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Biotechnology 2002 A Mix of Science, Technology and Money

Interest in the biotech industry has been revived. Biotechnology has experienced great growth with its unprecendented advances in the sequencing of the human genome. It also aroused interest of investors, who are no longer putting all of their money into hightech.

In Israel, life science companies doubled their share of the total \$2 billion investment pie last year according to the survey conducted by the IVC Research Center.

In 2001, life science companies accounted for 16 percent of the total capital raised, doubling its share over the previous year. Within the sector, 103 companies raised \$310 million, compared with 75 firms that raised \$238 million in 2000.

American biotechnology companies raised \$37.2 billion in 2000 through public and private financing. The vast number and high quality of technologies and

A glimpse into the performance of the \$1.3 billion Pictet Biotech Fund reflects the perils and rewards associated with investments in Biotechnology.

 31.01.2002
 -14.32%

 2001
 -10.90%

 2000
 69.67%

 1999
 59.98%

 Cumulative since inception (22.03.1995)
 363.79%

 Annualized since inception (22.03.1995)
 24.85%

innovations in the biotech R&D pipeline, promise big rewards to the right bidders.

Prof. Michel Revel of the Department of Molecular Genetics, Weizmann Institute of Science and Chairman of Israel's National Committee for Biotechnology summarized the state of the industry as follows:

Following the successes of its science-based industry in electronics, software and communications, Israel has a strong potential to take a leading place in the world of Biotechnology. Israel ranks as a top country for scientific publications per capita and almost 60% of its scientific publications are in biology and related medical or agricultural fields. Life sciences represent about 35% of Israel civilian research activities, mainly in its 7 universities, 5 medical schools and for agricultural research at the Volcani Institute and the Hebrew University Faculty of Agriculture. In Biotechnology, strong basic research is a prerequisite for industrial applications, so that both research and transition to industry are in need of support from government

Biotechnology 2002: A Mix of Science, Technology and Money Pomegranate's Unique Qualities Described Versamed Raising \$10m., to Market Portable Respirator Worldwide Bioinformatics Market to Reach \$1.7 billion Security Biometrics Signs Agreement with WonderNet DTR - 2000 Taut Wire Perimeter Intrusion Detection System A Day at the Tel Aviv Stock Exchange Precise Software Solutions Reports Record Revenues for 2001 Orbotech to Invest in 3 Israeli Start-Ups Nano-Technology at BioTech Israel 2002 Conference Teva Offers to Buy French Generic Operation Makov: New President & CEO of Teva Highlights: Teva's Earnings per ADR for Q4 Compugen Establishes Agricultural Biotechnology Subsidiary Schema: One of Israel's Most Promising High-Tech Companies Given Imaging Ltd. Files for New Proposed Public Offering AudioCodes Reports Fourth Quarter and Year 2001 Results Retalix Posts Q4 EPS after Loss in Q4 2000 10 Companies Account for 44% of Israeli Industrial R&D Unshackled Shekel May Boost Tech Companies' Profits HP Planning to Transfer More R & D, Manufacturing to Israel Fund to Invest in Arab Towns Nestle May Receive R & D Grant for Sderot D & B Voices Optimism High-Tech Personnel Demand Up by 9.4%

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and from university structures. Examples are R&D commercialization offices such as Yeda at the Weizmann Institute, Yissum at the Hebrew University and Ramot at Tel Aviv University. Many scientists from Academic Institutions have taken positions in biotech industries.

From three or four young Biotech companies in 1980, Israel has seen growth to 160 industrial enterprises active in the various sectors of therapeutic pharmaceuticals, diagnostics, bio-informatics and agro-bio including plant and farm animal products. The biotech work force grew from 400 in 1988 to 4,000 today. Sales of products developed by the Israeli biotech sector, which were \$15 million in 1988, reached to more than \$1.0 billion in 2001, about 80% being exports. The share of Israel is about 2.5% of the total world biotechnology sales. Biotechnology contributes significantly to the growth of the Israeli medical industry, including medical equipment and electronics as well as generic drugs, whose exports were \$1.1 billion in 1998, over 5% of total Israeli exports.

Therapeutic pharmaceuticals amount to 67% of the Israeli biotech product sales.

InterPharm developed and manufactures recombinant Interferon-beta (Rebif) and other cytokines by a proprietary technology expressing human genes in mammalian cell cultures. InterPharm is a subsidiary of Ares-Serono which registered and markets Rebif for treatment of Multiple Sclerosis in 40 countries. Another drug for Multiple Sclerosis, Copaxone, is produced in Israel and sold by Teva in the USA and worldwide. Last year global sale of Copaxone reached \$350 million. Biotechnology General sells recombinant Growth-Hormone, a Hepatitis B vaccine and viscoelastics for joints and eye applications. Pharmos licensed new opthalmic drugs and develops medication for strokes and head traumas. Many other products are under development including drug delivery systems such as by D-Pharm and Omri, human monoclonal antibodies XTL bv Pharmaceuticals, structurally shaped peptides by Peptor, recombinant heparin by Insight and promising cell therapies for spinal cord traumas by Proneuron. Together with a number of start-ups, this sector counts 36 companies.

Platform technology companies, especially in Genomic Bio-informatics include Compugen and QBI, and in computer-aided molecular design, Synergics, Peptor, BTG and Green Care develop new drug generations.



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The world market of therapeutic gene products, many of which will derive from the human genome project is very high. Erythropoietin, GM-CSF, Interferon total \$2 billion per year; Interferon for Multiple Sclerosis reached \$1.2 billion in 1999 with 170,000 patients treated. It would be an admirable goal for Israeli companies to develop yearly 2-3 new such drugs, but the duration and costs of clinical trials has until now been dependent on incorporation into multinationals.

For diagnostics, development is less financially demanding, but the market is also more limited. In Israel, diagnostics amount to 4% of biotech sales, mainly from genetic and immunological assays for viruses and other pathogens. The sector includes Orgenics, Savyon, Rahan Meristem and Gamida-Gen. But genetic diagnostics promise to become a major activity.

