Investment
Promotion Center
MINISTRY OF INDUSTRY, TRADE & LABOR

Inspiration
Invention
Innovation

Life Sciences in Israel

Invest in Israel
www.investinisrael.gov.il

Invest in Israel
where breakthroughs happen

Table of Contents

Israel: A Powerhouse of Opportunities

Over the last decade, Israel has introduced a wealth of groundbreaking and valuable innovations in life sciences. Israel's life sciences sector is supported by a strong foundation of academic excellence, including some of the world's leading research institutes, renowned R&D facilities and cutting-edge medical centers. Bolstered by a highly skilled workforce, a flourishing high-tech environment, and an entrepreneurial spirit, Israeli companies have been joined by leading multinationals in making Israel a recognized force in the industry worldwide. Global giants, including Johnson & Johnson, Perrigo, GE Healthcare, Phillips Medical, Abbott Laboratories, Merck Serono and Sanofi together with local companies such as Teva, itself a multinational company, Given Imaging, InSightec, Medinol and others have been continuously developing and marketing life-changing medical breakthroughs and innovations.

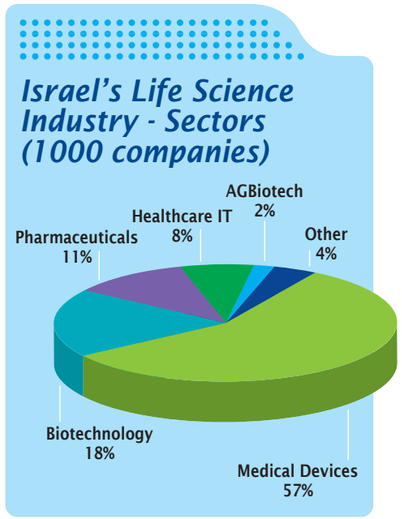
Prior to 1996, Israel was home to 186 life sciences companies. By 2012, this number had passed 1,000. With some 40 new companies formed each year, 41% of all life sciences companies operating in Israel today were established during the last ten years. In a relatively short period of time, an impressive 34% of these companies have already begun to generate revenue, demonstrating that Israel has crossed the threshold from an attractive start-up arena to a source of advanced, commercially viable and promising businesses. The bridge connecting excellent science to revenue-generating companies has been established. As proof of the industry's development, in 2011 life sciences exports reached $8.9 billion, an increase of 10% over 2010. A rich pipeline of seed companies promises to perpetuate current growth.

Four Israeli academics have won the Nobel Prize in Chemistry. Professor **Daniel Shechtman** of the Technion-Israel Institute of Technology received the Nobel Prize in 2010 for his discovery of quasicrystals, a new form of matter that has become a major subject field for scientists, mathematicians and crystallographers. Professor **Ada Yonath** of the Weizmann Institute received the Nobel Prize in 2009 for showing how ribosomes function, and **Aaron Ciechanover** and **Avram Hershko** of the Technion received the Nobel Prize for Chemistry in 2004 for their discovery of Ubiquitin-mediated protein degradation, leading to breakthroughs in the understanding and treatment of diseases such as cancer, Alzheimer's, Parkinson's disease and cystic fibrosis.

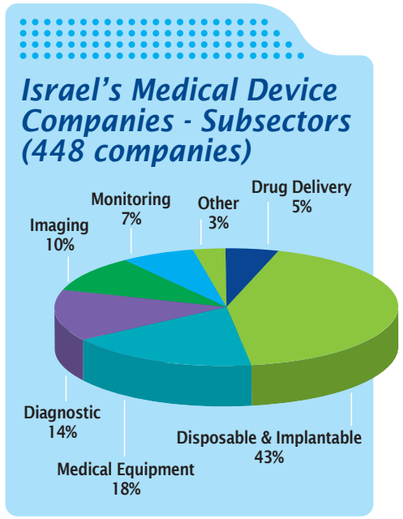
Why Israel's Life Sciences?

- Over 1,000 life sciences companies - biopharma and medical devices
- Over 1/3 of LS Start-Ups already generate revenue.
- Source of numerous blockbuster drugs such as Copaxone and Rebif generating over $5B in annual sales
- First in the world in quality of scientific research institutions (World Economic Forum [WEF] 2011-12)
- First in the world for medical device patents per capita, 4th for bio-pharma (US Patent Office 2009)
- Israel is 4th in global scientific activity, ranking just behind Switzerland, Sweden and Denmark for the number of scientific publications per citizen (Council for Higher Education).
- Pioneers in stem cell research and therapeutics
- Extensive international R&D and commercial partnerships
- World-renowned academic research institutes such as the Technion and the Weizmann Institute
- Unique financing tools and incubator frameworks for start-ups

Israeli Life Sciences Sectors



Source: IVC Database 2012



Source: Israel Life Sciences Industry (ILSI) 2010

Today, Israel is home to a thriving life sciences industry in which the major sectors are medical devices and biopharma. Over the last five years, more companies were established in life sciences than in any other area, with the rate of investments (including corporate funds, venture capital and angel investors) outpacing other segments of the economy.

