# ISRAEL HIGH-TECH & INVESTMENT REPORT

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Israel's greatest concern is the rapidly approaching ascendancy into the nuclear energy club. For a number of years the Iranians have boasted that their rockets can reach any place in Israel.

They have said that their rockets have a 1,500 mile range. Israel has often said that it will destroy the Iranian nuclear facilities. However, this is not likely as they are buried deep underground, and Israel does not posses the "b;ockbuster" bombs. The United States possesses the deep penetration bombs but as yet, has not supplied them to Israel.

On the more positive side Israel and the United States share information about Iran and in case of an attack they would coordinate such activities.

Israel has focused its efforts on anti-missile defense systems. The Iron Dome missile interceptor has been claimed to possess 84% accuracy. The recently successful launch of the Arrow anti-missile system is an addition to the arsenal.

Yet any discussion of foreign policy issues con tinues to place Iran at the top of the list.
It is more than likely that during Presdent Obama's recent visit to Israel positions were coordinated.

**Israeli scientists help develop breath test to sniff out stomach cancer**

The breath test, using 'electronic nose' technology was 90 percent accurate in diagnosing cancer and distinguishing it from other digestive tract ailments.

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**Israeli scientists find possible link between cellphone use, thyroid cancer**

A simple breath test can successfully diagnose stomach cancer and distinguish cancer from other complications in the digestive system, scientists from Israel, China and Latvia have found.

According to the scientists, the test was 90 percent accurate in differentiating cancers from other stomach ailments in 130 patients.

The breath test is expected to simplify the process of diagnosing stomach cancer, considered one of the most deadly types of the disease, and it could one day replace gastroscopy, in which a flexible tube equipped with a camera is inserted from the mouth into the upper digestive tract (stomach and duodenum) in a more invasive procedure that some patients find off-putting.

The breath test is based on artificial or "electronic nose" technology, in which sensors "sniff out" the chemical compounds of stomach cancer or other diseases. Molecules unique to cancer patients rise up from the stomach through the esophagus and are exhaled into the apparatus. Internal sensors that identify the chemical compounds are connected to another unit that analyzes them by means of an algorithm.

The initial trial of the breath test examined 130 Chinese patients who complained of digestive issues. Three-quarters of the samples were used to help program the apparatus, so that it could successfully identify tumors. After that, five chemicals were identified that point to cancer in the patient as opposed to other digestive system ailments.

Then, the remaining one-quarter of samples were sent to Israel for testing and the researchers did not know from which subjects they were taken. They found that 90 percent of the time the test accurately identified whether the subject suffered from stomach cancer or other complications in the digestive system, such as an ulcer or the bacterium Helicobacter pylori. The test also revealed 94 percent accuracy in determining whether the cancer was in an early or advanced stage, and 77 percent accuracy in distinguishing between ulcers and less serious complications in the digestive system.

The research team was headed by Prof. Hosam Haick of the chemical engineering faculty at the Technion in Haifa and included researchers from the Anhei Province University Hospital in China and the University of Latvia. The team published its findings in The British Journal of Cancer, their findings have already been touted as a breakthrough in the diagnosis of digestive system complications.

In Israel 600 patients per year are diagnosed with stomach cancer. Only one in five of those is diagnosed at an early stage, when surgery to remove the tumor is still possible.

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Previous studies using the "artificial nose" have proven its ability to identify cancer of the urinary tract.

**Allscripts acquires dbMotion for $235m**

Healthcare software developer dbMotion Ltd. has been acquired by Allscripts Healthcare Solutions Inc. (Nasdaq: MDRX) for $235 million in cash and shares, the companies announced. Allscripts will pay $145 million in cash, $50 million of stock and $40 million in cash via a note payable within 18 months.

Allscripts is dbMotion's distributor. The companies initiated a strategic partnership in 2009 and Allscripts made an equity investment in dbMotion in 2011. dbMotion technology is a key component of the Allscripts Connected Community of Health. 370 hospitals and 2,800 clinics around the world currently use dbMotion technology.

Founded in 2004, dbMotion is a pioneer in computerized healthcare information and sharing systems. The Hod Hasharon-based company has tens of millions of dollars in annual turnover and 110 employees at its headquarters and technology centers in Ra'anana and Omer, Israel..

dbMotion provides a strategic platform for care coordination and population health management that integrates discrete patient data from diverse care settings, regardless of IT supplier, into a single patient record. It provides a longitudinal clinical data repository with semantically normalized patient data, point of care tools, a physician portal, population tools and an analytics gateway. This reduces the cost of care delivery and enables better physician-to-physician care coordination.

