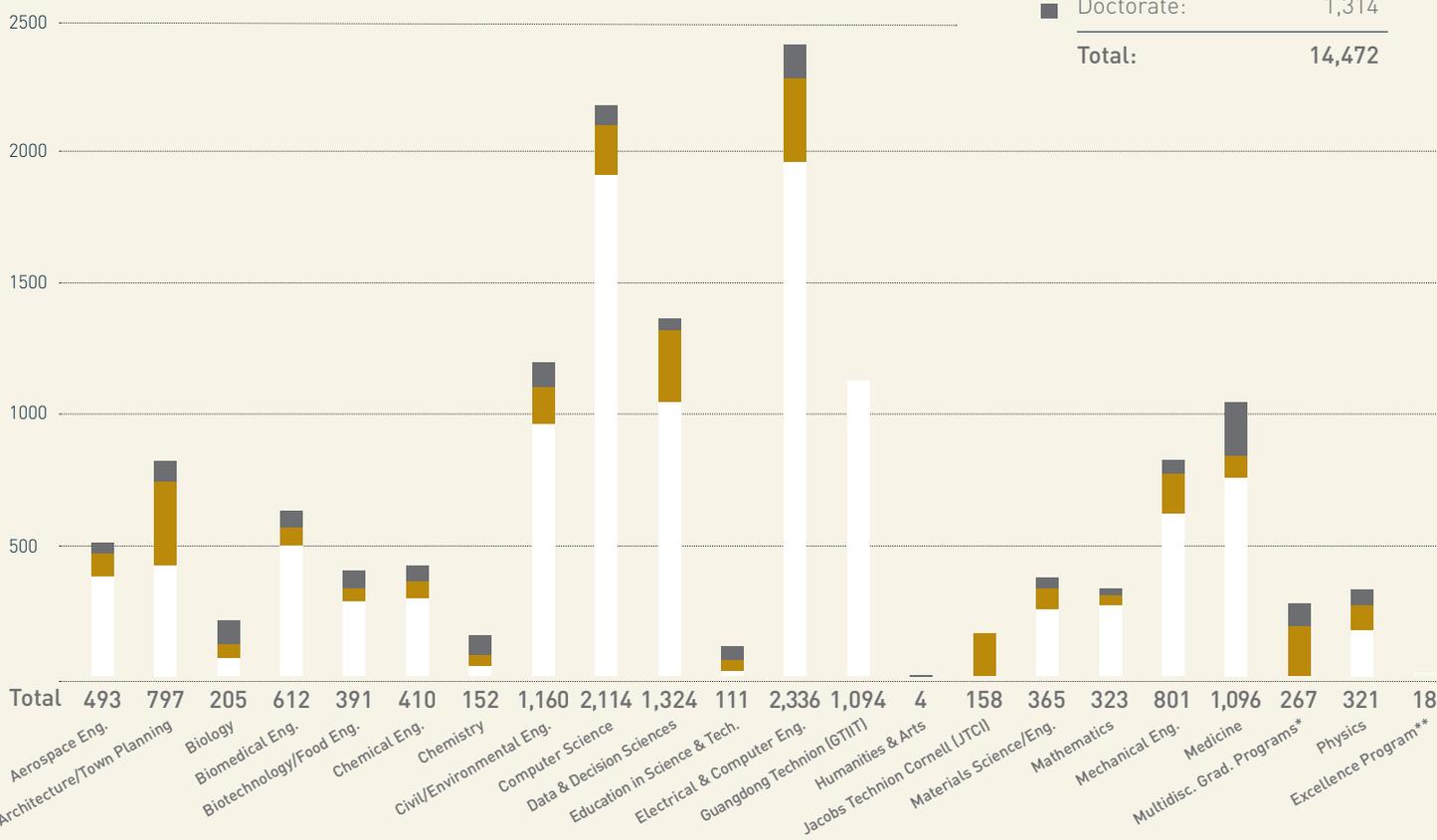
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for Finance
Keren Berko

Deputy Director General
for Human Resources
Ariel Hazan

Deputy Director
General for Operations
Zehava Laniado

FACTS AND FIGURES

NUMBER OF STUDENTS 2022 - 2023 (Including GTIIT and JTCI)



* Applied Mathematics; Autonomous Systems & Robotics; Biotechnology; Design & Manufacturing Engineering; Energy; Polymer Engineering; Nanoscience & Nanotechnology; Real Estate Studies; Systems Engineering; Urban Engineering; Vehicle Systems Engineering; General Master's Engineering and Marine Engineering

** First year intake and not including medical students

DEGREES AWARDED (graduates)

	2021	2022
Bachelor's	1,939	1,993
MD	155*	134*
Master's	827	886
PhD	199	212
Total	3,120	3,225

