powering

invention »
Definition: To exert an animating or exalting influence

\(\text{in-ˈspī(-ə)r}\)

It’s what we do at Israel’s innovation university
Activated by social protest

Dr. Orli Ronen
Porter School of Environmental Studies

**Project:** Laboratory for Urban Innovation and Sustainability for making cities smarter and residents more engaged.

**Uniqueness:** Helps cities leverage technology for the well-being of all.

**Genesis:** "For me, the social protest in Israel of summer 2011 was a turning point. The tent camps in Tel Aviv got city residents actually talking with each other about weighty issues for the first time."

**Last word:** "Cities are the problem of the 21st century, but also the solution."

Moved by bustling streets

Eyal Feder
MA student in the Adi Lautman Interdisciplinary Program for Outstanding Students; Academic Coordinator at TAU’s Orange Institute for Internet Studies; Co-founder of ZenCity, an urban data start-up.

**Project:** "AlterNative," an app for choosing how to get around the city based on factors like cost, time and carbon footprint, while also generating useful data.

**Kudos:** Won 1st Prize in the 2014 Tel Aviv Municipality/EcoMotion apps2go Competition.

**Messy or neat?** "Mess is part of the creative process."

Inspired by the sea’s potential

Dr. Alexander Golberg
Porter School of Environmental Studies

**Project:** Environmental Bioengineering Laboratory for creating offshore bio-refineries that will turn marine algae – or seaweed – into biofuels, industrial chemicals and protein-rich food.

**Aim:** Providing Israel’s fuel transportation and industrial needs, as well as thousands of jobs.

**Uniqueness:** Biomass farming in the sea combined with energy-efficient processes.

**Measure of success:** "When we see vast algae plots along Israel’s coastline."

Gets best ideas falling asleep

Yael Inbar
PhD student at the Faculty of Management

**Project:** Researching social dynamics in crowdfunding sites and how they affect funding outcomes.

**Aim:** Turn crowdfunding into active social networks that will benefit both entrepreneurs and backers.

**Why is Israel so innovative?** "The state had to build itself up in a very short time and that spirit continues until today."

Messy or neat?

"Mess is part of the creative process."
"My inspiration came from my internal drive for survival at any cost."

— Brig. Gen. (res.) Dr. Daniel Gold, leader of Iron Dome and graduate of TAU (PhD, Electrical Engineering & PhD, Business Management)
link

ˈlink\]

‘Connect’ > of Scandinavian origin; akin to Old Norse hlekkr ‘chain’

‘Light the way’ > Latin linchinus ‘candle’ > Greek lychnos

Today: Hypertext

Architecture + Genetics

Tom Shaked, Nimrod Serok and Shany Tal
MA students, David Azrieli School of Architecture
Project: “Self-evolving” architectural designs inspired by the science of genetics.
Why? Architecture is increasingly looking to nature in the quest for new forms and shapes.
Initiator: Dr. Eran Neuman, Head of the Azrieli School, who taught a course on the subject at the Architectural Fabrication Digital Lab and curated an exhibition on its early pioneer, David Yannay, at the Tel Aviv Museum of Art.
"Innovation is making a connection that didn’t exist before between two worlds."

—Dr. Ricardo Tarrasch
"The hardest part of innovation is knowing whether to stick to your guns or pivot to a whole new idea."
—Dr. Aliza Belman Inbal

Food + Power

Dr. Rafi Grosglik
Department of Sociology and Anthropology
Project: Researching the political, economic and cultural forces behind the organic food movement.
Inspiration? "When I took a year off from my BA studies to learn Chinese cooking at an academy in Guangzhou, China."
Food utopia? "When food sources become transparent, local, sustainable, natural and not part of an endless global food chain. Healthy food would be the democratic right of all."

Greenhouse Gas + Chemistry

Dr. Roman Dobrovetsky
Organic Catalysis Chemistry Lab, Raymond and Beverly Sackler School of Chemistry
Project: Transforming chemical garbage – like CO2 – into valuable substances for industries such as plastics, drugs, fuels and fertilizers.
Measure of success: When industrial processes use earth-abundant elements that are cheap and nontoxic.
Best ideas? "Come from unexpected results. Serendipity is a strong tool in science."

Health + Social Media

Prof. Nurit Guttman
Department of Communication
Project: Digital Social Marketing Campaign to Promote Health.
Aim: Using social media to give people health information and tips on what’s important to them, rather than generic directives.
Uniqueness: The TAU team not only researched and tested what works in the community, but was given a joint budget by three government offices to create and run the national campaign.

Students + Social Leadership

Racheli Warshavsky
Head, Unit for Social Involvement, Ruth and Allen Ziegler Student Services Division
Project: Mithabrim ("Connections") social leadership center for the benefit of civil society.
Aim: Connecting students with the major social challenges in Israel, and providing expert vocational training before the students head out to volunteer.
Partners: 100 Israeli NGOs, companies and agencies.
Measure of success: Graduates remain socially active in their personal and professional lives.

Doing Business + Doing Good

Dr. Aliza Belman Inbal
Hartog School of Government and Policy
Project: Pears Challenge for Innovation and International Development – a competition for bringing Israeli technologies to Africa.
Uniqueness: Bolstering Israel’s impact on poorer countries through private sector-driven innovation rather than NGO activity.
2014 prize winner: "Livingbox," a self-sustaining "mini-farm" created by Israeli entrepreneurs that grows vegetables anywhere, without the need for soil.
#1 trait of innovators? "Humility and stubbornness."
Extreme Science

Lilya Lobachinsky, PhD student
Laboratory of Dr. Alon Bahabad, School of Electrical Engineering

Project: Researching extreme non-linear optics, which involves converting visible laser light to light of exceptionally short wavelengths.

Uniqueness: The lab-generated light pulses are the briefest event that can be produced by mankind.

Aim: Controlling the light source to track natural phenomena occurring in miniscule space and time scales – such as the motion of electrons in atoms.

Long-term usefulness: Ultra-fast optical communications and efficient light harvesting for energy purposes.
1. Process

Udi Aharoni, CEO and Academic Director
Lahav Executive Education, Faculty of Management

Project: Executive programs in innovation and entrepreneurship combining cutting-edge academic training with best practices.

Aim: Imparting Israeli and TAU expertise to business and government leaders.

Magnet for: Groups from China, Korea, Brazil and other countries who want to learn the secrets of Israel’s start-up success.

Cycle of Success

Elena Donets, CEO

Project: StarTAU – Israel’s largest non-profit incubator for young entrepreneurs.

Aim: Providing courses, mentors, networking and pitch events – everything for turning start-up ideas into reality.

Measure of success: “Students who came in for help with their start-ups are now coming back as mentors.”

#1 trait of innovators? “They are leaders.”

Social Profit

Dr. Yifat Reuveni
Faculty of Management

Project: Israel’s first course in Social Entrepreneurship and Innovation that equips students with both theory and practical tools to help social enterprises become financially independent.

Aim: Nurturing a generation of socially conscious businesspeople.

Measure of success: Twelve successful business plans to date, including one for integrating people with autism into the IDF, an agricultural project in Africa, and “green” public housing.

Why is Israel so innovative? “Survival mode – it’s in our DNA.”

Innovation Gets Schooled

Dr. Miri Yemeni
Jaime and Joan Constantiner School of Education

Project: Researching entrepreneurship among school principals.

Why? With the growing decentralization and competitiveness of schools, along with funding cuts, school principals must become business-oriented and learn to use resources in creative ways.

Define innovation: “As my 8-year-old son said, ‘Innovation is like a home: You can renovate and improve it, or you can build it from scratch.’”

#1 trait of innovators? “They have a clear vision, they act as a team and they are not constrained by resources.”

Startups by Non-Techie TAU Alumni

1. Preen.Me – transforming how women shop for beauty products – Tamar Yaniv (BA, Sociology & Liberal Arts)
2. Evolero – event and conference management – Tal Shoham (LLB & BA, Eastern Asian Studies)
3. Insights – crowd-consulting app – Gal Alon (BA & Msc, Public Policy, Management and Media)
4. MindCET – educational technology – Avi Warshavsky (MA, Philosophy)
5. Marketing Envy – out-sourced startup marketing – Amit Lavi (BA, Political Science and Middle Eastern History)

Immersive Learning
A Safer Diagnosis

Prof. (emer.) Gil Navon
Raymond and Beverly Sackler School of Chemistry
Team member: Prof. Ilan Tsarfaty, Head of the Sackler Cellular and Molecular Imaging Center, Sackler Faculty of Medicine
Project: New MRI-based technology for diagnosing cancerous tumors that, unlike PET scans, does not use radioactive materials. Received investment from TAU’s Momentum Fund.
Measure of success: “If it works in human clinical trials, it will completely change the game for diagnosing and testing cancerous tumors.”
On new ideas: “When someone has an idea, at least 5 other people around the world have thought of it too. The question is, who will be the one to implement it?”

