

# ISRAEL HIGH-TECH & INVESTMENT REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES  
July 2005 Vol. XXI Issue No. 7

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

## Manna from Heaven

Over more than three decades the American Nasdaq securities market became the most favoured venue for Israeli companies for raising capital. Since the early 1970s, more than 125 Israeli companies listed on Nasdaq where they found a favourable environment. Wall Street brokerage companies like Lehman Brothers, provided the Israelis with their private and institutional investors and arranged for cross-country tours, where the Israelis presented their case to investors. Most of these new issues were completed even before reaching the market.

As 2005 unfolded it became clear that the Nasdaq had lost its lustre and was being replaced by London's Alternative Investment Market. (AIM) Last year only three Israeli companies went public on AIM and four on Nasdaq. By contrast eight companies have already been listed in 2005 and the line of brides-to-be is lengthening. It looks as if it were Manna from Heaven. "We're looking for the number of Israeli firms listed in London, to climb to around 40 by the end of the year," predicted Yaron Har-Zvi, partner at Ernst & Young Israel in Tel Aviv, which has advised many of the companies going public in London.

Many of the listing companies said they seek to avoid the tighter Nasdaq regulations and stricter disclosure requirements imposed by the American Sarbanes-Oxley Act of 2002.

In the recent past, London Stock Exchange officials have been aggressively marketing AIM in Israel. Its director of international business development, Graham Dallas, was to meet with IHTIR during his third visit to the country since January. "I was pressured to meet with companies interested in a London listing," he explained. Dallas argues that AIM is a better fit for most Israeli companies than Nasdaq, because it's quicker and less expensive. However, once on the market, investors find, that trading liquidity is low with some shares not trading for days at a time. This is rarely a problem on Nasdaq.

"The process of going public is much shorter in London, the cost is about one-half of what it is on the Nasdaq, and the annual cost of being listed is far lower than in the U.S.," said Eli Riesman, CEO and founder of Emblaze Group, which has raised \$720 million on AIM and the London Stock Exchange since 1996.

The London AIM market advertises itself as "specifically tailored to growing businesses, AIM combines the benefits of a public quotation with a flexible regulatory approach". Looking at the admission to trading criteria

<http://ishitech.co.il>

### Manna from Heaven

**Network Appliance Buys Decru for \$272m.**

**IAI and Rafael to collaborate on developing**

**New Technology to Protect Ancient Torahs**

**Sheinin Report on Venture Capital Paris Air Show 2005**

**RAFAEL to Show Mobile Air Defense System at Air Show**

**Israel's Secret Drone**

**The Fat Connection**

**eBay's Pays \$620m for Shopping.com**

**BioCancell Buys Xinnia Technology**

**BioCancell Unveils Novel Cancer Technology**

**IAI Reports Record \$5.35b Backlog for 2004**

**IAI to Unveil Military Trainer Jet**

**Novel Underwater Breathing System**

**BrainStorm Achieves Parkinson's Milestones Using Stem**

**Cell Technology**

**Fischer calls for Investment in Technology and Education**

**Clothes That Adjust to Body Temperature**

**Defense Exports to Grow to \$6.5b by 2009**

**Deutsche Telekom-BGU Sign Research Agreement**

**Aeronautics to Sell UAVs to General Dynamics**

to the London Stock Exchange and the AIM market one discovers the following requirements:

No minimum shares need to be in public hands before a floatation.

No trading records are required.

No prior shareholder approval for transactions

Admission documents not pre-vetted by Exchange or UKLA

Nominated adviser required at all times

No minimum market capitalization

One of the key requirements for a company seeking a listing is to locate a "Nominated adviser" who warrants to the Exchange that your company is appropriate for joining AIM. The nominated adviser is an Independent Corporate Finance Firm, an accountant or a broker: you are obliged to retain a "Nomad" throughout your company's life on the market. However, the Nomad's responsibility is not to the Exchange but to the company that has retained its services.

All this means that there is limited, if any, protection for the investor who probably has difficulty in differentiating between the London Stock Exchange and the London AIM Market. London is London, after all is said and done. ... but there is a vast difference.

Some observers are beginning to worry about seeds that are being sown today for another market crash similar to the one that happened to the German Neuer Market. On December 30, 1997, the Germans started what was to become the German equivalent of the NASDAQ. They called it the "Neuer" or "New Market." It started out with a value of 1000. Like the NASDAQ, it roared up, reaching its peak on March 10, 2000, at 9603.46. It had a peak market cap of \$400 billion US. On March 10, 2000, the Nemax 50 index of the largest companies listed on the Neuer Markt - Germany's Nasdaq - peaked at 9631. By July 18, it had lost 88 percent of its value, closing at 1124 and taking with it nearly \$200 billion of investors' money. On September 26, 2002 it gave up the ghost, and faded away.

We are not suggesting that the AIM Market will suffer the fate of the German market but investors should be wary of Manna from Heaven.

## Elbit Systems Awaits Boeing Order for Pilot Helmets

Elbit Systems (Nasdaq:ESLT) is expected to secure a contract to supply smart jet fighter helmets for Boeing, via VSI, which the Israeli company owns jointly with Rockwell Collins.

Boeing recently reported that it had received a U.S. defense order for the helmets. Sources affiliated with Israel's military industries believe Elbit Systems' share in the order will be worth \$41 million.

