ISRAEL HIGH-TECH
& INVESTMENT REPORT

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"The Recession is Over!"

Towards the end of 1999, in advance of the Nasdaq Crash, in the pages of this newsletter we predicted that event. Not long afterwards in April 2000, prices did crash. The crash was one of major proportions as measured by indices. The Nasdaq currently trading at 2,000 was then at its all-time peak at 5,132.
Predicting the movements of stock markets is a hazardous activity and perhaps is best to be avoided. Yet, that is one of the roles of newsletters. We are expected to be insightful. Emboldened by our success in having predicted a major crash we are moving into a new prediction mode, which foresees a return to growth on the part of the Israeli high-tech sector.

In 2000 the signal was given on February 17 when we heard: "With foreign economies strengthening and labor markets already tight," Mr. Greenspan warned, "how the current wealth effect is finally contained will determine whether the extraordinary expansion that it has helped foster can slow to a sustainable pace, without destabilizing the economy in the process." To us it presages a period of monthly lowering of interest rates. Mr. Greenspan has recently maintained interest rates of just above one per cent, a policy aimed at stimulating the economy. The program seems to be having an impact.

Most recently, Mr. Greenspan announced that he does not rule out the possibility of raising interest rates at some future date. We are convinced he will not make that move unless he is sure that the US economy is overheating as a result of excessive economic activity. Yet many believe that the day of higher interest rates is not that far away.

Israel has experienced a fairly severe recession over the past three years. Unemployment has peaked at 11.5% and per capita income has fallen to levels of nearly a decade ago. A severe drop in global tourism and more specifically, because of Arab violence in this area, has hurt its tourist industry. The high-tech sector an important part of the economy, accounting for nearly 50% of the country's GNP, was badly affected by a drop in worldwide business.

In the middle of March the Bank of Israel announced

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that it supports the Minister of Finance Mr. Benjamin Netanyahu's previous public statement that Israel's recession is officially ended.

First signs are appearing indicating the beginning of a new period of growth, perhaps as early as the late summer months.
A study conducted by a leading Israeli daily indicates that sales, investments, profit-taking, man power, infrastructure, real estate and wages - showed increases in the past few months.

The recovery process in Israel began in the first half of 2003 with the microchip companies - thanks to the increased demand in the consumer market for memory and microprocessors for various fields, such as wireless communication, telephones and handheld devices. Companies like DSPG, which develops and manufacturers processors for home telephones, were not affected during the high-tech crisis and continued to grow. Other companies, such as Tower Semiconductor, Zoran Microelectronics and Audio Codes, also began to recover sooner than the rest of the industry.

Moreover, fund-raising by startups in the first two months of 2004 reached levels similar to those recorded in early 2001 - some $300 million per quarter. The VC funds are reporting a substantial increase in seed investments. More high-tech companies were established in 2003 than closed down - after three years in which the opposite was the case - and the industry is starting to feel the return of the good days.

Investors are having to compromise - a recently published survey reveals that 25 percent of financing rounds in the past quarter were held at higher company values than in previous rounds.

Joel Maryles, managing director of the Israeli based investment bank Citigroup Global Markets estimated that ten to fifteen Israeli companies will raise $1.0 billion in US markets over the coming year. Our own research indicates that this figure will be considerably higher.

After a long lull there is a renewed demand for high-tech workers, including for those with BAs and no previous experience.

Workers in the high-tech sector now number 140,000, compared to 150,000 during the height of the high-tech bubble. Although employee bonuses have increased, wages are lower than they were in 2000 and are at 5-20 percent below their record highs.

The life sciences and computer departments of universities, which in recent years suffered from a decline in enrolment, are attracting more students again. Jerusalem's Hebrew University reports a 100 percent increase over last year in applications for its life sciences and computer departments, in the first month of registration for B.A. programs.

The Central Bureau of Statistics recent report indicates that investment in Israel rose 2,5 fold to $6.0 billion in 2003. The trend has continued in 2004. However, it should be kept in mind that a fairly large portion of the foreign investment was due to large State of Israel bond flotations on the international financial markets. Yet we read daily of reports of foreign investors taking positions in Israeli companies, especially in the communications field, a known Israeli strength.

The New Age of Drones

An Israeli pilotless plane, or UAV, opened the Asian Aerospace Show. For the first time in the air show's 23-year history, the aerial display segment was

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opened by a pilotless plane, a flight which signals the coming of age of Unmanned Aerial Vehicles (UAVs) in the global aviation scene. UAVs are being used to carry sensors, cameras, communications equipment and even more lethal payloads like missiles.