Agro-bio and veterinary products amount to 23% of sales. The bulk are genetically-developed hybrid seeds for vegetables, crops, fruits and cotton, with resistance to pathogens, herbicides and adaptation to unfriendly environments. Companies in this sector include Hazera, Zeraim Gedera, Rahan Meristem and Vitality. Poultry and farm animal vaccines produced by Abic, insects to fight plant parasites produced by BioBee; and new cellulose-based technologies contribute to agro-bio and environment control. Algae and fish cultures are other examples of the diverse food and bionutraceutical sector.

In an editorial in the November 1994 of the Israel High-Tech & Investment Report, we stated, "Israeli biotech industry has come of age." The International Biotechnology Conference being convened this month in Tel Aviv gives powerful proof to that effect.

Pomegranate's Unique Qualities

Because of its many seeds, the pomegranate has long stood as a symbol for fertility. A refreshing delicacy, it is loved by those who dwell in hot, thirsty lands. The plant grows wild in Syria and Persia and is cultivated in Israe, where 3,000 tons a year are grown annually. It is a shrub or small tree that can grow as high as fifteen feet, with a straight stem, reddish bark and plenty of spreading branches. The dark green leaves are highly polished and the pomegranate flowers are red. When ripe, the fruit is about the size of an orange, has a thick maroon jacket enveloping the pulp. Syrup made from the pomegranate seeds is known as grenadine. The first sherbet was made from snow mixed with pomegranate juice. In ancient times pharmacists made an astringent medication for treatment of dysentery from the blossoms.



Three pomegranates can be seen on the silver shekel of Jerusalem, the coin mentioned in the Bible. It was in circulation from 143 to 135 BC. Hiram of Tyre used the pomegranate building Solomon's in temple (I Kings 7:18, 20). It is also mentioned in regards to the ephod of the high priest which was bordered at the hem with pomegranates.

The medicinal powers of the pomegranate are mentioned in Greek mythology. It is said that Persephone becomes betrothed to her kidnapper, Hades, king of the underworld, after eating pomegranate seeds. Chinese mention pomegranate juice as a longevity drug.

But the pomegranate, whose whose main attraction has been as a fruit, is now coming into its own as a modern medical resource. Two separate Israeli medical research groups, are developing a broad range of treatments and products derived from the fruit;

At the Lipid Research Laboratory of Haifa's Rambam Medical Center, Dr. Michael Aviram, a Technion biochemist, for 20 years has researched ways to prevent and break down the deposits of cholesterol in the arteries -- arteriosclerosis -- that cause strokes and heart disease. Searching for natural antioxidants, he says he tested "many different substances before focusing on the pomegranate". Its juice, he found, contains a particularly powerful antioxidant, a flavonoid, more effective at fighting heart disease than those known in tomatoes and red wine.

For the past year, he has tested the medicinal value of the juice by providing it to Rambam patients suffering from carotid artery stenosis, a narrowing of those arteries that bring blood to the brain. The results, he reports, have been rapid with improvements noticed as early as after the first month.

The potential exists, Aviram says, for high-risk patients to be spared bypass surgery simply by drinking pomegranate juice. To make the consumption of pomegranate more palatable, he is working on developing a pill with the same medicinal attributes as the concentrated liquid.

Dr. Ephraim Lansky, the founder of the Rimonest company, is even more upbeat on the prospects for pomegranate. He suggests that research may prove the pomegranate is a virtual cure-all. Its juice, flesh, and even its skin, he believes, contain properties to counter not only cholesterol, but aging, and perhaps even cancer and AIDS, as well....

The primary shareholder and head researcher of Rimonest, Lansky is a University of Pennsylvaniatrained physician, with a doctorate in psychology and biology. He is qualified as a homeopathic physician acupuncturist. and He's currently marketing Cardiogranate, a juice concentrate which he says combats high cholesterol. He is also developing a cosmetic line of anti-aging creams, massage oils, masques and toners, using estrogen-rich extractions from pomegranate seeds and peel. As a practicing homeopathic professional, he prescribes pomegranate juice for fever and gives it to menopausal women for hot flashes.

Dr. Lansky is about to begin tests on mice in Israel's Beilinson Hospital and the Anderson Cancer Center in Houston, Texas, in order to confirm the efficacy of pomegranate in counteracting the proliferation of human breast-cancer cells.

Versamed Raising \$10m. to Market Portable Respirator

Versamed Medical Systems Ltd. is a developer and marketer of the first portable respirator approved for use in intensive care units. The company has facilities both in the United States and Israel. It is currently raising \$10 million to finance R&D and marketing activities. Previously the company has received a total of \$17 million since its establishment in 1994, from investors including Apax Partners, Aurora and Technoplast.

Versamed's flagship product, iVent201 is a PC-based full function, lightweight ventilator with a self-contained turbine flow generator. "This is the only ventilator with approval for use in all environments, including home care, transport and ICU," said Dror Givati, Managing Director. "It can be a replacement for devices used in intensive care environments in a majority of cases," Givati added.

iVent201's PC-based operating system integrates information from internal and external sensors to provide pressure flow trending and browsing capability,



iVent 201

pressure flow loops, dynamic and static CL and RAW.

400 devices were sold in the US last year, each at a price of approximately \$15,000. The company has signed distribution agreements for South America, Italy, Spain and Turkey, and is negotiating with the US Army to supply Versamed's ventilators for field use. The market for respirators is estimated at \$10 billion globally, Givati maintains.

Worldwide Bioinformatics Market to Reach \$1.7 billion

The worldwide market for bioinformatics is expected to reach \$1.7 billion by 2006, driven by bioinformatic technologies that decrease the time and money required for drug discovery and development. Emerging bioinformatic applications could reduce the cost of drug discovery by 33% and accelerate the process by 2 years. ["Bioinformatics, A Strategic Market Analysis," Front Line Strategic Consulting (Foster City, CA).]

Consisting of the content, analysis software, and IT infrastructure provider segments, bioinformatics will grow at a compound annual growth rate of 20%, with the largest growth in the analysis software segment. Large volume data mining and the need for analysis and visualization tools to support complex analysis, such as relationship modeling, will drive the \$202 million analysis software segment to \$634 million in 2006.

One of the biggest questions facing users of bioinformatics is whether to purchase content or technologies from commercial vendors, or to develop tools in-house to meet the company's specific needs. Front Line estimates that pharmaceutical and biotechnology companies will continue to allocate 60% of their total bioinformatics spending to commercial vendors, totaling \$1.1 billion in 2006.