Elbit Systems is presenting a virtual cockpit at the Paris air salon. It enables visitors to feel the sensations of flying a fighter jet and helicopter in training and combat using the most advanced of the company's systems.

An interactive panoramic screen shows the "view" from the plane windows, and scenarios of how the avionics systems would operate. The cockpit, developed for the Paris show, is patent-protected.

Elbit Systems will also present an unmanned drone, designed to fight terrorism. The unmanned aerial vehicle has accrued more than 30,000 flying hours working as surveillance for Israeli and foreign security services.

## Network Appliance Buys Decru for \$272m.

Decru was registered in the U.S., but it was the brainchild of Israelis Dan Avida and Serge Plotkin, and it was sold for \$272 million to Network Appliance (Nasdaq:NTAP)

It has been collaborating with Network Appliance on

### 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 17% VAT

solutions since January 2004.

The takeover, for which Network Appliance will be paying cash and stock, is expected to be closed by October 2005.

Avida, formerly the chairman and CEO of Electronics for Imaging (EFI), established Decru in 2001 together with Serge Plotkin, an associate professor at Stanford University. Avida, 42, and Plotkin both hail from the Israeli army's software development units.

Decru's flagship product DataFort protects the core of the storage network by seamlessly inserting a layer of strong encryption, authentication, access controls, and compartmentalization.

Since Decru's establishment it has raised more than \$45 million in venture financing from Benchmark Capital, Greylock, New Enterprise Associates, In-Q-Tel, and others.

Avida is considered a wunderkind of Israeli hi-tech. He began studying at the Stanford computer department while in his teens. After his hi-tech army service he studied computer engineering at the Technion University of Haifa, where he graduated with honors. In 1998 he joined EFI, which had been founded by serial hi-tech entrepreneur Efi Arazi.

Avida was the brains behind EFI's flagship product, the Fiery, and under his stewardship the company grew from annual revenues of \$130 million to more than \$600 million. Avida made tens of millions of dollars from his EFI holdings, but he lost a cool \$20 million when the stock collapsed in 1997. He left the company in 2000.

### **IAI and Rafael Collaborate on Developing micro-satellites**

The Israel Aircraft Industries and the Rafael armaments authority are setting up a joint venture to develop and make micro-satellites. The two Israeli companies signed the definitive agreement at the Paris Air Show today.

Micro-satellites aren't teacup-sized: they can weigh up to 120 kilograms, and be used in a range of civilian and military applications.

The JV's first project has been dubbed Venus: it involves developing micro-satellites for the

Israeli and French space agencies. The satellites will serve various monitoring capacities and will be armed with special cameras for agricultural and fishing applications, for instance. The satellite will also be used to test electrical propulsion systems in outer space.

IAI CEO Moshe Keret commented that the IAI will mean to pursue collaborative endeavors with Israeli companies to promote innovative space projects.

### **Seven Israelis on Red Herring's Top 100 List**

The prestigious Red Herring magazine announced the finalists on its 100 Private Companies of North America for 2005. Seven Israeli companies are on the list, that identifies new and innovative technology companies and entrepreneurs.

The Israeli companies are: Adimos, which develops wireless multimedia processors for consumer electronics; Atrica, which provides optical Ethernet solutions for metropolitan area networks; Clearforest, which provides text-driven business intelligence solutions; Comverge, which provides load management and control systems to energy suppliers; Cyota, which provides online security and anti-fraud solutions to financial institutions; Interwise, which provides innovative enterprise conferencing solutions; and Intransa, which makes disk-based storage devices for use in storage area networks (SANs).

Red Herring's editorial staff rigorously evaluated more than 900 private companies through a careful analysis of financial data and subjective criteria, including quality of management, execution of strategy, and dedication to research and development.

Red Herring editors were among the first to identify companies such as Google and eBay.

### **New Technology to Protect Ancient Torahs**

Temple Shalom after a theft of two Torah scrolls is boosting security. The synagogue is looking at two technologies that manage the tricky task of assigning unique serial numbers to Torahs without running afoul of strict Jewish laws keeping the scrolls ritually pure.

Occupying a central role in Jewish worship, ritual Torahs don't just roll off the printing press like yesterday's newspaper. Under Judaic law, a new Torah must be meticulously copied from an existing scroll by a trained scribe, who pronounces each Hebrew letter

aloud - - for accuracy -- before writing it by hand on squares of animal skin. The pieces are later sewn together and reeled onto giant wooden rollers.

The process takes a year, and a single letter broken or out of place renders a Torah unusable. Like many Torah scrolls in active service, the one stolen from Temple Sholom last month is an antique, and estimated to have been written in the Middle East several hundred years ago.

"It's so easy to steal a Torah from the synagogue," says Yitzchak Shteiner, a rabbi at Machon Ot, a Jerusalem-based non-profit Torah preservation center. In 1994, a New York burglar confessed to stealing scrolls from 10 synagogues and fencing them with a Chasidic silversmith in midtown Manhattan. With a fair market value of around \$50,000 for a new scroll, \$9,000 for a used one, Judaism's sacred text is in some ways a perfect underground commodity.

But perhaps most attractive to a thief, and vexing to law enforcement, Torah scrolls are inherently anonymous. Jewish law dictates that not one character can be added to the 304,805 letters of the Torah's text. That means no "property of" stamps, no serial numbers, and no visible identifying marks of any kind.