UAVs took central stage at the air show in Singapore, which opened with the low buzz of a robotic plane, the Israel Aircraft Industries Malat-EADS Eagle, making a slow overflight of the exhibition areas at Singapore's Changi Airport. Visitors were able to watch a real-time image of the area it flies over, projected on a large screen.

Another display featured a propellor-driven Eagle drone made by a European-Israeli tie-up.

Spectators on the ground were treated to a real-time image captured by the Eagle's camera as it swept over the area near Changi Village.

In all, 52 companies have brought UAV-related products to the airshow.

The U.S. Air Force is looking into developing UAVs that incorporate fighter-bomber capabilities.

Defense and industry officials learnt how a census of the UAV market showed there are about 470 different types worldwide. These are made in 39 countries by 188 companies and about 80 per cent are used by the military.

Reflecting a newfound optimism in prospects for the industry, a record 758 exhibitors from 33, countries are taking part in this year's Asian Aerospace exhibition, the region's largest.

The increasing role of Unmanned Air Vehicles (UAV) in a diverse range of applications has been underlined by industry, indications that the annual business could hit in excess of US$5 billion by the end of the decade.

As major new players in the market eye opportunities for acquisition and partnerships with established companies, the UAV market seems likely to live up to the annual double-digit growth forecasts which have been made by respective analysts.

The potential role of unmanned vehicles in combat, strategic long endurance and tactical scenarios is constantly being explored and expanded, with proven performance in civil and military operations underlining the significance of that potential.

The power plant manufacturers whose products are suitable for UAV applications will see new revenue stream opportunities as wellas possibilities to develop the new engines required for the broadening role of unmanned vehicles.

Public and private sector enthusiasm, backed by substantial long term commitment and investments, will ensure that the UAV market remains a major industry feature for the foreseeable future.

The latest in unmanned products and applications, including UAV / UCAV Systems, Sensors, Datalinks, Engines, Payloads, and Ground Control Stations will inevitably be an important highlight of Asian Aerospace 2004, which will showcase the major developments in this strategic sector to the highest level of procurement decision-makers in Asia-Pacific. Israel Aircraft Industries' (IAI) Malat Division unveiled a new Unmanned Aerial Vehicle (UAV) called "I-SEE" at the Asian Aerospace show.

The "I-See" vehicle is an enhanced mini UAV designed for short-range surveillance, reconnaissance and damage assessment roles, the ideal solution for "over the hill" missions.

"I-SEE" can carry electro optical TV and IR payloads as well as others supplied by the customer. It has an auto launch system and full data link capabilities.
Competition for a U.S. Defense Department contract to develop an unmanned ground vehicle has resulted

in new partnerships.

Elbit Systems has teamed up with SciAutonics LLC to participate in the Pentagon's Defense Advanced Research Projects Agency [DARPA] competition for the development of autonomous ground vehicle technology. DARPA seeks such technology as part of a project to manufacture unmanned combat ground vehicles.

Elbit and SciAutonics will participate in DARPA's Grand Challenge, an autonomous robotic ground vehicle race. The race, which includes 21 competitors, will take place along a 200-mile route between Los Angeles and Las Vegas. The vehicle that will complete the course in 10 hours will receive $1 million.

"The intent is to bring together innovative thinkers from a variety of fields who can help us make major strides in the development of autonomous robotic ground vehicles," said U.S. Air Force Col. Jose Negron, responsible for the competition.

Leading the Asian Airspace Show highlights this year was a special technology feature of UAVs with the spotlight on European Aeronautics Defense Space Company (EADS) and Israel Aircraft Industries Malat UAV System, EAGLE. The EAGLE is taking to the skies in what was a much anticipated UAV flying demonstration, the first time a UAV staged a flying display at a major international show.

Visitors were treated to a daily flying showcase of this performance whose real time image was captured and transmitted on to a large LED screen.

The multi-role EAGLE UAV system is an operational leading edge technology Medium Altitude Long Endurance UAV System based on a fusion of technologies and mature systems developed by EADS and IAI's Malat.

Israeli Banks Block Foreign Investors from Buying Shares on TASE

Israeli banks are blocking foreign investors from buying shares registered on the Tel-Aviv Stock Exchange.The Israel High-Tech & Investment Report's investigation reveals that the Israeli banks are forcing foreign investors to invest exclusively through their branches and insist that the investors open accounts with them. The management of the Tel-Aviv Stock Exchange has been made aware of the problem but have refused to act. Israelis, on the other hand, are not faced with any limitations when investing globally.

''The Wall Street Journal'' and the Heritage Foundation published its "2004 Index of Economic Freedom" .Israel was ranked 29th out of 155 countries in 2004. Over the years efforts within the country have aimed at privatization and the doing away with monopolies. The current Finance Minister Mr. Benjamin Netanyahu recently announced that these two issues would receive his attention and pointed squarely at the Israel Water Company and the Israel Electric Company as cases in point.