Diving into the Gene Pool

Dr. Noam Shomron
Sackler Faculty of Medicine, Sagol School of Neuroscience and Edmond J. Safra Center for Bioinformatics
Project: Personal Human Genome Viewer, licensed to start-up Variantyx.
Aim: Catching rare and undiagnosed diseases with an easy, cost-effective DNA kit.
Measure of success: “If we manage to save many lives with our tests.”
#1 trait of innovators? “Never taking anything for granted.”

Digital Relations

Rony Kahana, BA student
Steve Tisch School of Film and Television
Project: The short film, David555David – part of the “Digital Relations” student film series.
The story: Rony captures the less romantic side of online relationships in a film about her disabled father’s digital dating experience.
Innovation on campus: “TAU’s film school, unlike others, lets you choose your own curriculum so that you never have to narrow your scope.”

Top TAU Biomed Start-ups
1. Brainstorm Cell Therapeutics Inc. – stem cell therapies for ALS, MS and Parkinson’s – Prof. Eldad Melamed and Daniel Offen (Medicine)
2. ExceeMatrix – novel high-strength collagen for biomedical devices – Prof. Yehuda Benayahu (Life Sciences) and Dafna Benayahu (Medicine)
3. NeuroPhage Pharmaceuticals – therapies for diseases like Alzheimer’s – Prof. Beka Solomon (Life Sciences)
4. Quiet Therapeutics – a new class of cancer treatments – Prof. Rimona Margalit and Dan Peer (Life Sciences)
5. Savicell Diagnostics – in vitro diagnostic test for early detection of immune system diseases – Prof. Fernando Patolsky (Exact Sciences)
Bureaucracy
—Plant scientist Prof. Amir Sharon

Cynicism
—Urban studies scholar Dr. Orli Ronen

Need for academic freedom
—VP for R&D Prof. Yoav Henis

Too much worry and stress
—BA student Rony Kahana

Being too comfortable
—Venture specialist Prof. Yesha Sivan

Fear
—Education researcher Dr. Ricardo Tarrasch

When you don’t know what your goal is
—Biomedical engineer Dr. Natan Shaked

Lack of funding
—Environmentalist Dr. Alexander Golberg

Optimism
—Dr. Orli Ronen

Curiosity
—Prof. Amir Sharon

Other innovations
—Computer scientist Prof. Sivan Toledo

Great minds, unique in how they work
—Rector Prof. Aron Shai

The privilege to think and take risks
—Communication scholar Prof. Nurit Guttman

Chaos and danger
—Dr. Ricardo Tarrasch

The desire to succeed
—Optics engineer Prof. David Mendlovic

Acting as a team; never "I did" but always "we did"
—Entrepreneurship researcher Dr. Miri Yemini

Communication
—Dr. Alexander Golberg

A supportive environment
—Medical researcher Dr. Noam Shomron

Funding and good students
—Engineer Dr. Gabor Kosa

Morality
—Sociologist Dr. Rafi Groslik

Funding and good students
—Engineer Dr. Gabor Kosa
Soaring Aspirations

TAU student team in StarTAU’s ‘Bee’ accelerator program for start-up founders

Project: CoLab cloud platform for collaboration between researchers.

Aim: Introducing new tools for managing and accelerating research.

Measure of success: “When the top 100 universities in the world collaborate on our platform.”

#1 trait of innovators: “Resilience. Mental toughness. Chutzpah.”

Definition: Something daring, risky or of uncertain outcome

Middle English venteren > Old French aventure ‘adventure’

Noun and verb

| ven(t)-shə |
Cyber Guard

Prof. Yuval Shavitt
School of Electrical Engineering and Blavatnik Interdisciplinary Cyber Research Center

Project: BGProtect – a TAU spin-off company that keeps the Internet safe from digital hijackings.

Uniqueness: First to provide large-scale monitoring of the Internet from thousands of locations and alert clients about cyberattacks in real time.

Messy or neat? “Messy, but my computer files are exceedingly well-organized.”

Top TAU Alumni Exits

1. Waze navigational app – sold to Google for $1 billion – Uri Levine (BA, Economics) and Ehud Shabtai (BSc, Computer Science and Philosophy)
2. Viber mobile messaging company – sold to Japan’s Rakuten for $900 million – Talmon Marco (BSc, Computer Science and Management)
3. Maker Studios video company – sold to Disney for $500 million – Yonon Kreiz (BA, Economics and Management)
4. Check mobile billing company – sold to Intuit for $160 million – Guy Goldstein (BA, Software Engineering and Management)
5. KAI pharmaceuticals – sold to Amgen for $315 million – Prof. Daria Mochly-Rosen (BSc, Life Sciences)

Venturing Forth

Prof. Yesha Sivan
Faculty of Management

Project: Coller Institute of Venture at TAU

Aim: Researching and improving the global venture ecosystem.

Uniqueness: “We’re creating a database on the history of venture that can also help design the future.”

Measure of success: “Our policy recommendations will be applied by governments and organizations the world over.”

#1 trait of innovators? “Grit.”

Your Heart in Your Hands

Maayan Cohen (below right)
MBA graduate, Faculty of Management, start-up founder

Project: Hello Heart – a mobile app that helps hypertension patients understand and manage their medical data. www.helloheartapp.com

Uniqueness: No other app takes lab results directly from clinics and presents them in an easy-to-grasp visual format, together with tips and tools for monitoring health.

Measure of success: The beta version is already connected to 50% of US hospitals and clinics.

Definition of innovation: “I don’t like defining things. I like doing them.”

Smart Giving

Dafna Meitar-Nechmad (left) and Edna Fast
Attorneys-at-law and philanthropists

Project: Institute for Law and Philanthropy, Buchmann Faculty of Law

Aim: Overhauling the philanthropic system in Israel by removing bureaucratic, legislative and fiscal obstacles to social initiatives.

Team members: Law professor Yoram Margalioth and Advocate Galia Feit.

Uniqueness: The initiative came from Meitar-Nechmad and Fast, who are teaming up with other donors to support academic and policy research on Israeli giving.

Messy or neat? “Messy, but my computer files are exceedingly well-organized.”

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5. KAI pharmaceuticals – sold to Amgen for $315 million – Prof. Daria Mochly-Rosen (BSc, Life Sciences)
Mobile Lab

Prof. David Mendlovic, serial entrepreneur
School of Electrical Engineering

Team member: MEMs specialist Prof. Slava Krylov, TAU School of Mechanical Engineering

Project: Unispectral Technologies start-up. Received investment from TAU’s Momentum Fund.

Uniqueness: Developing smartphone cameras so sensitive and powerful that they can read the chemical composition of almost any object.

Applications: Detection of fake drugs or foodstuffs, industrial quality control, consumer uses.

3D Medical

Dr. Natan Shaked
Department of Biomedical Engineering and Center for Nanoscience and Nanotechnology

Project: Compact add-on component that transforms ordinary microscopes in doctor’s offices into powerful 3D diagnostic tools. Received investment from TAU’s Momentum Fund.

Aim: Improving IVF success rates; cancer diagnosis and monitoring; and neuronal imaging.

100 Tags = 100 Million Locations

Prof. Sivan Toledo
Blavatnik School of Computer Science

Team members: Profs. Tony Weiss and Arie Yeredor, School of Electrical Engineering; Prof. Ran Nathan of Hebrew University; Director of the Minerva Center for Movement Ecology.

Project: Wildlife tracking system that enables ecologists to solve, for the first time, unanswered questions about animals’ territory and movements.

Uniqueness: Uses “reverse GPS” technology to create tracking tags that are smaller, cheaper, more accurate and longer lasting than GPS-based ones.