The Council responded with the first advance in Torah technology since the invention of parchment: a method of assigning Torahs globally unique identifiers without violating rabbinic law.

Called the Universal Torah Registry, the system works like this: A synagogue mails in a form with their contact information and the number of Torahs they want to place in the system, and the registry sends back a computer-coded template for each scroll. The 3.5- by 8-inch template resembling an IBM punch card, with eight holes arranged so their position relative to one another describes a unique identification number in a proprietary code.

A rabbi uses the template to perforate the coded pattern into the margins of the scroll with a tiny needle. To keep an enterprising thief from swapping the perforated segment with a section from another stolen scroll in some kind of twisted Torah chop shop, the registry recommends applying the code to 10 different segments of the scroll. Pollack says the code contains self-authentication features that keep a thief from invalidating it by just adding an extra hole in an arbitrary location.

Now if a crook tries to sell the Torah, the pattern can be mapped back to the ID number, which is linked to the rightful owner in a database. "It makes it harder to

fence," says Pollock. "If your car has a VIN number, it's harder to sell illegally."

Machon Ot's, competing system, the International Torah Registry, takes advantage of the handcrafted nature of the Torahs. Though the content is always the same, the position of the lettering varies from scroll to scroll, making each Torah individual. By measuring the distances between letters at certain standardized points, and entering them into a computer program, Machon Ot generates a 20-digit number that uniquely identifies each Torah.

The organization also has about 10,000 registered Torahs in its computer, about half in Israel and half in the United States, where the group sends experts several times a year to enter new scrolls into the system, and to perform inspections and evaluations of Torahs.

### Sheinin Report on Venture Capital

The annual high-tech conference of the Israel Venture Association (IVA) held in Tel-Aviv, last month, was a standing room only event. Sprinkled throughout the audience were young entrepreneurs, hoping to land a venture capitalist investor. The conference attracted top drawer speakers in including the Prime Minister and the Minister of Finance.



The IVA commissioned a study to determine the contribution of the venture capital funds to the Israeli economy. A key finding in the study prepared by economist Yacov Sheinin reveals that startup companies supported by venture capital contributed about 35% of the growth in the electronics and software field in Israel in the past decade.

The current rate of \$1.5b. per year in VC funding is required for a sustained growth of at least 6% in the Israeli economy in its current business structure. The report suggests that continuation of investments at current levels will help to advance Israel's economy from 22nd place in the global ranking of GNP to 15th place or higher within 20 years.

Other findings include:

During the past decade, VC investors have invested over \$12 billion in Israel. This is the world's highest rate of VC investment relative to GDP.

6% of the country's labor force is employed by its high-tech industries.

Venture capital investments directly contribute over 1% of Israel's GDP.

Over 90% of VC investments are directed to startup companies and represent the dominant source of funding for these companies.

About 90% of the Israeli startup that are supported by VC funds continue to operate in Israel rather than moving overseas.

The percentage of high-tech production in the overall GDP is the highest in the world.

An increase in grants from the Chief Scientists for new ventures, including incubators, is a necessary condition for increasing investment opportunities for the venture capital funds for further development of high-tech industries.

### Paris Air Show 2005

The 46th Paris International Air Show, held bi-annually at Le Bourget Airport near Paris, is the leading professional air show, joining together both military and civil products in Aviation & Aerospace on all aspects. Israel is one of the leading participants at this show.

Israeli aeronautical and aerospace industries are today at the forefront of technological advancement and sophistication. The success in researching and developing new products and advanced technologies is a direct outcome of Israel's hard-won experience in defending itself, its skies and its air transportation, against all threats, with a recent emphasis on fighting terrorism.

The Paris Air Show 2005 provides an opportunity for Israel to showcase its contribution to the important area of civil aviation security, including airport security, as well as security and defense of the cockpit and the aircraft interior. Combined with special developments in the field of unmanned systems by Israeli Industry, it will be demonstrating at Israel's pavilion, integrated systems of the most sophisticated technologies.

These include UAVs, avionics upgrades, precision castings, simulators, electro-optical and infrared sensors, C4I systems, satellites in space, airborne reconnaissance platforms, air-to-air and air to ground missiles and more.

UAVs came into being about ten years ago to make up for shortfalls in the existing civil and military systems. Both pre-programmed and remotely piloted versions, are now operated in greater numbers on combat, reconnaissance or security missions; some of them requiring extreme powers of endurance. Currently, over 300 UAV programmes are underway in more than

40 countries.

The multiple and increasing roles that UAVs play in political and economic crisis situations and their contribution to the international fight against terrorism will ensure they quickly find their place in civil airspace.

This new technology is of interest to both the media and the general public in terms of its possible applications in the civil sector, which are very varied and include cartography, forest fire detection, crop spraying, and surveillance of roads, nuclear power plants and high-speed trains.

### Rafael Exhibits Mobile Air Defense System at Air Show

The RAFAEL Armament Development Authority exhibited its advanced air defense system at the Paris Air Show. The company will also display a variety of capabilities and products in air detection, attack, defense, and weapons systems support.

The company also revealed its advanced guidance system, which provides an ordinary bomb with advanced capabilities that turn it into a precision counter-weapon with the ability to identify and update information about its target.