"We share Allscripts' vision to create an open, EHR-neutral, connected community of health," said dbMotion chairman and CEO Yuval Ofek. "We look forward to accelerating our mission to impact industry-wide interoperability and to deliver solutions that support new value-based payment models and improve the health of populations."

dbMotion has raised $50 million from Pitango Venture Capital, Gemini Israel Funds, and Vertex Venture Capital and from the University of Pittsburgh Medical Center.

Pitango managing general partner Rami Beracha told "Globes", "dbMotion is at an all-time high by every measure: sales, strategic agreements, team, and management."

**Israel is world's largest exporter of drones**

An Israeli soldier sits in an office chair in an air-conditioned metal chamber staring at two screens side by side. One shows a map with a moving dot. The other displays a video feed. Next to the soldier are three more identical stations.

The soldier isn't an air traffic controller but a pilot, and his aircraft is called an unmanned aerial system, more commonly known as a drone.

Welcome to the next generation of the Israeli Air Force.

Israel has relied on superior air capability to maintain a military edge in the Middle East, and its pilots are among the most respected soldiers in the county.

Now Israel's drone industry is booming, and experts predict that within decades, manned flight largely will be a thing of the past – especially in risky combat missions. During Israel's Pillar of Defense operation in Gaza last year, Israeli drones reportedly played a key role on the battlefield.

"Already today we see that the technology can work faster and better than our five senses, which are limited," Tzvi Kalron, a marketing manager for Israel Aerospace Industries said during a recent tour of an Israeli drone facility. "When you take away the human factor in battle and send tools that know how to do it better, it's easier."

With two large drone manufacturers -- Israel Aerospace Industries, a government company, and Elbit Systems -- Israel is the world's second-largest producer of drones, behind the United States, and the world's largest exporter of drones.

IAI began manufacturing drones in 1974, employs 1,000 people in its drone division and sells about $400 million worth of drones per year. The company exports to 49 countries, including NATO allies fighting in Afghanistan, such as Canada and Australia. The client list also reportedly includes some U.S. rivals, such as Russia, and developing countries like Nigeria.

About one-fifth of IAI's drones stay in Israel. They range from the 5-ton Heron TP, which can fly as high as 45,000 feet and stay in the air for 52 hours, to the handheld Mosquito micro-drone, which weighs less than a pound and travels nearly a mile. The Heron looks like an oversized, gray remote-control airplane, with a radar sticking out of its top and, of course, no space for a pilot.

Along with Air Force drones, the Israel Defense Forces plans to incorporate drones in infantry units. Soldiers may carry a disassembled mini-drone in two backpacks and, when patrolling cities, assemble the drone, launch it by slingshot and monitor it by remote control. The Ghost, as this drone is known, weighs nine pounds and can help the unit eliminate blind spots and, according to IDF spokesman Eytan Buchman, overcome the "fog of war."

"You can't see around the corner, you don't know what's on the other side of the hill," Buchman said. "It's definitely helpful when you're facing guerrilla opponents and rely heavily on the element of surprise."

He added that drones help save civilian lives by identifying civilians near a bomb's target and helping reroute the bomb to avoid them.

The Ghost's only protruding feature is its most expensive part: a small, round camera that sticks out of the drone's underbelly. To protect the camera, the Ghost flips upside-down before it lands.

Kalron said IAI hopes to expand its drone options in the coming years, developing stealth drones that are harder to see and hear, and working on a micro-drone with wings that flap like a butterfly -- a concept known as biomimicry. IAI also is expanding drones' civilian uses, like surveillance of large crowds and stadiums.

IAI's drones conduct surveillance, take photographs, and record audio and video, according to Kalron. He would not discuss the drones' combat capabilities; IAI's website includes the payload limits for drones.

Drone expert Arie Egozi of the online publication Israel Homeland Security told JTA that "from a technological standpoint, every drone" can shoot missiles. "You put bombs under the wings and it shoots them," Egozi said.