Security Biometrics Signs Strategic Partnership Agreement with WonderNet

Security Biometrics Inc. (OTCBB: SBTI) announced a strategic partnership agreement signed with WonderNet Ltd., a leading Israeli biometric company, to co-integrate and co-market each company's core Biometrics Signature Authentication (BSA) and Dynamic Signature Verification technologies, respectively. Security Biometrics, Inc. will unite its patent-pending Short Loop Method platform with WonderNet's patented and proprietary Penflow technology engine, to open a whole new world of digital possibilities for Security Biometrics, Inc.

With this agreement, Security Biometrics feels that it has gained a formidable position, whereby it can readily deploy its enabling technologies over WonderNet's established channels of distribution. By leveraging WonderNet's business connections, Security Biometrics, Inc. will be able to leapfrog its technologies out of the R&D lab to here-and-now business-revenue opportunities.

WonderNet Ltd.'s customer list includes Bank Hapoalim BM, (Israel's largest bank), the Israeli Air Force and Visa International.

About WonderNet Ltd.

WonderNet Ltd. is a biometric signature authentication company offering the Penflow(TM) solution. The system is based on inherent proprietary patents that validate a signature in a quick, non-invasive and highly accurate manner.

DTR - 2000 Taut Wire Perimeter Intrusion Detection System

The prevention and detection of intrusions by unauthorized personnel into high security, sensitive,

secret or vital sites has long been the aim of Magal Security System's DTR-2000 Taut Wire Intrusion Detection System (TWIDS).

Since its first installation over 30 years ago the system has been reported to be exceptionally reliable, combining an unequaled "Probability of Detection" with a virtual absence of either false alarms or nuisance alarms. Because the DTR-2000 has no weather, terrain or other environmental limitations, it has been giving reliable, trouble and maintenance free service in dry and scorching desert conditions; under severe storms; in tropical, hot and humid climates and in sub zero snow covered areas.

The heart of this system is an electro-mechanical sensor which - upon activation - sends a signal to the Computerized Control Center (CCC). The CCC evaluates this signal, sounds an alarm, and gives a clear indication of the type and location of this intrusion attempt.

A Day at the Stock Exchange

"Dual listing continued to be an ongoing and positive process at the TASE. In 2001, 12 new companies were added. In January 2002, Compugen also double listed The total is now at 15," said Prof. Yair E. Orgler, Chairman of the Board of Directors of the TASE at the recently held annual meeting with the foreign press. Furthermore, to encourage investors to greater activity and a resulting gain in the volume of trading, institutional and retail Israeli investors have been granted exemption from capital-gains tax on investments in dual-listed foreign companies.

In addition, in August 2001, tax regulations were amended in Israel, making dual-listing very attractive to foreign companies. Another advantage is that institutions and private investors may buy and sell, due to the seven hour time difference between New York and Tel-Aviv. This gives traders the equivalent of two to non-stop trading sessions and adds a globalization flavor.

"One third of the total TASE market capitalization is NASDAQ related and TASE share price movements,

generally, follow those on NASDAQ. The graph sshowing the price movemenst of the two Exchanges are guite similar. However, the Tel-Aviv 100 Index in 2001. was only 16% down by while NASDAQ was 39% lower," pointed out Prof. Orgler.

When share prices fall and trading volumes decline, as was the case in 2001, fixed income trading swells. Share trading turnovers slumped to a daily \$64 million in 2001 in comparison with a \$115 million average in 2000. The TASE was negatively affected by the global and local recession and by conflict in the area.

The fixed income market benefited from the above developments, as well from falling interest rates. The Government of Israel raised \$9.4 billion in 2001 as compared with \$5 billion in 2000. Daily turnovers rose sharply from \$74 million in 2000 to \$130 million in



2001.

Computerization of trading was enhanced and the expansion of stock trading volume capacity was achieved. "On the day that trading was six times average volume it only accounted for 10% of the total capacity. (Our calculations indicate that it would imply a maximum capacity of \$3.8 billion worth of share trading). A securities advisor in a commercial bank active on the capital market pointed out that "the computerized system of trading works fine, as one buys directly opposite the seller and the transactions are completed instantaneously".

Manipulation of share prices, which was common before computerized trading was put into operation, has almost been eliminated, as the system will not accept orders in excess of a 35% price change from the previous trade.

Saul Bronfeld, TASE Managing Director, in reply to a question from IHTIR regarding low level trading (some shares do not trade for many liquidity, months), said that last year more than 100 shares issues were cited for delisting. Another 150 issues are being currently examined as prospects for delisting due to liquidity issues, market capitalization and distribution among investors.

On December 23, 2001 the Governor of the Bank of Israel announced a 2% reduction in the Israeli prime rate to 3.8%. A fairly rapid 10% devaluation of the New Israeli Shekel versus the American dollar

followed over a period of six weeks. The previous currency rate versus the dollar was seen as too high and some observers felt devaluation was justified. The rate cut was followed by a rally in shares, which reversed direction as the NASDAQ trended lower. "A shift to equities will take place if interest rates stay low and devaluation stabilizes," opined Mr. Bronfeld. As to the possibility that the Government may finally impose a capital gains tax Mr. Bronfeld said that he maintains a reasonably social conscience regarding taxation. "I am not against taxation but it should be done in harmony with imposing taxes on all capital markets."

Precise Software Solutions Reports Record \$55.6 m. Revenues for 2001

Precise Software Solutions (Nasdag : PRSE), а leader in optimizing business through application performance management, has reported its financial results for the fourth quarter and year ended December 31, 2001.

Revenues for the fourth quarter of 2001 grew 77 percent to a record \$17.1 million, compared with \$9.6 million for the fourth quarter of 2000. Fourth quarter revenues increased 19 percent sequentially from the \$14.3 million posted for the third quarter of 2001. The company reported a pro forma operating income of \$538,000 or \$0.02 per share, for the fourth quarter of 2001, compared with a pro forma operating loss of (\$950,000), or (\$0.04) per share, in the same period last year. Including all non-cash items and other income, the company reported a net income of \$232,000 for the fourth guarter 2001, or \$0.01 per share, compared with a net loss of (\$2.7) million, or (\$0.12) per share, in the same period last year.