* Including 22 graduates of the Technion American Medical School Program

TOTAL STUDENT POPULATION

	2018/19	2019/20	2020/21	2021/2022	2022/2023
BSc	9,354	10,174	10,779	10,504	10,436
MD	505	529	517	539	323
Master's	2,573	2,873	2,990	2,633	2,399
PhD	1,155	1,158	1,295	1,320	1,314
Total	13,587	14,734	15,581	14,996	14,472

TOTAL DEGREES AWARDED (1924 - 2022)

Bachelor's	90,601
MD	3,433
Master's	26,229
PhD	6,447
Total	126,710

FISCAL OVERVIEW

OPERATING BUDGET 2022/2023

(October 1, 2022 - September 30, 2023)

Income	Thousands of NIS	%
Government Allocation	1,140,279	70.6%
Tuition Fees	141,500	8.8%
Technion Societies	40,000	2.5%
Self Income	238,000	14.7%
Deficit	54,945	3.4%
Total Income	1,614,724	100%
Expenditure		
Staff Emoluments	818,728	50.7%
Pension Payments	333,670	20.7%
Student Aid	140,645	8.7%
Maintenance	124,056	7.7%
Operating Expenses	197,625	12.2%
Total Expenditures	1,614,724	100%

* The actuarial liability of the Technion as of September 30, 2022 was NIS 5.7 billion. The consolidated liability (Technion and TRDF) is NIS 6.2 billion.

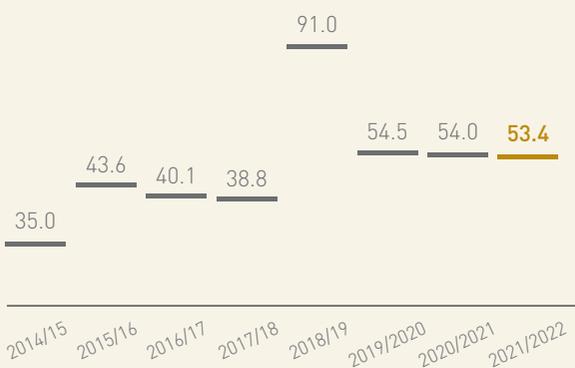
TOTAL INCOME FROM TECHNION SOCIETIES

(\$US M October 1, 2021 - September 30, 2022)



DEVELOPMENT EXPENDITURE

(\$US M)



SPONSORED RESEARCH FROM EXTERNAL SOURCES

(\$US M)



TECHNION INVESTMENT 2021/2022

(October 1, 2021 - September 30, 2022)

	Millions of NIS	%
CPI Linked Investments	2,539	33
Foreign Currency Investments	115	2
Shekel Unlinked Investments	2,371	31
Stocks	2,608	34
Total	7,633	100%

DEVELOPMENT EXPENDITURE 2020/2021

(October 1, 2021 - September 30, 2022)

	Thousands of \$US	%	Thousands of NIS
Buildings, Renovations & Infrastructure	42,728	79.9	138,531
Multidisciplinary Research Centers	1,808	3.4	5,818
Laboratories & Equipment	8,911	16.7	29,021
Total	53,447	100%	173,370

* \$US 1 = 3.543

FACULTY

New Faculty Appointments

Aerospace Engineering

Igal Gluzman
Assistant Professor

Vitaly Shaferman
Associate Professor

Architecture and Town Planning

Guy Austern
Lecturer

Biotechnology and Food Engineering

Dan Bracha
Assistant Professor

Chemical Engineering

Dan Mendels
Assistant Professor

Civil and Environmental Engineering

Nicolo Pollini
Assistant Professor

Data and Decision Sciences

Omer Ben-Porat
Assistant Professor

Allon Vishkin
Assistant Professor

Education in Science and Technology

Areej Mawasi
Lecturer

Electrical and Computer Engineering

Joseph Keshet
Assistant Professor

Kiril Solovey
Assistant Professor

Uziau Pereg
Assistant Professor

Humanities and Arts

Dustin Lazarovici
Assistant Professor

Mathematics

Ron Levie
Assistant Professor

Mechanical Engineering

Christian Grussler
Assistant Professor

Leeya Engel

Assistant Professor

Medicine

Boris Slobodin
Assistant Professor

Ariella Glasner

Assistant Professor

Medical Staff

Clinical Associate Professor

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Yuval Freifeld

Yuval Ginsberg

Hagai Hazan-Molina

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Yoram Wolf

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Reuven Keidar

Senior Lecturer

Erez Hasnis

Clinical Lecturer

Abed Agabarya

Amnon Eitan

Eyal Fuchs

Eyal Ginesin

Nir Kugelman

Mordechai Pollak

Yotam Shkedy

Hussein Sliman

Galit Tal

Clinical Lecturer (Educator)

Shay Brikman

Suzan Faranesh-Aboud

Nadir Ghanem

Salim Mazzawi

Ronaz Najjar

Baruch Ovadia

Rabia Shehada

Merav Sudarsky

Edward Zalyesov

ACADEMIC FACULTY 2022-2023

Faculty	Individuals	Full Time Equivalents (FTEs)
Professor	216	216
Associate Professor	185	185
Assistant Professor	153	152
Lecturer	6	6
Others	7	7
Total	567	566
Research Fellows	18	6.85
Clinical Track Appointments	421	99.375
External Adjuncts	712	273.5

