

ISRAEL HIGH-TECH & INVESTMENT REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES
January 2011 Vol. XXVI Issue No.1

JOSEPH MORGENSTERN, PUBLISHER
You are invited to visit us at our website: <http://ishitech.co.il>

A Change of National Direction

At the turn of this century, Israel specialized in Internet companies. However, many of these failed and are only a memory. Typical of these was Virtual Jerusalem It was a neat project involving all aspects of Jerusalem. You could even place a prayer in the Western Wall. The company arranged a reverse merger and listed on NASDAQ. The price skyrocketed from \$0.40 to \$8. Investors did not heed the accountants comments that in their view the company would never make any money. Virtual Jerusalem tanked as did dozens of other Internet companies.

Replacing the Internet were security companies who found a niche in anti-terror devices. Today, there are 400 companies with total exports of \$1.5 billion. Security problems will not only not disappear but most are likely to grow. One of the major issues is airport security. Another one is that of mail security where "lethal" materials can easily be sent through the mails.

Some twenty years ago a company named Luz was a world leader in solar energy systems. They had the world's largest installation in California. The contracts were based on the price of oil. When oil prices dropped precipitously Luz had to close shop. However, In the past few years the number of solar energy companies has mushroomed.

Israelis are world-leaders in inventing solar energy solutions — for today and tomorrow. Chromagen and Amcor supply most of the country's domestic

solar hot water collector units.

LUZ II (a subsidiary of Brightsource Energy) plans to generate electrical power by using solar energy to convert water to superheated steam

The Solel company has the organization, the resources and the project management capa-



In this Issue

1A Change of National Direction

Google invests in startup

Israeli device lets paralyzed people stand and walk

More about solar power

More about solar power

Hospital uses Apple's iPad for communication

Good News items from Israel

Bayer and Evogene sign collaboration agreement to improve wheat seed

Sequencing the full woodland strawberry genome

New cells halt disease

Tel Aviv Exchange seeks to become high-tech center

bilities needed to design, manufacture and install solar fields for large scale power generation.

Solar energy israel photo Zenith Solar has developed a modular and easily scalable high concentration photovoltaic system (HCPV).

There are at least another dozen companies successfully supplying solar energy solutions.

Another prospering field, is water purification. DSE Desalination has contracted to supply Victoria's desalination plant which will be the largest in Australia, capable of supplying about one third of Melbourne's annual water needs.

It will supply up to 150 billion liters of water a year, independent of rainfall, to Melbourne, Geelong, and regional towns in South Gippsland and Western Port of Australia.

Google invests in startup

Google CEO Eric Schmidt has invested in Israeli mobile application start-up Any.Do Ltd. Genesis Partners, Blumberg Capital, and Schmidt's Innovation Edeavors invested \$1 million in Any.Do's first financing round. Private investors, including Palantir Technologies co-founder and CEO Joe Lonsdale, also invested in the company.

Any.Do also hired Facebook mobile manager Eric Chang and Twitter search location-based manager Elad Gil as advisors.

Any.Do CEO Omer Perchik co-founded the company with two others in January 2010. Perchik served in the IDF computer unit. The founders developed the product in a garage. Perchik says that the company will use the proceeds from the financing round to complete development of the product and hire employees to work on the product's software, algorithms, marketing, and user interface.

Any.Do's technology analyzes users' intentions to help them carry out daily tasks in real time over their mobile telephones. The technology

can be activated by voice ID by analyzing natural language and personalizing the services offered. Perchik says that the technology will change attitudes towards mobile telephones and further enhance the user's experience. The product is due to reach market in 2011.

Sensors to alert Israeli commanders not only to vehicle fuel levels but also soldiers' hydration The Israel Army plans to develop a sensor that would monitor the physical state of infantry soldiers.

Military sources said the Army has approved a plan to develop sensors that could tell commanders the physical state of their soldiers before major operations. They said the sensors would be strapped to the wrist of the soldier and linked to a database.

"The sensor would be crucial in operational planning as well as allowing commanders to understand how much they could push their men," a military source said.

Israel High-Tech & Investment Report
Published monthly since January 1985

Publisher and Editor in Chief
Joseph Morgenstern, B.A. Chem.