Some critics argue that the use of drones raises serious moral and legal problems. The debate has been particularly heated on the American use of unmanned vehicles for targeted killings in Afghanistan and Pakistan.
While drones are not without their Israeli critics, they have provoked far less controversy here

than in the United States. For many Israelis, a future where planes fly unmanned and pilots are at less risk of death or capture is a welcome development.

"If you can take the pilots out of danger, of course it's better," said Uri Aviv, a civilian flight instructor who spent 15 years in the Israeli Air Force. "The moral question is about hitting the target, not the type of weapon. It doesn't matter if you use a cannon, a tank, a plane or a drone. A pilot can't see who he's hitting -- it's the same thing with a drone."

The biggest concern raised by drones, says Hebrew University philosophy professor Moshe Halbertal, is that their pinpoint accuracy raises the bar for the soldiers operating them. Freed from the stress and uncertainty of flying a plane, Halbertal said, soldiers must take more time to "identify who is a legitimate target" and review the decision before launching a strike.

Halbertal said he doubts that "those who operate drones will be much quicker in using weapons" than traditional pilots.

Egozi said the bigger question for Israel is about the efficacy of exporting to countries such as Russia, which has provided technology to Israeli adversaries like Iran and Syria. Israel's agreements with Russia have required pledges that Russia not sell certain missile technology to Iran.

Every IAI export deal must receive Israeli Defense Ministry approval before being finalized, according to Kalron.

He said he looks forward to a day when 95 percent of army aviation is unmanned and the Israeli Air Force is not needed.

"In 20 or 30 years they'll fly drones on commercial flights," Kalron said. "It's a trend that's developing quickly. Technology is superior than all human abilities."

Israel's Fourth International Conference on Drylands, Deserts and Desertification drew more than 500 participants from 60 countries.
Nearly 47 percent of the earth's land area is drylands, and this percentage is growing due to poor farming practices, deforestation, changes in weather patterns and climate change. How can the world's leaders and scientists deal with the planet's looming, terrifying environmental crises?

The concept of "zero net land degradation" – restoring as much land as has been impoverished – is an approach that was discussed by international experts at the fourth biannual International Conference on Drylands, Deserts and Desertification (DDD), held at the Sde Boker campus of Ben-Gurion University of the Negev in November.

The concept was introduced and approved last June at the major United Nations global climate summit, the Rio+20 Conference on Sustainable Development, in Brazil.

The UN Convention to Combat Desertification (UNCCD), one of the Israeli conference's sponsors, has a goal of achieving zero net land degradation by 2030.

One of the major results of desertification and land degradation in general is hunger and poverty, explained Luc Gnacadja, executive secretary of UNCCD, speaking on the first day of the conference.

"Land degradation is one of the major causes of food insecurity," he stated. "The concept of 'zero-net land degradation' provides the opportunity to frame land and soil degradation as global issues and to ensure that sustainable land management and restoration are reflected

everywhere at every scale. Policy action should build and capitalize on grassroots-level success stories on land restoration."

**'The orphan of global environmental challenges'**

"The desert is one of the places least affected by desertification on Earth," explained Prof. Uriel Safriel of Hebrew University and BGU's Blaustein Institutes for Desert Research. "We have to look at areas that are not desert and be careful not to make them desert."

"We admit that it is difficult to achieve zero net land degradation," continued Safriel, who heads Israel's UNESCO Man and Biosphere program. "Not only do people need to reduce the rate at which land is being degraded every year, but they also need to offset the amount that has already been degraded by restoring now unusable land."

Desertification has for a long time been "the orphan of global environmental challenges," says BGU's Blaustein Institutes for Desert Research Prof. Alon Tal, one of Israel's leading environmentalists, and co-chair of the event.

"Unlike climate change and biodiversity, which have hundreds of international gatherings every year, unfortunately people just don't deal with desertification much. For too long the world has seen this as a problem of Africa and Asia and one that doesn't affect all of us," states Tal.

Papers delivered at the conference covered topics ranging from reforestation of croplands, to satellite remote sensing research on soil, to ecologically appropriate desert architecture. There was even a session with Jordanian, Palestinian and Israeli researchers on conflict resolution through the creation of environmental "peace parks."

Attendees had a choice of eight-day trips, which included desert architecture in the Negev, forestation projects in drylands, eco-tourism in the desert milieu, agriculture in the Dead Sea area, mine rehabilitation in the Ramon Crater and the National Solar Center at Sde Boker.