INTERNATIONAL AWARDS AND HONORS

ERC Grants within Horizon Europe Program

ERC Advanced

Prof. Avner Rothschild
Faculty of Materials Science & Engineering

ERC Consolidator

Assoc. Prof. Meytal Landau
Faculty of Biology

Assoc. Prof. Asya Rolls

Ruth and Bruce Rappaport
Faculty of Medicine

Assoc. Prof. Avi Schroeder

Wolfson Faculty of
Chemical Engineering

Assoc. Prof. Nadav

Amdursky
Schulich Faculty of
Chemistry

Asst. Prof. Graham De Ruiter

Schulich Faculty of
Chemistry

ERC Starting

Asst. Prof. Inbal Talgam
Henry and Marilyn Taub
Faculty of Computer Science

Asst. Prof. Noga Ron-Harel

Faculty of Biology

Asst. Prof. Naama

Geva-Zatorsky
Ruth and Bruce Rappaport
Faculty of Medicine

Asst. Prof. Ofra Amir

Faculty of Data & Decision
Sciences

ERC Synergy

Assoc. Prof. Dori Derdikman
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Faculty of Medicine

Royal Society of Chemistry (RSC) Materials Chemistry

Division Horizon Prize

Stephanie L Kwolek
Award

Prof. Gideon Grader

Wolfson Faculty of
Chemical Engineering

Prof. Avner Rothschild

Faculty of Materials Science
& Engineering

International Society of Bionic Engineering (ISBE)

Elected fellow member

Distinguished Prof. Emeritus

Daniel Weihs
Faculty of Aerospace
Engineering

Schmidt Futures Foundation

Schmidt Science Polymaths
Award

Assoc. Prof. Ido Kaminer

Andrew and Erna Viterbi
Faculty of Electrical &
Computer Engineering

Deputy Dean of the Academy of Management Fellows Group

Prof. Emerita Miriam Erez
Faculty of Data & Decision
Sciences

Intel's Rising Star Faculty Award

Asst. Prof. Eilam Yalon
Andrew and Erna Viterbi
Faculty of Electrical &
Computer Engineering

Institute of Electrical and Electronics Engineers (IEEE) Nuclear & Plasma

Sciences Society (NPSS)

Plasma Science and Applications (PSAC) Award

Prof. Yakov Krasik
Faculty of Physics

The Society for Industrial and Organizational

Psychology (SIOP)

Distinguished Scientific

Contributions Award
Prof. Emerita Miriam Erez
Faculty of Data & Decision
Sciences

Fellow of the Society for the Advancement of Economic

Theory

Prof. Emeritus Dov

Monderer
Faculty of Data & Decision
Sciences

Global Young Academy

Member

Asst. Prof. Farah Shady
Wolfson Faculty of
Chemical Engineering

American Institute for Medical and Biological Engineering (AIMBE) College of Fellows

Assoc. Prof. Avi Schroeder
Wolfson Faculty of
Chemical Engineering

Prof. Shulamit Levenberg

Faculty of Biomedical
Engineering

ISRAELI AWARDS AND HONORS

Israel Prize for Physics and Chemistry Research

Prof. Emeritus Joshua Zak
Faculty of Physics

Israel Academy of Sciences and Humanities Elected Member

Prof. Emerita Rachelle Alterman
Faculty of Architecture & Town Planning

Israel Latin America Network (ILAN) Technology Award in partnership with the Peres Center for Peace and Innovation

Prof. Shulamit Levenberg
Faculty of Biomedical Engineering

Israeli Society of Developmental Biology (IsSDB) Career Award

Eliezer Lifschitz Z"l
Faculty of Biology

Israel Fertility Association (IFA) Certificate of Appreciation

Prof. Emeritus Joseph Itskovitz
Ruth and Bruce Rappaport
Faculty of Medicine

The Israel Association of United Architects Lifetime Award

Prof. Emeritus Michael Bur
Faculty of Architecture & Town Planning

Rambam Award

Prof. Emeritus Moussa Youdim
Ruth and Bruce Rappaport
Faculty of Medicine

Kadar-Sheba Prize for Excellence in Research

Prof. Lior Gepstein
Ruth and Bruce Rappaport
Faculty of Medicine

Wolf Foundation 2023 Krill Prize for Excellence in Scientific Research

Asst. Prof. Shay Moran
Faculty of Mathematics

—
Asst. Prof. Inbal Talgam-Cohen
Henry and Marilyn Taub
Faculty of Computer Science

—
Asst. Prof. Aviv Tamar
Andrew and Erna Viterbi
Faculty of Electrical & Computer Engineering