Technology Review Board
Prof. S.J. Joel-Cohen, MD, FRCS. FRCOG (1996-2002)
Prof. Hylton Miller, M.B. Ch.B.
Dr. Clive L. Carpel, M.B. Ch.B.

Copy Chief
Debbie Mor

Web Master
Marty vonBokel

Graphics Consultant
Daniel Morgenstern

Subscription Inquiries
Tel-. +972-3-5235279 Fax. +972 3-5227799
E-mail: htir_1@netvision.net.il
Annual subscription \$95.- per year, for 11 issues,
Israeli residents add 16% VAT

Web Edition and Achives
<http://ishitech.co.il>

Israeli device lets paralyzed people stand and walk

When Israeli entrepreneur Amit Goffer was paralyzed in a car crash in 1997, he went on a search to help other victims walk again.

He started wondering why the wheelchair is the only way for the paralyzed to get around, short of being carried.

So he invented an alternative: robotic “pants” that use sensors and motors to allow paralyzed patients to stand, walk and even climb stairs. He founded a company, Argo Medical Technologies Ltd.

After several years of clinical trials in Israel and the United States, units will go on sale in January to rehabilitation centers around the world.

Argo joins several companies that have developed robotics in medicine.

Called “ReWalk,” the latest device can help paraplegics to stand and walk using crutches for stability when they lean forward and move their upper body in different ways.

The 35-pound device, worn outside of clothing, consists of leg braces outfitted with motion sensors and motorized joints that respond to subtle changes in upper-body movement and shifts in balance. A harness around the patient’s waist and shoulders keeps the suit in place, and a backpack holds the computer and rechargeable 3 1/2-hour battery.

When operated, it makes clanging robotic sounds, like the hero of the 1980s cult movie “Robocop.”

ReWalk is a man-machine device. The machine cannot walk by itself. The user cannot walk by himself. Only when they are together they can walk,” said Oren Tamari, Argo’s chief operating officer.

He said regular usage of the device, which costs about \$100,000, would prevent costly complica-

tions that often arise in people who can’t walk, including pressure sores and urinary, digestive, circulatory, and cardiovascular problems.

The ReWalk arrives at a boom time for such devices in medicine.

Tibion Corp. of Sunnyvale, Calif., is promoting a “Bionic Leg” quite similar to ReWalk, but intended to help stroke patients walk again. Ossur of Iceland makes a powered knee prosthesis that lets amputees walk.

ReWalk will have competition in targeting paraplegics. Last month, Berkeley Bionics of Berkeley, Calif., unveiled eLEGS. The exoskeleton will begin clinical trials early next year in rehabilitation clinics. A limited release of eLEGS is scheduled during the second half of 2011.

New Zealand-based Rex Bionics has developed a fully robotic, joystick operated unit, and others have marketed performance augmentation units that are not necessarily designed for the handicapped.

Goffer is paralyzed from the neck down, and ReWalk users need their hands and shoulders to operate it and support crutches, so he is not yet able to enjoy his creation. But he said the company is working on a version for quadriplegics such as himself.

Those who have tested it say the benefit is more than physical.

“When I use the ReWalk I feel like I am maintaining my body. It is like taking a car to the garage ... It feels great,” said Radi Kaiuf, a ReWalk evaluator who was paralyzed in 1988 during his Israeli military service.

“I have a 3-year-old daughter. The first time she saw me walking, she was silent for the first few minutes and then she said, ‘Daddy you are tall.’” It made me feel so good, like I was soaring.”

More about solar power

Israel's burgeoning high tech industry is a sign of the country's intelligence and ingenuity, but another development will actually make Israel brighter — solar power.

Arava Power, an independent power company in southern Israel, announced this week that it would begin construction on the country's first solar field, a \$25 million project that would feed environmentally sound electricity into Israel's mostly coal-dependent power grid. And at the helm of Arava is none other than David Rosenblatt, a native Pittsburgher.

Rosenblatt, 45, "graduated from Allderdice sometime in the '80," he said with a laugh. He then attended Penn State before becoming a lawyer, eventually going back to school and entering the world of business. Rosenblatt went on to co-found QuickenLoans, a leading online lender, and online real estate site Move, Inc., before starting Arava with Ed Hofland and Yosef Abramowitz.

Arava Power launched in Israel as a forerunner of the solar power wave that swept the country in the last three years.