Super Wheat

Prof. Amir Sharon and Dr. Eitan Millet
Institute for Cereal Crop Improvement and Manna Center for Plant Biosciences

Project: A new wheat variety resistant to devastating rust diseases. Received investment from TAU’s Momentum Fund.

Aim: Saving the 15-50 million tons of wheat lost to rust diseases annually.

Uniqueness: Drawing upon the one-of-a-kind Harold and Adele Lieberman Gene Bank to transfer beneficial traits of wild wheat to cultured wheat.
Head: Prof. David Mendlovic  
School of Electrical Engineering  

**Aim:** Creating the conditions and providing the resources to make the entire campus – and beyond – even more entrepreneurial.  

**Uniqueness:** As opposed to the other major accelerators operating in the Tel Aviv area, the TAU one will add an academic environment to the mix.  

**Measure of success:** Already have several VC funds, companies and private investors showing interest in the project.  

**Definition of innovation:** “When someone creates something you don’t have and that you can use.”  

**Last word:** “We not only serve the university community across the disciplines, we have a national purpose to continue the Israeli drive toward innovation.”  

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**Project: TAU Center for Innovation and Entrepreneurship**  

1. **Momentum Fund** – $23.5 million investment fund supporting 12 TAU discoveries so far  
2. **Colton Family Next Generation Technologies Institute and Miles S. Nadal Institute for Technological Entrepreneurship** – philanthropic funds supporting 21 projects to date  
3. **BrainBoost** – Sagal School of Neuroscience framework for seeding 10-20 projects with industrial promise  
4. **Center for Innovation in Transportation** – joint TAU-government accelerator supporting 5 new eco-friendly transportation ventures  
5. **BioMedTech@TAU** – biomedical engineering competition to seed new clinically oriented technologies in collaboration with hospitals
What's the most important change you hope to see in 50 years?

Livable cities
Peace
Technology used for society and not against it
A stronger Israel
Personalized medicine
An end to global poverty
Green energy
Cancer, Alzheimer's and other debilitating diseases eradicated
People talking to each other again
Solidarity
Something I can't even imagine today

What do you hope stays exactly the same?

Ability to disconnect from the grid
Warmth of the Israeli people
Hope
Size of the polar ice caps
People concerned about each other
All the good stuff!
Man
Hmmm...chocolate
That in Israel the streets will still be safe at night
Imagination of children
Funny and creative people
Nothing. We can do better on all fronts.
We live in a globalized world in which the markets for goods, capital and ideas are interconnected. Scientific progress and the creation of knowledge offer great opportunities that can be shared globally for the benefit of mankind. That is why progressive-minded institutions such as Tel Aviv University must operate in the global arena and actively respond to major trends.

The first global trend is the rising East. In 1990, China and India together manufactured about 7 percent of world output; in 2015 that figure was up to about 25 percent. TAU has led Israel’s universities in recognizing this change in the center of gravity of the world economy. Expanding our links with Asia has become a strategic goal. The University has developed ties with 30 leading Chinese universities; initiated the robust India-Israel Forum for academic and business initiatives; and established programs with Singapore and Korea. And that is just the start.

A second global trend is openness and transparency. Simply put, nations that aspire to excellence and develop open societies and transparent governance succeed more than those who do not. Here, our University contributes significantly in the areas of law, economics, political science and public policy.

A third global trend is the ascendance of the knowledge economy. Education imparts the ability to learn, to adjust, to seize opportunities and to innovate. Tel Aviv University excels in reinforcing innovation and expertise – in Israel and internationally. With the continued backing of our Governors and Friends, TAU will play an even greater role in on shaping our shared, interconnected global future.

Prof. Jacob A. Frenkel
Chairman, Board of Governors
Tel Aviv University

The modern university as we know it has not changed in about 300 years. Perhaps it’s time to rethink the role of this institution in society?

Undoubtedly universities should continue pursuing research, disseminating knowledge and teaching students, but they are also increasingly called upon to be relevant. We are seeing a growing inter-relationship between academia, industry and society – and not just on the local level but on the global one. Universities need to identify new opportunities for connecting to the urgent issues of the day: health, security, climate and sustainability, human rights, economic justice, and many more.

One major initiative Tel Aviv University recently launched is the Momentum Fund, an investment fund for early-stage technologies that have great potential to solve real-world problems. Managed by Ramot, TAU’s technology transfer company, the $23.5 million fund’s investors include the giant Indian conglomerate, Tata, and the Singaporean government’s Temasek. Three more strategic growth projects are the Blavatnik Initiative, the Claire Maratier Estate and the Steve Tisch School of Film and Television, all of which will significantly boost TAU’s impact across the sciences, humanities and arts.

TAU has been globalizing its campus for some years now, but increasingly we are pinpointing specific areas for intensive joint cooperation. Water research with Mexico, food security with Africa, and nanoscience with China – these are a brief sampling of dozens of collaborations and TAU is developing many more. In all our efforts, the University is privileged to partner with like-minded supporters who believe in TAU’s relevance for national and global progress – and are dedicated to strengthening it.

Prof. Joseph Klafter
President
Tel Aviv University
Lay Leaders

Dr. h.c. Josef Buchmann, Dr. h.c. Stewart M. Colton, Mr. James Dubin, Prof. François Heilbronn, Dr. h.c. Raya Jaglom, Dr. h.c. Adolfo Smolarz, Dr. h.c. Melvin S. Taub

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Prof. Dina Prialnik
Vice Rector

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Mr. Robert Goldberg
Chairman Emeriti of the Board of Governors

Prof. Jacob A. Frenkel
Chairman of the Executive Council

Dr. Giora Yaron
Chairman of the Executive Council

Dr. h.c. Karl-Heinz Kipp
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Prof. Eyal Zisser
Dean of the Lector and Sally Entin Faculty of Humanities

Prof. Ron Harris
Dean of the Buchmann Faculty of Law

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Prof. Daniel Chamovitz
Dean of the George S. Wise Faculty of Life Sciences

Prof. Tammie Ronen
Dean of the Gershon H. Gordon Faculty of Social Sciences

Prof. Ehud Grossman
Dean of the Sackler Faculty of Medicine

Prof. Zvika Serper
Dean of the Yolanda and David Katz Faculty of the Arts

Prof. Yaron Oz
Dean of the Raymond and Beverly Sackler Faculty of Exact Sciences

Prof. Yoav Ariel
Dean of Students

Prof. Yaron Oz, Exact Sciences, Alexander von Humboldt and the Carl Friedrich von Siemens Award

Prof. Ariol Porat, Law, EMET Prize for Science, Art and Culture; member of the Israel Academy of Sciences and Humanities

Prof. Simcha Ronen, Management, Fellow of the International Association of Applied Psychology

Prof. Ronit Rubinfeld, Exact Sciences, ACM Fellows Award

Prof. Galla Sabar, Humanities, Certificate of Recognition for Tel Aviv residents who actively work for the welfare of residents from developing nations

Prof. (emer.) Leon Shidlovsky, Arts, Premio Nacional de Musica 2014

Prof. Yossi Shiloh, Medicine, Olav Thon Foundation Prize

Prof. Ran Spiegler, Social Sciences, Michael Bruno Memorial Award
New Projects

Academic Development
- Support for the Argentinean Friends Advanced Studies Program in Life Sciences – Latin America
- Support for the Israel and the Middle East Workshop – David Boeker and Ann Pecknspaugh, Becker Philanthropic Fund, USA
- Blavatnik President’s Faculty Recruitment Discretionary Fund – USA
- Support for the Minerva Humanities Center and Cohn Institute for the History and Philosophy of Science and Ideas – Bertram and Barbara Cohn, USA
- Support for the Institute for National Security Studies – Crown Family Foundation, USA
- Support for the Safar International MBA Program – Richard Eiman, USA
- Shalom Rosenfeld Institute for Media of the Jewish People – Tamar Gay, Israel
- Estate of Claire Maratier – France
- Supporting the Institute for National Security Studies – Stewart Resnick, USA
- The Weiss | Shaoul Fund for Visiting Scholars and Fellows – USA
- Support for the Institute for National Security Studies – Jeffrey Silverman, USA
- Support for the Institute for National Security Studies – Latin America
- Support for the TAU-UCSD Cosmology Collaborative Research Program – The Joan and Irwin Jacobs Fund, USA
- Research Fund for Prof. Dan Peer – Leonard Mark, USA
- Research Fund for Dr. Tal Dvir – Movie Foundation, USA
- Ruhama Rosenberg Chair in Jewish Studies – USA
- Raymond and Beverly Sackler Center for Computational Molecular and Materials Science in honor of President Joseph Naveh – USA
- Raymond and Beverly Sackler Fund for Convergence Research in the Biomedical, Physical and Engineering Sciences – USA
- Raya Strauss Center for Family Business Research – Israel
- George S. Wise Chair in Astronomy and Physics – USA
- George S. Wise Chair in Life Sciences – USA