Council for Higher Education Program for Quantum Science and Technology

Fellowship
Asst. Prof. Ben Ohayon
Department of Physics

Council for Higher Education Program for Quantum Science and Technology

Fellowship
Asst. Prof. Uzi Pereg
Andrew and Erna Viterbi
Faculty of Electrical & Computer Engineering

TECHNION PRIZES AND FELLOWSHIPS

TECHNION EXCELLENCE PRIZES

Hilda and Hershel Rich Technion Innovation Award

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Faculty of Mechanical
Engineering

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Faculty of Mechanical
Engineering

Dr. Valeri Frumkin
Faculty of Mechanical
Engineering

Mr. Omer Luria
Faculty of Mechanical
Engineering

—
Prof. Ashraf Brik
Schulich Faculty of Chemistry

—
Prof. David Meiri
Faculty of Biology

—
Prof. Amit Meller
Faculty of Biomedical
Engineering

—
Prof. Ezri Tarazi
Faculty of Architecture &
Town Planning

—
Asst. Prof. Omer Yehezkeili
Faculty of Biotechnology &
Food Engineering

**Norman Seiden Prize for
Academic Excellence**
Prof. Schechner Yoav
Andrew and Erna Viterbi
Faculty of Electrical &
Computer Engineering

Morton and Beverley Rechler Prize for Excellence in Research

—
**Assoc. Prof. Charles
Diesendruck**
Schulich Faculty of Chemistry

Prof. Eran Friedler
Faculty of Civil &
Environmental Engineering

Assoc. Prof. Reut Shalgi
Ruth and Bruce Rappaport
Faculty of Medicine

Assoc. Prof. Mark Silberstein
Andrew and Erna Viterbi
Faculty of Electrical &
Computer Engineering

Diane Sherman Prize for Medical Innovation for a Better World

Asst. Prof. Joachim Behar
Faculty of Biomedical
Engineering

**Cooper Award for
Excellence in Research**
Prof. Zev Gross
Schulich Faculty of Chemistry

Uzi and Michal Halevy Innovative Applied Engineering Award and Research Grant

**Assoc. Prof. Shahar
Kvatinsky**
Andrew and Erna Viterbi
Faculty of Electrical &
Computer Engineering

—
Prof. Gadi Schuster
Faculty of Biology

Prof. Noam Adir
Schulich Faculty of Chemistry

Crown Vanguard Award for Science and Technology

—
Prof. Moran Bercovici
Faculty of Mechanical
Engineering

Prof. Ashraf Brik
Schulich Faculty of Chemistry

Prof. Avner Rothschild
Faculty of Materials
Science & Engineering

CAREER ADVANCEMENT CHAIRS

**Deloro Career
Advancement Chair**
Asst. Prof. Michael Levi
Faculty of Biotechnology &
Food Engineering

Career Advancement Chair at the Technion

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Asst. Prof. Ben Ohayon
Faculty of Physics

Dr. Areej Mawasi
Faculty of Education in
Science & Technology

**The Norman Seiden
Fellowship in
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Optoelectronics**
Asst. Prof. Assaf Zinger
Wolfson Faculty of
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Asst. Prof. Shira Wilkof
Faculty of Architecture &
Town Planning

Jack Klein Career Advancement Chair in Cancer Research

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Sherman-Saifer Career Advancement Chair for Women

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Women's Division Career Advancement Chair

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Department of Humanities
& Arts

Chaya Career Advancement Chair

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Andrew and Erna Viterbi
Faculty of Electrical &
Computer Engineering

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—
Asst. Prof. Nicolò Pollini
Faculty of Civil &
Environmental Engineering

Asst. Prof. Ariel Rapaport
Faculty of Mathematics

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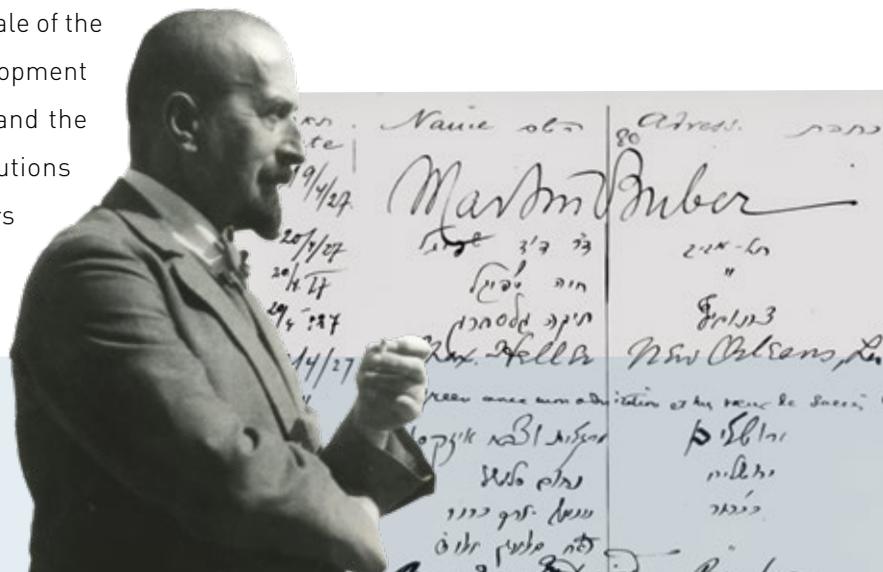
The Technion - Israel Institute of Technology kicked off its centennial celebrations during the June 2022 Board of Governors annual meeting, celebrating the first class opened in the winter of 1924-1925