Rafael also showed, for the first time, its Spyder Air Defense System, a mobile system developed in cooperation with Israel Aircraft Industries that incorporates the Derby active radar (RF) missile and the Python 5 dual waveband Imaging Infra Red (IIR) missile.

### Israel's Secret Drone

Israel has been utilizing a secret device to counter the growing threat of mortars and Qassam rockets Hamas regularly launches at the Jewish communities of Gaza – a pilotless drone that identifies and takes out militants and their equipment before they can fire the rockets, according to senior Israeli security sources.

The Israel Air Force recently fired three missiles at two teams of Palestinian militants, planning a mortar attack in a Gaza refugee camp. Palestinian residents related that Israeli drones fired the missiles near where a group of militants was gathering.

The IDF only confirmed that missiles destroyed both launchers, but would not reveal which kind of aircraft was used in the operation.

## The Fat Connection

Israeli and Swedish scientists have discovered how excess body fat can lead to the onset of diabetes. One out of 12 people in the western world suffers from type 2 diabetes.

Worldwide, 150 million people are diabetic and their numbers are expected to double in the next 20 years, as a result of the growing obesity epidemic. Yet, the reasons for the strong correlation between excess body fat and diabetes have been puzzling researchers. Scientists at the Weizmann Institute of Science and the University of Umea, Sweden have now unravelled a mechanism, by which fat contributes to the onset of the disease. Their results were published in the April issue of Cell Metabolism.

Type 2 diabetes is a complex disease characterized by the body's inability to efficiently utilize sugar. Two stages of the disease have been identified: In the first, "silent" stage, the body's cells lose their ability to respond properly to the crucial hormone, insulin, responsible for moving sugar from the blood into cells. If sugar remains in the bloodstream, the insulin-producing beta cells in the pancreas compensate by stepping up production. Eventually this leads to beta cell exhaustion, reduced insulin output and the appearance of full-blown diabetes.

Elevated fat in the bloodstream appears to accelerate both stages of the disease but exactly how does this happen? The culprit may be a receptor known as GPR40 found on the outer surface of pancreatic beta cells. GPR40 was recently discovered to respond to fatty acids, alerting beta cells to their presence in the bloodstream. Beta cells were known to be attuned to changes in blood glucose levels, responding to after-meal glucose surges with a sharp increase in insulin production. But when fat is present in addition to sugar, the GPR40 receptor causes even greater insulin output. Frequent overstimulation of the beta cells may be tied to persistently elevated insulin levels, hastening the onset of the disease.

How does this destructive cycle begin? To understand GPR40's role, Prof. Michael Walker and students Nir Rubins and Reut Bartoov-Shifman of the Weizmann Institute's Biological Chemistry Department teamed up with Prof. Helena Edlund and post-doctoral fellow Dr Per Steneberg of the University of Umea. Together, they developed two types of lab mice with modified GPR40 activity. In the first, the scientists used a technique known as gene knockout to prevent production of the GPR40 receptor. The second type

had overactive GPR40 genes creating a surfeit of fat-signalling receptors that tricked the beta cells into sensing high fatty acid levels, even on a normal diet.

Throughout the trial, the GPR40 knockout mice remained healthy, apparently suffering no ill effects from the deletion of the receptor, even when the fat content of their diet was raised substantially. In contrast, normal mice on a high-fat diet displayed typical symptoms of the first stage of diabetes. But strikingly, in the animals with extra GPR40 receptors, the disease progression was swift. They soon began to exhibit the classic symptoms of full blown diabetes, including failure of the beta cells to produce adequate amounts of insulin.

Prof. Walker: "These studies show that excessive GPR40 action can trigger each of the two stages of the disease. Our results establish GPR40 as an important link between obesity and diabetes. This gives us a new tool to combat the diabetes epidemic: For example, it might be possible in the future to treat the condition using drugs that block the action of this receptor. "

## eBay's Pays \$620m for Shopping.com

EBay has agreed to a \$620m deal to buy the Israeli firm Shopping.com, as part of an effort to offset slowing growth in its core business of online auctions.

Shopping.com is a price comparison website, allowing users to hunt down the cheapest prices for whatever they are trying to buy. EBay hopes that by merging the listings on its online marketplace with the product listings on Shopping.com, it will drive further traffic toward its sites.

EBay is paying \$21 a share in cash for Shopping.com, a 20% premium. Founded in 1998, Shopping.com resisted the lure of the stock market during the boom years and finally floated in New York last October at \$18 a share. The price peaked at \$32 later that month and has since been falling back.

EBay is paying \$21 per share in cash, a 20% premium over Shopping.com's \$17.40 closing price prior to the announcement. The deal prices Shopping.com at a multiple of 4.7 times estimated revenues this year.

## India, Israel set up joint industrial R&D Fund

India and Israel have signed an agreement to set up a joint industrial Research and Development fund to encourage investment and joint ventures.

Minister of State for Science and Technology Kapil Sibal and Israeli Deputy Prime Minister and Minister for Trade and Industry, Ehud Olmert signed the agreement under which each side will contribute \$1.0m. each to

provide risk-free grants to entrepreneurs from both countries.

The two ministers outlined cooperation in the areas of nano-technology, biotechnology, water management, non-conventional energy and space and aeronautics as the five priority areas of "common interest".

"We have collaborated with each other in defence and strategic areas but we need to move on to areas in which we can affect the lives of ordinary people," said Sibal.