Research
- Support for the Center for Renewable Energy – Tomer Amioz, Israel
- Support for Renewable Energy Research Equipment – Australian Friends of Tel Aviv University (Victoria)
- Blavatnik Center for Drug Discovery – USA
- Blavatnik Computer Science Research Fund – USA
- Blavatnik Interdisciplinary Cyber Research Center – USA
- William F. Cohen Nanotechnology Chronic Lymphocytic Leukemia Fund – USA
- Claudia and Ricardo Florenbaum Research Fund for Biochemical Visualization of Molecular Processes – Latin America
- Di Laudadio Family Laboratory for Photolithography – Ethel and Mauricio Di Laudadio, Latin America
- Support for the TAU-UCSD Cosmology Collaborative Research Program – The Joan and Irwin Jacobs Fund, USA
- Research Fund for Prof. Dan Peer – Leonard Mark, USA
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- George S. Wise Chair in Astronomy and Physics – USA
- George S. Wise Chair in Life Sciences – USA

Campus Development
- Erez Fleckser Classroom – Fleckser family, Israel
- Nathan, Anne, Kim and Julian Geller Accessible Campus Project at TAU – USA
- Classroom in Memory of Engineer Avraham (Romek) Halpern and Tziporah (Pina) Halpern – Hal-Dor Import & Wholesale of Steel Products Ltd., Israel
- Support for the Lorry I. Lokey Graduate Center at the TAU Business School – USA
- Mia and Mike Pinkas Accessible Learning Center and Fund – Latin America
- Support for the Rothstein-Willamowsky Post-Graduate Dental Clinics – Drs. Garry Rayant & Kathy Fields, USA
- Support for the Steinhardt Museum of Natural History and National Research Center – Michael H. Steinhardt, USA
- Zambian Jewish Community Public Health Wing – Zambia

Student Aid and Fellowships
- Erika and Moses Beisly Estate Scholarship Fund for Graduate Students of Medicine – Israel
- Blavatnik Student Film Production Fund – USA
- Boniya and Moshe Boroshek Estate Scholarship Fund for Students of Computer Science and High-Tech – Israel
- Crown Family Foundation Graduate Doctoral Fellowships in the Sciences – USA
- Fellowship Fund – Anonymous, Switzerland
- Scholarship Fund for Students of Computer Science and High-Tech – Israel
- Scholarship at the Eli Hurvitz Institute for Strategic Management – Zvi Metar, Israel
- Scholarship Fund – Mildred Niren Endowed Estate, Canada
- Doctoral Fellowship Fund in memory of Rabbi Dr. Ignac Papi – Liechtenstein
- Support for Operation Protective Edge Emergency Campaign Scholarship Fund for Reserve Combat Soldiers – Peamey Tikva Ltd. Charitable Foundation, Israel
- Marcelle and Tidore Philose Family Doctoral Fellowship for the Study of Neuroscience – France
- Florence Rosenberg Wise and Naomi Rosenberg Sarlin Scholarship Fund – USA
- Scholarship Fund for Needy Students with Outstanding Academic Promise – France
- Support for the Schülch Leader Scholarships – Seymour Schülch, Canada
- Dennis Schuman Estate Scholarship Fund – USA
- Support for Scholarships – Steven and Henryk Schwarz, Schwarz Foundation, USA
- Support for the Ruth and Allen Ziegler Student Services Division – Ruth Ziegler, USA
- Support for the Operation Protective Edge Emergency Campaign Scholarship Fund for Reserve Combat Soldiers – Generous donors from around the world

Community
- Sulamot Program in Al Qasum for Bedouin Arabs in the Negev – Ruth and Amos Wilnai, Israel

Listed: Projects of $100,000 and above, by alphabetical order within categories.
Interdisciplinary Research

Generosity across the Fields

- Blavatnik Initiative
  The Blavatnik Family Foundation, headed by TAU Honorary Doctor and Governor Len Blavatnik, USA, has launched the Blavatnik Initiative – a multi-year program committed to the advancement of interdisciplinary scientific research, discovery and development at TAU in five areas. A state-of-the-art core lab, the Blavatnik Center for Drug Discovery, will serve dozens of drug research groups at a critical stage in their research. The Blavatnik Computer Science Research Fund promotes research in high-impact areas that could contribute to Israel’s economic prosperity. The Blavatnik Interdisciplinary Cyber Research Center, which draws on TAU’s rich pool of cyber scholars and experts, supports research, position papers and the training of a new generation of cyber researchers and analysts; the Blavatnik Student Film Production Fund supports student filmmakers at TAU’s Steve Tisch School of Film and Television; and the Blavatnik President’s Faculty Recruitment Discretionary Fund helps TAU attract world-class faculty and students and faculty to the University.

- Major French bequest
  A bequest from the late Claire Maratier, made possibly through intensive and dedicated efforts by the French Friends of Tel Aviv University, will provide vital funding for the arts, sciences and refurbishment of facilities in the Humanities; support faculty recruitment, French culture studies in Exact Sciences, Life Sciences, Medicine and provide record high energy capacity up to 20 times higher than similarly sized ones being produced now. They can be used in neuro-stimulators, drug delivery chips, ear implants, micro-sensors and other devices. The research team has established a start-up, Honeycomb Battery Ltd., through TAU’s technology commercialization arm, Ramot.

- How the brain controls movement
  Dr. Jason Friedman (Health Professions) arrived at TAU after post-docs at Penn State, USA, in Kinesiology, and at Macquarie University, Australia, in Cognitive Science. He is involved in several collaborative research projects, studying how the brain controls movement, how movement interplays with decision-making, and how this can influence the design of computer-human interfaces. Together with Dr. Sharon Shaklai of TAU and Loewenstein Rehabilitation Hospital, he is studying finger movement in healthy children and in those with developmental disorders. By better understanding typical and atypical development of the amount of force exerted in movement, they aim to develop improved rehabilitation methods for kids with difficulties.

- The media and your politics
  At the new Media-User Interaction Lab, Dr. Shira Dvir-Gvisrsman (Social Sciences) will be studying how people engage with and process online information, in particular with regard to their political opinions. Dvir’s research will ask the question: Do people treat political information in a rational manner? The new lab’s equipment will track eye movements and capture facial expressions during natural web surfing, allowing analysis of what attracts people’s attention or elicits emotional reactions. The resulting data will reveal how the consumption of online information affects political behavior.

- Early Detection of Disease
  A unique lab has recently been established through collaboration between the Orthodontics Department of the Maurice and Gabriela Goldschleger School of Dental Medicine and the Dan David Laboratory for the Search and Study of Modern Humans at the Steinhardt Museum of Natural History. The new lab’s equipment is designed to explore the evolutionary aspects of the configuration of our teeth. Working out of the lab, Dr. Tal Dvir (Life Sciences) is integrating complex micro- and nano-electronics with engineered cardiac patches to treat heart attacks. Part of the growing biomedical field of electrorheологии, which uses implanted devices that modify bodily functions through electrical stimulation, the patch senses heart tissue functioning and intervenes when needed by providing electrical pulses or a controlled release of drugs. Other directions of Dvir’s research into cardiac treatment are being funded by the Israeli Science Foundation and the Moxie Foundation.

- Identifying oral cancer
  A research group led by chemists Dr. Tal Dvir (Life Sciences), both of the TAU Center for Renewable Energy and Center for Nanoscience and Nanotechnology, together with Prof. Menachem Nathan (Engineering), has developed a technology that enables fabrication of 3D micro-battery networks of 10,000-30,000 tiny energy-storing units connected in parallel. These novel batteries provide record high energy capacity up to 20 times higher than similarly sized ones being produced now. They can be used in neuro-stimulators, drug delivery chips, ear implants, micro-sensors and other devices. The research team has established a start-up, Honeycomb Battery Ltd., through TAU’s technology commercialization arm, Ramot.