"When we started, I'd talk to people about solar power in Israel, and they'd laugh at me," said Rosenblatt. "Now they tell me, 'You should really look at this solar thing, it's becoming huge!'"

Rosenblatt watched as his company led "literally hundreds of companies doing solar power in Israel now," he said. "And we're the largest as we were the first. Hopefully, we can maintain that."

Building Israel's first solar field won't hurt the chances.

A solar field is a huge conglomeration of solar panels converting sunshine into power. Solar fields most often lay flat on several acres of land, but could even float on water, said Rosenblatt. The output, of course, is much larger than a rooftop panel.

"Your average home panel generates between five and 10 kilowatts," he said, "but a field would generate 5,000 times more energy than any rooftop."

Arava's first solar field is set to be completed and functioning sometime in the second quarter, said Rosenblatt. It will sit on 20 acres of land near Kibbutz Ketura outside of Eilat, and will produce 4.95 megawatts of energy, enough to power about 4,000 homes. Future solar fields could produce as much as 200 megawatts.

Instead of the panels feeding energy directly into a household, though, a solar field generates energy that becomes a part of an area's power grid. In other words, the solar energy becomes no different than any other electricity flowing through power lines, but it was created in a much cleaner way.

Though construction on the solar field is about to begin, Rosenblatt said the road there was rocky.

"Israel is a country that is very small, and all the land is spoken for," he said. "The government regulates it heavily. Even land you think is owned by private entities is really leased by government. Land is a sensitive issue. In order to get that tract of land to produce solar power, you have to change how land policy is done."

Arava also encountered resistance from an existing utility. According to Rosenblatt, the Israel Electric Corporation, which supplies most of the power in Israel, was wary of "allowing a private company to produce power to feed the grid."

The benefit of a new, clean source of energy for Israel, said Rosenblatt, is more than just environmental, and is logistically more crucial than solar power in the United States.

"Think about us. If our state doesn't produce electricity, we'll get it from our neighbors, New York or West Virginia," said Rosenblatt. "Israel is an energy island. If Israel doesn't produce energy, its

neighbors won't help."

Pioneering a new industry in Israel has been "rewarding on many levels," Rosenblatt said. "This is really meaningful for the long-term demand for electricity. It's helping the economy and the individual. I'm helping something I really care about."

New energy: Future trends

Israel will get its advantage in energy not only by being ahead with application, but also in having the flexibility to move rapidly with scientific advances. Remember the old cellular phones? Research into photovoltaics and solar power is racing ahead. For example, at the Grand Technion Energy Program (GTEP) scientists working with the Cavendish lab in Cambridge have produced the science behind the future plastic solar power (roll-up panels for your car or lap-top?). <http://gtepIsrael.blogspot.com/2010/12/solar-flexi-power.html>

Hardest organic material ever designed

Tougher than steel and stronger than Kevlar, the new material could lead to a new class of cheap, ultra-light body armor.

Tougher than stainless steel and even the previous record holder, bulletproof Kevlar, a new, transparent material developed by scientists in Israel is the hardest organic nanostructure known to man.

Inspired by an unlikely source -- the beta-amyloid proteins found in patients with Alzheimer's disease -- the new material could be applied to make steel tougher and may also lead to cheaper and lighter body armor.

"In principle it may be possible," to print body armor, said Ehud Gazit, a scientist at the Tel Aviv University and a co-author of a new article in the journal *Angewandte Chemie* international edition.

"But we are thinking of more straightforward uses: to improve the mechanical properties of composite structures, such as ceramics and bulletproof

glass," he added.

The new material is similar, but not identical, to the brain plaque linked with Alzheimer's disease. Dozens of amino acids form those beta-amyloid proteins. The new synthetic proteins only have a fraction of those amino acids and are covered with an additional protective layer to create super-strong spheres.

The spheres are submicroscopic, ranging in size from about 30 nanometers to two micrometers. The material itself is transparent and easy to manipulate and manufacture.

It is also incredibly tough. Only a diamond-tipped probe could penetrate the material -- and to make a dent the probe needed to use twice the pressure of what it would take to make a mark in Kevlar.

"I think this is an amazing discovery," said Kenneth Woycechowsky, a scientist at the University of Utah familiar with the research. "The rigidity and stiffness of these spheres is unique, and surpasses any other known organic molecule, even Kevlar."