For the year ended December 31, 2001, revenues increased 102 percent to a record \$55.6 million, compared with \$27.5 million in 2000. The pro forma operating loss for 2001 was (\$553,000), or (\$0.02) per share, compared with a pro forma operating loss of (\$4.5 million), or (\$0.24) per share, in 2000. Including all non-cash items and other income, the Company reported a net income of \$923,000 in 2001, or \$0.03 per share, compared with a net loss of (\$9.9 million), or (\$0.52) per share, in 2000.

"For the first guarter of 2002, we expect to achieve \$17.8 million to \$18.0 million in revenue, with a pro

March 2002

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forma operating income of \$600,000 to \$650,000, or approximately \$0.02 per diluted share outstanding. This forecast assumes a 4% to 6% sequential growth. Our top line expectation for the full year 2002 is \$85 million to \$89 million, which results in 53% to 60% year-over-year growth over the year 2001. For the full year, we anticipate a pro forma operating income in the range of \$5.3 million to \$6.3 million," concluded Alon.

About Precise Software

Over 4,500 leading enterprises worldwide, including 80% of the Fortune 100, are using Precise's solutions to help maximize their technology investments and meet their business goals. Precise has offices throughout North America, Europe, the Middle East, Far East and Pacific Rim, as well as a global network of resellers and distributors.

Nano-Technology for HIV Drugs, Self-Aware DNA and New Approaches to Alzheimer's at BioTech Israel 2002

Israel's first international biotechnology conference will take place in Tel Aviv on March 19-21, 2002 as part of National Biotechnology Week.

Bio-Tech Israel 2002 includes a Scientific Program comprising more than 40 presentations by leading Life Science researchers from Israel, and by overseas presenters from the Serono Pharmaceutical Research Institute, AstraZeneca and Crucell B.V.

Nanotechnology has become one of the hot topics in science over the past few years. However, little is understood about the true promise nanotechnology holds, with speculation on the field's potential running from miniature, disease fighting robots, to self-erecting electronics factories, on a one-billionth of a meter scale!

Israel is at the forefront of the nanotechnology revolution, with research being performed at newly established nanotech centers at the country's major universities. The country also has several startup companies active in the nanotechnology field, including NanoPowders, which produces nanosized metal powders for a variety of industrial applications, including potential applications in life sciences. Carmel Biosensors is developing implantable, micro-devices based on living cells for in-vivo monitoring of physiological parameters. The first application is expected to be the monitoring of blood glucose levels in diabetics.

Researchers from the Tel Aviv University, Hebrew University of Jerusalem and Carmel Biosensors will present their visions of the nano-future. Their research offers fascinating, albeit still distant visions of nanotechnologies and their potential within the field of medicine of the future.

"Most of nanotechnology is in the R&D stage, and projections are that revenues will come from nanotechnologies only in the year 2007," said Professor Yosi Schacham of Tel Aviv University's Department of Physical Electronics. Prof. Schacham also heads the Nano-Science and Nano-Technology Project, a joint research effort involving Tel Aviv University, the Hebrew University and the Israel Ministry of Health.

Schacham is one of two Tel Aviv University researchers who will be presenting their visions of a nanotechnology future. Schacham is developing an integrated system on a chip intended to analyze water toxicity, while Professor Eshel Ben-Jacob, of Tel Aviv University's School of Physics, is exploring the potential of DNA as a cybernetic system with selfawareness.

An important feature of the Schacham's chip will be its ability to detect toxic substance within a water sample, regardless of a priori knowledge of the chemical structure of a toxin. The system incorporates a solidstate electronic platform with biological cells for rapid, real-time sensing of molecules in water. The device integrates different cell types, bacteria, yeast or human cells, which will be genetically engineered to emit a fluorescent signal in the presence of specific molecules in water. The cells will be embedded in a dormant state into modular cavities in a micro-fluidic chip and integrated with a CMOS imager and electronic circuitry for optical signal detection, signal processing and communication units.

The technology, which demonstrated positive results in initial trials early this year, may have additional applications in identifying toxins in body fluids and in the air in the event of chemical warfare.

Ben-Jacob's theory on the self-aware potential of DNA arises from observing bacterial response to environmental stress. The DNA of certain bacteria has been observed to "recognize" a stress situation, and initiate a specific response at the genomic level in order to increase chances for survival.

This ability to recognize environmental change may also have computational applications, in which DNAbased systems will not only perform computation, but actually recognize problems and change according to outcomes.

Such systems may be used to construct logical elements composed of DNA and networks for specific digital electronic computations, or for the creation a universal Turing machine, which is a device capable of performing all mathematical calculations and, theoretically, doing anything the human brain can do, including developing a consciousness of its own.

Professor Itamar Willner of Hebrew University's Institute of Chemistry will present his work on the integration of biomaterials and transducers to develop DNA analysis methods of unprecedented sensitivity. "Based on this method, you can build a sensor that transmits electronically the detection of DNA and RNA aberrations to a very high level of sensitivity," Willner said.

One development of the technology will be a system enabling the bioelectronic detection of drug resistance in patients with HIV. The genetic information within the HIV virus constantly changes through mutation, reducing the effectiveness of drug cocktails used to combat the virus. By providing a test to determine drug resistance, doctors will be able to prescribe more effectively.

Nanotechnology and Bioelectronics will be featured at BioTech Israel 2002 on Tuesday, March 21 at the David Intercontinental Hotel in Tel Aviv. The program will be chaired by Professor Yair Aharonowitz, Vice President and Dean for Research at Tel Aviv University.

Teva Offers to Buy French Generic Operations

Teva Pharmaceutical Industries Ltd. (NASDAQ:TEVA) announced that it has made a firm offer to acquire Bayer Pharma S.A.'s French generic business.

The offer includes Bayer Classics S.A. a leading supplier of generic pharmaceutical products to the French retail market. The potential acquisition in the emerging French generic market is in line with Teva's strategy to be a global generic leader and enhance its activities in Europe.

Teva Pharmaceutical Industries Ltd., headquartered in Israel, is among the top 40 pharmaceutical companies and among the largest generic pharmaceutical companies in the world.

Makov is New President & CEO of Teva

Teva Pharmaceutical Industries Ltd. (Nasdaq: TEVA) announced that the company's Board of Directors has appointed Mr. Israel Makov to be the company's next President and Chief Executive Officer.