However, a closer look at the banking monopoly would probably result in the downgrading of Israel's position on the Freedom Index.
The Israel High-Tech & Investment Report, which we publish for nearly twenty years has always aimed at providing a platform for Israel's high-tech companies. Some of these are public companies listed on the Tel-Aviv Stock Exchange (TASE). We encouraged our readers that if they liked the companies, they should invest in their shares. To our surprise we received a large number of letters saying that it is impossible to place orders of shares listed on the TASE. We investigated the difficulty and found that indeed this was the case. An Israeli can turn to his bank and buy shares

on any Exchange, Bangkok, Hong Kong and not just on the New York Stock Exchange or Nasdaq. However an American can not invest on the Israeli Exchange using his own broker. One broker suggested to a potential client that an Israeli bank in the US perhaps could carry out the purchase. The investor, in turn, was advised by Bank Leumi in New York that he must open an account with them. The head of Foreign Securities for Bank Hapoalim Ms. Hanna Prizant confirmed this.The investor decided it was too much trouble.

For the past three years at the annual meeting of the Foreign Press Association at the Tel-Aviv Stock Exchange I turned to Prof. Yair E. Orgler, Chairman of the Board of Directors of the TASE and asked him to deal with the issue. After three years of raising the issue we realized that the 11 members of the Exchange are banking institutions and that they have no incentive to change the status quo.

So if we want the international investment community to invest in our companies and make the local Exchange a truly international market, access to it must be made as easy as it is for Israeli

Much is said about free competition. If we want the international investment community to invest in our companies and as a result make the local Exchange a truly international market, it must have free and convenient access.

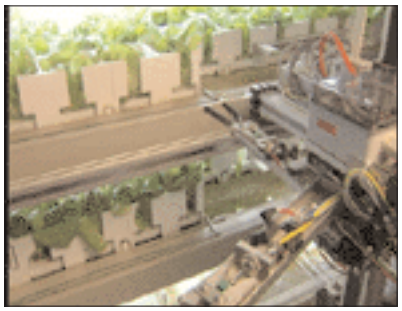
$1.1b. Available for Investment

IVC Research Center estimates that capital availability in Israel's venture capital industry is $1.15 billion, of which $750 million is intended for First high-tech company investments. IVC estimates reflect the $5.2 billion raised in the years 2000-2003, excluding investments made, returns and management fees, and after adjusting for changes in allocation policy between First and Follow-on investments.
There was also an increase in the number of companies receiving venture capital backing rising to to 1,208 in 2003 from 995 in 2002.

Star Ventures maintained top ranking with $991 million under management and a portfolio numbering 165 companies.
Apax Partners with $740 million under management and 37 companies under in their portfolio took second place.
They were followed by Pitango Venture Capital, with $720 million capital under management and 60 portfolio firms. Vertex Management Israel follows with $700 million.
Other industry leaders included Evergreen Canada Israel Investments with $650 million,
First Israel Mezzanine Investors with $430 million,
Genesis Partners, Gemini Capital Fund Management and Giza Venture Capital, in places 8 to 10, each with $300 under management.

Hydroponics: Money in the Bank

OrganiTECH Inc. (OTCBB:ORGT) the US-Israeli agro-technology company, specialized in automated, hydroponic growth technologies and greenhouse products, announced the first commercial sales in Europe. OrganiTECH Ltd. and Van Dijk Nurseries Ltd. signed a purchase agreement for the GrowTech 2500 automated hydroponics growing system. The GrowTech 2500 product line was first presented during the European lead exhibition for state of the art agriculture and horticulture "Hortifair" in Amsterdam in November 2003.
The agreement specifies the supply of initially two units of OrganiTECH's new automated floating hydroponics platforms with the explicit purpose of cultivating large quantities of pesticide-free hydroponics lettuce and other leafy vegetables.
GrowTech 2500 is an automated, rotating and hydroponic field-system for the culture of green-leave plants and herbs. Vegetables such as lettuce float in Styrofoam trays in a nutritious solution, which serves as a means of transport in the system. GrowTech 2500 enables year round and high yields production of plants at low costs. The GrowTech 2500 platform leads to a reduction of up to 80% of the costs for heating and labor, the most serious cost-drivers in the greenhouse industry.
Van Dijk Nurseries Ltd., based in Ireland, is a multinational company. Its core business is the growing, sourcing, shipping, marketing and distribution of fresh fruits and vegetables to Irish, UK and European consumers.
Organitech Ltd. holds a U.S. Patent on 56 claims



involving several advanced technologies and designs utilized to automate the entire cultivation process of plants and vegetables inside an environmentally controlled 40-foot metal container as well as in a conventional greenhouse structure.

