

RAMOT | TAU *innovations news*

A Note from our CEO



Tel Aviv University (TAU) is the single largest source of innovation in the state of Israel. We are proud to report that Ramot's technology-transfer activities on behalf of the university have led to it being ranked # 1 in Israel and # 29 among the TOP 50 Universities PCT (international patent application) filers for 2014

Through Ramot, TAU inventions have been granted proportionately more US patents than those of US universities of similar size (25-35K students) that work with AUTM tech transfer managers (Association of University Technology Managers). Furthermore, the ratio of new invention disclosures to US-issued patents is considerably higher at TAU with 1:2 versus almost 1:5 for US universities.

This continuous increase in innovation lays the foundation for successful commercialization. Ramot has made significant progress in 2014 in every area of its activity, in its continuing mission to successfully foster, initiate, lead and manage the transfer of new technologies from the laboratory to the marketplace and to support our researchers' productivity. During 2014-2015, Ramot funded more than 15 unique technologies through its different value enhancement programs, moving promising innovations from basic science to proof of concept, increasing the prospects for successful commercialization. A unique venture fund has been established to support TAU's applied research and to bridge the gap between academic work and marketable innovation: the TAU Innovation Momentum Fund. Based on milestones, the fund invests up to a million dollars in promising technologies in a wide range of fields, including pharmaceuticals and health care, high-tech and the physical sciences. We closed the fund in November 2014 with an oversubscribed amount of \$23.6 million, after managing to bring [Temasek](#) in as the second lead investor, following Tata, each company having committed \$5 million. Two rounds of investment have been closed and 12 promising innovations approved for funding, with a total budget of \$3.6M which, based on successfully reaching milestones, can grow to a total of \$10.2M. The Momentum Fund will commence its third round of investment selection on July 1, 2015! Calling all researchers! If you think you have the next big thing... bring it on :-).

With approximately 30 licensing transactions every year and more than 40 new companies founded based on TAU technology, we continue to serve our scientific community in the quest for new promising innovations.

Technology spotlight: Unispectral

The revolutionizing Smart Image Sensor – SIS - Unispectral

UNISPECTRAL



Industry collaborations –

[Kadimastem to collaborate with Professor Shimon Efrat of Tel Aviv University, to accelerate the development of diabetes cell therapy](#)

Under the agreement, Kadimastem will conduct joint research with Prof. Shimon Efrat in the field of cell therapy for diabetes, based on technology developed by Kadimastem, and the extensive experience accumulated by Prof. Efrat and his TAU research team.

[Click here to read more.](#)

[OCS grants](#)

The Office of the Chief Scientist [OCS] at the Ministry of Economy is charged with executing government policy for support of industrial R&D. Ramot works closely with the OCS to assist in the development of TAU technology in collaboration with local companies.

Via Ramot's services, Tel Aviv University leads the number of granted KAMIN programs (Promotion of Selected Applied Research) with an annual average of approximately 12 approved projects, and funding of approximately 400,000 NIS each.