'Israel is leading the way'

DDD conferences have earned global distinction as the only such interdisciplinary gatherings in the world. This year's event drew more than 500 participants from 60 countries.

The delegates included some of the world's top researchers, government officials, activists and members of international development aid agencies, who spent four days exploring theoretical and practical ways of combating the ever-increasing threat of desertification on formerly fertile lands, and living sustainably in the drylands.

The conference hosted a delegation of Italian researchers who, together with Israeli scientists, are carrying out a range of research initiatives such as an agricultural development project in Senegal to eradicate hunger by providing farmers with technological know-how.

"Israel is a fascinating place to be, to learn about what they're doing in terms of water management and environmental issues and trans-boundary water issues," says Megdal, a frequent visitor to Israel and other Middle Eastern countries. "Israel is leading the way in water resources and management from some very specific areas – for example, desalination of brackish ground water, not only sea water, and also efficient use of water in agriculture."

In the opening plenum, prominent American ecologist and demographer Prof. Paul Ehrlich of Stanford University declared that Israel, "as one of the most scientifically advanced countries, can play a major role in bringing all of these problems to global attention. But its great

experience in combating one major element in the deadly nexus - land degradation, especially desertification - gives it an ethical duty to not only help other nations to prevent and reverse the damage, but also to be sure it deals properly with relevant local and regional aspects."
Is your snoring keeping your mate up at night? An Israeli app monitors and records your nocturnal noises for medical analysis.

If Avshalom Ben-Zoor looks like he's had a good night's sleep, it may be due to his Snoring U app.

Snoring can rattle the house and wake up your spouse. When it's really bad, it can even break up marriages. Now it's possible to download an app from Israel for your iPhone or Android to help you solve your marital woes.

At $5, Snoring U is a little sleep lab rolled up inside your iPhone, tablet or Android device. It was built by three Israeli entrepreneurs who believe that knowing you have a snoring problem is the first step to getting it treated.

Snoring U is a simple download seeking to change your nighttime habits for the better.

Sleeping U gets turned on at your bedside before you go to sleep and it will record and monitor all the noises made during a regular night's sleep. It can identify snoring, wheezing and coughing, and actually record the sounds of snoring patterns as they progress through the night. You can program the application to send you a "nudge" by way of a battery vibration or sound alarm chosen by you.

According to Avshalom Ben-Zoor, CEO of Personal Technologies-Health Monitoring, the developers of Snoring U, about 80 percent of all people who snore are completely in denial.

"Snorers don't hear themselves. And yes, I am a snorer and denied it as well — until I heard myself," admits Ben-Zoor.

This straightforward tool in effect functions like a small, but powerful sleep lab, which can provide data readouts for sleep diagnosticians, he says.

A Snoring U analysis

"I believe all sleep disorders are treatable," says Ben-Zoor. "We are that first step."

Sometimes snoring may be cured by changing sleep positions, buying a new pillow or, in some cases, surgery.

Although Snoring U is not a medical device, it was built in consultation with a leading Israel sleep and internal pulmonary medicine specialist, Dr. Naveh Tov. The others on the creative team were Ben-Zoor and Ilan Aisic. At least two of them are admitted snorers and together they aim to help people worldwide sleep better.

Snoring in Chinese or Japanese?
In fact, the initial idea came to Aisic one night, when -- like many nights before -- his wife woke up several times asking him to shift positions to stop his snoring. The computer engineer took his idea to his partners and the company was founded by the beginning of 2012.

The company counts 100,000 downloads to date, and some users have reported getting better sleep because of the app, says Ben-Zoor. All these download have come without any dedicated money in advertising, but the founders are hoping for a $2 million investment to help market their solution.

The program is available with support in multiple languages in addition to English, including Japanese, Chinese, Korean, Spanish, Italian, Hebrew, Russian and French.

Sleeping U is a second application that is available for download for free. It has the same basic functions as Snoring U, including the ability to record and play back your snores, but the Sleeping U version won't "nudge" you awake at night when your snoring gets out of control.

Health benefits accompany early treatment

Besides the irritation factor, snoring can be a symptom of more serious medical problems, such as sleep apnea, which can have severe health consequences including a higher risk for heart disease and accidents.

Physician colleagues of Dr. Tov who have seen the app are therefore excited about it. "The feedback has been great," Ben-Zoor says. "The response has been extremely positive."