World's Third Busiest Airport Implements NICE Surveillance System

Raanana, Israel based Nice Systems (NASDAQ:NICE) reported that the Dallas/Fort Worth International Airport is using its digital surveillance systems.

Dallas, the world's third busiest airport, is upgrading its technology and security systems with NiceVision Digital Video and Audio Recording solutions, Nice reported. The airport, which serves nearly 54 million passengers a year.

Nice had won a $104 million commitment by the Transportation Security Administration to support security upgrades earmarked for DFW's terminals.

The new technology surveillance system will cover all entrances to terminals and the giant airport's perimeter. The airport, handles about 2,000 flights a day, anticipates having the expanded system in operation by June 2004, Nice says.

"Ultimately, we are saving our tenant airlines money and our passengers unnecessary delays by greatly eliminating the possibility of terminal evacuation, and of course the upgraded security capabilities are essential to future growth," said William Flowers, vice president of IT at DFW, in Nice's statement, summing up what security systems are supposed to do.

Israel, Jordan Sign on Science Center on Border

Israeli-Jordanian relations have taken a giant step forward. A huge science center, for Israeli and Jordanian students will be built in the Arava, Israel wilderness. The center will straddle the international border, and will work on joint scientific projects.

Israel and Jordan will each allocate 300 dunam (75 acres) for the science center, which will have extra-territorial status.

The project was originated by the Rift Foundation, headed by Israeli tycoon Mati Kochavi, 42, living in New York in recent years. His partners in the project are well-known Israeli and American businessmen. Jordanian government officials and senior Jordan Army officers also partner the project, an investment estimated at tens of millions of dollars.

"Our center can host meetings on every topic, including business meetings and the setting up of infant care centers in the Arab world" says Kochavi. "Even bicyclists planning joint bike tours can meet and organize there. The idea is for the center to finance stays, as well as the planning and fund-raising for specific projects. Starting next year, we'll also give a large financial prize annually, to people from both countries, working on joint projects in various fields."

Jordan King Abdullah II, a full partner in establishing the center, wants to stress its importance. "This project is greater than just Jordan and Israel," he said. Prime Minister Ariel Sharon has said that establishing the center, "is of primary strategic importance."

The center is due to open in five years. The first stage will include a campus for biological and technological research, attended by students from Israel, Jordan, and other Arab countries. Stanford University and Cornell University, ranked among the top five universities in the US, will award BA degrees. The lecturers will be Israelis, Jordanians, and Americans. Scores of scholarships will be awarded in the coming year to Israelis and Jordanians, who will study in the US before returning to set up the project.

Potential Google Competitor?
Quigo Technologies Raises $5 Million

Quigo Technologies Inc., a leading developer of proprietary solutions for online contextual advertising and search engine marketing, announced today that it has secured over $5 million in its first round of institutional funding from Highland Capital Partners. In conjunction with the financing, Bob Davis of Highland has joined the Quigo board.

"At Quigo, we are very excited to partner with Highland, one of the leading blue chip venture capital firms in the U.S.," said Quigo CEO

Michael Yavonditte. "With its years of experience shaping the success of many well known brands, Highland brings far more to this partnership than money. We look forward to utilizing this rich history and applying their best practices to our business."

Quigo is a developer of search solutions for online contextual advertising and search engine marketing in their AdSonar and FeedPoint products respectively. AdSonar is a contextual advertising platform for publishers that applies proprietary semantic algorithms to automatically identify, match and deliver the most relevant ads to each particular page of content. FeedPoint provides a turnkey, search engine marketing solution for advertisers and agencies. With FeedPoint, Quigo has developed the industry's most advanced search engine marketing solution for easy feed creation and to increase ROI. FeedPoint effortlessly generates keywords, titles and descriptions from ordinary web pages for all search and comparison shopping engines.

"We have been very impressed with the technology behind Quigo's FeedPoint and AdSonar products. At a time when search engine revenues are exploding and advertisers are looking for contextual placement on web sites, Quigo Technologies is positioned to harness that demand with these exceptional products. Their partnerships with Overture and AltaVista are a testament to that," explained Bob Davis, partner at Highland and former CEO of Terra Lycos. "The management team of Quigo brings years of industry experience and technology expertise to the table and they are poised to leverage that to capture the market leadership position."

Quigo plans to use the funding to support growth and the continued research and development of its search and contextual advertising technologies.