Research Services

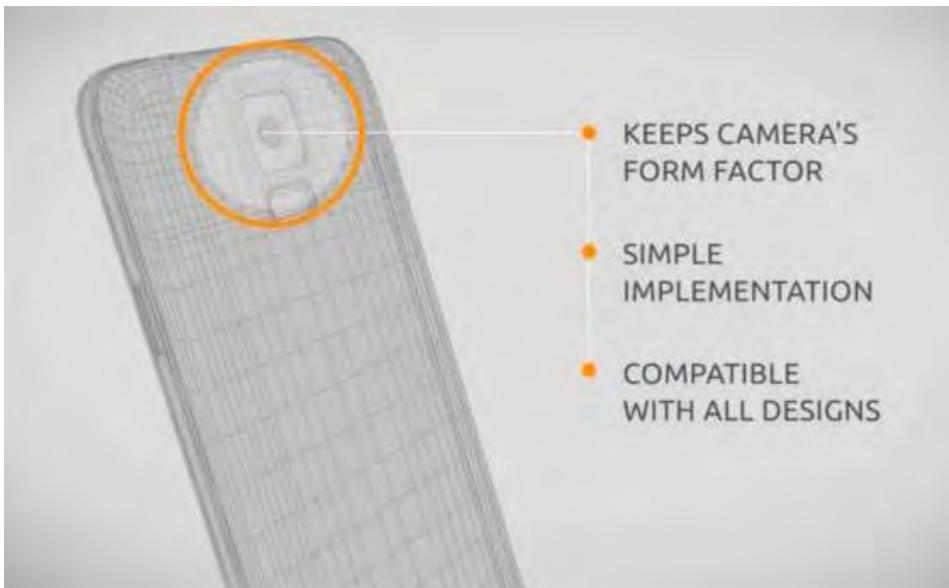


TEVA Pharmaceutical Industries is collaborating with Prof. Gerardo Lederkremer's lab in the Department of Cell Research & Immunology, Faculty of Life Sciences and the Sagol School of Neurosciences



TEVA Pharmaceutical Industries is collaborating with the laboratory of Prof. Gerardo Lederkremer in researching the mechanism of action of pridopidine, a first of its kind drug currently in clinical trials for therapy of Huntington's disease.

Existing treatments are available to help manage the symptoms of Huntington's disease, but treatments cannot prevent the physical, mental and behavioral decline associated with the condition. There is a significant unmet medical need for effective new treatments with minimal side effects.



A leading project, funded by the Momentum Fund, is the Smart Image Sensor (SIS). The project's principal investigator is Prof. David Mendlovic.

The technology aims to revolutionize mobile phone cameras by significantly improving their sensitivity and resolution, and adding hyperspectral detection capabilities.

The Bayer color filter array, used by most cameras, hinders optimal image quality. The developed SIS component will replace it with a game-changing component and complementary image processing core. SIS is a clear-aperture tunable spectral filter, compatible with all types of camera modules (mobile phone to full scale professional cameras) and standard active alignment procedures. The image processing core is optimized for heterogeneous computing. SIS will fit in the same form factor used today by mobile cameras and will keep the same camera cost. SIS will also revolutionize the hyperspectral imaging market by enabling its implementation in the same mobile camera module.

Key SIS advantages vs. Bayer include:

- At least 2 EV better
- Improved low light performance
- Better dynamic range
- Hyperspectral capabilities
- 2-4x resolution
- Better and more flexible color detection
- Flexible exposure schemes
- Image stabilization



Our team presented the new Unispectral technology at the Mobile World Congress held in Barcelona in March 2015.

[Click Here to watch the Technology movie](#)

Industry Spotlight

Motti Bazar and Prof. Gil Markovich explain:

Trends in the field of ITO replacements



The laboratory of Professor Amit Gefen in the Department of Biomedical Engineering, The Iby and Aladar Fleischman Faculty of Engineering is closely collaborating with ROHO, Inc.



ROHO provides products and support worldwide to individuals who seek tissue protection and pressure ulcer prevention, positioning and comfort solutions. The collaboration, which on ROHO's side is led by Ms. Kara Kopplin, Senior Director of Research and Efficacy, is utilizing computational modeling and simulations in order to determine the efficacy of support surface technologies in protecting against pressure ulcers

The fruitful research collaboration between Prof. Gefen, at TAU, and ROHO over the last 3 years has added substantially to the body of evidence characterizing the critical characteristics of effective wheelchair cushion designs.

Specifically, the research provided the scientific evidence that the ROHO air cell technology minimizes internal tissue deformations, and hence, reduces the risks inherent to the individual **which** result from extended sitting. The research outcomes, which significantly pushed the field of pressure ulcer protection forward, were reported in multiple journal articles in the relevant bioengineering and medical literature, and in many invited talks and conference presentations delivered by Prof. Gefen all over the world.



Compugen is working with the TAU Veterinary Service Center and the university labs.

Compugen is advancing a therapeutic pipeline consisting mainly of early-stage immunology programs. Compugen is working with Prof. Dan Frenkel of the Department of Neurobiology, Faculty of Life Sciences, Prof. Ariel Munitz of the Department of Human Microbiology, Sackler School of Medicine and Prof. Neta Erez of the Department of Pathology, Sackler School of Medicine, on several services projects.

Compugen is a leading drug predictive discovery company focused on monoclonal antibodies and therapeutic proteins to address important unmet needs in the fields of oncology and immunology. The company utilizes a broad and continuously growing integrated



ITO (Indium Tin Oxide) is widely used as the material for transparent electrodes in a diverse range of electronic devices, including display panels (LCD, Plasma, OLED), touch panels, e-paper, and solar cells.