Going the extra mile and getting US Food and Drug Administration (FDA) approval is a milestone the company would like to achieve if they had the right investment, but meanwhile it's not the highest priority.

"We want to bring it through the FDA but this requires dramatic investment and expenses and it will make our product more expensive. Now it is very cheap and affordable while at the same time is simple and accurate," says Ben-Zoor.

It's still debatable how effective diagnoses are in sleep labs since many problematic sleepers don't sleep well in settings that aren't home. Snoring U may very well help you roll over to sleep better, and forego that visit to the sleep lab.

**Israeli products provide natural defense against bugs**

Whether it's keeping little pests out of greenhouse netting or larger critters out of food packaging, Israeli companies have the answer.

A native plant extract repels tiny bugs from greenhouse nets

Greenhouse netting is a farmer's first line of defense against critters that eat leaves and chew through roots, but tiny bugs can slip through the fine mesh. A new company from Israel called EdenShield has a natural solution for keeping greenhouses pest-free without nasty pesticides that pollute the earth and harm people.

The company has developed a plant-derived extract from a bush found in Israel, Jordan and Egypt to repel insects from the exterior netting of the greenhouse.

Company founder Yaniv Kitron has years of experience working with plant extracts from the Holy Land region that he uses in his natural cosmetics line, Herbs of Kedem. His latest idea involves a remedy used by Israeli Bedouin to alleviate irritated intestines.

Kitron found an extract from the bush can be applied to nets as a natural defense against tiny insects like thrips and the tomato leaf miner. Both pests can do extensive damage to greenhouse crops, yet most farmers today agree that the use of fewer pesticides in agriculture is the best way to grow.

This new invention, under development at the Mofet Venture Accelerator in Kiryat Arba and funded by an Office of the Chief Scientist grant, seems to block the olfactory senses of the bugs that would normally help them home in on their supper. In a "sense" this extract, Kitron says, acts as a nose plug that confuses the insect. And it works on a broad range of bugs. Why or how is yet to be determined by EdenShield's chemists and biologists.

"It is interesting to see why so many different pests are affected by this extract. Maybe it is acting more like an odor mask than repellent," says Kitron.

The fact that this natural chemical does not kill the insect should be seen as a plus rather than a minus, he notes. Ecologists have shown, Kitron explains, that pesticide use leads to stronger and more resilient pests. One of the reasons is that conventional pesticides also kill the natural predators of the pest, wiping out an important line of defense.

"Our solution doesn't cause mortality and it is not toxic to insects or humans," says Kitron. "We believe this is a more efficient tool to be used in integrated pest-management programs. Our solution can even enhance the effectiveness of the pest's natural enemies."

The secret burning bush?

This particular bush (its species name withheld to protect the company's IP) seems to have developed a special resistance to desert pests only in the Levant area, though the bush grows in other regions of the world.

In the humanitarian domain, Kitron says that EdenShield is also undergoing tests on mosquito nets used for combating malaria-carrying anopheles and the kissing bug, a blood-sucking insect that carries the chagas parasite and is a problem in South America, various regions of Africa, Jordan and the Dead Sea area.

Down the road, Kitron hopes the spray could be developed into a general pest repellent for plants. But for that, more rigorous tests by health agencies need to be done. He is currently testing EdenShield in Israel and is seeking partnerships with greenhouses around the world to test the product's potency.

A spicy repellent goes to market

The use of natural methods for pest control is an Israeli specialty. In another line of defense, the Israeli company Organis developed a naturally sourced insect repellent from the turmeric plant. The company's focus is keeping insects out of food packaging and warehouses, particularly for manufacturers of cereals, grains, pasta, nuts, beans, dried fruits, coffee, and chocolate and cocoa products.

Turmeric, an ingredient in curry, is a favorite in Indian and Middle East cuisine, but Israeli Druze villagers also use it as a natural medicine. It was, in fact, Israeli Druze Prof. Fadel Mansour who suggested it to his business peers as a commercial opportunity.

Based on years of research by entomologists from Israel, Organis was founded in 2001 as BioPack. The company has created a platform of insect repellents derived from the turmeric plant that are deemed safe for humans and animals to consume. Organis' solution has been classified as "generally recognized as safe" by the US Food and Drug Administration.