Medical Devices

In the area of medical devices, Israel's scientists and engineers have integrated advanced technologies in electronics, communications, and electro-optics in the development of world-class innovations in digital imaging, medical lasers, electro-medical devices, telemedicine, surgical equipment, diagnostic kits and rehabilitation equipment. According to the US Patent and Trademark Office, Israel has the highest rate of registered medical device patents per capita in the world, with cutting-edge innovations such as ingestible cameras, portable cardiac ultrasound systems, implantable visual aids for the sight-impaired and instant CT scanners helping to significantly improve global health, and well-being, while at the same time, creating significant investor value.

The largest subsector in the medical device arena is therapeutic devices, both implantable and disposable.

Many of Israel's trailblazing medical devices have already been adopted worldwide and are generating substantial revenues. Others have been introduced more recently and are undergoing clinical trials both in Israel and other countries.

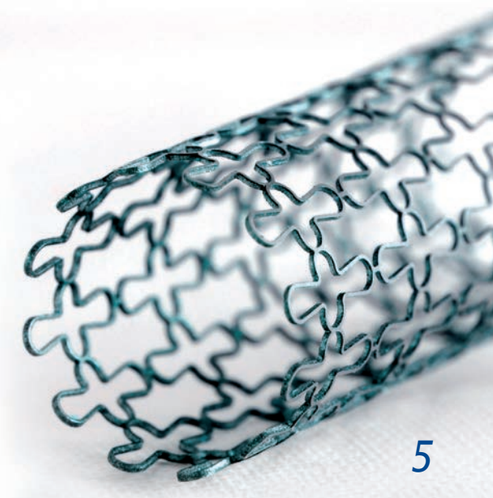
Innovative Medical Devices

- The Pillcam, the first miniature ingested camera which diagnoses and photographs abnormalities in the gastrointestinal tract, was introduced by **Given Imaging** (NASDAQ: GIVN). Given Imaging continues to be successful, posting profits of $181 million in 2011.
- The **superDimension** i·Logic System, acquired by **Covidien** in 2012 for $350m, uses Electromagnetic Navigation Bronchoscopy (ENB) to provide minimally invasive access to lesions deep in the lungs as well as mediastinal lymph nodes, enabling physicians to diagnose benign and malignant lung lesions and avoid the need for higher-risk procedures.
- **Disc-O-Tech Medical Technologies** develops expandable implants used in minimally invasive orthopedic surgeries. The company has developed an expandable spinal implant system for use in lumbar spinal fusion procedures and offers a wide range of special fixation nails and pins for complicated fractures.
- The closed cell stent design which facilitates blood flow to the heart was pioneered and developed by Medinol in the early 1990s. **Medinol** continues to introduce additional innovations in the field of heart catheterization.
- A highly advanced and cost- efficient surgical sealant, or "biological glue", Quixil, which facilitates haemostasis and reduces operative and post-operative bleeding, was developed by **Omrix Biopharmaceuticals,** which was acquired for $438m by **Ethicon**, a Johnson & Johnson company.
- ExAblate 2000, a non-invasive surgery developed by **InSightec** which uses MR guided Focused Ultrasound to treat uterine fibroids.
- **Argo Medical Technologies Ltd** has developed a restoration device for people with lower limb disabilities. The company's flagship ReWalk product offers an ambulation alternative to wheelchair users, enabling paralyzed people to stand, walk and even climb stairs.

Cutting Edge R&D: Medical Devices

- A treatment using an instrument to determine the patient's liver function has been introduced by **Exalenz**. The device has already been successfully tested on hepatitis C and NAFLD (non-alcoholic fatty liver disease) patients and is expected to be on the market soon.
- Microneedle based systems for the painless intradermal delivery of drugs were implemented by NanoPass. **NanoPass** collaborated with **GlaxoSmithKline** on optimization of its platform for vaccine delivery.
- **Ventor**, acquired by **Medtronic** in 2009 for $325m, created a unique aortic valve prosthesis which can be implanted "off pump" on a beating heart. Ventor's unique valve design allows for easy implantation, enhanced prosthesis anchoring and superior hemodynamic performance.
- The NovoTTF, a portable, wearable device that delivers an anti-mitotic, anti-cancer therapy as patients maintain their normal activities, was developed by **Novocure**. In 2011, it obtained FDA approval for its use in the treatment of adults whose brain tumors recurred after chemotherapy.
- The **SMT** filter is a proprietary medical device that acts as a filter, allowing normal blood flow to the brain, by filtering and diverting all emboli downstream, thus preventing stroke. The product is designed to be used during interventional and surgical procedures.

NESS Neuromuscular Electrical Stimulation Systems was awarded the Medical Design Excellence Award (Medical Device and Diagnostic Industry magazine) for its L300 leg neuroprosthesis, a noninvasive device which delivers electrical stimulation to nerves and muscles in the leg, improving the walking ability of those suffering from foot drop associated with central nervous system injury or disease.