- Taking research to heart
  Supported by a grant from the European Research Council, Dr. Tal Dvir (Life Sciences) is integrating complex micro- and nano-electronics with engineered cardiac patches to treat heart attacks. Part of the growing biomedical field of electrorheологии, which uses implanted devices that modify bodily functions through electrical stimulation, the patch senses heart tissue functioning and intervenes when needed by providing electrical pulses or a controlled release of drugs. Other directions of Dvir’s research into cardiac treatment are being funded by the Israeli Science Foundation and the Moxie Foundation.

The Brain and Decision-Making

- As decisive as a worm
  The long-held view that decision-making is essentially rational has been replaced with the understanding that people also decide irrationally. Dr. Dino Levy (Management) and Dr. Oded Rechavi (Life Sciences), both of the Sagol School of Neuroscience, have come together to study the process of decision-making in its most basic neurological form – in the genes of the roundworm. Among nature’s most primitive organisms, the roundworm nevertheless shares many of the same biological characteristics as humans. Discovering inconsistent choices by these worms would indicate biological basis for irrational behavior. The research partners believe that, by studying these organisms, they will be able to develop a more biologically based theory of decision-making.

- How the brain controls movement
  Dr. Jason Friedman (Health Professions) arrived at TAU after post-docs at Penn State, USA, in Kinesiology, and at Macquarie University, Australia, in Cognitive Science. He is involved in several collaborative research projects, studying how the brain controls movement, how movement interplays with decision-making, and how this can influence the design of computer-human interfaces. Together with Dr. Sharon Shaklai of TAU and Loewenstein Rehabilitation Hospital, he is studying finger movement in healthy children and in those with developmental disorders. By better understanding typical and atypical development of the amount of force exerted in movement, they aim to develop improved rehabilitation methods for kids with difficulties.

- Ancient teeth for modern treatment
  A unique lab has recently been established through collaboration between the Orthodontics Department of the Maurice and Gabriela Goldschleger School of Dental Medicine and the Dan David Laboratory for the Search and Study of Modern Humans at the Steinhardt Museum of Natural History. The new lab’s equipment is designed to explore the evolutionary aspects of the configuration of our teeth. Working out of the lab, Dr. Tal Dvir (Life Sciences) discovered a pathological occlusion, or defective bite, in a prehistoric skull, indicating the existence of cancer cells. This could lead to a simple tool for identifying cancer in an everyday clinical setting.

- Tiny Devices and Growing Fields
  A research group led by chemists Prof. Diana Goldnitsks and Prof. Emanuel Peled (Exact Sciences), both of the TAU Center for Renewable Energy and Center for Nanoscience and Nanotechnology, together with Prof. Menachem Nathan (Engineering), has developed a technology that enables fabrication of 3D micro-battery networks of 10,000-30,000 tiny energy-storing units connected in parallel. These novel batteries provide record high energy capacity up to 20 times higher than similarly sized ones being produced now. They can be used in neuro-stimulators, drug delivery chips, ear implants, micro-sensors and other devices. The research team has established a start-up, Honeycomb Battery Ltd., through TAU’s technology commercialization arm, Ramot.

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"Innovation is in Israelis' cultural genetics – instilled by the early pioneers who founded the state and made something out of nothing."
—Prof. Amir Sharon, faculty

• Setting up a new Minerva Center
Three faculty members from various departments at the George S. Wise Faculty of Life Sciences are receiving funding to establish a prestigious Minerva Center for Genome Evolution: Incumbent of the Gol Family Chair for Applied Microbiology Prof. Martin Kupiec (Microbiology and Biotechnology), Prof. Lilach Hadany (Molecular Biology and Plant Ecology), and Dr. Oded Rechavi (Neurobiology). The TAU team, in collaboration with Prof. Tzahi (Neurobiology), and Martin Kupiec (Microbiology and Biotechnology), Professor of Biology and Prof. Yaron Oz, Dean of the Raymond and Beverly Sackler Faculty of Exact Science Center led by Prof. Yaron Oz, Dean of the George S. Wise Faculty of Life Sciences are involved in data science in fields ranging from cyber security to medicine, from food security to e-commerce, and from brain science to ethics. Uniting these researchers under a single academic framework, the Center will build upon—and expand—TAU achievements and could have far-reaching impact on key issues facing the world today.

• Handling mountains of data
The amount of digital data we create could reach 4.4 trillion gigabytes—the equivalent of 6.6 stacks of computer tablets reaching from earth to the moon—by the year 2020. Now, in a bid to find efficient ways to manage and make sense of all this information, TAU has established the Data Science Center led by Prof. Yaron Oz, Dean of the Raymond and Beverly Sackler Faculty of Exact Sciences. Data science (or “Big Data”) aims to generate solutions for storing, mining, analyzing, sharing and securing huge amounts of information. Ten percent of TAU researchers across the campus are involved in data science in fields ranging from cyber security to medicine, from food security to e-commerce, and from brain science to ethics. Uniting these researchers under a single academic framework, the Center will build upon—and expand—TAU achievements and could have far-reaching impact on key issues facing the world today.

• Keeping plastics off the menu
Plastic waste, often taking the form of environmental steroids, is cause for growing concern. When these steroids enter the body via water pollutants, they act like estrogen hormones and may be related to breast and testicular cancer in humans, or feminization of wildlife. Steroid analysis has therefore become an important issue in analytical chemistry, medical diagnosis, pharmacetics and environmental applications. PhD candidate Keren Hakshur (Engineering) is working on producing a quick, simple, low cost and highly sensitive method for detecting environmental steroids. Combining nano- and optical technologies with molecular biology, she is aiming to develop an optical-based biosensor for the cost-effective monitoring of these harmful steroids.

• How should nations address their violent histories?
International experts recommend that aggrieved parties confront one another’s contested histories as a crucial step toward post-conflict reconciliation. Post-doctoral fellow Yifat Gutman (Social Sciences) is assessing the effectiveness of this strategy. Focusing on a new type of nongovernmental player called “memory activists,” she compared reconciliation processes in Central Europe and Israel. She found in both cases that although recommended reconciliation paradigms were influential in shaping the vocabulary and political claims of activists and national leaders, they could also be used to hinder, and not only advance, resolution of grievances.

• Exposing inequalities
Dr. Lilach Lurie (Social Sciences) studies connections between law, society and the labor market. Focusing on the impact of law on industrial relations and the pension market, she conducted an empirical study of collective agreements, demonstrating that labor unions fail to represent certain groups of workers such as the elderly or female employees. In another current study regarding the bylaws of pension funds, Lurie details the high risks involved in private pension schemes as opposed to public pensions offered by the government. By exposing inequalities, her studies present a major step toward correcting them.

• A new slant on history
The Israeli Forum for Environmental History, organized by Dr. Miri Shefer-Mossensohn (Humanities), Dr. David Schorr (Law) and doctoral candidate Yaron J. Balslev (Environmental Studies), brings together 98 senior scholars and PhD students from five Israeli universities. Its aim is to promote the emerging field of environmental history research in Israel. At monthly meetings, which will culminate in a first-of-its-kind annual conference, participants present and discuss studies covering a wide range of disciplines, from history of law, geography and architecture, to history of the Middle East and Europe. The TAU quarterly Zmanim will dedicate an entire issue in 2016 to environmental history—also an Israeli first. The forum is sponsored by the Porter School of Environmental Studies and the Zvi Yavetz School of Historical Studies.

• Business and the environment
SPREE is the flagship project of the new Innovations in Industrial Ecology Lab initiated by Dr. Vered Blass (Management). The lab was established as a collaboration between the Faculty of Management and the Porter School of Environmental Studies in response to growing interest in this multidisciplinary field. Funded by the EU 7th Framework Research Program, SPREE aims to help governments revolutionize the way everyday products and services are consumed and sold, by fostering sustainable development. The project examines options for transitioning to an economy that favors services over products in meeting consumer needs. Three models were developed to simulate application of various policy packages aimed at accelerating this transition.