Mr. Makov will begin his term upon Eli Hurvitz's retirement from the office after Teva's Annual General Shareholder Meeting, scheduled for April 22, 2002.

Highlights: Teva's Earnings per ADR for Q4

Fourth Quarter Revenues Increased 9% to \$567m. as Net Income Increased 54% to \$89 Million or \$0.66 per Fully Diluted Million Share and

Full-Year Revenues Grew 19% to \$2.08 billion

Share and Full Year Net Income Grew 56% to \$28 million or 50% to \$2.11 per Fully Diluted Share

Fourth Quarter Sales of Copaxone Multiple Sclerosis drug Increased 42% to \$102 Million and Full- Year Sales Grew 47% to \$363 Million

Orbotech to Invest in 3 Israeli Start-Ups

Israeli tech firm Orbotech Ltd. (Nasdaq:ORBK) plans to invest \$7 million in three private Israeli start-ups as part of its growth strategy and to strengthen its position within the electronics industry.

Orbotech, which makes automated optical inspection systems for printed circuit boards and flat panel displays, said it would make the investments through its corporate venture fund, Orbotech Technology Ventures.

Orbotech will also invest in CoreFlow Scientific

Solutions Ltd, a maker of aerodynamic-based technologies for conveying and automation applications for use in a number of sectors.

Two investments will be made through the fund, one to ts corporate venture fund, Orbotech Technology Ventures.

Compugen Establishes Agricultural Biotechnology Subsidiary

Compugen Ltd. (Nasdaq:CGEN) announced the establishment of Agro-LEADS, a majority owned subsidiary focusing on agricultural biotechnology and plant genomics, with offices and laboratories located in Rehovot, Israel.

The agricultural activity now being established as a separate company was initiated in 1999 as a division of Compugen. Its objective wa to overcome the limitations of both classical breeding and modern biotechnology, in order to generate improved crops and new agricultural biotechnology products in an economically efficient way. This objective is accomplished by integrating computational biology and plant genomics with classical breeding approaches into high-throughput platforms for accelerating, directing and mimicking the natural evolution process.

Agro-LEADS' core product focus will be the development of seeds with new and highly improved traits. An important aspect of the new company's business strategy will be collaborative initiatives in areas such as crop protection products, nutritionally enhanced crops, and the use of plants as factories for nutraceuticals, as well as industrial and therapeutic products.

Schema Named as One of Israel's 10 Most Promising High-Tech Companies

Schema, a leading provider of planning and optimization solutions for wireless networks, has been named as one of Israel's 10 most promising privately-owned high-tech companies. The other companies named included: Actelis, Cash-U, Followup, Mellonox Technologies, Mysticom, Power Desine, QBI, Wintegra.

The list, compiled by consulting company Dolev & Avramovich and published by Yediot Aharonot (one of Israel's national newspapers), highlights 10 of Israel's high-tech companies that are expected to undergo rapid and sustained growth and development in 2002.

Yosi Ben-Dov, Chief Executive Officer, Schema, welcomed the accolade: "The report cited the fact that we save communications companies money. We are pleased to receive recognition for our continued expansion, client wins and the strength of our product offering."

About Schema

Schema is a leading provider of complete optimization and planning solutions that improve the way wireless carriers plan, implement and manage their networks. Schema's approach to network optimization enables operators to increase capacity, enhance quality of service and efficiency by maximizing the value of existing systems.

By helping carriers achieve excellent system-wide performance through the automated fine-tuning of vital network parameters, Schema ensures its customers advantageous resources throughout the migration to new standards. Schema's solutions are deployed and benchmarked by leading wireless operators worldwide, including Verizon Wireless, Cingular Wireless, U.S. Cellular, BellSouth International's Cellcom Israel, Cellcom Greenbay and Pelephone.

Given Imaging Ltd. Files Registration Statement for Proposed Public Offering

Given Imaging Ltd. (NASDAQ: GIVN) announced that it has filed a registration statement with the Securities and Exchange Commission for a proposed public offering of its ordinary shares.

The company expects to offer 3,000,000 ordinary shares, and certain selling shareholders expect to sell an additional 3,200,000.

Given Imaging has developed the Given System, a proprietary wireless imaging system that represents a fundamentally new approach to visual examination of the gastrointestinal tract. The Given System uses a

miniaturized video camera contained in a disposable capsule that is ingested by the patient and delivers high quality color images in a painless and noninvasive manner.

Given Imaging Ltd., also announced fourth quarter and year end results for the period ended December 31, 2001.

The company announced sales of \$3.5 million for the fourth quarter of 2001 and \$4.7 million for the full year. The fourth quarter was the first full quarter of sales for for Given for both the U.S. and European markets following FDA clearance of the Given® Diagnostic Imaging system in August 2001. Sales reflect strong fourth quarter demand for the Given System from physicians, as well as an increase in capsule sales.

Revenues totaled \$3.5 million during the fourth quarter. Gross profit was 51% of revenues. Net loss for the

fourth quarter was \$6.5 million, or \$0.26 per share, on an adjusted, post-initial public offering basis of 25,104,913 shares.

For the year ended December 31, 2001, revenues were \$4.7 million and gross profit was 48% of revenues. Net loss for the full year 2001 was \$18.7 million. Net loss for the year was \$0.74 per share, on an adjusted, post-initial public offering basis of 25,104,913 shares.

During the fourth quarter, Given Imaging reached the following milestones:

More than 3,600 M2A capsules were sold in 2001, of which 2,000 represent reorders.

In the United States. 166 systems were sold commercially and 59 were provided to physicians to support sponsored clinical trials.

AudioCodes Reports Fourth Quarter and Year 2001 Results

AudioCodes Ltd. (Nasdaq: AUDC), a leading provider of Voice over Packet technologies, announced financial results for the fourth quarter and year-ended December 31, 2001. Revenues for the fourth quarter ended December 31, 2001 were \$5.5 million compared to \$5.0 million for the third quarter ended September 30, 2001 and \$22.5 million for the fourth quarter ended December 31, 2000. Excluding a write-down of \$750,000 relating to a minority equity investment, the pro forma net loss for the fourth quarter was \$4.2 million, or \$(0.11) per basic and diluted share, compared with net income of \$8.0 million, or \$0.19 per diluted share, for the same period last year. Including this charge, net loss for the quarter was \$5.0 million, or \$(0.13) per basic and diluted loss per share.