Organis has three solutions currently on the market or in advanced stages of development under the BioPack trademark. The company typically provides customized services and technologies according to individual customer's needs. This can start at the post-harvest stage, during the manufacturing process and all the way up until the products are delivered to retailers.

The company has already reached the revenue stage and is actively seeking new "spicy" business opportunities.

Israel's sweetest solar energy

Thanks to Tigi Solar's Honeycomb Collector, the Land of Milk and Honey is offering space heating solutions for cold climates.

The Bible calls Israel the Land of Milk and Honey. If you ask one solar energy entrepreneur in Israel about that, you'll see he's taken the expression quite literally. Shimon Klier invented a new kind of solar energy panel that collects the sun's rays to directly heat homes in countries that have the largest energy bills.

The inspiration for the collector came by way of the honeybee.

The company based on his invention, founded in 2007, is called Tigi Solar, and it is turning heads at industry conferences in Europe.

Tigi's revolutionary product is the Honeycomb Collector, which is built like the inside of a bee hive. In regular thermal solar collectors that are used in hot countries like Israel to heat water, much of the thermal radiation leaks out from between the spaces of the panels.

Klier's patented idea, which started in the early 1980s during the oil crisis, is built on a novel premise — what he calls "transparent insulation," letting the sunshine in and keeping its heat from escaping.

Tigi's Honeycomb Collector keeps the sun's heat inside

From the outside, the unit closely resembles the PV panel or solar thermal water heaters commonly found on the roofs of Israeli apartment buildings and homes. "If you look up close, you will see something that looks like a honeycomb attached to the collector," says Zvika Klier, the CEO of Tigi, and the son of Shimon. "The way it works is that the honeycomb absorbs heat quicker, and reduces heat loss, which is normal when it's really cold outside.

"Our honeycomb gets air circulating between the absorber plate and the freezing glass. The glass normally cools down the absorber plate, but not in this solution; the honeycomb holds the air and prevents it from circulating, and therefore prevents losses from convection," he says.

Restraining the sun's power

This kind of insulation used in the solar thermal collectors can heat water to temperatures so high that it can actually damage the machinery, says Klier. For this reason the company has built in a special protection system that stops the water heating past a certain temperature.

Still, the water can get so hot that even in colder countries it can be piped through homes in the winter months for heating.

In countries like Canada, where most of the homes are connected to natural gas, bills for heating are generally reasonable. But at off-grid properties in rural communities or places still relying on propane gas, oil or even electricity, heating costs can be astronomical in the winter -- $1,000 a month or more.

This is where Tigi stands ready to step in. The company offers a low-cost solution that typically would pay for itself quite quickly, says Klier.

He's not able to offer an ROI (return on investment) figure, since pricing depends on location, size of home and current energy bills. The installation cost is averaging out at 300 to 350 euros per square meter.

Proven success

Zvika Klier is a man with proven business success. Before joining his dad's business a few years ago, he was the CEO of 3DV Systems, which was sold to Microsoft. Before that, he was president of Arel Communications, a distance-learning company traded on NASDAQ.

Klier brought in other high-tech experts from Israel to join Tigi.

The company is focusing on two business directions: space-heating solutions for homeowners in cold countries; and industrial-scale, year-round water heating. Hotels, prisons, textile companies and factories need unlimited hot water for showers or industrial processes, but in colder countries water heated even with 90 or 100 solar thermal panels wouldn't deliver the goods, says Klier.

"We can do a better job than most other collectors most of the time," he says. "Overall, our solution costs less than the alternatives."

In this direction, the company has signed some contracts in Europe and tested the honeycombs in real-life applications. It is also striking deals with manufacturers of solar collectors.

Klier is convinced that Tigi can get a stake in the multibillion-dollar home heating business, considering that there are 16 million solar thermal collectors already in use around the world -- yet most, if not all of them, are installed in hot climates where they are used only to heat water.

At the Intersolar EuropExhibition held in Germany in June 2012, Tigi was awarded a top prize. As a result, interest from the German market is high, and Germany is a good place to start because it has advanced targets in renewable energy.

Tigi is based in Petah Tikvah, Israel, and employs 10 people. It has been privately financed by the family and angel investors up to now, but seeks $3 million to $5 million for marketing and sales.

URINFO 2000 is the first medical device developed for accurate measurement and monitoring of urine output in the hospital.