• The best innovations are when you think to yourself ‘Wow, I can’t believe no one thought of this before.’
—Yael inbar, student

An interdisciplinary look at food
With over 7 billion mouths to feed globally, ensuring a secure supply of food is a burgeoning challenge for scientists and policymakers alike. The Manna Center Program for Food Security and Safety, headed by Prof. Nir Ohad (Life Sciences), is an interdisciplinary research and teaching program that brings together biologists, economists, political scientists, businesspeople and public health experts from around the world. It offers a new course cluster for Israeli and international MA and PhD students who wish to specialize in food security. The Program also established an outreach project for students from Vietnam in cooperation with the Arava regional council.
International Initiatives

Collaborations with North America

Scientific convergence

As part of its ongoing collaborations with the University of California, Berkeley, TAU launched the Raymond and Beverly Sackler Fund for Convergence Research in the Biomedical, Physical and Engineering Sciences. The fund, generously provided by TAU benefactors Raymond and Beverly Sackler, will promote cooperation between scientists at the two universities, providing support for four promising joint research projects each year. The aim is to facilitate a prestigious seed fund program for researchers with complementary research interests, harnessing the strengths of both institutions.

• TAU and Johns Hopkins get together on health
  Dr. Silvia Koton (Health Professions) and Prof. Joseph Coresh of Johns Hopkins University, together with a team of experts from several US universities, studied the incidence of stroke, a major cause of death in both Israel and the US, over the period 1997 to 2011 in the US. They found that while incidence among the over-65s has declined, there has been little progress in reducing risk of stroke among younger people. However, there was a drop in stroke-related deaths among the younger group, while mortality rates held firm in the over-65s. Plans are underway by Koton and Coresh to establish a new Johns Hopkins-Tel Aviv University program for researchers with complementary research interests, harnessing the strengths of both institutions.

• Canadian ties boost medical research
  The TAU Sackler Faculty of Medicine has entered into two new joint projects with Canadian universities.
  - The TAU-McGill Student and Post-Doctoral Fellow Exchange Collaborative Program is devoted to research into neurodevelopmental, neurodegenerative and neuropsychiatric diseases. The program is supported by the Eldee Foundation and the Bloomfield family of Montreal, Canada, and headed by Prof. Illana Gozes (Medicine), Head of the Adams Super-Center for Brain Studies, Prof. Karen Avraham, Vice Dean of Medicine, and Prof. Uri Ashery (Life Sciences), Head of the Sagol School of Neuroscience.
  - The Jeannie Tanenbaum Joint Program for Collaborative Research between TAU and the University of Toronto is focusing on neuroscience, developmental biology, human genetics, cancer, hematology and immunology, with the aim of combating disease. The program is headed by Prof. Karen Avraham, Dr. Michael Milyavsky and Prof. Shai Izraeli (all of Medicine).

Delving into Ever-Smaller Worlds

How heavy is an atom?

The research group of Prof. Uzi Kaldor (Exact Sciences) has developed methods for accurate prediction of properties of super-heavy elements, which are very difficult to measure since they exist in minute quantities and have short half-lives. Radioactive Astatine is an element with medical potential because it could serve as an ideal source for short-range radiation therapy. Lawrencium is another element of great scientific interest. Properties of these two elements were obtained for the first time by TAU researchers. This discovery, the new, more effective therapy will involve a minimally invasive implant for controlled release of the therapeutic substance.

Close Encounters of the Academic Kind

• A magnet for mathematicians
  The Mathematical Institute at Tel Aviv University has been launched this academic year, with funding from the Office of TAU President Prof. Joseph Klafter. The institute supports a variety of research-related activities at the School of Mathematical Sciences, including talks by visiting lecturers, workshops and travel abroad by research students. This year the Institute will hold a lecture series of several globally prominent mathematicians, including Prof. Henri Berestycki, École des hautes études en sciences sociales, Paris; Prof. Alex Furman, University of Illinois at Chicago; Prof. Sorin Popa, UCLA; and Prof. Van Vu, Yale University. It will also support several workshops to be held at TAU.

• Bridging rabbinic and academic studies
  Dr. Mazoz Kahana (Humanities) uniquely combines his background in ultra-orthodox rabbinical education with academic Jewish and legal studies toward the elucidation of rabbinic literature, law and legal culture within the social and intellectual contexts of European history. Renowned in his field, he was invited to join the Pinkasim Project conducted by scholars from seven countries aimed at uncovering Jewish communal minute books that survived the Holocaust. Focused on research into early modern Hebrew and German/Yiddish, the project’s goal is to analyze and digitize all of these surviving manuscripts and to deepen understanding of Jewish life in modern times.

• Medicine tailored to your DNA
  Out of 450 research proposals competing for major European funding, one of the 9 that were chosen was submitted by a group of EU-based researchers coordinated by TAU’s Dr. Yuval Ebenstein (Exact Sciences) and focused on personalized medicine. The 7-member team will base their work on a technology that reads information from individual DNA molecules, and each scientist will apply his or her particular expertise for extracting and using this information for clinical diagnostics. At TAU, a method is being developed for detecting damaged sites on DNA, as well as cancer at a very early stage, which could lead to treatment tailored to an individual’s own DNA. The research group was awarded €6 million by Horizon 2020, the EU Framework Program for Innovation and Research.

• Acquiring language
  Dr. Sara Ferman (Health Professions), is one of three Israeli representatives in COST ACTION (European Cooperation in Science & Technology), an international collaboration focused on developing interventions for children experiencing difficulties acquiring a first language. Ferman uses an artificial language to examine language learning among a range of populations varying in age, socioeconomic level and language impairment. Her finding that adults are superior to children in acquiring an artificial language does not support conventional wisdom that children generally have an advantage in language learning. Other parameters that may influence language achievement are being tested, with the aim of optimizing language rehabilitation programs.

Better therapy for visual impairment

The VISION project, initiated and coordinated by Prof. Arieh S. Solomon (Medicine), and funded by a large European grant, involves a consortium of 5 partners from Israel, Germany and Spain working to develop a new therapy for glaucoma and other eye diseases involving the death of vision-related nerve cells. Solomon’s team identified a protein (Sem3A) responsible for inducing neuron cell death, and demonstrated that an antibody acting against this protein inhibited further death of the relevant nerve cells. Building on this discovery, the new, more effective therapy will involve a minimally invasive implant for controlled release of the therapeutic substance.

“Innovation answers a need you didn’t even know you had.” —Rony Kahana, student
**Community**

**Reaching out to Children...**

- Enhancing the school experience
  The Komenyesh elementary school in Bnei Brak is attended by children from stressed environments. A project led by Dr. Orit Bart and Sara Gat (Health Professions), and backed by Tovanot B’Hinuch ("Insights into Education"), a group of educators and business leaders dedicated to assisting schools, provided these children with individual or group occupational therapy conducted by professionally supervised TAU students. Special activities aimed at improving children’s writing, play, motor and organizational skills included their working on a school newspaper and playing games with parents and siblings. The children’s academic and communication skills showed marked improvement, commensurate with teachers’ reported satisfaction with the project.

- Promoting reading among Israeli-Arab children
  Reading in Arabic is a challenge since the spoken language differs significantly from the written one. In an ongoing community program involving teachers and parents of Israeli and Arab children in the al-Fahem, adults are encouraged to read together with children. Prof. Dorit Aram (Education) is now evaluating this program with colleagues from other institutions, with the aim of creating a model that can be emulated by other Arab towns. Given the importance of book reading with young children, the program’s evaluation is ongoing and will be evaluated with colleagues from other Arab towns.

- Resident-driven change
  Following the lead of a US program that reduced child maltreatment while enhancing the positive influence of parents and the community, Dr. Carmit Katz (Social Work) adopted the program in Israel. She sent 125 students to a south Tel Aviv neighborhood, accompanied by a supervising social worker and research coordinators who evaluated the program’s effectiveness. Students worked together with residents to plan activities designed both to promote socializing among the diverse members of the neighborhood and to provide informal support for parents. Over 70 local residents were actively involved, and the local elementary school provided space for activities.

...and to the World

Members of the TAU chapter of Engineers Without Borders—Israel have been working on a project to supply a rural Tanzanian village with potable drinking water. In 2014, a rainwater harvesting system was installed at a regional secondary school in the village where it serves 400 students and staff. The system is capable of storing 48,000 liters of water for drinking and cooking. Following the TAU students’ further assessments of the needs of the community, the team’s plan now is to install an off-grid solar electricity system at the local clinic, which will dramatically improve the quality of medical services. The next phase, contingent on successful fundraising, is planned for implementation in October 2015.