### BioCancell Buys Xinnia Technology

Israeli start-up CableMatrix has bought out U.S. rival, in bandwidth management, Xinnia Technology. CableMatrix develops servers to manage bandwidth; Xinnia provides solutions for cable network application management.



CableMatrix servers allow cable operators to control and manage bandwidth in real time and ensure quality of service for advanced multimedia applications on their IP networks. Xinnia - whose software manages applications at the end user - will allow the Israeli startup to offer an end-

to-end solution. The acquisition will help CableMatrix finalize the launch of advanced multimedia servers for cable television operators.

### BioCancell Unveils Novel Cancer Technology

BioCancell has developed technology for the targeted elimination of cancerous tumors. The development came in a research project led by Prof. Avraham Hochberg, who has published 95 articles on the subject.

Avi Barak, CEO of Yissum, Hebrew University's Research and Development company that is one of BioCancell's backers, said that BioCancell has begun a round of financing aimed at raising \$3-6 million from private investors. Barak heads the university's R&D commercialization process, and explains that the funding will probably come more from private and strategic investors and less from venture capital funds.

Cancer is now the number two killer in the western world, second only to old age. In the United States alone, some 600,000 people die of cancer annually, one in two men and one in three women are considered

to be at risk of developing some type of cancer.

Hochberg has discovered a gene that is found in fetuses, which disappears after birth, and reappears in huge quantities in over 30 types of cancer.

"We have developed a method for detecting cancerous tumors that contain this gene," Hochberg says. "The method is so precise that it allows us to see a single cancer cell in tissue, using inexpensive and quick computer technology."

Doctors currently fight cancer via radiation, chemotherapy and surgery. Hochberg calls the DNA-based methods "non-conventional weapons," and his technology is part of an innovative therapy.

BioCancell has also developed a drug for destroying the cancer gene based on the operating mechanism of the gene, identified by Hochberg. The drug contains diphtheria toxin, the strongest toxin known to science, and plasmid DNA, which will cause the toxin to attack only the cancer cells that contain the gene, while leaving the surrounding cells unharmed.

"Fortunately, the whole population was immunized against diphtheria during their childhood," Hochberg says. "When the drug is introduced into cells containing the cancer gene, the toxin is activated and the cancer cells are destroyed."

This therapy has been tried on patients with advanced bladder cancer, producing effective results with no side effects. At this stage BioCancell is applying to American and Israeli health authorities for approval for a broader use of the therapy in human beings. The first trial will be with 15 patients, the second with 35, and the third with hundreds of patients.

BioCancell produces the drug in its own labs. The company has registered a series of patents on the gene, which is now completely patent-protected. Thus far, \$7 million mostly from grants and donations raised by Hochberg's lab has been invested in the drug's development.

### IAI Reports Record \$5.35b Backlog for 2004

Israel Aircraft Industries backlog of orders, reached a record \$5.355 billion at the end of 2004.

IAI president and CEO Moshe Keret said, "We also anticipate that by the end of 2005 the backlog will approach or exceed \$6 billion." Keret also announced that IAI's sales in 2004 reached \$2.1 billion, an increase of 10% from the previous year.

Keret attributed IAI's growing backlog to the company strategy to an increase of international cooperation agreements in the United States, Southeast Asia, South America and India.

"We are also trying to deepen our cooperation in Europe because of common needs and interests. We have taken a number of steps in this direction and initiated several joint activities with EADS and signed an agreement for the development of the Venus micro-satellite with the French Space Agency," Keret said. Keret recently met with Turkish minister of defense Vecdi Gonul during the latter's visit to Israel. Keret briefed Gonul on the company's line of mini UAVs and their role in homeland security.

Keret also stressed that the company is pursuing at an equal pace business cooperation in both the military and civilian sectors. He cited IAI subcontracting activities for Boeing's new 787 Dreamliner aircraft; the launch of the Gulfstream G150 business jet; cooperation on the Indian Dhruv helicopter and work with a European company on heavy fuel engine for IAI UAVS.

### **IAI to Unveil Military Trainer Jet**

Israel Aircraft Industries (IAI) has joined with US-based Aviation Technology Group (ATG) to develop the first Israeli military jet since the collapse of the Lavi project in the late 1980s.

Much less ambitious and smaller than the Lavi, the Javelin advanced jet trainer, hopes to address the global demand for the next generation training aircraft and light combat jets. The tandem-seat, twin-engine plane will be suited for a variety of military training and support requirements.

"The Javelin was unveiled at the Paris Air Show, and we expect the aircraft to take off for its maiden flight very soon," an IAI source said.

"Israel offered the aircraft manufacturer Aviation Technology Group its hi-tech know-how, marketing expertise and industrial facilities to develop and sell the military version of the Javelin jet."

IAI conducted preliminary design work several years ago for a new advanced military trainer, but faced with mushrooming development costs of nearly \$200 million, it teamed up with ATG to develop and promote a very lightweight plane with clear potential for further military applications. IAI is bringing its avionics and design experience to the project and believes an enhanced military version could be launched as soon as next year.

IAI said that "since the collapse of the Lavi fighter program in 1987, the Israeli government decided explicitly to abandon future military aircraft projects, regarding them as too risky. By moving to develop the first Israeli military jet since the Lavi project was discontinued, IAI has made a conscious decision to

move from its former role as a mere subcontractor and spare parts supplier for overseas military industries to a manufacturer of main military aeronautical platforms.