"With search poised to become a $7 billion market globally by 2007, contextual advertising could reach $1 billion," estimates US Bancorp Piper Jaffray senior research analyst Safa Rashtchy, "We expect that within this field, the role of advanced technologies will be increasingly important — much more so than it was in paid search — and companies like Quigo, with a strong technology foundation, will have an edge in this burgeoning market."

Jack Lahav, outgoing Quigo chairman and private investor who played an active part in the deal stated, "Quigo will benefit by capitalizing on the expertise of Bob Davis who in just five years led Lycos from a company with $2 million in venture capital to a multi-billion dollar business as an esteemed member of the NASDAQ 100."

Proneuron Biotechnologies to Raise $3.2m

Prominent Israeli start-up Proneuron Biotechnologies and the Shepherd Center in Atlanta, a global leader in the treatment of traumatic spinal cord injuries, have received a $3.2 million commitment from The Marcus Foundation to conduct Phase II clinical trials of ProCord, an experimental procedure for acute spinal cord injury.

The Marcus Foundation chairman Bernie Marcus said, "We have been following the development of this experimental procedure, ProCord, for more than a year and feel confident that the collaboration between Shepherd and Proneuron will significantly contribute to the further advancement of this research."

Proneuron is currently conducting clinical trials of its procedure in Israel, Belgium, and the US.

Proneuron, a Delaware registered company, is the first biotechnology company to apply the power of the body's own immune system for the treatment of permanent debilitating central nervous system (CNS) disorders. The six year old company bases its activities on the ground breaking research of Professor Michal Schwartz of the Weizmann Institute of Science, which demonstrated the role of immune response in normal and pathological conditions in the central nervous system.

Largest Exporter and Investor

Intel Israel's exports contracted by 3% in 2003 to $1.362 billion. In 2002 its exports had been at $1.4 billion.

The company attributes the performance to stability, as the company's global sales had slumped far more sharply compared with earlier years. In 2000, its exports had reached $2.21 billion, and in 2001 they dropped to $1.7 billion.

In 30 years of operations in Israel, Intel has exported $10.4 billion worth of products. Intel's investments in Israel total $2.8 billion. It has secured $800 million of State of Israel Government grants for exporting firms.

Intel's vision is to converge computerization and communications by means of processors for wireless environments. Much of the dream is based on the Centrino chips developed in the company's Haifa R&D center, based on 90-nanometer technology.

In mid-2004, Intel Israel plans to launch the Dotan, which is the second generation of the Centrino.
The Petah Tikva, Israel research center is meanwhile working on a PXA800F processor, codenamed the Manitoba, which will support smart phones for third-generation cellular communications.

Future plans for capital investments include a plan to upgrade the Kiryat Gat manufacturing facility at an investment of $660 million.

Visonic, a Leading Security Firm Plans IPO on LSE

An Israeli manufacturer of burglar alarms and other security devices has announced that it plans to float its shares on the London Stock Exchange.
Visonic, which was established more than 30 years ago, sells its products to a number of international companies including BT, Chubb, Siemens and Honeywell.
Its alarms are also available through London high street retailers such as Argos.
The Tel Aviv-based company plans to float on the main market this springat a company value of £50m.

Visonic is planning the flotation to further its R&D and to strengthen its marketing programs.
It also believes the flotation will put it in a better position to make acquisitions if suitable opportunities arise.
Chief executive Dr Avi Shachrai said the market for the firm's products continued to grow strongly as a result of rising crime rates across the world.
He added: "New market opportunities are also arising as a result of widening our geographical spread and technological development."
Visonic was founded in 1973 as a maker of video antennas and quickly moved into the lucrative security market.
Its products include traditional wired burglar alarms and unwired systems, which can be easily removed when a home is being redecorated.
The firm also makes motion and glass break detectors, a range of radio transmitters, remote controls and GSM mobile phone communicators.
Visonic now sells its products in more than 70 countries across the UK, North America, Asia Pacific and continental Europe.The firm's customers include hospitals, prisons, mental health institutions and museums.

Intel, JP Morgan and Goldman Sachs are Most Active Foreign Investors
IVC Research Center has ranked the activity of foreign investors . These cover VC funds, investment companies, corporations and corporate Vcs in Israel in the years 2000-2003.

Rankings were based on the number of First Investments during 2000-2003 in Israeli and Israel-related companies (excluding follow-on investments) and distinguish between investments made with Israeli VC participation in the same or earlier financing round and investments that did not include participation of an Israeli VC.
Intel Capital tops list
Corporate investor Intel tops the list, having made 35 First investments during 2000-2003. Intel Capital is the largest CVC in the world and has investment representatives in Israel who oversee local investments. JP Morgan, Goldman Sachs, Shamrock Holdings and Deutsche Bank trailed Intel with 16,15,12 and 10 First investments, respectively. We note, that JP Morgan, Goldman and Deutsche Bank investments were made during 2000-2001, after which activity was limited to follow-on investments.