Despite the promise of the new material, it could be decades before scientists are able to translate its design into functional applications.

"We have several patents and it is being licensed, so we hope to see it on the market soon," said Gazit. "But it always takes more time than one expects. Kevlar was invented in the 1960s but only in the 1980s did it become incorporated into body armor."

British-Israeli team to harden biodegradable plastic

Scientists at Bath University and Tel Aviv University are working on a project to improve the properties of plastics made from plants.

Poly(lactic acid) or PLA is a type of biodegradable plastic that can be made from renewable plant sources such as corn, wheat or sugar. It is

currently used in bottles, bags and films, and can be woven into fibres to make clothes in place of polyester.

The scientists at Bath and Tel Aviv are developing a new chemical catalyst to improve the process of making these plastics, making them stronger and more heat resistant so they can be used for a wider range of objects such as engineering plastics for the automotive industry, microwavable trays and cups for hot drinks.

Prof Matthew Davidson, Whorrod Professor of Sustainable Chemical Technologies at the Bath University and director of the university's Centre for Sustainable Chemical Technologies, said: 'PLA can be made up of two types of building blocks that are mirror images of each other. Using the current technology, when the plastic is made with both types present they are jumbled together within the structure of the plastic.

'This new project will develop a selective catalyst that will build up a polymer of "left-handed" and "right-handed" building blocks in a structured order so that we can control the physical properties of the resulting plastic.'

The project is one of 10 joint British-Israeli research projects that tackle global challenges in energy and the environment that have been selected to receive funding through the Britain-Israel Research and Academic Exchange Partnership

Teva's Laquinimod succeeds in Phase III

Teva and other pharmaceutical companies have been trying to develop oral versions of multiple sclerosis drugs for years.

Teva Pharmaceutical Industries Ltd. (Nasdaq: TEVA; TASE: TEVA) and Active Biotech (Nasdaq: OMX: ACTI) reported success in the Phase III Allegro Clinical trial of Laquinimod, the oral version of multiple sclerosis version drug Copaxone. Laquinimod was safe and well-tolerated.

Copaxone is Teva's flagship product, respon-

sible for almost 30% of its revenue. Copaxone is injected; oral Laquinimod is considered the next-generation Copaxone. Teva and other pharmaceutical companies have been trying to develop oral versions of multiple sclerosis drugs for years. In September, the US Food and Drug Administration (FDA) approved Novartis AG's (NYSE:NVS; LSE: NOV; SWX: NOVZ) oral multiple sclerosis, Gilenya.

Teva's clinical trial took two years. Patients treated with 0.6 mg daily oral laquinimod experienced a statistically significant reduction in annualized relapse rate compared to placebo. Additional clinical endpoints, including significant reduction in disability progression, as measured by Expanded Disability Severity Scale (EDSS), were also achieved.

The overall frequencies of adverse events were comparable to those observed in the placebo group. No deaths were reported in laquinimod-treated patients. Overall incidence of infections was similar between the two arms of the trial.

"This pivotal study met its primary endpoint while maintaining a very good safety profile," said Professor Giancarlo Comi, director of the Department of Neurology and Institute of Experimental Neurology at the University Vite Salute at San Raffaele, Italy, who was the principle investigator in the trial. "Laquinimod demonstrated a significant reduction in the progression of disability which may be explained by its unique mechanism of action that includes neuroprotective properties. Laquinimod may therefore be a promising therapeutic option for the MS community."

Teva president and CEO Shlomo Yanai said, "We are very pleased to have achieved this major milestone in the development of oral laquinimod, a novel therapy that can potentially improve the lives of many MS patients in a safe way."

Teva said that it will submit additional analysis of the Allegro study at a leading scientific conference during the first half of 2011. The second phase III clinical trial, is still ongoing, and Teva expects

results in the third quarter of 2011, after which it will submit regulatory documentation with the FDA and European Medicines Agency (EMA).

Laquinimod is also undergoing a Phase II development for Crohn's disease and Lupus, and is being studied in other autoimmune diseases.

In a special investment report on Teva, "Baron's" wrote that Teva will double in size over the next five years as the company dominates the generic-drug industry that could almost double by 2015. It adds that Teva is fundamentally undervalued.

n

A hospital in Israel has begun using Apple's iPad to enable medical staff to help treat patients, provide consultations and study X-rays and CT scans from afar.