Cash balances as of December 31, 2001 were \$130.1 million compared to \$133.7 million as of September 30, 2001.

Revenues for the year ended December 31, 2001 were \$35.7 million compared to \$71.8 million in 2000. Net loss for the year ended December 31, 2001 was \$13.3 million, or \$(0.34) per basic and diluted share, compared to net income of \$26.7 million, or \$0.62 per diluted share, in 2000.

On 21 October, 2001 AudioCodes was listed for trading on the Tel Aviv Stock Exchange, in addition to its listing on the Nasdaq Stock Market.

About AudioCodes

Founded in 1993, AudioCodes Ltd. (Nasdaq: AUDC news) designs, develops and markets Voice over Packet media gateway technologies for converged networks. The company is a market leader in voice compression technology and the key originator of the ITU G.723.1 standard for the emerging Voice over IP market. AudioCodes' product line includes leading edge VoIP communication boards, VoIP media gateway modules, VoP chip processors, analog media BioView Ltd, a developer of machine vision technology for medical applications, and the second to Sagitta Engineering Solutions Ltd, a developer of production and inspection equipment for advanced fiberoptic components.

Retalix Posts Q4 EPS after Loss in Q4 2000

Israel's Retalix Ltd, a maker of software for the retail industry, posted net income in the fourth-quarter after a loss a year ago. The gains were fueled by a number of major contracts.

Retalix said net income in the period amounted to \$635,000, or 5 cents per diluted share, compared with a net loss of \$427,000, or 4 cents a share, in the fourth quarter of 2000.

Revenues jumped 17 percent to \$15.5 million in the fourth quarter and the company's president and chief executive Barry Shaked said 2002 will be even better.

"In the coming year, we expect that revenue growth will be over 20 percent, and that we will be consistently profitable and cash flow positive, with operating income increasing significantly by more than 130 percent to over \$5 million," stated Retalix President BarryShaked.

10 Companies Account for 44% of Israeli Industrial R&D

Ten companies account for 44% of industrial R&D in Israel. The situation is similar in the software sector, where ten start-ups and incubators carry out 28% of the sector's R&D, according to the Central Bureau of Statistics.

According to the figures, total business sector R&D in 2001 was NIS 11 billion (\$2.4 billion). This amount is 68% of all national civilian R&D, estimated at NIS 16 billion (\$3.4 billion).

March 2002

The number of business sector R&D employees prior to the onset of the global high-tech crisis was 36,000, of which 27,000 were university graduates. A quarter of all R&D employees in Israel were women. The proportion of women in the industrial and computer sectors reached an even higher level of 30%.

Goldman Sachs: Unshackled Shekel May Boost Tech Companies Profits

Goldman Sachs said today that Israeli technology companies could experience a modest impact to profitability in 2002 if the shekel's exchange rate remained at current levels, or weakened further.

"Israeli tech companies under our coverage generate over 95% of total revenue in dollars, while 20%-50% of total expenses are shekel-based. While it is difficult to predict the specific impact of the shekel move on individual company results, we believe the current direction of the shekel versus the dollar is generally positive for margins among companies under our coverage," the investment bank said.

The companies with the highest percentage of total operating expenses in shekels included Comverse (Nasdaq: CMVT) with roughly 50%, Orbotech (Nasdaq: ORBK) with 35%, Check Point (Nasdaq: CHKP) with 25% and AudioCodes with 25%.

"While we expect some companies to leverage the devaluation in order to report higher operating profits, we would not be surprised if others use the benefit by investing more (in shekels) in sales and marketing as well as R&D, and in some cases lowering prices. In doing so, the companies can attempt to gain market share and potentially enhance distribution and their product portfolio without negatively impacting profitability beyond current 2002 plans," the analysts noted.

HP Planning to Transfer more R&D, Manufacturing to Israel

Hewlett Packard (NYSE:HWP) is planning to transfer to Israel additional development and manufacturing activities, according to an Israeli newspaper report.

The paper says VP Bill McGlynn has met with Finance Minister Silvan Shalom and Minister of Industry and Trade Dalia Itzik and informed them that HP is planning to expand the Indigo (Nasdaq:INDG) development and manufacturing center in Israel. He also said that HP could transfer to Israel additional activities.

Fund to Invest in Arab Towns

Jewish and Arab businessmen have set up a fund to raise \$4 million for investments in the Arab community. The initiative was born of a seminar on "Integrating Israel's Arab Citizens in the Business Sector" in Nazareth on Tuesday, under the auspices of the Foreign Ministry, the Arab Business Club in Israel, the Israel Export Institute, the Israel SMEs Authority and The Coordination Office of Economic Organizations. The plan envisages half the investments in the fund being made by Jewish and half by Arab investors. The list of investors includes the CEO and Chairman of SHL TeleMedicine Yoram Alroy, President of the Federation of Israeli Chambers of Commerce, Danny Gillerman, Chairman of Delta Galil Industries Ltd., Dov Lautman and the President of the Federation of the Israeli Economic Organizations and the Chairman of the Manufacturers' Association, Oded Tyra.

"The appeal from the Arab business sector to Jewish businessmen to open the doors of government ministries to them has for years been what meetings of this kind were all about," says Peera Chodorov, adviser to the foreign minister. "Jewish businessmen would come to the meetings with a lot of good intentions, but that was that. This time we decided to do preparatory meetings in which the expectations of both parties were discussed. The big accomplishment this time was that a joint lobby was created that will start working immediately on public agencies and government offices."

"The business community needs to understand its responsibilities [in promoting civil rights and equality]," said Paul Steven Miller, head of the U.S. Equal Employment Opportunity Commission.

Nestle May Receive R&D Grant for Sderot

The multinational food corporation Nestle S.A. has submitted a grant request to the Ministry of Industry and Trade's Investment Center to establish a \$5.6 million global research and development center for snack foods in Sderot.Companies that invest in national priority A areas like Sderot are entitled to a grant of 24 percent of their total investment. The investment center is expected to authorize the grant next week. Nestle plans to invest \$2.4 million in a 1,700-meter facility and \$3.2 million in equipment. The Swiss based corporation plans to hire nine workers directly and dozens of others indirectly. The research and development center will receive logistic services from Sderot's Osem factory. Nestle is the controlling shareholder in Osem.