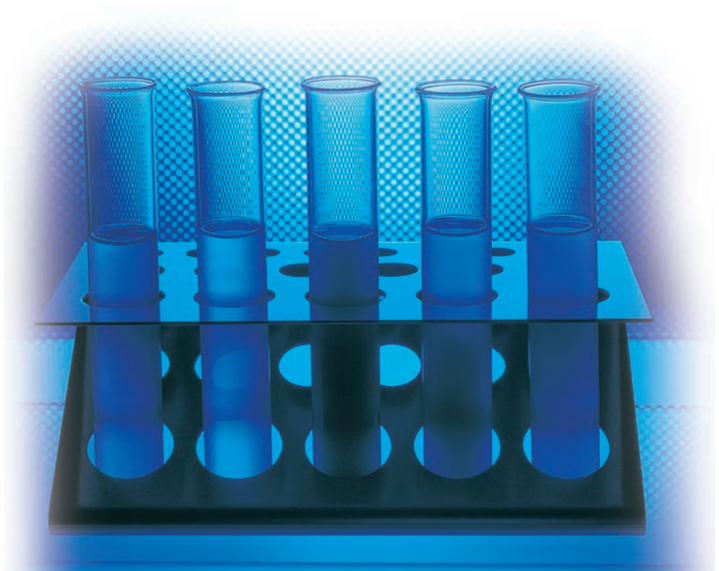


Invest in Israel
where breakthroughs happen

EarlySense, developer of the EverOn® Touch patient supervision system for hospital and post-acute care won a 2010 **Popular Science** Best of What's New Award in the health category.
The EverOn System is an FDA approved and CE-cleared, automatic, continuous, patient monitoring system, approved for use in hospitals and homes.

- Ear infection treatments by **Otic Pharma** are based on foam, called "Foam-Otic", rather than drops, which allows the substance to stay in place longer and enables lower and less frequent doses. It is about to complete a clinical trial on 105 patients to test the safety and efficacy of Foam-Otic at reduced dosages and lower frequencies of the drug, compared with ear drops. The Orbimed Israel fund has recently invested in this company.
- **Brainsway Ltd.** is dedicated to the development and marketing of Deep TMS (Transcranial Magnetic Stimluation) systems, a noninvasive medical device for treatment of a wide range of neurological and psychopathological disorders. The device is currently in clinical trials for the treatment of major depression and received the Frost & Sullivan 2012 Global New Product Innovation Award in neuro-psychiatric devices.

A live tissue memory and processing chip was created at Tel Aviv University to demonstrate how our brain learns and stores information, an important advancement toward sophisticated artificial intelligence solutions. This chip was cited by **Scientific American** magazine as one of the 50 most significant scientific breakthroughs of 2007.



Biopharmaceuticals

Backed by outstanding academic and research institutes (ranked first in the world by WEF 2011-12), Israel is recognized as one of the world's leaders in biopharmaceuticals, comprised of Israeli biotech and pharmaceutical companies engaged in drug discovery, stem cell research, immunology and related fields. Israel's pharmaceutical and biotechology industries have benefited greatly from each other. Biotechnology serves as a key driver for growth in the entire pharmaceutical industry: introducing new and improved products and innovative technologies, adding revenue streams, shortening the time to FDA approval and the market, and most importantly, improving quality of life and extending patient life. Israel is a global leader in the number of new patents filed in biopharma and in the number of new companies founded and taken public.

Pharmaceuticals

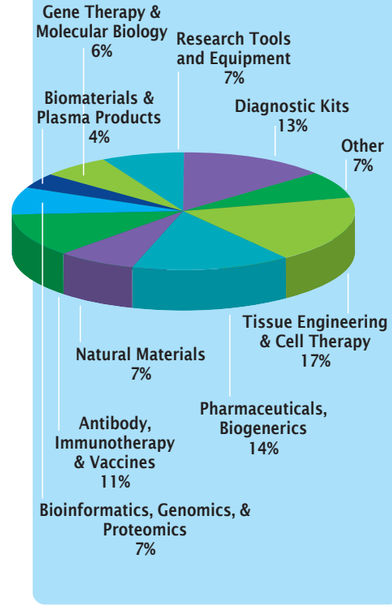
Israel's thriving pharmaceutical industry includes some of the country's largest, most mature and profitable corporations, with more than 60 companies and over 28,000 workers.

The combination of Israeli research expertise and continued clinical progress has led to the emergence of blockbuster drugs and promising treatments for cancer, MS and Alzheimer's disease. **Teva Pharmaceutical Industries**, established in 1901 and with $18.3 billion in annual sales in 2011, is today the world's largest generic drug manufacturer and one of the 15 largest pharmaceutical companies in the world. Headquartered in Israel, Teva operates in 60 countries and has 46,000 employees worldwide. Recent acquisitions include large US company Cephalon and Taiyo, the third largest pharmaceutical company in Japan, in 2011; Germany's Ratiopharm in 2010, which turned Teva into the leading generic pharmaceutical company in Europe and Barr Pharmaceuticals in 2008, which enhanced Teva's leading position within the US generic pharmaceuticals market.

Other home-grown companies such as **Taro, Dexcel/Dexxo**n and **Rafa** also focus primarily on generic drug manufacturing.