"Both the Javelin advanced light combat jet and the Dhruv transport helicopter project we're now marketing with the Indians move us back into the exclusive military aircraft manufacturing club, something IAI has been looking forward to for many years."

The Javelin will fly at 0.9 Mach, or about 1,100 kph, just shy of supersonic speed. It will weigh approximately 2,700 kg. The Javelin's cockpit and avionics will be compatible with other systems in advanced generation fighters, including the F-15, F-16, MiG-29, Sukhoi-30, Rafael and Eurofighter. Systems will include embedded simulations of combat scenarios, simulated operation of weapons and self-defense systems and mission planning, and debriefing capabilities.

IAI expects to enter the largely untapped market of military jet training, citing the fact that approximately half of the world's advanced trainer fleet is more than 20 years old and far more expensive to maintain than a modern jet such as the Javelin. IAI also sees a strong market in Asia, and is likely to offer the aircraft to the IAF as a replacement for its early-1960s Fouga Magisters.

"The Israel Air Force is kept fully informed of the Javelin's development, and we employ retired combat pilots to benefit from their experience and input as to future Israeli jet training needs," IAI said. A civilian version will sell in the US for about \$2.5 million.

### **Novel Underwater Breathing System**

An Israeli Inventor has developed a breathing apparatus that will allow breathing underwater without the assistance of compressed air tanks. This new invention will use the relatively small amounts of air that already exist in water to supply oxygen to both scuba divers and submarines. The invention has already captured the interest of most major diving manufacturers as well as the Israeli Navy.

The idea of breathing underwater without cumbersome compressed air tanks has been the dream of science fiction writers for many years. In George Lucas' movie "The Phantom Menace", Obi-Wan whips out a little Jedi underwater breathing apparatus and dives in. As things tend to happen in our world, yesterday's science fiction has turned into today's science fact due to the dream of an Israeli inventor.

There are a number of limitations to the existing compressed air tank underwater breathing method. The first is the amount of time a diver can stay



underwater, which is due to the compressed air tank capacity. Another limitation is the dependence on compressed air refuelling facilities near the diving site which are costly to operate and are used to compress the gas into the tanks which might be dangerous if not handled properly. The final problem has to do with the actual use of compressed air tanks underwater. When these tanks are in use, they empty out, and change the balance of the diver in the water.

Engineers have tried to overcome these limitations for many years now. Nuclear submarines and the international space station use systems that generate Oxygen from water by performing 'Electrolysis', which is a chemical separation of oxygen from hydrogen. These systems require very large amounts of energy to operate. For this reason, smaller, diesel fuelled submarines cannot use these systems and are required to resurface to re-supply their air tanks every so often. Divers can't even consider carrying such large machines not to mention supplying them with energy. To overcome this limitation an Israeli inventor, Alon Bodner, turned to fish.

Fish do not perform chemical separation of oxygen from water; instead they use the dissolved air that exists in the water in order to breathe. In the ocean the wind, waves and underwater currents help spread small amounts of air inside the water. Studies have shown that in a depth of 200m. below the sea there is still about 1.5% of dissolved air. This might not sound like much but it is enough to allow both small and large fish to breathe comfortably underwater. Bodner's idea was to create an artificial system that will mimic the way fish use the air in the water thus allowing both smaller submarines and divers to get rid of the large, cumbersome compressed air tanks.

The system developed by Bodner uses a well-known physical law called the "Henry Law" which describes gas absorption in liquids. This law states that the amount of gas that can be dissolved in a liquid body is proportional to the pressure on that liquid body. The law works in both directions – lowering the pressure will release more gas out of the liquid. This is done by a centrifuge which rotates rapidly thus creating under pressure inside a small sealed chamber containing seawater. Rechargeable batteries will power the system. Calculations showed that a one-kilo Lithium battery could provide a diver with about one hour of diving time.

Bodner has already built and tested a laboratory model and he is on the path to building a full-scale prototype. Patents for the invention have already been granted

in Europe and a similar one is currently pending examination in the U.S. Meetings have already been held with most major diving manufacturers as well as with the Israeli Navy. Initial financial support for the project has been given by Israel Ministry of Industry and Commerce and Bodner is currently looking for private investors to help complete his project.

If everything goes according to plan, in a few years the new tankless breathing system will be operational and will be attached to a diver in the form of a vest that will enable him to stay underwater for a period of many hours.

### **BrainStorm Achieves Parkinson`s Milestones Using Stem Cell Technology**

Targeting Parkinson`s disease, BrainStorm Cell Therapeutics has made major breakthroughs. Four months after stem-cell-derived cells (green) were transplanted into a Parkinson`s disease mouse model, the cells continue to produce dopamine (yellow), the substance depleted in Parkinson`s disease patients.

The key to unlocking cures to many diseases and conditions is believed by many to be held by stem cells -- unique cells that, when dividing, can produce either more cells like themselves or other specialized cells, such as heart cells, skin cells and neurons. BrainStorm Cell Therapeutics, an emerging company based in New York, with a subsidiary in Petach Tikvah, Israel, is developing stem cell technology targeting Parkinson`s disease and other CNS conditions.