The Mayanei Hayeshua Medical Center, located in the largely ultra-orthodox Tel Aviv suburb Bnei Brak, said it is the first hospital to program the high-resolution, touch-screen iPad to interact with Microsoft Corp's Chameleon software used by hospitals. The hospital's computer department programmed the iPad with the help of an external technology company.

"We now have the same program and the same database for treatment in the hospital on the iPad," Yoram Liwer, chief executive of Mayanei Hayeshua, said.

"The patients' data are in the computer... so physicians who are out of hospital but on call can see X-rays and ultrasounds through their iPad and give more intelligent advice to staff in the hospital."

For example, a patient recently arrived in the emergency room with a broken hip and ultimately needed a full hip replacement.

The doctor on duty consulted with a senior orthopedic surgeon who was not in the hospital and

who offered advice on the treatment after studying the X-rays and CT scans. The senior doctor was also able to follow up immediately after the surgery to see the results.

"The high resolution of the screens enables good viewing of the X-rays and also the iPad is also fun to work with," Liwer said.

Good News items from Israel

1. Scientists in Israel found that the brackish water, drilled from underground desert aquifers hundreds of feet deep, could be used to raise warm-water fish. The geothermal water, less than one-tenth as saline as sea water, free of pollutants, and a toasty 98 degrees on average, proves an ideal environment.

2. Israeli-developed designer-eyeglasses promise mobile phone and iPod users a personalized, high-tech video display. Available to consumers next year, Lumus-Optical's lightweight and fashionable video eyeglasses, feature a large transparent screen, floating in front of the viewer's face that projects their choice of movie, TV show, or video game.

3. When Stephen Hawking recently visited Israel, he shared his wisdom with scientists, students, and even the Prime Minister. But the world's most renowned victim of amyotrophic lateral sclerosis (ALS), or Lou Gehrig's disease, also learned something, due to the Israeli Association for ALS' advanced work in both embryonic and adult stem cell research, as well as its proven track record with neurodegenerative diseases. The Israeli research community is well on its way to finding a treatment for this fatal disease, which affects approximately 2,500 – 3,000 Canadians.

4. Israeli start-up Veterix has developed an innovative electronic capsule that sits in the stomach of a cow, sheep or goat, sending out real-time information on the health of the herd to the farmer, via email or cell phone. The e-capsule, which also sends out alerts if animals are distressed, injured, or lost is now being tested on a herd of cows, in the hopes that the device will lead to tastier and

healthier meat and milk supplies.

5. The millions of Skype users worldwide will soon have access to the newly developed KishKish lie-detector. This free Internet service, based on voice stress analysis (a technique commonly used in criminal investigations) will be able to measure just how truthful that person on the other end of the line really is.

6. Beating cardiac tissue has been created in a lab from human embryonic stem cells by researchers at the Rappaport Medical Faculty and the Technion – Israeli institute of Technology's biomedical Engineering facility. The work of Dr. Shulamit Levenberg and Prof. Lior Gepstein has also led to the creation of tiny blood vessels within the tissue, making possible its implantation in a human heart.

7. Israel's Magal Security System is a worldwide leader in computerized security systems, with products used in more than 70 countries around the world, protecting everything from national borders to nuclear facilities, refineries, and airports. The company's latest product, DreamBox, a state-of-the-art security system that includes Intelligent video, audio and sensor management, is now being used by a major water authority on the US east coast to safeguard the utility's sites.

8. It is common knowledge that dogs have better night vision than humans and a vastly superior sense of smell and hearing. Israel's Bio-Sense Technologies recently delved further and electronically analyzed 350 different barks. Finding that dogs of all breeds and size, bark the same alarm when they sense a threat, the firm has designed the dog bark-reader, a sensor that can pick up a dog's alarm bark, and alert the human operators. This is just one of a batch of innovative security systems to emerge from Israel which Forbes calls 'the go-to country for anti-terrorism technologies.'

9. Israeli company BioControl Medical, sold its first electrical stimulator to treat urinary incontinence to a US company for \$50 million. Now, it is

working on CardioFit, which uses electrical nerve stimulation to treat congestive heart failure. With nearly five million Americans presently affected by heart failure, and more than 400,000 new cases diagnosed yearly, the CardioFit is already generating a great deal of excitement as the first device with the potential to halt this deadly disease.