When the doors of the Technion, previously known as the Technikum, opened to students in the winter of 1924/1925 – a dozen years after the first cornerstone was laid on Mount Carmel - no one could have fathomed the impact that the Institute would have on Israel's social and economic development and global intellectual and scientific advancement. Technion graduates, researchers, professors, and students have played pivotal roles in the enrichment of knowledge and the human condition on both local and global scales, accounting for more than 50% of the startup founders in Israel's wildly successful high-tech sector and at least 50% of the nation's engineers.

Nearly 100 years and more than 123,000 academic degrees later, the Technion - Israel Institute of Technology marks the historic commencement of classes by celebrating its humble beginnings, as well as the intellectual pragmatism and remarkable achievements of its graduates and faculty.

As the Technion - Israel Institute of Technology marks 100 years since the first students walked through its doors, it is an opportunity to acknowledge the sheer scale of the Institute's impact on both the development and flourishing of Israeli society and the breadth of creative and novel solutions that its graduates and researchers continue to impart to the world.



'24 - '25

TECHNION
PRESIDENTS

Arthur Blok, Principal

1929



An academic trajectory intertwined with history

The history of the Technion begins in 1901, half a century before the establishment of the State of Israel, in the halls of the Stadtcasino Basel, where the Fifth Zionist Congress was unfolding. There, three Jewish intellectuals – philosopher Martin Buber, biochemist and the future first president of Israel Chaim Weizmann, and journalist Berthold Feiwel – brought to the attendees’ attention the necessity of adopting a program of Hebrew culture, including the establishment of an educational institute for engineers to support the development of the future state. In 1908, the German-Jewish organization Ezrah Association, headed by Dr. Paul Nathan, set out to raise funds toward establishing what is known today as the Technion - Israel Institute of Technology.

Fast forward to the winter of 1924/1925, when classes in civil engineering and architecture finally commenced in the Technion’s original building, designed by the Berlin-born architect and early Technion professor Alexander Baerwald. Just the year before, the great physicist Albert Einstein visited the campus together with his wife Elsa and founded the first of many future Technion Societies in Germany, hosting the group’s meetings in his home. The former British Prime Minister and then Foreign Secretary Lord Arthur James Balfour visited the Technion building in the spring of 1925, noting to much fanfare that the institute represented a vision for the development of the State of Israel, but also for the future, as a beacon of progress in teaching practical sciences.

In 1929, the first graduating class of 17 students – 10 engineers and 7 architects, including one female



architect – were granted their diplomas, beginning a tradition of academic excellence that would continue to thrive in the next century.

Classes and research proceed despite tumultuous world events

By the time World War II broke out in 1939, the Technion was already a flourishing academic institution with 500 students enrolled, the majority of whom immigrated to Palestine from Europe. The war inevitably slowed enrollment as students enlisted to fight against Nazi Germany, but classes did not come to a complete halt. To enable studies to continue, professors and industry leaders, such as Solal Boneh, donated funds to help students continue their studies despite the wartime conditions. During the War, Technion workshops were used to repair and supply spare parts for British ships

'25 - '27

'27 - '29

'30 - '31

'31 - '50

Eng. Max Hecker

Shmuel Pevsner / Prof. Aharon Tcherniavsky

Prof. Joseph Breuer

Dr. Shlomo Kaplansky

damaged at sea. Already at this early date and prior to the declaration of the State of Israel, Technion faculty published academic articles in prestigious scientific journals.

After World War II, the fight for independence from Britain officially began. When independence was won in 1948, it was in large part due to the engineering genius and technological prowess of the Technion's students, graduates, and faculty. It was clear from the very beginnings of the State of Israel that the Technion would be the nation's backbone as it established its infrastructure, security, and economy – just as the thinkers at the Fifth Zionist Congress had intended.

Blossoming into an intellectual cornerstone in the Middle East

In 1949, the Department of Industrial Technology was divided into two units: the Faculty of Electrical Engineering and the Faculty of Mechanical Engineering, resulting in five academic faculties at the Technion. As the student body grew and the topics of study expanded, it was clear that the original building (now serving as The Israel National Museum of Science, Technology, and Space - Madatech) would no longer suffice, therefore, a new campus in Neve Sha'anun was established in the early 1950's.