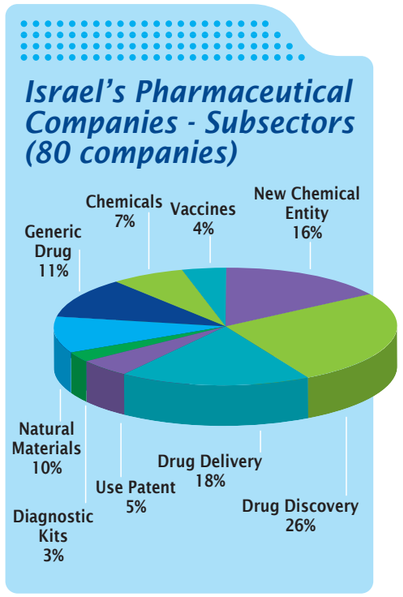
Israel's growing biopharma sector is drawing the attention of global giants of the industry. In 2012, Germany's Merck Serono inaugurated a new drug development incubator at Inter-Lab Incubator in Yavne, the chief developer of Rebif. The company will invest $13 million in five or six projects in areas such as oncology, fertility, MS and endocrinology.

Israel's Biotech companies - Subsectors (155 companies)



Source: ILSI 2010

Israel is second in Europe in per capita private biotech companies' products in pipeline. (Ernst&Young)



Source: ILSI 2010

Biopharma Products on the Market

Oncology

- A chemotherapy drug for the treatment of ovarian cancer, **Doxil**, was developed at the Hadassah Medical Center and was sold to **Johnson & Johnson**.

Multiple Sclerosis and Diseases of the Central Nervous System

- **Teva Pharmaceuticals**, together with the Weizmann Institute, developed **Copaxone**, for the treatment of multiple sclerosis. This drug significantly improves the quality of life for MS sufferers by reducing relapses and lengthening the time between them.
- Another treatment for multiple sclerosis, **Rebif** was developed by the Weizmann Institute in conjunction with **Serono**. Rebif also has broader antiviral applications in the field of central nervous system disorders.

Parkinson's and Alzheimer's Diseases

- **Exelon,** a drug for the treatment of Alzheimer's originated from research conducted at the Hebrew University and was developed and marketed by **Novartis**.
- Another Teva drug, **Azilect**, was developed together with the Technion for the treatment of Parkinson's disease.

Cutting-edge R&D: Biopharma

Oncology

- **Can-Fite** has developed an unique platform technology that for the treatment of inflammatory, ophthalmic, cancer and viral diseases. The company's lead drugs CF101 and CF102 are small-molecule oral drugs. CF101 has shown activity in psoriasis, dry eye syndrome and rheumatoid arthritis in Phase III studies, while CF102, is currently being tested in two Phase II studies: one in hepatocellular carcinoma and the other in patients with hepatitis C viral infection.
- **Gamida Cell Ltd.**, a world leader in stem cell expansion technologies and therapeutic products, is developing a pipeline of products in stem cell transplantation and in tissue regeneration to treat cancer, hematological, autoimmune and ischemic diseases. Its populations of adult stem cells are selected from umbilical cord blood and bone marrow, and expanded in culture. Gamida Cell's flagship product, StemEx, is now being studied as a therapy for patients with blood cancers such as leukemia and lymphoma in an international Phase III, pivotal registration trial at leading transplant centers in the U.S., Europe and Israel. The market launch of StemEx is anticipated in 2013.
- **Vaxil BioTherapeutics Ltd.** develops novel, therapeutic vaccines for the treatment of cancer. Vaxil's lead therapeutic vaccine, ImMucin™ is currently being evaluated in a Phase I/II clinical trial in multiple myeloma patients. The company is also developing a vaccine against mycobacterium tuberculosis (Mtb) and is currently in preclinical invivo studies.

Diabetes

- An oral insulin capsule by **Oramed Pharmaceuticals**, a developer of oral delivery systems, has successfully undergone Phase IIB clinical trials.
- **Kamada's** D1-AAT drug with AAT (alpha-1 antitrypsin) protein, which treats Type 1 diabetes, is a breakthrough treatment of the disease, which may greatly reduce the body's need for insulin. In 2012, the drug received a positive interim report on the preliminary results of a Phase I/II clinical trial, the first time the drug was administered to children. In 2011, the FDA approved orphan drug status, which would give Kamada the exclusive right to sell the drug for seven years in the US pending full drug approval.

Other Biopharma Technologies

- Together with Yeda, the Technology Transfer Organization of the Weizmann Institute, **Protalix BioTherapeutics** developed prGCD, a plant manufactured enzyme that serves as treatment for Gaucher's disease. This discovery led to the development of the drug Elelyso, which received FDA approval in 2012. This marks the first time the FDA has approved a drug produced in a genetically engineered plant cell.
- An improved prophylactic intranasal hepatitis B vaccine was developed and commercialized by **Nasvax,** in collaboration with **SciGen** of Singapore.
- **Debrase Gel Dressing**, a revolutionary gel for the treatment of burns by means of enzymatic action, minimizing flesh removal, bleeding, scars and the need of plastic surgeries for burn victims, was developed and commercialized by **Mediwound**, which is now collaborating with **Teva**.
- Global drug company **Pfizer** acquired the exclusive worldwide license to the human gene RTP-801, discovered by **QBI,** and molecules that modify its expression. The gene is involved in the development of pathologic blood vessels, which accelerates the progression of age related macular degeneration (AMD), the leading cause of blindness in the developed world.
- **PROLOR Biotech**, is a publicly traded biopharmaceutical company applying its patented technology to develop proprietary, longer-acting versions of therapeutic proteins that require frequent injections.