Company researchers have made several major breakthroughs, becoming the first in the world to achieve two important milestones:

In vitro, BrainStorm`s researchers succeeded in causing stem cells derived from human bone marrow to differentiate into neurons that produce dopamine, the substance that becomes depleted in the brains of Parkinson`s patients;

In animal models, company scientists went a step further and transplanted stem- cell-derived dopaminergic cells into the brains of a rodent model of Parkinson`s, causing a reduction in disease activity.

"Our technology aims to treat patients using adult stem cells, derived from the bone marrow of the patient being treated and consequently is not subject to the controversial public debate provoked by the use of embryonic stem cells," points out Dr. Yaffa Beck,

Brainstorm's CEO.

Dr. Beck is an experienced biotechnology manager, having held senior positions at Collgard Biopharmaceuticals, Organics, BTG and D-Pharm, which she co-founded. She also has a proven track record as a fund-raiser and recently led Brainstorm, which is traded publicly (OTC BB: BCLI.OB), to a successful \$1.5 million private seed placement.

The company's technology, was developed at Tel Aviv University by a research team led by Prof. Eldad Melamed, Head of Neurology at Rabin Medical Center, and expert cell biologist Dr. Daniel Offen, at the Felsenstein Medical Research Center of Tel-Aviv University.

BrainStorm's technology is expected to be applicable to a large number of neurodegenerative diseases, but the company chose Parkinson's as an initial target for several reasons. "The disease is characterized by the death of a defined set of specialized brain cells concentrated in a small area of the brain that are responsible for the production of dopamine, the compound that controls motor activity in the body," explains Dr. Beck. "Thus, it is potentially amenable to a restorative approach based on replacement of the degenerated cells with healthy dopamine producing neurons". She points out that current therapies for Parkinson's are centered around dopamine replacement with drugs that deliver dopamine to the brain, mimic its activity or inhibit its breakdown. "As these drugs do not provide on-site production, with time and increasing dosage, they often cause prohibitive adverse side effects and are, thus, of limited effectiveness," she adds. Despite such limitations, annual Parkinson's disease drug sales in the US amount to \$1.5 billion.

Parkinson's disease is estimated to affect 4 million people in the developed world, including 1.5 million in the US alone. The disease has achieved a high public profile following its diagnosis in public figures that include the now-deceased Pope Paul II, former boxing world champion Muhammad Ali, US evangelist Billy Graham and actor Michael J Fox.

The impetus for trying to replace non-functioning dopaminergic cells in the brain with healthy ones, actually came from clinical studies carried out in Sweden, relates Dr. Daniel Offen, who now serves as BrainStorm's Chief Scientist. "We read reports about how scientists working with fetal tissue had had some success in improving the condition of patients

by transplanting fetal tissue into their brains," recalls Offen. "So we began working with bone marrow stem cells with the hope that if we could use them to produce dopamine we would have a safer and more reliable supply."

As only one out of every thousand bone marrow cells has the potential of differentiating into a desired type of cell, Dr. Offen and his team had to find a way to isolate and enrich them and to then manipulate them to the desired phenotype. "We use something like a cocktail mixture of ingredients to guide the cells into becoming cells that produce dopamine," says Dr. Offen.

In the study using mice, Offen and his colleagues were able to show that a large number of transplanted cells survived in the model animal brains during a four month follow-up monitoring period. "We also observed that the cells migrated to the damaged areas of the brain and that after one to two months the rodents' motor functions substantially improved. For the first time we observed cells functionally replacing those damaged by the disease."

Prof. Eldad Melamed, who serves as Brainstorm's Chief Medical Advisor and Chairman of its Scientific Advisory Board, is an international authority on Parkinson's and serves on the scientific advisory board of the Michael J. Fox Foundation for Parkinson's Research. He emphasizes the safety advantages of the BrainStorm concept. "There is a proven safety record of using adult stem cells from bone marrow in other conditions, mainly cancer. In addition, because we aim for the patient to receive cells derived from his or her own body, we expect to avoid the problems of rejection that often occur during transplants and there should be no need for immunosuppressive drugs," he says.

The company recently completed the formation of its Scientific Advisory Board with the appointment of a number of internationally renowned neurologists and researchers. They include Prof. Warren Olanow of the Mount Sinai School of Medicine and Hospital, Prof. Andre Lozano of the University of Toronto, Prof. Jeffrey Kordower of Rush Presbyterian-St. Luke's Medical Center and Prof. Ole Isacson of Harvard Medical School.

Brainstorm is currently designing a development and production facility that will serve as a center for cultivating and expanding the bone marrow derived neuron-like cells, denoted NurOwn™. The process is expected to take about four weeks between a aspiration of the patient's bone marrow to transplantation of the differentiated cells into the patient's brain. The facility will enable the company to carry out additional pre-

clinical studies in preparation for clinical trials. In addition to Parkinson's disease, the company plans to continue its research to apply the technology to the treatment of Multiple Sclerosis, Amyotrophic Lateral Sclerosis (ALS), Optic Nerve Replacement, Spinal Cord Injury, Alzheimer's Disease and Huntington's Disease.

### Fischer calls for Investment in Technology and Education

In his first public appearance since becoming Governor of the Bank of Israel, Prof. Stanley Fischer recommended bolstering economic productivity, and increasing investment in education and technology. "Higher productivity is critical for sustainable growth. Being in the forefront of knowledge and technological innovation is essential to economic growth. Any country that aspires to economic leadership must guarantee that its pool of technological know-how will increase," stated the new Governor.