The 1950s saw physical expansion, and the opening of additional academic departments and the Technion's first research facilities. Former Chief of Staff of the Israeli



Defense Forces Yaakov Dori was named President in 1951, serving until 1965. Also in 1951, under President Yaakov Dori, the Faculty of Science was set up, comprising four academic divisions: mathematics, chemistry, physics, and mechanics.

In 1952, the Israeli government asked the Technion to establish testing centers in different fields to support the development of Israel's infrastructure – a framework for research and development that has lasted 70 years and is known as the Technion Research and Development Foundation (TRDF). TRDF and its technology transfer arm, T3, invest in entrepreneurship, patents, and start-ups coming out of the Technion. The Department of Aeronautical Engineering (now known as the Faculty of Aerospace Engineering) was founded in 1953, followed by additional faculties and divisions.

During the 1960s, the Technion was one of the first universities in the Middle East to open its doors to students from developing nations in Africa and Asia, with faculty providing technological assistance to various countries through the United Nations and other international and inter-governmental organizations. In 1962, former Prime Minister Ben Gurion received an honorary doctorate in architecture, recognizing his immense contribution to the development of the state and the Technion.

Advancing human health since the 1960s

To meet growing demand for enrollment, available fields of study were expanded. In 1969, Prof. David Erlik became the first dean of the Faculty of Medicine, later named the Ruth and Bruce Rappaport Faculty of Medicine.



'51 - '65

**Lt. Gen. (res.)
Yaakov Dori**

'61 - '62

**Prof. David Ginsburg
(Acting President)**



Over the decade, the Technion established several new departments.

During the 1970s, despite the tumult of war in the region, the Technion continued to pave the way forward with cutting-edge research and technological solutions such as desalination. The Faculty of Biology was established in 1971. In 1973, over 1,800 approved research projects were being carried out by Technion staff and 1,100 research theses were pursued by graduate students. At the time, the Institute's major research centers blossomed to cover nearly every aspect of Israel's industrial, agricultural and defense needs.

A powerhouse of science, engineering and medicine

The 1980s saw continued progress and advancement in the Technion's scientific achievements, which would go on to be the basis for Israel's first Nobel Prizes. Early in the decade, Irwin A. Rose, Avram Hershko, and Aaron Ciechanover published two papers on energy-dependent intracellular proteolysis, reporting that the process for breaking down proteins was more complicated than previously accepted models. In 1982, Technion scientist

and future Nobel Prize laureate Dan Shechtman first observed the ten-fold electron diffraction patterns of the quasicrystal while conducting a routine study of aluminum-manganese alloys at the U.S. National Bureau of Standards. In 1978, Abraham Lempel and Jacob Ziv, two of the "founding fathers" of Israel's high-tech movement, published their groundbreaking paper on data compression using the LZ77 algorithm they had developed. The algorithm is well-known for birthing the popular PNG, ZIP and GIF formats.

In 1987, research at the Technion accelerated in the field of optoelectronics, or studies and applications for light-emitting devices, leading to the inauguration of the Barbara and Norman Seiden Advanced Optoelectronics Center in 1989. The Center aimed to facilitate multidisciplinary research partnerships and attract Israeli researchers who had departed during the "brain drain" back to the country by establishing the Technion's reputation for its world-class laboratories and computational research.

In addition, during the 1980s, the Technion's role in the formation of Israel's dynamic high-tech scene began, with applied research in the fields of computer science, electrical engineering, semiconductors and fiber

'65 - '73

Alexander Goldberg

'73 - '82

Maj. Gen (res.) Amos Horev

'82 - '86

Prof. Josef Singer

'86 - '90

Dr. Max Reis



optics accounting for the development of pioneering technologies that would become the basis for the nation's first high-tech exports.

Technion's academic excellence expands

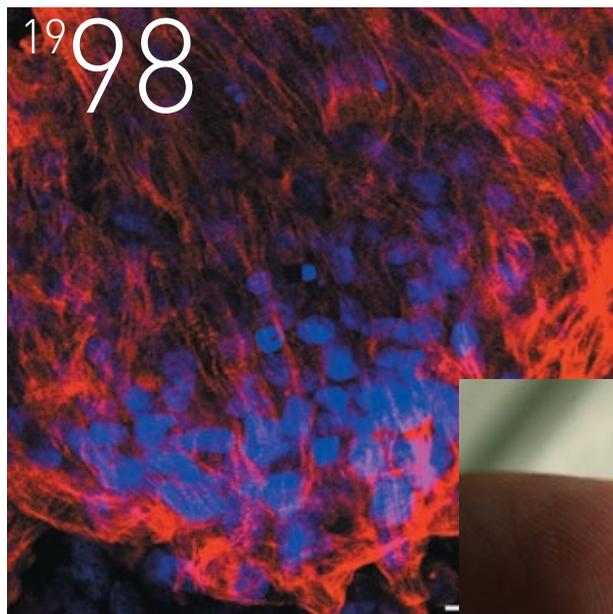
The mass immigration of researchers, scientists and intellectuals from the former Soviet Union in the 1990s significantly increased the number of students and teaching staff, resulting in a campus expansion program and the construction of the new home of the Henry and Marilyn Taub Faculty of Computer Science, among other capital projects.