Dun and Bradstreet Voices Optimism

The latest Dun and Bradstreet purchasing managers' survey reports January bringing the first signs of optimism since March 2001. The purchasing managers index was 56.3 percent for January, compared to 45.5 percent in December 2001 - an index of over 50 percent shows a positive future trend, below 50 is a pessimistic view.

Ze'ev Dekel who managed the survey for Dun and Bradstreet said most manufacturers taking part in the survey pointed out that an increase in local components of the index was seasonal only. Nevertheless, the increase in the index indicated movement in buying by companies that believe December's sharp 2 percent cut in the interest rate bodes well for orders - even if the rise of the dollar would make imported raw materials more expensive. the possibility that the economy may be turning around.

The import of manufacturing input components for various economic sectors rose in December by three percent after steady declines since October 2000. Industrial output in November continued to fall, but only by a microscopic one percent, in comparison with larger percentages, some of them double-digit, in early 2001. Retail merchandise sales showed an increase, as did sales volumes in the commercial and service sectors.

The economy has a broad and strong basic structure.. A devaluation of 10 to 15 percent (after years of an almost total freeze in the shekel's exchange rate) is not a cause for concern.

The international credit-rating firm Fitch t made no change in Israel's credit rating (A-). Two of the reasons Fitch 2002 gave for its decision were Israel's still relatively strong economic foundations and its flexible Forex rate.



High-Tech Personnel Demand Up 9.4%

The demand for communications and computer workers rose in January by 9.4 percent compared to demand in December 2001, the first rise in demand for workers in these high-tech sectors since October 2000, according to a survey by Manpower Israel subsidiary. Another international credit-rating firm, Moody's Investors Service, came to similar conclusions even before Fitch, although not all the fiscal assumptions at the basis of its evaluation can be expected to materialize.

Some figures for the last few months of 2001 indicate

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.

Clal Biotechnology Industries Aims at Big Profits

Clal Biotechnology Industries Ltd. (CBI) has a strong management team with a defined and disciplined approach to investing. "We look for companies that have minimally completed animal tests and are about to begin human tests," asserts Dr. David Haselkorn, CEO of Clal Biotechnology Industries Ltd. The general direction taken by CBI is towards immunology, with a war chest of \$100 million the company's yield or its return-on-investment will very much depend on approvals to be won for the products which are now in the pipeline.

CBI is invested in one of Israel's most prominent biotechnology companies, D-Pharm. It has a substantial investmen in that company. Another sizeable holding is in Compugen. That company has generated sales but its long-term profitability is far from assured. CBI's management goes to great lengths to explain that it differs from conventional venture capital companies. When the management decides to move ahead, it typically invests between \$5-\$10 million. Of late, it has shown a readiness to invest in companies outside of Israel, a cross-border approach that is intended to develop an international portfolio.

However, the proliferation of biotechnology venture capital funds in the 1990s, also helped to boost the sector in Israel. Foreign venture capital having already spotted the value of Israel's high-technology industry, was the first to discover the potential riches of Israeli biotechnology. Israeli-based biotechnology funds (most of whose investors are, nevertheless, foreign) have grown in size and number and there are now about 20 such funds active in Israel, individually valued between \$20 million and \$100 million. Israeli companies have been successful at generating funds through public offerings, especially

on European stock markets. There are now seven Israeli biotechnology companies listed on foreign stock exchanges.

About Clal Biotechnology Industries

Clal Biotechnology Industries Ltd. (CBI) is wholly owned by Clal Industries and Investments Ltd. Currently, it has under its management \$140 million. Its investment activities are totally focused on life sciences and reflect the experience and capabilities of its management team.

Dr. David Haselkorn, CEO, for II years beginning in 1987, headed the activities of Biotechnology General Corporation. BTG is dedicated to producing genetically-engineered drugs and during his management tenure BTG developed into one of the world's first profitable biotechnology companies.

In the late 1970s Dr. Haselkorn, after earning a doctorate in Chemical Immunology from the Weizmann Institute of Science, headed a major R & D arm of the Israeli Defence Forces. His group was awarded the prestigious Israel Defense Prize.

CBI's initial investments targeted Israeli entities. In recent years CBI expanded its investment focus to include companies outside of Israel's borders, has investing over \$ 25 m. in French and US-based companies,

CBI's strategy appears on the surface as very conservative, however it is highly aggressive:

*Becoming a major shareholder in portfolio companies with technological platforms and innovative products having a large potential market and clinical proof of feasibility.

*Co-operating with strategic partners, capitalising on a wider scope of resources at all stages of the portfolio company's life.

*Investing in biopharmaceutical companies demonstrating cutting-edge technologies and clinical proof of concept.

*Investing heavily (average \$10m per investment) in a few select companies, thus overseeing a relatively small portfolio (10-12 companies max.)

*Management with an intrinsic understanding of the technology and science exercises a hands-on strategy

*Focusing on a long term perspective.

*Enjoys backing of the Clal group, in which life science investment constitutes a core investment area.

CBI manages a proprietary database with more than 250 investments that have been screened, out of which 10 investments have been executed.

Combining all Available Resources

BG Negev, Ben-Gurion University's applications firm, recently signed an R&D cooperation agreement with biotech firm Compugen. Under the agreement, the two entities will conduct joint R&D on the genome of microalgae, with the objective of building a broad database for the genome and developing products based on the data.

The research team will be headed by Professors Shoshana Arad and Yacob Weinstein of Ben-Gurion University of the Negev. The research, which will be conducted at the university, will combine algae research, molecular biology and bioinformatics.

Ben-Gurion University's collaboration with Compugen will include both knowledge developed at the university, and Compugen's computational and biology tools. These tools will make it possible to decode and explore the algae genome, its functions and also contribute to an understanding of the process of evolution.

The cooperation agreement was drafted as part of the Industry and Trade Ministry's Magneton program, which supports cooperative projects between business and academic institutions. Prof. Arad asserts that the research, which is of great scientific and business importance, is aimed at studying a genome with commercial potential for both biotechpharmaceutical and bioinformatics applications.