Bayer and Evogene sign collaboration agreement to improve wheat seed

Bayer CropScience AG and Evogene Ltd. (TASE: EVGN) have entered into a five-year collaboration to accelerate the development and introduction of improved wheat varieties. Improvements will be pursued for wheat yield, drought tolerance, fertilizer use efficiency and certain other wheat traits utilizing a combination of advanced breeding and state of the art genetic modification methods. Bayer will have exclusive rights to commercialize in wheat the traits resulting from this collaboration.

The collaboration further builds on an on-going partnership between Bayer CropScience and Evogene, which was initiated in 2007 and expanded in 2009, for increasing rice productivity and yield.

In a separate agreement, Bayer CropScience will make an equity investment of USD 12 million in Evogene at a price of approximately USD 7 per ordinary share.

On a global basis, wheat is the largest crop in terms of cultivated area and one of the most important food crops. The critical need to provide sufficient wheat to meet the needs of the growing world population is widely recognized. Significant efforts are being directed towards addressing this challenge, primarily through programs attempting to increase yields and to sustainably reduce required inputs, such as water and fertilizer.

The collaboration will utilize Evogene's ATHLETE, RePack and EvoBreed computational genomic technologies for the identification of genetically modified and native traits to improve yield, drought tolerance, fertilizer utilization and certain

other characteristics in wheat.

Bayer CropScience will utilize its capabilities in breeding and product development to incorporate genetically modified and native traits identified by Evogene, into its wheat pipeline for developing elite varieties displaying improved performance. The resulting improved wheat varieties will be commercialized by Bayer CropScience.

Evogene will receive approximately USD 20 million in the form of upfront fees and annual research payments over the term of the agreement. Furthermore, the company will receive development milestone payments and royalties on the commercialization of any resulting products. Further details of the agreement were not disclosed.

“The wheat industry is facing challenges, such as changing climate, the decline of mineral resources used for fertilizer and the need to increase crop yields. We look forward to working together with Evogene in the area of wheat research to help tackle these issues,” said Lykele van der Broek, Chief Operating Officer of Bayer CropScience. “Being market and innovation Leader in the crop protection market for Cereals, we aim to become the partner of choice to wheat growers and the wheat industry and will offer superior integrated solutions to improve cereal production in a sustainable way.”

“We are very pleased by this major expansion of our relationship with Bayer CropScience, a worldwide leader in innovative crop science, and we are confident that this joint effort will result in meaningful contributions to meeting the needs of the wheat industry,” stated Ofer Haviv, Evogene’s President and CEO. “A unique aspect of this collaboration is the synergistic combination of the two research approaches for trait improvement: advanced breeding and biotechnology. By combining these two approaches in one truly collaborative program utilizing an array of Evogene’s leading computational genomic technologies and Bayer CropScience’s proven product development expertise, we anticipate opportunities for

significantly enhanced results.”

Main wheat producing regions are Australia, the Black Sea Region, China, the EU, India and North America.

Sequencing the full woodland strawberry genome

In a collaborative effort involving 74 researchers from 38 research institutes, scientists have produced the full genome of a wild strawberry plant. The research appeared today in *Nature Genetics*.

Drs. Asaph Aharoni and Avital Adato of the Weizmann Institute’s Plant Sciences Department were the sole Israeli scientists participating in the project, but they made a major contribution in mapping the genes and gene families responsible for the strawberry’s flavor and aroma.

The woodland strawberry (*Fragaria vesca*) is closely related to garden-variety cultivated strawberry. The fruit of this berry contains large amounts of anti-oxidants (mainly tannins, the substances that give wine their astringency), as well as vitamins A, C and B12 and minerals – potassium, calcium and magnesium. In addition, the strawberry fruit is uniquely rich in substances for flavor and aroma.

Participation in this project is something of a circle closer for Aharoni: For a number of years he has been investigating the metabolic pathways of ripening, in which the substance that give the fruit its flavor and aroma are produced. Aharoni was one of the first to use biological chips to analyze the genetic networks involved in creating these substances. He has also conducted a comparative analysis of these genes in wild and cultivated plants, looking for the differences. Now that the full genome of the wild strawberry plant is available for research, he is able not only to conduct deeper and broader investigations, but to shed new light on some of his past findings. Thus, for instance, in carrying out a computerized analysis of the woodland strawberry genome, Adato was able to place an enzyme that Aharoni had previously characterized in a relatively small enzyme family. This small

family is responsible for the production of a large number of aromatic substances, and the finding helped clarify their means of production.