In 1995, the National Center for Research and Analysis of Proteins opened in the Faculty of Biology.

Multi-sector partnerships were initiated with pharmaceutical and biotechnology companies, an indication of the Technion's role in establishing Israel's expertise in biomedicine.

The TechSat-Gurwin II satellite was launched from a Russian space station in Kazakhstan in 1998, becoming one of the first satellites to be launched by an academic institution and a showcase for the Technion's important collaboration with industry and the local and international scientific community. The project was designed by experts and students from the Technion and the Israel Space Agency, Israel Aircraft Industries, and from the IDF Research and Development Administration – an example of successful and close cooperation between the Technion and Israeli industry.

Also in 1998, Prof. Joseph Itskovitz-Eldor of the Faculty of Medicine was on the international team that first discovered the potential for the use of stem cells to form tissue and established the Technion's first stem cell laboratory.

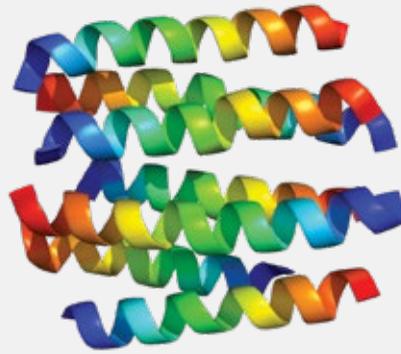
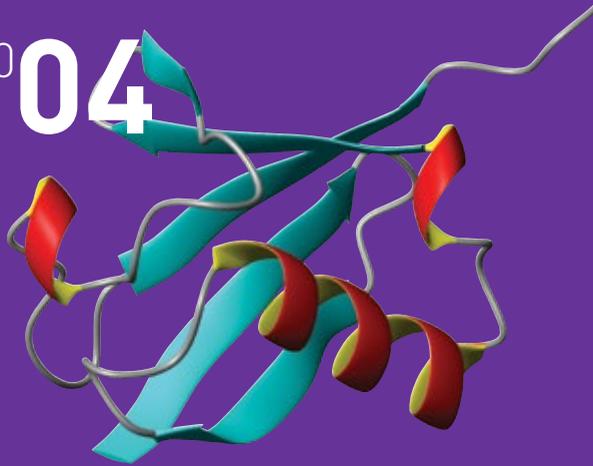


'90 - '98

Prof. Zehev Tadmor



2004

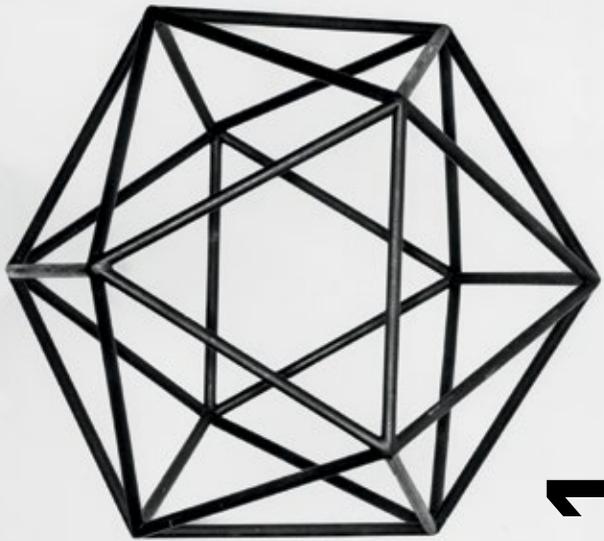


2013

characterized the ubiquitin system, which is responsible for the breakdown of proteins in the living cell; Prof. Dan Shechtman received the prize in 2011 for his discovery of quasiperiodic crystals, or "Shechtmanite;" and Technion graduate Prof. Arieh Warshel received the prize in 2013 for the development of multiscale models for complex chemical systems.

At the urging of leading Technion scientists and professors, the Russell Berrie Nanotechnology Institute (RBNI) was opened in 2005 to explore the field of nanotechnology and related applications, such as nanoelectronics, nanomaterials and nanomedicine. RBNI engages in multidisciplinary research to empower the field of nanoscience that has applications in a wide range of fields, including life sciences, electronics, ecology, computer science, and more. The contribution by the Berrie Family to fund the construction of the nanotechnology center was recognized by naming the central promenade of the Neve Sha'anun campus after Russell Berrie, and in the creation of a stunning kinetic sculpture by the architect Santiago Calatrava in the shape of an obelisk, which stands at the heart of campus.