The Spheno-Palatine Ganglion (SPG) stimulation platform which can be used to treat stroke victims and a host of CNS-related indications was developed by **Brainsgate**, which was selected by **Red Herring** magazine as one of the 100 most promising private companies in Europe.

Scientific American magazine listed Dr. Beka Solomon of Tel Aviv University's research on the use of antibodies in the treatment of Alzheimer's disease as one of the 50 most significant scientific breakthroughs in 2007.

NuLens, selected as one of **Red Herring's** 100 most promising companies in Europe for 2009, researches, develops, and markets technologies for ophthalmic markets. It offers IOL, an accommodative intra-ocular lens, which enables the restoration of post-cataract vision at various distances.

Healthcare IT

Israel is a world leader in the utilization of IT for healthcare purposes. Many primary care physicians in Israel use computerized patient records. With a very strong IT and communications industry and a highly-developed national healthcare system, Israel is uniquely positioned to develop, test and operate new IT healthcare products and systems. One specific area in which Israel excels is telemedicine, with more than 70 companies involved in this sector.

Leading companies in the healthcare IT sector include **Roshtov**, a leader in enterprise medical information systems that manages patient file-oriented software solutions; **Medic4All Group**, which develops wireless technology for medical data transmission from the patient's environment to a monitoring center by phone or Internet, as well as a web measurements viewer and a web medical file and **eWave**, a system integrator and software system provider that developed web-based solutions for electronic health record applications. A major investment in this sector was the $123 million purchase of **STARLIMS** laboratory information systems by **Abbott Laboratories.**

Biotechnology

The promise of new cures and the continual progress from laboratory to application keeps Israel's biotechnology industry flourishing, with novel breakthroughs and discoveries already helping millions of patients worldwide. Within the last decade, the sector has grown impressively, with the number of companies increasing at a rate of 17% annually. Biotechnology research in Israel is carried out at major universities, hospitals, technical colleges and research institutes.

Israel's Biomedical Engineering: Spotlight on Stem Cell Research

Israel's position as a world center of excellence in stem cell research is well established. Israeli scientists have been recognized among the earliest pioneers in stem cell research and have been at the forefront of global efforts to isolate human embryonic stem cells (hESC). These scientific achievements are at the forefront of medical research and upon commercialization, the resulting products will have a profound impact on countless treatments for a variety of diseases. Israel's expertise in this area is especially noteworthy in light of recent reports that the FDA is working to approve the first stem cell-based medical products.

Ongoing Progress and Accomplishments

There are **about 15 active stem cell companies in Israel**, four of which are already involved in clinical trials, with one currently in Phase III.

The rapid development from research to trial is testimony to a highly supportive, regulatory environment, established in line with strict medical ethics and an impressive government grant program.

Israel is the second leading publisher of stem cell research, in absolute numbers. After the US, Israel leads the UK, Korea, China and Singapore in the number of research papers published on this subject, with 11 out of the 20 most cited papers in recent years having been published by Israeli authors. Three of the most cited hESC papers ever published in peer-reviewed journals were written by Israelis. Israel ranks first in the world per capita for stem cell research-related articles published in scientific journals.

Much of the research and development in this groundbreaking sector is currently carried out on the campuses of leading university hospitals in Israel, mainly at Hebrew University/Hadassah Medical Center (Jerusalem) and the Technion/Rambam Medical Center (Haifa). Hadassah has recently inaugurated a Human Embryonic Stem Cell Research Center, which is led by prominent figures in the field, including Professors Benjamin Reubinoff and Tamir Ben-Hur.

Clinical Achievements

- Among the therapeutic stem cell technologies close to clinical trials is a procedure to reverse heart failure and another that enables diabetics to produce insulin.
- Trials to assist Parkinson's sufferers to manufacture their own dopamine and tests on leukemia victims to radically ease and improve the outcome of bone marrow transplants are in process as well.

According to **Red Herring** magazine, Israel's stem cell-oriented companies have raised a total of $75 million over the last decade, mostly from pharmaceutical companies and venture capital firms. Forecasts for the next 10-15 years place stem cell therapeutic product sales in global markets at $40 billion.

Israel's Stem Cell Firsts:

- First clinical trials of cell therapy treatments
- First to demonstrate *in vitro* differentiation of human ES cells and generation of human embryonic bodies
- First to show the ability of hESCs to improve behavior in animals injected with Parkinson's disease
- First to display the generation and isolation of hepatic cells from the induction of *in vitro* differentiation of human stem cells
- First to genetically modify hESCs, including a line that represented a model for human disease (Lesch Nyhan disease)

Dr. Shulamit Levenberg, Head of the Biomedical Engineering department at the Technion - was named one of 50 top research contributors in 2007 by **Scientific American** magazine for implanting blood vessels in muscle tissue without the body's rejection of the implanted muscles and for her work in tissue engineering using embryonic stem cells.