Aharoni hopes that, among other things, the newly sequenced genome will help scientists understand how to return the flavors and aromas that have been lost over years of breeding in the cultivated cousin of the wild strawberry. The intense, concentrated aroma and flavor of the woodland strawberry are, he says, something to aspire to.

The woodland strawberry has now joined the elite list of plants, including rice, grapes and soya, which have had their genomes sequenced. The length of the genome is about 240 million bases and contains around 35,000 genes. (In comparison, the human genome has three billion bases, but only 23,000 genes.) The woodland strawberry genome is relatively short, simple and easy to manipulate, and the plant grows quickly and easily. These qualities make it an ideal model plant that might provide insight into other related agricultural crops (the rose family) including cultivated strawberries, and such fruit trees as apples, peaches, cherries and almonds.

Get a new set of eyes from Israel

An Israeli company is using a new stem cell technology to save the sight of aging baby boomers by replacing diseased cells with new ones.

Are “granny glasses” a thing of the past? Israeli company CellCure Neurosciences (<http://www.cellcureneurosciences.com/>) has developed a new stem cell technology for the treatment of age-related eyesight deterioration, which would replace diseased cells with fresh new ones.

The innovative treatment, which is unprecedented in the medical field, would not just improve deteriorating eyesight; rather those who benefit from the treatment will feel as if they have a new set of eyes.

New cells halt disease

More than eight million people in the US and many millions more worldwide, suffer from age-related macular degeneration, the main cause of visual

impairment in people over 50. The dry form of this disease, which CellCure plans to treat, affects the ability to see fine details. Thus, company CEO Charles Irving explains, “Those who are unfortunate enough to have this disease cannot read, drive, or see the faces of their grandchildren.”

Age-related macular degeneration begins in the retina, when retinal pigment epithelial (RPE) cells begin to die. RPE cells are caretakers of the photo-receptors – the cells in the retina that enable the eye to see light and dark. Currently there is no drug treatment for this disease, which typically progresses gradually over time.

In October, CellCure reached a breakthrough based on the work of Professor Rubinoff, director of the Human Embryonic Stem Cell Research Center at Hadassah University Hospital, and Dr. Eyal Banin, head of Hadassah’s Macular Degeneration Unit.

The researchers found a method of converting human embryonic stem cells into RPE cells, which can be transplanted into the patient’s eye. The transplants, performed on animal models with macular degenerative disease, showed that the new RPE cells could protect the cells in the retina from degenerating. Once the old cells were replaced, the progress of the disease halted, thereby rescuing the retina from the disease.

The mission of CellCure is to take this technology, together with clinical grade embryonic stem cells, and to create a product: Clinical grade RPE cells which can be used in clinical trials and commercialized. Teva has signed a license option agreement with CellCure to take over the clinical studies of the product development, once the company receives FDA approval to begin clinical trials.

The company is also working to combat other age-related degenerative diseases, but treatment of this particular disease is less complex than the treatment of neurological disorders, for example, and therefore more easily applied.

“The simplicity of this particular application [of stem cell technology] makes it the number one leading clinical application of human embryonic stem cells,” says Irving. “For this reason, many pharmaceutical companies have become interested in it.”

So far, Teva has invested \$2 million in the company, Hadasit Bioholdings invested \$1 million, and BioTime, a US-based company, invested \$4.1 million. CellCure is located in the Jerusalem BioPark at Hadassah Ein Kerem and supports about 10 scientists

Training Israel’s team for the International mathematical olympiad

Intensive training starts today at the Davidson Institute of Science Education. To raise the achievements of the Israeli team, the Ministry of Education has given the task of selecting the team and training its members to the Davidson Institute of Science Education, the educational arm of the Weizmann Institute of Science. As of today, preparations for the Olympiad, scheduled for July 2011, are entering an accelerated phase.