Fischer said that a window of opportunity for long-term economic growth, export expansion, and political and security independence was now opening, including the knowledge of economic independence. "We're actually already on this path. If we continue on it, we can fully realize our potential, and be among the world's most developed countries," he declared. Fischer estimates Israel's growth potential at 5-6% a year.

### PortAuthority Raises \$13.4m.

PortAuthority, a Ra'anana, Israel based company that makes software to prevent information leaks from organizations, has raised \$13.4 million in a third round of financing.

The company, formerly known as Vidius, received a lucky break in the timing of the round, thanks to the recent eruption of the "Trojan horse" industrial espionage scandal that has involved a dozen leading Israeli companies.

The Trojan horse scandal in Israel is an example of what is happening worldwide, and it illustrates the damage that organizations are liable to suffer in the absence of suitable solutions to prevent information leaks from these organizations," said Shmil Levy of Sequoia, who will now be joining PortAuthority's board of directors, along with Asheem Chandna of Greylock.

"What is unique to this company is its technology's ability not only to detect a leak, but also to prevent it

in real time. We expect the company to become the leading solution on the market, with very high growth rates," Levy said.

The system operates by tagging secret information and then monitoring the company's communications systems to prevent any such information from leaving the firm. In addition to preventing leaks, it enables companies to comply with government regulations, such as the new Sarbanes-Oxley Act in the United States.

PortAuthority's customers include banks, high-tech and life-science companies and government institutions throughout the world.

### Clothes That Adjust to Body Temperature

An Israeli clothing manufacturer has designed a line of clothing using a fabric that automatically adjusts to a wearer's personal body heat.

The Israel company Bagir is using a high technology wool blend designed to maintain a wearer's comfort level regardless of the temperature of his surroundings.

The special fabric was created by Bagir's sister company, Polgat Textiles, a specialist in developing unique fabrics for apparel manufacturers, Polgat combined wool with a technology developed for NASA called "Smart Fabric Technology." The special technology contains patented micro-encapsulated phase-change materials, called Thermocules, that absorb, store and release heat - maintaining a balance in temperature.

Outlast Technologies, the developer of the Smart Fabric Technology, issued Polgat the exclusive global license on all wool blend fabrication.

### Defense Exports to Grow to \$6.5b by 2009

The Israel Export and International Cooperation Institute believes that in the absence of external intervention, Israel's defense, aviation and aerospace exports could grow by an annual 7% over the next five years, reaching \$6.5 billion in 2009.

Furthermore, the Export Institute believes that this year, the global defense market, including aviation and aerospace, will amount to \$1.4 trillion, or 5% more than last year. The Export Institute projects an annual growth rate of 4% for the next five years.

There are currently 150 Israeli companies active in defense and security, aviation and aerospace, employing 60,000 workers.

There are 350 homeland security companies, with \$350 million in combined exports to the civilian market.

**Deutsche Telekom-BGU Sign Research Agreement**

German communications giant Deutsche Telekom (DT) signed a research agreement with Ben-Gurion University of the Negev today. DT will invest \$4 million in the area of computer and network security. The agreement was signed between DT and the University's technology transfer company BGN Technologies Ltd. Participating in the signing ceremony were DT's Senior Executive Vice President Innovation Hans Albert Aukes and Vice-President of Innovation Management Ralf Baumann and senior University administration, including University President Prof. Avishay Braverman, Vice-President and Dean for Research and Development Prof. Moti Herskowitz and BGN Technologies CEO Netta Cohen.

According to Prof. Avishay Braverman, "This agreement is a direct result of the University's commitment to be leaders in applied research and to bring hi-tech industries to the Negev. I am proud of our outstanding researchers who have impressed Deutsch Telekom with their unique work."

Deutsche Telekom is one of the leading integrated telecommunications companies in the world. It offers its customers the entire spectrum of IT and telecommunications services from a single source. Deutsche Telekom offers millions of private and corporate customers all over the world the entire spectrum of modern information technology and telecommunications services – from wireless communications, Internet and fixed-network to complex IT and telecommunications solutions.

**Aeronautics to Sell UAVs to General Dynamics**

US General Dynamics (NYSE: GD) has chosen Aeronautics Defense Systems of Yavnem Israel will supply its Aerostar Tactical Unmanned Air Vehicle System. The system be used to guard borders and installations, and will later be used to patrol the US-Mexico border.

Plasan Sasa , located at Kibbut Sasa in the Upper Galilee, which won a contract to produce armor

systems for US Army M915 vehicles, has sub-contracted production of the systems to General Dynamics Armament and Technical Products for \$7.2 million.. Plasan Sasa's armor system is composed of a number of steel layers, compound materials, and aluminum, which protect military vehicles and their passengers against explosives, mines, and non-conventional terrorist threats.

The Israeli pavilion at the Paris Air Show was inaugurated yesterday in the presence of the Ministers of Defense and Transport Shaul Mofaz and Meir Sheerit.



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.

I am providing you with my name, title, mailing address,e-mail, telephone and fax numbers.

**The Israel High-Tech & Investment Report is a monthly report dealing with news, developments and investment opportunities in the universe of Israeli technology and business. While effort is made to ensure the contents' accuracy, it is not guaranteed. Reports about public companies are not intended as promotion of shares, nor should they be construed as such.**