Stem Cell Therapy: Highlights

- **Cell Cure**'s OpRegen™ product is a proprietary formulation of embryonic stem cell-derived RPE cells developed to address the needs of people suffering from age-related macular degeneration (dry-AMD).
- **Brainstorm** Cell Therapeutics uses self-generated bone marrow-derived adult stem cells to treat Parkinson's. In 2012 BrainStorm announced positive interim results in its Phase I human clinical trial to test the safety and efficacy of its adult stem cell treatment for ALS.
- **Pluristem** Therapeutics is dedicated to the commercialization of unrelated donor-patient (allogeniec) cell therapy products derived from human placenta for the treatment of severe ischemic and autoimmune disorders. In 2012 preclinical trials proved that its PLacental eXpanded (PLX) cells improved heart attacks in animals.

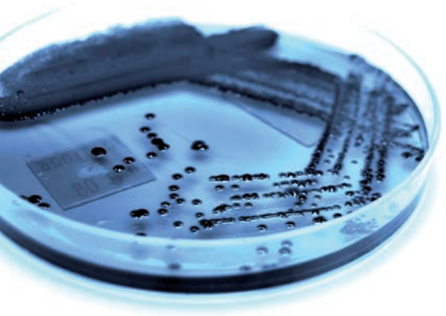
Stem Cell Research Collaborations

Local Support

The Israel Academy of Sciences and Humanities supports stem cell research in several ways:
The **Genesis Consortium** was created eight years ago in order to create and advance a cluster of cell therapy companies in Israel that share information and aspire to acquire global leadership positions in the field, by providing generic technologies for cell therapy, stem cell-derived products and new embryonic stem cell lines. This initiative, supported by Israel's Ministry of Industry, Trade and Labor, was made up of leading academic institutions and industry leaders. The consortium ended its activities in 2009. Nevertheless, it contributed greatly to the advancement of stem cell research by developing innovative new technologies that now serve as a basis for the development of new products. In addition, the Ministry of Health and the president of the Academy of Sciences and Humanities created the Israel Stem Cell Research Forum (ISCRF) to advance cell therapy, research and development in Israel.

International Partners in Stem Cell Research

Israeli research bodies have teamed up on cell therapy and stem cell projects with major research centers in the US such as UCLA, UCSD, UCSF, UC Irvine, Stanford and Cedars-Sinai in California, as well as institutions in the UK, France, Czech Republic, Australia, Singapore and South Korea.



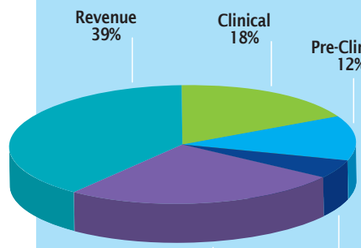
Rapid Research to Financial Return

The last few years have witnessed several significant Israeli life sciences "exit" transactions with investors realizing impressive returns via IPOs, mergers and acquisitions. Close to 60 life science companies went public on the Tel Aviv Stock Exchange (TASE) in recent years, among them BiolineRx, Biondvax, Brainsway, Intec, Mazor, Prolor, Pluristem, Hadasit Bio Holdings and Nasvax, and approximately 15 Israeli companies have gone public on foreign exchanges, mainly in the US. According to the IVC Research Center, the value of M&As and IPOs in Israeli life sciences companies totaled $822 million in 2009.

Mergers and Acquisitions

Acquirer	Israeli Company	Sum in $ millions	Date
Sun Pharmaceuticals	Taro Pharmaceuticals	457	2007
Johnson & Johnson	Omrix	438	2008
Covidien	superDimension	350	2012
Covidien	Oridian Systems	346	2012
Medtronic	Ventor	325	2009
St. Jude	MediGuide	283	2008
Kyphon	Disc-O-Tech	220	2006
Align Technology	Cadent	190	2011
Alcon Inc.	Optonol	180	2010
PhotoMedex	Radiancy	175	2011
Candela	Inolase	150	2007
Stryker	Sightline	140	2006
Essilor	Shamir Optical Industry (*for half the company)	130	2010
Abbott Labs	STARLIMS	123	2010
Boston Scientific	Labcoat	100	2009
Teva	CoGenesys	100	2008
Nobel BioCare	Alpha BioTech	95	2008

Companies Developmental Stage



Israel is the non-US country with the second highest number of companies listed on the NASDAQ. Approximately 70 Israeli companies are traded on various European exchanges.

Ranked third in the world for venture capital availability, Israel provides its entrepreneurs with the necessary backing to turn their innovative ideas into profitable businesses (IMD World Competitiveness Yearbook 2010).