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**Doctoral Student Breakthroughs**

- A new twist on nanomaterials
  PhD student Assaf Ben Moshe, advised by Head of the Raymond and Beverly Sackler School of Chemistry Prof. Gil Markovich (Exact Sciences), leads a collaborative research team that achieved a breakthrough. He succeeded in preparing the first nanocrystals of inorganic materials that are typically asymmetrical. Known as chiral nanomaterials, they took the form of twisted nanocrystals of Tellurium, a rare metal similar to tin. Recently published in *Nature Communications*, this work opens a new research direction in materials science, whereby new nanoscale structures with complex shapes and unique optical properties could be prepared in large quantities through simple chemical processes.

- Of genes, cells and viruses
  PhD student Ranen Aviner received the Rothschild Fellowship for his work in cell biology with Prof. Oroma Elroy-Stein (Life Sciences). He discovered a novel mechanism important to healthy cell growth that reduces protein synthesis rates in dividing cells, thereby allowing proper completion of their division into two identical daughter cells. Mutations affecting this mechanism can lead to aberrant cell division and development of cancer. Aviner also devised a technique for detecting and quantifying newly-synthesized proteins, providing insights into the dynamics of gene expression. Now, working with researchers from Stanford University, he is looking into virus-host interactions in human pathogenic viruses.

- Inspired by... or copied?
  Copyright law prohibits the creation of derivative works, or the making of artistic works based upon existing ones. This aspect of the law has often led to controversy. PhD candidate Omri Rachum-Twaig (Law), a Fellow at the Edmond J. Safra Center for Ethics, confronts this issue by delving into cognitive psychology and gene theory for an understanding of behavioral aspects of creativity, which he suggests must be considered by copyright law. He proposes a new model that would clearly differentiate between derivative works and mere reproductions. Among the remedies he suggests is a compulsory licensing scheme allowing authors to use preexisting works as a basis for their creations, with original authors obtaining a commensurate fee.

- Environment, sociology and politics
  PhD candidate Natalia Gutkowski (Environmental Studies), a Fellow at the Edmond J. Safra Center for Ethics, combined her environmental interests with her studies in sociology and anthropology in founding the Social-Environmental Lab at the Porter School of Environmental Studies. The lab investigates how society impacts upon the environment and vice versa. Exploring the influence of sustainable agricultural policy in Israel, and particularly its implications for the nation’s Arab citizens, her research sheds light on the political meanings of agriculture and landscape, and on possibilities for reconstructing State-citizen relations through a sustainability paradigm.

- Tracking the footsteps of... the ribosome
  PhD student Renana Sabi, a member of Dr. Tamir Tuller’s research group (Engineering) and a Fellow at the Edmond J. Safra Center for Bioinformatics, uses a computational approach to understand biological processes. Looking at how proteins are created, she is analyzing large-scale measurements of the movement of ribosomes—the molecules that synthesize proteins. Sabi and Tuller have identified protein parts that cause ribosome movement to stall. They have also demonstrated that these protein parts tend to be eliminated over time through natural processes. These findings contribute to our understanding of the evolution of genes and ribosomes, and open the door to biotechnological applications for protein engineering.

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"Why are Israelis so innovative? They are inherently argumentative and never accept anything as is.”

– Maayan Cohen, alumna
**Revealing More about Our Physical Universe**

- **Protons hog momentum in nuclei**
  
  Like couples swirling on the dance floor as bystanders look on, protons and neutrons that have briefly paired up in the nuclei have higher average momentum, leaving less for non-paired nucleons. Using data from experiments carried out at the Thomas Jefferson National Accelerator Facility in the USA, Prof. Elaizer Plasetsky (Exact Sciences), incumbent of the Wolfson Chair in Experimental Physics, and his students, Or Hen and Igor Kover, have shown for the first time that this phenomenon exists in all atomic nuclei, including those that have many more neutrons than protons. Implications of the findings for other systems, such as quarks in nucleons, atoms in cold gases and neutrons in neutron stars, are now being studied.

- **Shining a light on dark matter**
  
  More than 80% of the universe is made up of mysterious dark matter. We can neither see it nor measure it, but scientists know it is there due to the gravitational force it exerts. Dr. Tomer Volansky (Exact Sciences) is studying novel theories of dark matter and new technologies that will allow the discovery of its particle nature. Together with incumbent of the Raymond and Beverly Sackler Chair in Clusters and Nanoparticles Prof. Ori Cheshnovsky; physicist Prof. Abner Soffer (both of Exact Sciences), and others, he has initiated a groundbreaking project to develop a detector sensitive enough to measure dark matter. Going far beyond current capabilities, his research opens a new field of enquiry aimed at solving the mystery of these dark particles.

- **Riding a comet**
  
  Culminating 35 years of research, Prof. Akiva Bar-Nun (Exact Sciences) helped plan the European Space Agency’s Rosetta Mission to fly alongside a comet, continuously sample it for a year, and land a probe on its surface. Although the probe is now dormant, the Rosetta spacecraft has been successfully sampling gases emanating from the comet’s surface. At the TAU Comet Studies Laboratory, Prof. Bar-Nun, Dr. Diana Lauffer, and PhD student Adi Ninio Greenberg are analyzing initial findings, which include many firsts. If this comet is representative of those that hit primordial Earth, then its contribution to the liquid and gas make-up of our planet was rather minor, contrary to previous thought.

**Understanding Life, Human Development and Behavior**

- **Plants, genes and resilience**
  
  Sustainable food production is a major challenge for today’s plant biologists. To advance this field, a sophisticated growth chamber for plants called a phenomics chamber has been installed at the Molecular Biology & Ecology of Plants Department (Life Sciences). It will provide a tightly controlled environment allowing high precision phenotyping – the study of plants’ genetic function and performance. Furthermore, it will help improve understanding of gene function under environmental stress, leading to better tools for improvement of plant resilience in harsh environments.

- **Ancient clue to human development**
  
  The oldest human skull to be found outside of Africa, and that is directly related to modern man, has been discovered in a cave in Israel’s Western Galilee. According to Prof. Israel Hershkovitz, who heads the Dan David Laboratory for the Search and Study of Modern Humans at the Steinhardt Museum of Natural History and National Research Center, and Dr. Hila May (both of Medicine), this skull links ancient African and European populations, and supports evidence that modern humans moved from Africa through the Nile Valley into the Middle East some 60-70,000 years ago, later spreading into Eurasia. While in Israel it is likely that they encountered Neanderthals, with whom they coexisted for several thousand years and probably interbred, later carrying Neanderthal genes to other parts of the world. That makes Israel perhaps the earliest site of the human melting pot.
• Do children perceive robots as “alive”? Today’s children are surrounded by smart machines. Prof. David Mioduser (Education) has developed a robot-programming learning environment for schoolchildren to assess how they perceive these seemingly autonomously behaving machines. Findings of recent studies conducted in collaboration with former and current PhD students, Dr. Karen Precel, Asli Kuperman and Gonen Raveh, indicate that constructing and programming adaptive behaviors of devices leads children down the path from anthropomorphic to technological perceptions and language. Such learning environments, already implemented in kindergartens, are now being planned on a broader scale for elementary school children.

• How to decide Behavioral economics and psychological aspects of decision-making are new faculty recruit Dr. Ayala Arad’s (Management) areas of interest. In her research into how people reason and behave in complex competitive interactions with others, she found that they simplify complex situations to reach a decision. For example, when faced with numerous options, they group them into categories that involve fewer details to consider. Ayad proposes that this kind of reasoning is relevant to technological perceptions and language. Such learning environments, already implemented in kindergartens, are now being planned on a broader scale for elementary school children.

• Far-reaching effects of a tummy-bug Dr. Khitam Muhsen (Medicine) has been studying the bacterium Helicobacter pylori, which colonizes the stomach and causes chronic symptom-free gastritis in most infected people, with only a minority much later developing a disease such as peptic ulcer or gastric cancer. Dr. Muhsen found that the presence of this infection in children coincided with a high prevalence of anemia, as well as lower cognitive development. She also recently showed that children infected at age 1-5 display slower growth at school age. In another novel study, Dr. Muhsen is examining the involvement of H. pylori in diseases such as adult-onset diabetes and dementia. These studies are expected to impact global public health and clinical treatment strategies.