In 2006, a novel drug to treat Parkinson's disease, Azilect® (Rasagiline), was approved by the American Food and Drug Administration. Azilect® was developed by Profs. Emeritus Moussa Youdim and John Finberg of the Ruth and Bruce Rappaport Faculty of Medicine, along with Teva Pharmaceuticals, to treat Parkinson's disease throughout its various stages. *[Read more about Prof. Youdim and two other Technion professors who received the*



2011

Nobel Prizes mark a new era of scientific distinction

If the start of the 20th century saw the opening of the Technion's doors, the beginning of the 21st century saw the university's academic, scientific and intellectual achievements recognized, with three Technion researchers and one Technion graduate receiving Nobel Prizes in Chemistry. Professors Aaron Ciechanover and Avram Hershko received the prize in 2004 for their groundbreaking research that



'98 - 2001

Maj. Gen. (res.) Amos Lapidot

2006

'01 - '09

Prof. Yizhak Apeloig



Israel Prize this year in the news section of this publication]. Also in 2006, the Lorry I. Lokey Interdisciplinary Center for Life Sciences and Engineering was launched. Its goal: establishing, fostering, and enhancing new multidisciplinary research activities, aiming to apply engineering tools to life sciences.

The Stephen and Nancy Grand Technion Energy Program (known as GTEP) was established in 2007 to fuel research into scientific and technological applications for energy generation, including the development of fuel cells, and the splitting of hydrogen, among other projects contributing to sustainability and energy.

Global expansion

The aughts have also seen the extension of the Technion's academic prowess across borders, with campuses opening internationally in the U.S. and China. 2009 was the first year of Technion International, a program offering courses entirely in English for international students.

In 2012, the Technion and Cornell University won a bid to establish a new applied science and engineering institution on Roosevelt Island in New York City, known as Cornell Tech, which includes the Jacobs Technion-Cornell Institute. The Institute aims to transform industries using technological innovation, deep-tech startups, and skilled talent, including an Urban Tech Hub to foster tomorrow's leaders in urban technology and sustainable solutions.

In 2015, the Li Ka Shing Foundation and the Technion established the Guangdong-Technion Israel Institute of Technology (GTIIT) in southeastern China. The university offers bachelor's, master's, and doctoral degrees in a range of fields, including mathematics, chemical engineering, biotechnology and food engineering, materials engineering, mechanics and aerospace engineering, which are accredited by the Technion.



2022



In 2018, the Hellen Diller Quantum Center was established, focusing on quantum mechanics applications in computing, communication, sensing, and signal processing, while cementing the Technion's role as one of the world's leading academic and research institutes in the field.

A beacon of coexistence and diversity

Today, with over 15,000 students, 17 faculties (and one academic department), and 60 research centers, the Technion encourages its students and faculty to break paradigms and fuse creative thinking with technology. A diversity of viewpoints and origins is key to the Technion's

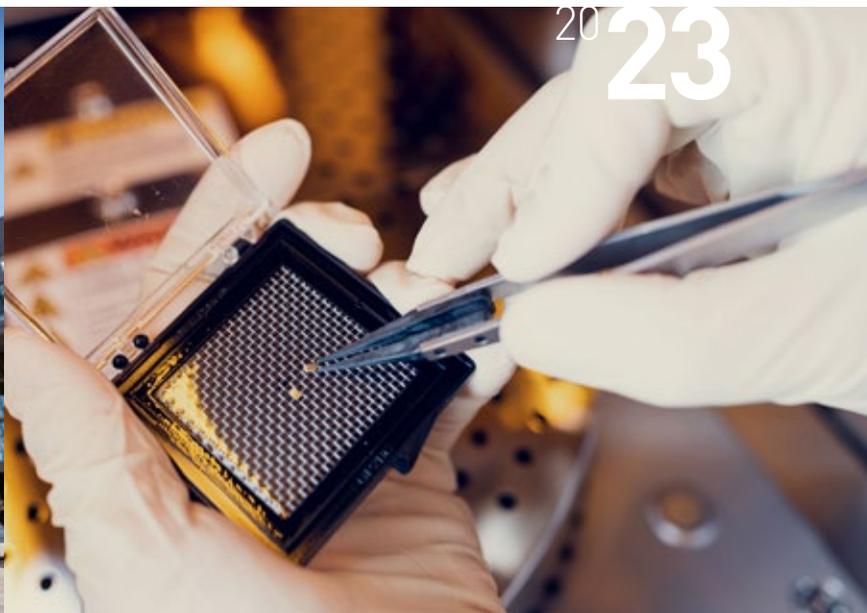
success, with a diverse student body of all religions and backgrounds, and with female students accounting for over 42% of the student body.

This year, as the Technion begins the centennial celebrations for the commencement of classes, Israel's Institute of Technology is proud to be one of the intellectual birthplaces of the modern State of Israel, and home to graduates and researchers who are responsible for building successful high-tech and startup companies, lifesaving medical innovations, Nobel Prize winners, and exhibiting engineering genius that enables humanity to prepare for the challenges that lie ahead in the 21st century and beyond.

2015



2023



EXCHANGE FOR CHANGE



1924 - 2024

Join us for our
upcoming centennial
celebrations in 2024