IPOs and Publicly Traded Companies

Noted examples of IPOs and publicly traded companies listed on foreign exchanges:

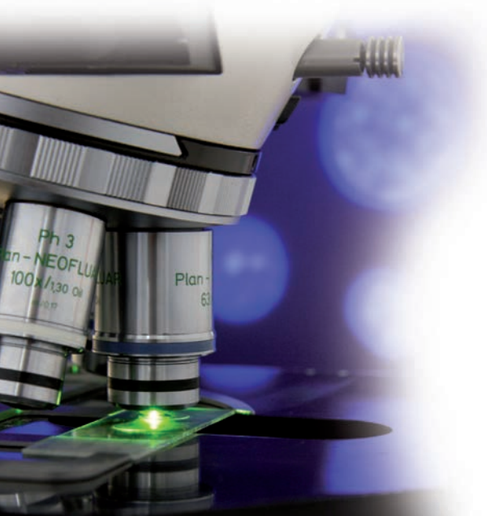
Omrix	(OMRI)	$272M
Keryx	(KREX)	$30M
Protalix	(PLX)	$200M
XTL	(XTL.B)	$71M
Compugen	(CGEN)	$65M
Rosetta	(ROSG)	$60M
Given Imaging	(GIVN)	$473M
Syneron Medical Ltd.	(ELOS)	$430M

TASE Listings

In recent years, the biotechnology and medical device sectors have become more prominent on the TASE. In 2005, TASE regulating authorities realized that life science companies have different "track records", timelines and financing requirements. In order to attract such companies, listing requirements and costs were changed accordingly. This move led to an influx of life science companies into the market, solving a large financing gap while providing transparency and liquidity to a wide investor audience that was previously not exposed to this sector. Today 56 life sciences companies with a combined value of some $3.3 billion are traded on the TASE. In 2010, TASE established a new index, the **BioMed Index**, to track biotechnology companies.

Venture Capital

In 2010, the life sciences sector led capital raising in the high-tech sector with 28% of total capital raised. Exhibiting a strong vote of confidence in the sector, venture capital investment from local and foreign companies amounted to $395 million in 2011, a 41% increase from the $350 million raised in 2010. Israel's investment infrastructure also includes a range of options from university technology transfer units and incubators to binational funds, such as BIRD (US), SIIRD (Singapore), KORIL (Korea), CIIRD (Canada), the European Union's 7th Framework Programme (FP7), as well as strategic partnering and joint ventures.



Israel's Competitive Edge

Academia and Research

Approximately 50% of all academic research funding in Israel is in the field of life sciences, and institutions such as the Hebrew University of Jerusalem, Tel Aviv University, Ben Gurion University of the Negev, the Technion-Israel Institute of Technology and the Weizmann Institute of Science have played dominant roles in advancing biotech R&D. In fact, over the past five years, the Weizmann Institute was ranked twice as the top international academic institution in the world for scientists to conduct research in life sciences. In 2008, it was followed by the Hebrew University of Jerusalem and in 2010, it was ranked second. This stems from impressive levels of R&D funding and highly skilled and creative manpower, which continues to generate new patents in the field.

Cluster Effect

Many of Israel's achievements in the life sciences sector stem from the fact that over 90% of the population resides within two hours driving time of each other and within close proximity to seven major universities and industrial clusters. This cluster effect creates economies of scale, and allows for better information sharing and synergies between the companies.

Highly Educated and Highly Skilled

50% of the population aged 25-34 has attained at least tertiary education, placing it sixth in the world behind Singapore, Japan, and Korea (IMD Competitiveness Yearbook 2009). Approximately 24% of Israel's workforce holds university degrees – placing it third in the industrialized world after the US and The Netherlands. Israel is ranked second in the world in the percentage of engineers and scientists in the work force (IMD 2009).

Entrepreneurial Spirit and Ingenuity

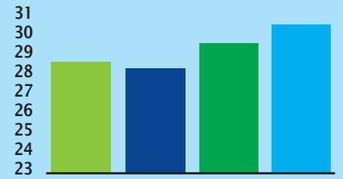
The exceptional volume of life science start-ups and patents attests to the entrepreneurial and risk-taking climate in Israel. Israeli researchers and entrepreneurs overcome technological barriers and solve development problems within a short period of time and at a fraction of the cost of some of their larger and more affluent competitors overseas.

Economic Indicators

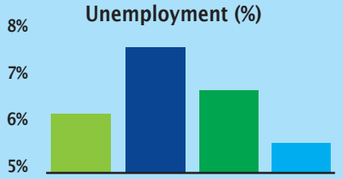
Sources: Bank of Israel, Ministry of Finance, IMF

2008 2009 2010 2011

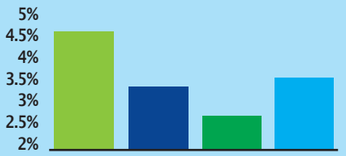
GDP Per Capita (PPP, 1000 US$)



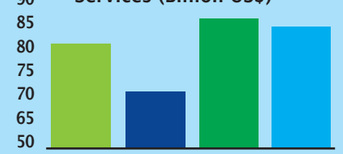
Unemployment (%)



Inflation % (excl. housing)



Exports - Goods & Services (Billion US$)



The Yissum TTO has over:

- 7,000 patents
- 2,025 inventions
- 530 licenses
- 68 spin-offs

Technology Transfer Organizations (TTOs)

Seven university-associated and five hospital-linked technology transfer organizations (TTO) provide a valuable forum for connecting Israeli researchers and early stage projects with the industry through their commercialization efforts — investments, sponsorships and partnerships from multinational companies eager to benefit from Israeli innovations. TTOs are part of one national organization, the ITTN (Israel Technology Transfer Network). Israeli universities were among the first in the world to develop TTOs and Israel is home to one of the largest and oldest, Hebrew University's **Yissum,** founded in 1964. Yissum generates a similar output as its counterparts at MIT and Stanford, with 7,000 patents to date.