In addition to Intel, leading foreign corporations that maintain local investment representation include Applied Materials, Johnson & Johnson, Motorola,, Nokia and Philips. Active corporations without local representation include Siemens, Samsung and Nortel Networks among others.

Investors that increased activity in 2002-2003 are Accel (7 First investments), CDIB (5), West Steag (5), Lightspeed (4) and Hitachi (4). Noteworthy is US-based Advent which, although not ranked among the most active investors for the four-year period, made three First investments in 2003.

Benchmark and Sequoia operate direct investment funds in Israel, and Alice Ventures and Partech have representative offices in Israel.

Co-Investments with Israeli VCs

As mentioned above, foreign investors made 288 First investments in 2000-2003, 241 (84 percent) of which were made with participation of Israeli VCs at the

same or earlier financing round. Only 47 investments (16 percent) were without Israeli VC participation. These data demonstrate that foreign investors prefer to invest together with Israeli Vcs, or to join a financing round in Israeli VC backed companies.

According to Zeev Holtzman, Chairman of Giza Venture Capital and IVC: "Foreign investors are expanding their activity in Israel and prefer to invest with local VC funds. This cooperation is one of the unique characteristics of the Israeli VC industry compared to the rest of the world. It reflects the attractiveness of Israel as the most important resource of innovative technologies after North America."

Foreign Investors by Geographic Area

Most of the 24 active foreign investors in Israel are located in the US. Six investors are from Asia and five are European. Jafco (Japan) ranked highest among Asian investors (though it is no longer making new investments in Israel), and Holland Ventures (Holland) is the most active European investor. Accel Partners (US) invests in Israeli companies through its London-based office.

Companies by Sector

During 2000-2003, 197 Israeli and Israel-related companies received First investments from foreign investors. Ninety-five companies (48 percent) were in the Communications sector, 56 (29 percent) in Enterprise & IT Software, 18 (9 percent) Internet, 14 (7 percent) in the Life Sciences and 14 (7 percent) in other sectors.

Foreign Investors Increasing Investments in Israel in 2004

Foreign investors are expected to increase their investment activity in Israel in 2004. Several important delegations of overseas investors are expected to visit Israel in the next coming months.

The Tech Tour, which includes 40 overseas companies and investors, is making its first foray outside of Europe in late March.

"Tech Tourists" include representatives of Silicon Valley Bank, Lightspeed Venture Partners, Nokia, Marubeni Corp., Highland Capital Partners, Siemens VC and other leading corporations and VC funds.

Prof. Ruth Arnon: "My Only Interest is Pure Science"

The Business Plan described a startup company named BiondVax. Founded less than a year ago, the company is developing "an intranasal flu vaccine that is to provide an effective multi-season strain protection against the majority of existing and future influenza strains". Most of us, at some point in our lives, are vaccinated. However, it is always for a specific influenza.

What particularly caught our attention was that the vaccine in question, was "developed by Prof. Ruth Arnon and had been proved effective in animal models". Prof. Arnon's name had been previously associated with the development of Copaxone, a drug produced by Israel's Teva Pharmaceuticals. Copaxone properties effectively reduces the disease's remission period from 1.6 attacks per year to one in six years.

Copaxone subsequently became Israel's first home-developed drug. Its 2004 sales are expected to exceed $1.0 billion.

IHTIR visited with Prof. Ruth Arnon at her modest office in the Department of Immunology in the Wolfson Building of the Weizmann Institute of Science, Rehovot, Israel. The second generation Israeli studied biotechnology at the Hebrew University in Jerusalem. "At that time the subject of immunology was still unknown", she comments. As other young Israelis Ruth Arnon served two years in the army and was fortunate enough to work as a chemist.

Multiple Sclerosis (MS) is a disease whereby the body's immune system attacks and damages the myelin sheath surrounding nerves in the central nervous system, which is comprised of the brain and spinal cord. The myelin sheath serves to facilitate conduction of nerve signals along pathways. The destruction of the myelin causes degradation of nerve signals resulting in impaired functioning of systems that those nerves serve.

"When we started the research, we didn't even dream of discovering a drug," she said.

Instead, the team was trying to understand the mechanisms of MS. In MS, the myelin sheath, a coating that insulates nerve cells, is attacked by the body's immune system, causing debilitating and painful symptoms, including paralysis. Prof. Arnon's team synthesized a polymer that mimicked the myelin sheath in hopes of inducing an MS-like disease in ani-

mals so that they could study it. But the experiment, insofar as fulfilling their initial goal, was a failure. The polymer did not induce disease.
"We almost gave up on the whole project," she recalled.
But, with the resourcefulness that characterizes her research, they switched tack and investigated whether the synthesized polymers could act as decoys for the body's myelin sheaths, preventing attack by the immune system.
She teamed with Weizmann Institute scientist Prof. Michael Sela, which proved to be a fruitful scientific partnership.