URINFO electronically measures urine flow in real time

A new Israeli medical device to measure urine volume digitally could save lives, while saving healthcare systems a lot of money.

A basic measurement of urine volume during an operation or over the course of treatment in an intensive care unit (ICU) can tell a doctor if a patient is suffering from an acute kidney injury. About 30 percent of all patients in an ICU and 5% of all hospital patients suffer some form of kidney injury resulting from low blood volume, urinary tract blockage, sepsis or damage from surgery or accident. If not detected quickly, this could have severe consequences such as the need for dialysis.

Robert Bash, the CEO of FlowSense, represents a new biomedical device company that has developed URINFO 2000, a real-time online monitoring device for use in the operating room and the ICU.

Despite the seriousness of the problem, says Bash, urine output is still measured rather primitively and manually in a collection bag or container. This method leaves room open for subjective and human errors, especially during shift changes.

"If a nurse is holding onto the bag and pressing it slightly this can change the volume reading," says Bash, calling his company's invention "the first tool to measure the last vital sign."

Consider that a normal flow rate of urine is anywhere from 30 to 400 cc per hour. Anything significantly more or less than that number should alert the medical staff that a kidney injury might have been sustained. Whether it stems from a heart operation or a motorcycle accident, says Bash, a kidney injury must be dealt with swiftly.

Already saving lives in Israeli hospitals

With its device already in use at Israeli medical centers such as Soroka in Beersheva, Shaare Zedek in Jerusalem and Rambam in Haifa, FlowSense is currently in sales channels to market the device to European and American hospitals.

The company, founded by the Trendlines Group of Israeli business incubators, quickly passed through regulatory processes in both the United States and Europe. It is publicly traded on the Tel Aviv Stock Exchange (TASE).

The Trendlines Group, based in the Misgav Technology Park in Misgav, is a seed stage investment house focusing on life sciences, clean-tech and agritech.

While many medical devices at Trendlines are transferred from other high-tech markets – digital imaging from the defense and space industries, for instance – this particular technology has a different blue-and-white twist: "It comes from an Israeli who specialized in low flow metering for irrigation," says Bash. "Someone heard about the idea and thought that it could work to solve a problem in urine measurement."

That's how FlowSense began in 2009.
FlowSense isn't the first company to attempt a new way to tackle the basic problem of monitoring urine output, but it is the first to succeed, says Bash, who notes the problem isn't as simple as it looks.

With the help of optical sensors and disposable features, the data can be collected and accessed online by clinicians at any time -- not just every hour or when the nursing staff makes its rounds.

URINFO 2000's two components include an electro-optical reader and display with memory functions and alarms; and a disposable, patent-pending urine collection and measurement unit. It can be used as a standalone system or configured into other vital-sign monitoring tools. A bag under the monitor still collects urine the old-fashioned way so readouts on the digital screen can be crosschecked with a glance.

For now, the company is sticking with this one application. However, in its pipeline are plans for developing tools to check for certain biomarkers in the urine. But that's down the road, says Bash.

The problem of kidney injury is acute, because some of the complications can severely alter the quality of one's life, or in the worse cases can be fatal. While there are other tests for kidney injury, such as a urine tests, they take time that no doctor has to spare if an injury is suspected.

If doctors could detect a problem sooner, everyone wins: The hospital can free up more beds, healthcare costs go down and the patient can look forward to a longer, healthier life.

**Futuristic 'microscope' sees through skin**
Israeli team invents a simple new imaging tool that brings us one step closer to 'X-ray vision.'

It might not give us humans Superman vision just yet, and it could take at least 10 years to develop it into a commercial product, but a new discovery by a research team from Israel's Weitzmann Institute of Science in Rehovot has paved the way for an exciting medical advance.

Ori Katz and Eran Small, under the guidance of Prof. Yaron Silberberg, have developed a tool

for seeing through semi-opaque objects such as human skin or eggshells. They believe this foundational research paves the way for a new kind of microscope, one that can see inside deep tissues and could one day do away with the need for cancer biopsies.

Their handmade invention, based on simple, cheap and readily available equipment, can also see around corners. While they are not the first in the world to be able to achieve these feats, they are the first to do it without the use of lasers -- and they can do it in real time.

Surprisingly sophomoric science
"Other teams used special lasers and scanned their target point by point," says Katz. "Our technique is more straightforward and it can be done in such a way that any second-year physics college student can understand what's going on."