"Fundamental scientific importance lies within the study of the algae genome. It brings us to an evolutionary understanding of the development of various organisms, from their most primitive stages to their most advanced stages," explains Prof.Arad, who serves as the Director of the Institute for Applied Biosciences at Ben-Gurion University of the Negev.

Israel's Venture Capital Market is Moving Ahead

The Israeli venture capital market experienced a major shake-up in 2001. It was caused mostly by the global high-tech crisis and to a lesser degree by the instability in this region. In spite of these issues Bank of Israel senior economist Dr. Hedva Bar concluded that financing raised by Israeli high tech from venture capital funds last year, was double that in 1999.

Dr. Bar published a comprehensive study of the venture capital market in Israel in 1997-2000, and added figures for 2001. Her most notable finding was that Israel's market has reached a very high level,

even in global terms. She also found that venture capital market players have scored substantial success to date.

Other major conclusions:

*60% of the companies that cashed out on their investment did so through a share issue, mostly in the US. Some of the companies were involved in mergers or sellouts.

*Most Israeli venture capital funds tended to invest in the early stages of a company's life span, when the risk was the greatest.

*Israeli and foreign banks are heavily involved as partners in the venture capital funds. This involvement indicates that the banks have no confidence in their ability to directly supervise and assist companies in the early stages, and therefor prefer to support high-tech companies indirectly through venture capital funds.

*There is evidence that the funds carefully select companies before deciding to invest. <u>They invest in</u> <u>companies with higher initial value, particularly in</u> <u>biotechnology and medical companies.</u>

*Companies with support from venture capital funds are more successful, and have shown that they have a better chance of reaching the stage of realizing the investment through a stock exchange issue, a sale, or a merger.

The Israeli biotechnology industry's revenues will pass the \$1.0 billion mark in 2002 and the likelihood for further growth appears assured.

Yet the industry could perform even at a higher level. However, considerable potential in Israel remains untapped. During the past decade, the government commissioned several studies to pinpoint where the problem lies, and to suggest solutions; however, all reports are gathering dust on government shelves. The recent Monitor report points to a lack of resources for the development of discoveries with commercial potential within universities. Frequently, the only companies that are able to forge codevelopment partnerships are foreign, and so the product is developed abroad. This creates a vicious cycle in which Israeli companies do not gain the experience and resources needed to commercialize the next discovery at home. The Monitor report therefore recommends that the government, together with private investors, establish a multi-million fund to support research projects with commercial potential within Israel. The inefficiency and inexperience of university technology transfer facilities is also a handicap. Monitor has recommended that the government provide them with additional funds for

AN INVITATION TO SUBSCRIBE

The Israel High-Tech & Investment Report in 2002 began its 18th consecutive year of publishing investment focused news related to technology, innovation, science based industries both public and private, in the fields of electronics, telecommunications, wireless applications, medicine, biotechnology and internet. The contents include news and its analysis and point to developing trends in the business of Israeli technology. The coverage is intended for investment bankers, venture capitalists, portfolio and fund managers, entrepreneurs, investors, lawyers, accountants, businessmen, journalists, libraries, and the media.

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increasing work force, acquiring external consulting services, and for help with patent registration.

D-Pharm Completes First Milestone

D-Pharm Ltd. announced that it has received the first milestone payment for SPD 421 from its licensing partner Shire Pharmaceuticals Group plc (LSE:SHP.L) (Nasdaq:SHPGY) (TSE:SHQ CN). The milestone was made to D-Pharm pursuant to the Phase II clinical trial progress of SPD 421 as add-on therapy in the treatment of complex partial seizures.

SPD 421 (formerly designated DP-VPA) is a unique phosphatidyl-choline conjugate of valproic acid, a drug widely used for the treatment of epilepsy, bipolar disorder and migraine prophylaxis. "The use of SPD 421 in patients is a tremendously exciting event for D-Pharm," stated Dr. Alex Kozak, D-Pharm's President and CEO. "SPD 421 is D-Pharm's first and most advanced D-RAP product, so we are looking forward to seeing our efforts finally benefit patients."

The worldwide market for anti-epileptics in 1999 was valued at over \$3.0 billion and is projected to grow to \$4.5 billion by 2005. Yet, the market is still largely under-served, with about 20-25% of epilepsy patients still refractory to current anti-epileptic drug treatments. Patented formulations of valproic acid (Depakote, Depakine) are first-line drugs of choice for epilepsy, and generate approximately \$900 million in global sales annually for epilepsy, bipolar disorder and migraine prophylaxis indications. However, despite excellent efficacy, a variety of adverse effects limit valproic acid's maximum dose and use, mainly in women and children. SPD 421 was developed to safely serve the needs of this patient population, as well as extend its use to refractive epilepsy patients.

Hebrew U. Research Finds Why Chemotherapy Might Lead to Cancer

A study of chromosomes in cancerous cells conducted at the Hebrew University of Jerusalem, found that some chemotherapy drugs actually create the conditions that generate new cancerous growths. Associate Professor of Genetics Batsheva Kerem's article on this study was featured in the inaugural edition of Cancer Cell, which was published on February 26, 2002. Prof. Kerem, who is renowned for her work on the genetics of cystic fibrosis, said that her research can lead to the development of more effective and less damaging chemotherapy drugs.

ISRAEL BIOTECHNOLOGY INDEX

SYMBOL	PRICE	MARKET CAP
^BTK		
BTGC	8.38	488.10
CGEN	3.16	82.10
KERX	6.55	129.30
PARS	2.27	125.01
TARO	36.12	775.30
TEVA	58.5	7,491.98
TOTAL CA	P	9,091.78
		as of 12/31/2001

The Israel Biotechnology Index was first calculated by IHTIR at the end of calendar year 2001. It is based on market capitalization of the individual components and includes low-cap, medium-cap and high-cap companies.

During a recent discussion with a Portfolio Management and Equity Research specialist in biotechnology we heard that the biotechnology public company sector is "oversold". The conclusion being that from an investment point of view now was a good time to invest.

The group of companies included in the Israel Biotech Index were down by 4.53% from the beginning of the year until March 1.

By comparison we studied the performance of the internationally well-known Pictet Biotechnology Fund and noted a 20.6% drop from Year to Date.

Biotechnology investments tend to be highly volatile but over the longer term reflect the dynamics of the biotechnology industry, and return to investors above-average profits.