Applying biochemical ideas the two concentrated on antigenic properties of proteins, using synthetic antigens comprising of polymers and copolymers of amino acids. Antigens are substances, which can stimulate an immune response. They reasoned that there are proteins that not only can cause an immune response but also provide clues as to specificity.
Their attention focused on MS and they developed the first animal models of the disease. Subsequently human models were developed.

The experimentation that followed uncovered that a group of synthetic copolymers showed high efficacy in suppressing EAE, an acute neurological autoimmune disease resembling MS. It was designated as Experimental Allergic Encephalomyelitis. The inhibition experiment was "overwhelming" as not one but several of the synthetic copolymers showed high efficacy in suppressing EAE. The most active in the series was Copolymer 1 (Cop 1). The research had proved promising and patent applications were filed and received for various countries during 1972-4.

Eli Hurwitz, the head of Teva Pharmaceuticals, a close friend of Michael Sela, expressed interest in the development. An agreement was made between Yeda Research and Development Foundation, the development arm for Weizmann Institute research, and Teva. The latter, in 1987, was granted rights for the commercial development of Cop 1. The road was far from smooth as Teva had yet to develop production methods to replace laboratory procedures. Analytical and validation procedures needed to be established for each production batch. Subsequent testing, including a two-year clinical trial in the United States proved Cop 1 to be effective. Teva's road that called for the preparation of the material for submission to the regulatory agencies still lay ahead. "But for me as a scientists, together with my colleagues Dvora Teitelbaum and Michael Sela, the results were pure elation. Research, which we had conceived, designed and carried through, had matured into a budding pharmaceutical product with potential to alleviate the suffering of many people. I had seen the

Professor Ruth Arnon: Israel's Leading Woman Scientist

Formerly Vice-President of the Weizmann Institute of Science (1988-1997), Professor Arnon is a noted immunologist. Prof. Arnon joined the Weizmann Institute in 1960. Prior to her appointment as Vice-President, she served as Head of the Department of Chemical Immunology, and as Dean of the Faculty of Biology. From 1985 to 1994, she was Director of the Institute's MacArthur Center for Molecular Biology of Tropical Diseases. Prof. Arnon has made significant contributions to the fields of vaccine development, cancer research and to the study of parasitic diseases. Along with Prof. Michael Sela, she developed Copaxone® a drug for the treatment of multiple sclerosis which was approved by the U.S. Food and Drug Administration, and is presently marketed in the USA, Canada and many other other countries worldwide.
Prof. Arnon is a member of the Israel Academy of Sciences, and presently chairs its Science Division. On the world scene, she is an elected member of the European Molecular Biology Organization (EMBO). She has served as President of the European Federation of Immunological Societies (EFIS), and as Secretary-General of the International Union of Immunological Societies (IUIS). Her awards include the Robert Koch Prize in Medical Sciences, Spain's Jiminez Diaz Memorial Prize, France's Legion of Honor, the Hadassah World Organization's Women of Distinction Award, the Wolf Prize for Medicine, the Rothschild Prize for Biology and the Israel Prize. Prof. Arnon is also the Advisor for Science to the President of Israel. Prof. Arnon is the incumbent of the Paul Ehrlich Chair in Immunochemistry. She has published about 350 articles, chapters and books in the field of Immunology and Biochemistry.

unbearable despair of young women sufferers. The feeling that one can alleviate this suffering brings fantastic satisfaction," states Prof. Arnon.
Prof. Arnon research is pure science and not product oriented. "From good research useful products will ensue," she comments.

UBS Repeats Buy 1 Rating for Agis

UBS reiterated a Buy 1 rating for the drug company's stock, saying its fourth-quarter results had been and in line with forecasts.
UBS analyst Stephen Levy noted that Agis' pipeline remains strong. The Israeli firm can expect another six to seven U.S. Food and Drug Administration approvals this year, on top of the approval received in January, for Ketoconazole Shampoo 2%, a generic version of McNeil's Nizoral Shampoo, used to treat fungal conditions of the scalp. Agis has another 20 drugs under development of which some will be submitted for FDA scrutiny in 2004.
UBS estimates NIS 1.9 billion revenues and NIS 6.28 EPS in 2004, unchanged from its previous research on Agis.