ITO is a ceramic material, processed using vacuum deposition at high temperatures, making production expensive. Today's market trends move towards large and flexible displays. Utilizing ITO deposition technology is far from ideal in several respects:

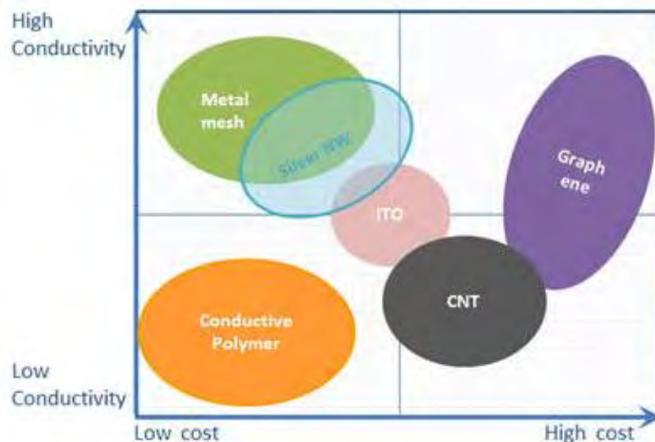
- For flexible/curved screens that require thin plastic substrates, electrical and optical performance diminishes significantly as the substrate materials limit the ITO deposition temperature
- ITO cannot withstand repeated bending or rolling as it is brittle and prone to cracking, limiting truly flexible devices
- Sustainability and price concerns. Indium is a rare, volatile, and geopolitically sensitive material (most of the world's indium is a byproduct of zinc, mined in China). According to Indium Corp., commissioning a new mine to produce zinc and indium takes seven years, and a sudden increase in demand is always followed by a period of shortage, coupled with high prices

To meet the above shortcomings, an alternate transparent conducting material is not only desirable, but a necessity. Several new conductive materials are poised to take over and enable exciting new devices.

One alternative material is graphene, a two-dimensional sheet of carbon that is a single atom thick with excellent strength, flexibility, transparency, and electrical conductivity. However, its production as high quality sheet is expensive and difficult to up-scale, and therefore is not expected to take a significant market share from ITO.

Other options of using carbon nanotube (CNT) films, conductive polymer films, or combinations thereof, could not provide high enough conductivity to be seriously considered as ITO alternative.

Roll-to-roll metal mesh technology offers another ITO alternative as low resistance can be achieved even on plastic substrates. The widespread adoption of this technology is dependent on making metal lines finer, to make them invisible and eliminate visual interferences. Metal meshes can be printed with specific patterns, which would again be expensive, but a lower cost option is emerging these days- random meshes of metal nanowires or nanoparticle networks, usually made of silver. In particular, random silver nanowire networks are a promising prospect. A percolated network of single crystal silver nanowires results in highly conductive layers with good transparency and flexibility at a lower cost than ITO. However, these nanowires are typically >50 nm wide, which causes some light scattering, rendering some haze to the nanowire based coatings. In addition, they are difficult to pattern, as done with ITO. It's difficult to say at this point to what extent metal meshes could serve as the ITO replacement of choice but one can say with confidence that consumers will be getting a product with better performance and endurance characteristics at a likely lower price.



infrastructure of proprietary scientific understandings and predictive platforms, algorithms, machine learning systems and other computational biology capabilities for the in silico (by computer) prediction and selection of novel drug target candidates, which are then advanced in its Pipeline Program.

Open Call – Momentum Fund

We are happy to share with you the Momentum Fund #3 call for proposals.

Please see attached Call for Proposals (CFP) forms to apply for the next round of the Momentum Fund. This is an opportunity for you to make an impact on industry through the tight and extensive support of the Momentum Fund. Just do it!

The objective is to develop your Promising Innovation and bring it to an advanced stage in which its commercialization value will be maximized, with greater success probability. Proposals that will meet the criteria will be presented to a group of industry experts (see attached the composition of the different committees)

We would appreciate receiving your proposal by July 31st 2015, as specified in the attached CFP and submission form.

Please do not hesitate to contact either Dr. Miriam Mangelus, Director of HealthCare technologies (miriam.mangelus@ramot.org) or Mr. Motti Bazar, Director of HighTech technologies (motti.bazar@ramot.org) or your Business Development officer for any clarifications.



[Call For Proposals- July 2015](#)



[MF Application Template](#)