Low rankings for the Israeli teams competing in the annual International Mathematical Olympiad in recent years led the Ministry of Education to seek a new approach to preparing and training the team. After a lengthy process in which proposals from a number of bodies and organizations were considered, the Davidson Institute of Science Education was asked to carry out an innovative new program. Dr. Yaakov Lavie of the Davidson Institute heads the new math training program. Working with him is a staff of high-level professional trainers headed by Lev Radzivilovsky, who will receive additional advice and assistance from Weizmann Institute scientists.

The candidate selection and preparation process began with a nation-wide mathematics test given by the Science and Technology Division of the Ministry of Education to 4,000 outstanding high-school students. In the next step, the 350 highest scorers were invited to participate in the Prof.

Joseph Gillis National Math Olympiad, held at the Weizmann Institute. Of these, 30 are now entering the next stages of training, provided by the Davidson Institute.

Each of the 30 vying for a place on the team will have a personalized, online learning program designed for him, or her alone, including individual tutoring and guidance sessions.

Along with the individual work, the students will participate in a five-day sleep-over training camp in February at the Laub International Youth Village on the Weizmann campus. Here, they will take part in intensive “workouts” led by Davidson Institute staff trained by Radzivilovsky, as well as sessions with members of the Weizmann Institute’s Mathematics Department. A second training camp will be held over the Pesach vacation, at which point 15 of the 30 will be invited to continue. At a third camp to be held in June, the most outstanding seven students will be chosen to make up the Israeli team to the international competition, to be held in Holland in July.

Lavie: “At the Davidson Institute of Science Education, we don’t take shortcuts. We believe in hard work and perseverance, but also in giving the individual attention that will bring out the best effort in each member of the team. Thanks to the intensive, personalized training program, we expect to turn things around and raise Israel’s standing in the international mathematics rankings.”

Dr. Ariel Heimann, Director of the Davidson Institute of Science Education: “Success in the Mathematical Olympiad is not important to us just because we want to win competitions. We hope it will bring the issue of math education to the fore in Israel. Math is the foundation of all the sciences, and these are crucial for the country, socially, intellectually and economically.”

Tel Aviv Exchange seeks to become high-tech center

The Tel Aviv Stock Exchange (TASE) plans two new technology stock indexes as part of efforts to transform itself into a high-tech center and lure overseas investment, Chief Executive Ester Leva-

non said.

The bourse will launch a new index including 50 blue chip tech stocks which will replace the Teltech index, Levanon told a news conference. The other will include all tech stocks.

“Transforming the Tel Aviv Stock Exchange into a center for Israeli and foreign high-tech companies is a strategic target and the bourse will do all that is needed to achieve this,” Levanon said.

TASE, which launched an index for biomedical companies in 2010, is also seeking an international firm to provide regular research in English, first covering high-tech companies then other Israeli companies, at a reasonable cost.

The bourse, which will guarantee the international firm a minimum income, has approached three firms and will choose one to bring to the board’s approval in late January. Levanon said she expects the project to be launched in the second quarter.

Of 144 technology companies listed on TASE, 50 are dual listed, mainly on Nasdaq.

“This is not for Teva Pharmaceutical Industries or Nice Systems but for companies that are smaller and less exposed,” Levanon said.

“We hope that companies will take a deep breath and enter into a process that could yield reports that are not all that flattering to the company.”

Two major developments influenced trade on the bourse in 2010 -- one being the market’s upgrade to developed status by MSCI on May 26, when volume hit a record 16.4 billion shekels on the day.

The other development was an offshore natural gas discovery, boosting trade in exploration stocks which subsequently accounted for a fourth

of the rise in the TA-25 and TA-100 indexes.

In dollar terms the TA-25 is up 212.9 percent since January 2000, compared with a rise of 167.7 percent in the MSCI emerging markets index and 0.5 percent in the Dow Jones.



Please enroll me as a subscriber to the Israel High-Tech & Investment Report.

I understand that if not satisfied, I may cancel my subscription at any time and receive a refund of the unexpired portion. I enclose a check for \$95 (or the Israeli shekel equivalent and 18% v.a.t.) and am sending it to POB 33633, Tel--Aviv 61336.

The Israel High-Tech & Investment Report is a monthly report dealing with verse of Israeli technology and business. While effort is made to ensure the companies are not intended as promotion of shares, nor should they be con-

news, developments and investment opportunities in the uni- contents’ accuracy, it is not guaranteed. Reports about public strued as such.