ProNeuron Biotech to Raise $3.2m

Prominent Israeli start-up ProNeuron Biotechnologies and the Shepherd Center in Atlanta, a global leader in the treatment of traumatic spinal cord injuries, have received a $3.2 million commitment from The Marcus Foundation to conduct Phase II clinical trials of ProCord, an experimental procedure for acute spinal cord injury.
The Marcus Foundation chairman Bernie Marcus said, "We have been following the development of this experimental procedure, ProCord, for more than a year and feel confident that the collaboration between Shepherd and Proneuron will significantl contribute to the further advancement of this research."
Proneuron is currently conducting clinical trials of its procedure in Israel, Belgium, and the US.

Proneuron, a Delaware registered company, is the first biotechnology company to apply the power of the body's own immune system for the treatment of permanent debilitating central nervous system (CNS) disorders. The six year old company bases its activities on the groundbreaking research of
Professor Michal Schwartz of the Weizmann Institute of Science, which demonstrated the role of immune response in normal and pathological conditions in the central nervous system.

Israel Joins Galileo Space Project

An agreement for Israel's participation in the €16 billion Galileo European satellite navigation system project was signed recently. The agreement was signed by European Commission director-general for Energy and Transport Francois Lamoureux and Ministry of Industry, Trade and Labor director-general Raanan Dinur.

The agreement establishes joint activity in satellite navigation and satellite-based timing in a wide variety of fields, chiefly science and technology, industrial production, development of services and markets, standardization, and accreditation agencies, and frequencies. The agreement also paves the way for Israel's financial participation in Galileo Joint Undertaking, the agency administering the project.

Given Imaging to Dual-list in Tel Aviv

Given Imaging Ltd. (Nasdaq: GIVN) announced that its shares were approved for listing on the Tel Aviv Stock Exchange (TASE). Trading of the company's shares on the TASE began trading on March 25, 2004. The listing on TASE is in addition to the listing on the Nasdaq National Market where Given Imaging shares trade under the symbol "GIVN". According to its current price,Given Imaging would be one of the 20 largest companies listed on the local exchange. Given Imaging is currently trading at a market value of $796 million, which would automatically send it into the Tel Aviv top 25, the Maof index, at its next update in July.

Miniature Robot for Spinal Surgery

The medical device startup company -- Mazor Surgical Technologies, which develops a miniature robot designed for spinal procedures, installed its first two systems in the US and Israel. This system enables the surgeon to increase the level of accuracy during surgery while lowering the level of risk related to spine surgical procedures.
The robot developed by Mazor, SpineAssist, is an advanced solution in the medical field, which offers an innovative approach to the longtime problem of spine surgeons: the need to perform precise surgical procedures in the spine area, without the risk of injuring any nerves. The solution offered by Mazor, is a precise

robot, no bigger than a soda can, attached directly to the patient's body. It helps the surgeon to determine the exact positioning of tools and implants. TheSpineAssist will shorten surgery time, increase accuracy and minimize the risk of medical failures that result from misplacement of implants and use of other surgical tools during spine fixation procedures.
The system was successfully tested on cadavers at the Cleveland Clinic Foundation (CCF) and is in the midst of clinical human trials in several spine centers in Israel (Sheba Medical center, Rabin Medical Center and Carmel hospital). CCF in Ohio, one of the leading centers in spine surgery and research in the world, and the Israeli centers will be the first to perform surgeries with the SpineAssist. Each year more than 500,000 spine surgeries are performed in the US alone, creating a large potential market for the SpineAssist.
Mazor's CEO, Ori Hadomi, predicts that in a few years SpineAssist will become a standard of care in spine surgeries. "I believe that the combination of precision, operation simplicity and performance reliability will play a key role in the success of the product and company."

Professor Moshe Shoham founded Mazor in 2001. The company is located in Israel and it employs 20 employees. Several international VC funds invested in Mazor: J&J DC, Shalom Equity, ITP, Proseed, Dor and Alice.

Sales of Drug for Alzheimer`s Reach $367m.

Yissum, the Technology Transfer Company of the Hebrew University of Jerusalem, finished 2003 with a total of about $32 million in royalties, a growth of 30% compared to total income for 2002 of $25 million.
Royalties from the sale of the drug Excelon for the treatment of Alzheimer`s disease, developed by Prof. Martha Rosin Weinstock for NOVARTIS. Total worldwide sales of Excelon in 2003 reached approximately $367 Million.

In 2003, Yissum registered 83 new patents and invested over one Million NIS in registration and maintenance of its patent portfolio of over one thousand patents. Yissum is currently promoting over 260 projects in fields such as Biotechnology, Nanotechnology, Pharmaceutics, Medicine, Chemistry, Physics, Agriculture, Computers and more.