• Teaching doctors more than medicine Can bedside manner, interpersonal skills and humor be taught? Dr. Orit Karnieli-Miller (Medicine) set out to assess the effectiveness of a course for medical students that intended to do just that. Led by Dr. Arik Steinberger (Medicine), a dentist and a theater director, the course introduced concepts of empathy, verbal and non-verbal communication, and elements of theater such as improvisation and medical clowning. Dr. Karnieli-Miller then evaluated students’ behavior toward patients in a simulated medical encounter. Her study found that the course improved students’ interpersonal skills, attitudes toward use of humor and ability to apply it. The study was funded by a grant from The Magen David Adom Foundation.

• Memory on the silver screen As part of a research workshop entitled Presence and Absence of Memory and Trauma in Contemporary Israeli Cinema, Prof. Raz Yosef (Arts) explored the role of cinema in remembering and restaging past traumas and losses that were denied entry into the shared national past. He contends that current Israeli cinema reflects a radical discontinuity between history and memory, with many events becoming the private memories of specific groups within society rather than a collective memory. Wars, ethnic and sexual discrimination, and loss of identity through immigration all cast long shadows on Israel’s history, giving a melancholic air to contemporary Israeli cinema and opening old wounds in an attempt to bring them into the realm of historical national memory.

• The economics of the Israeli-Palestinian conflict While political, religious and sociological explanations of the conflict abound, little has been written about the economic aspects of the Israeli-Palestinian conflict. Dr. Sami Maaari (Social Sciences), in collaboration with an overseas colleague, seeks to shed light on the role that economic factors have played in escalating or alleviating the conflict. He has assembled a comprehensive dataset on Palestinian violence and attitudes toward the conflict over two decades. His findings indicate that economic shock due to reduced Palestinian trade with Israel coincided with higher levels of violence during the Second Intifada, while local employment within the Palestinian Authority seems to have had little effect on levels of violence against Israel. The one variable that was found to lead to reduced Palestinian grievances, lower levels of violence and less support for aggression against Israeli targets, was Palestinian employment inside Israel.

• Tunisian lawyers and the uprising Dr. Lena Salaymeh (Law), recently arrived from UC Berkeley where she completed a post-doc, investigates why and how Tunisian lawyers took a leading role in protecting citizens from government repression during the 2010-2011 Tunisian uprising. The lawyers, arguing that independence from the government was necessary for their professional autonomy and for safeguarding the rule of law in Tunisia, used their unique combination of legal resources and expertise to facilitate resistance to the abuse of power, particularly when the pretext of security was manipulated to expand that power. Tunisian lawyers have emerged in the aftermath of the uprising as government “watchdogs” who view themselves not as agents of the state’s legal system, but as agents of the rule of law.

• All in the family Family-owned businesses dominate the Israeli economy, but the phenomenon is seldom researched. In a collaboration between Ms. Raya Strauss of Israel’s family-owned food empire and the Faculty of Management, the Raya Strauss Center for Family Business Research has been established to close this gap. The center is jointly headed by Prof. Dan Weiss and Dr. Nava Michael-Tsabari, initiators of the project, who recently submitted the first doctorate in this field in Israel. In her research, Michael-Tsabari defines a new parameter, kin climate (KC), for measuring the extent to which a company or organization displays a family-like organizational structure. Her findings indicate that KC has a significant effect on company growth and success.

"The main reason for Israeli innovativeness is a strong higher education system.”
Prof. Sivan Toledo, faculty
Focus on technology
The Sofer International MBA (IMBA) Program has redesigned its curriculum to provide an attractive program for students interested in entrepreneurship and innovation. Program Head Dr. Iris Ginzburg and Academic Director Prof. Shai Danziger are working closely with Management Dean Prof. Moshe Zviran to integrate the IMBA with the School’s Hebrew-language MBA in Innovation, Technology and Entrepreneurship, a program founded by Zviran and Ginzburg six years ago. The goal is to leverage the strength of both programs to provide new opportunities and benefits for international and local students. These include Israel’s first pre-accelerator for student-driven ventures and professionally-focused partnerships in Hong Kong, France, and the US.

Concept to company
Delta Start-Up Studio, a self-defined “pre-accelerator,” is another pioneering program in which student accelerator programs help start-ups get off the ground, a pre-accelerator leads participants through the entire process of developing an idea and turning it into a viable business proposition. An accredited course in TAU’s IMBA program in Technology, Innovation and Entrepreneurship, Delta gives students the tools to devise business strategies and create polished presentations. The intensive program links academia with entrepreneurship and leads to well-defined start-ups with investor interest.

Arts and Culture

An honors program for art historians
The Art History Department has inaugurated a new undergraduate honors program for art historians for so or so of its most outstanding first-year students. They are being offered an enriched curriculum that bridges between scholarship and the museum and gallery scene. Operating since October 2014, the program is founded by Zviran and Ginzburg six years ago. The program was designed to give new city leaders practical knowledge as well as one-on-one guidance by seasoned municipal experts. Main issues addressed include management of the municipal budget, planning and construction, and general management skills.

Understanding disparities
The Sociology and Anthropology Department has initiated a new MA program designed to enrich students’ understanding of social and economic inequality, a research forte of the department. The new MA in Inequality and Distributional Justice, headed by Prof. Yossi Shavit, incumbent of the Weinberg Chair in Social Stratification and Inequality, and Prof. Sigal Alon (both of Social Sciences), will provide students with the analytical and research skills needed to study the causes and consequences of socioeconomic disparities. Graduates will be able to apply these skills in academia, in the public sector or in private sector organizations.

Accelerated PhD in Political Science
The Political Science Department opened a straight PhD program that will allow outstanding students to enroll in doctoral studies directly after completing their MA degrees. Aimed at training the next generation of scholars and teachers in the fields of political science and international relations, the prestigious 5-year program accepted 9 students in its first year. They are receiving fellowships together with travel grants for attending conferences, special programs and seminars at leading universities abroad.

Every city deserves the best mayor
The Department of Public Policy has positioned itself as the main go-to source for public servants at the highest echelons. Its Institute for Local Government, headed by former Interior Minister Ophir Pines Paz (Social Sciences), has developed a unique training program for newly elected mayors of Arab municipalities. The program was designed to give new city leaders practical knowledge as one-on-one guidance by seasoned municipal experts. Main issues addressed include management of the municipal budget, planning and construction, and general management skills.

The program was established with the cooperation of two partners: Injaz Center for the promotion of Arabic entrepreneurship and innovation, as well as one-on-one guidance by seasoned municipal experts. Main issues addressed include management of the municipal budget, planning and construction, and general management skills.
Providing That Extra Help

- Recognizing students who serve
  Over 1,000 TAU students were called up to serve in Operation Protective Edge during summer 2014. To help ensure the smooth continuation of their studies, TAU President Prof. Joseph Katzcer announced an emergency campaign for scholarships. TAU’s supporters in Israel and around the world rallied to the cause and donated the scholarships, which were allocated by the Celia, Henry and Gerald Burger Unit for Student Aid at the Ruth and Allen Ziegler Student Services Division. The Psychological Services Unit at the Ziegler Division was also ready to respond, helping students who served to deal with the impact of their experience. Thanks again to donor support, every student who sought help received it.

- Walking Together mentoring project
  Freshmen students arriving at a large university can find the experience rather daunting. To ease their introduction to a new physical, academic and social environment, the Unit for Student Advancement at the Ziegler Division initiated a project in which first-year students are matched up with seasoned upperclassmen who walk them around the campus and familiarize them with the university. Participating first-year students have indicated that this friendly introduction makes all the difference to their feeling confident, at home, no longer alone and able to dive into their studies.

- Ramping up accessibility on campus
  Two major projects aimed at making life easier for students with disabilities were recently established. The Nathan, Anne, Kim and Julian Geller Accessible Campus Project is carrying out sweeping improvements ranging from wheelchair lifts, ramps and handrails at dozens of buildings, to a campus-wide “Step-Hear” navigation system for the blind and visually-impaired. The Mia and Mile Pinkas Accessible Learning Center, a new physical facility to be located at the Soursay Central Library, will provide space for hearing- and vision-impaired students to study and collaborate on assignments using specialized, state-of-the-art computer equipment. The accompanying Mia and Mile Pinkas Accessible Learning Fund will provide scholarships and essential services to students with disabilities on campus, thereby ensuring they have every opportunity to successfully complete their degrees.
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