A simple digital camera, regular halogen light and a spatial light modulator found in digital projectors enabled this advance, says Katz. The field is called "wave front shaping," and it allowed the team to study how light is absorbed by a semi-opaque object and then scattered.

"For us it was very surprising when it did actually work," says Katz, who will continue his post-doctoral research in Paris for a few years.

While a human body, for instance, doesn't appear to be transparent, when you shine a flashlight on the back of your hand in the dark, you'll see that some light does shine through, Katz explains. This is called "scattered light."

Once it was thought to be too difficult to make sense of scattered light, because it appeared to be incredibly random and chaotic. But now with new HD imaging screens the researchers can amplify and analyze the scattering patterns.

By developing an algorithm that projects the inverse pattern, the researchers are able to detail what can be found inside an object that the naked eye could never decipher.

Researchers from BGU have generated a promising drug candidate for the treatment of Psoriasis
Researchers from the Department of Life Sciences and the National Institute for Biotechnology in the Negev at Ben-Gurion University of the Negev in collaboration with Teva pharmaceutical industries LTD. have engineered a natural immune system receptor into a promising drug candidate for the treatment of Psoriasis.

Psoriasis is an autoimmune disease that affects millions of people, causes great suffering, and costs billions to health care systems worldwide. The main reason for the outbreak of Psoriasis is the disturbance of the natural balance between pro-inflammatory signals and signals that inhibit inflammation. In Psoriasis the outcome of this imbalance is inflammation and unregulated division of the skin cells.

One of the key signals involved in the progression of Psoriasis is the immune system protein Interleukin 17 (IL-17). In a paper just published in the journal Chemistry and Biology entitled: "Directed Evolution of a Soluble Human IL-17A Receptor for the Inhibition of Psoriasis Plaque Formation in a Mouse Model", Dr. Marianna Zaretsky and Prof. Amir Aharoni from BGU together with Dr. Liora Sklair-Tavron, Dr. Joel Kaye and Revital Etzyoni from Teva developed a method to inhibit IL-17 pro-inflammatory signals.

The team engineered the extra-cellular soluble domain of IL-17 receptor to bind with high affinity to the natural IL-17 protein. The engineered IL-17R was developed by a directed evolution approach, in which an ensemble of mutants is screened for improved properties.

Arrow 3 Missile Test: Israel, U.S. Defense System Trial Completed

Israel and the U.S. recentlyy carried out a successful test of the next-generation Arrow 3 missile defense system, for the first time sending an interceptor into outer space, where it could destroy missiles fired from Iran.

The Arrow 3 is part of a multilayered system that Israel is developing to protect against a range of missile threats, from short-range rockets in the Gaza Strip and Lebanon to medium and longer-range missiles in the hands of Syria and Iran. The Arrow system is being developed to protect against sophisticated Iranian-made Shahab ballistic missiles.

Israel's Defense Ministry said it was the first flight test of the Arrow 3 interceptor. It was conducted at an Israeli test range over the Mediterranean Sea. The system is about three years away from becoming operational.

"The Arrow 3 interceptor was successfully launched and flew an exo-atmospheric trajectory through space, in accordance with the test plan," it said in a statement. "The successful test is a major milestone in the development of the Arrow 3 weapon system and provides further confidence in future Israeli defense capabilities to defeat the developing ballistic missile threat."

Iran's Shahab ballistic missile can carry a nuclear warhead and has a range of 2,000 kilometers (1,250 miles), putting Israel and parts of Europe within range. With Iran suspected by the international community of trying to develop a nuclear weapon, the success of the Arrow is considered critical for Israel.

Israel considers a nuclear-armed Iran to be an existential threat, citing Iranian calls for Israel's destruction, its support for anti-Israel militant groups and its missile and nuclear technology. Teheran says its nuclear program is peaceful, a claim that Israel and many Western countries reject.

A senior Defense Ministry official said the test was conducted "100 percent successfully."

"This is the first time the interceptor with all of its equipment took off and flew, achieved its velocity and did the maneuver in space," he said, speaking on condition of anonymity under ministry regulations. "The Iranian missiles are a main factor to why this system was developed," he said, but he stressed that the test was not connected to a specific regional development.

The Arrow 3 is being developed by state-run Israel Aerospace Industries in conjunction with American aviation giant Boeing Co.