Yeda Research and Development Company is responsible for technology transfer from The Weizmann Institute of Science. The drug Copaxone, a breakthrough treatment for multiple sclerosis, was developed at Yeda. Also at Yeda, researchers have developed CCL2, a chemokine for the treatment of inflammation in rheumatoid arthritis and asthma, and have identified associated genes and markers in the early detection of susceptibility to schizophrenia. Scientists, using computer simulations, have provided an explanation as to why certain genetic diseases caused by repeats in the code are "genetic time-bombs" whose onset and progression can be accurately predicted.

Hadasit, the TTO of Hadassah Medical Organization, has established a number of start-up companies, six of which have already gone public within the framework of Hadasit Bio-Holdings. Hadasit Bio-Holdings is currently developing an innovative drug for the treatment of strokes, eliminating current side effects and tripling the "therapeutic window."

Ramot, the TTO of Tel Aviv University, recently joined forces with Johnson & Johnson to establish a joint research fund to promote projects relating to metabolic disorders such as diabetes, diseases of the central nervous system, cancer and stem cell research. Ramot has developed organo-boron antifungal molecules used for the topical and systemic treatment of fungal disease and has recently announced new findings in hepatitis C virus immunology.

The Association of University Technology Managers (AUTM) has included two Israeli technologies among its list of the top 100 technologies that promote world health: a novel treatment for the treatment of Alzheimer's disease and a new antiviral treatment with a cinnamon base, both developed at Ramot.

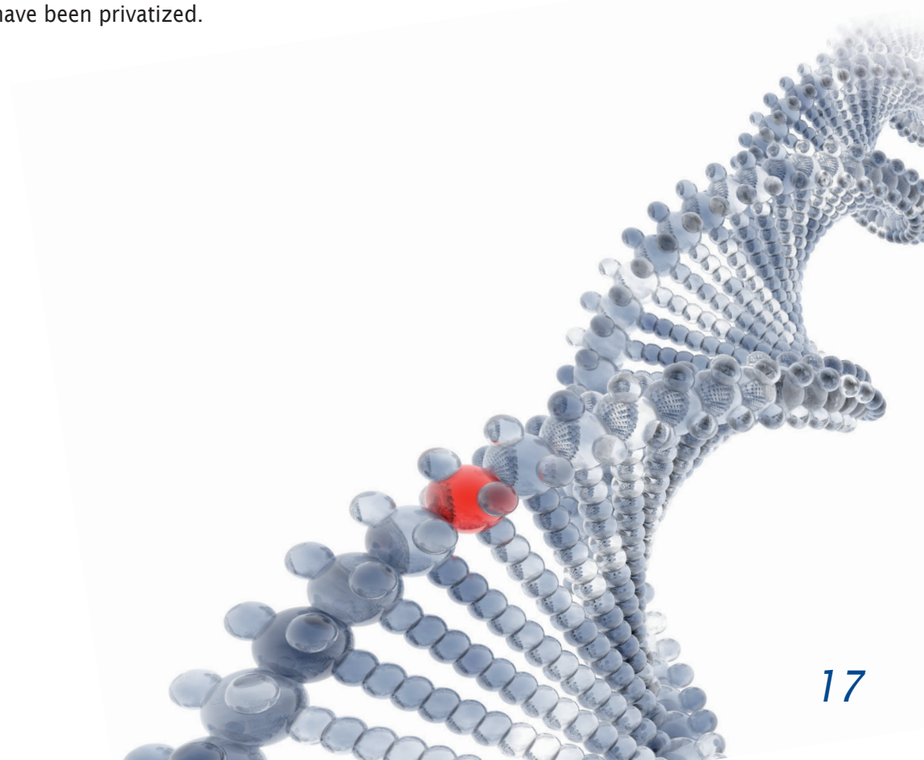
The Technion Israel Institute of Technology, the largest center of applied research in the country, houses the **Technion R&D Foundation**. Recently, following a $100 million allocation, the Mann Institute for Research and Development in Biomedicine opened its doors at the university, the only Mann Institute located outside the US. The Institute focuses on the development of knowledge in biomedicine, medical equipment and life sciences created at the Technion.

The Technological Incubator Network

The technological incubator network, with its huge repository of ideas, is a virtual 'start-up machine' and a most effective tool for encouraging research and development in the life sciences. Totaling more than 20 throughout the country, each incubator houses up to 15 companies and provides them with a full suite of services: secretarial, legal and business development. The incubator provides funding of approximately $500,000 for the first 2-3 years of the life of the company — when risk is highest and private funding is scarce. The program has been active since the early 1990s and 1000 companies have graduated so far, successfully raising independent, external funding.

Thanks to the success of this model, nearly all of these tech incubators, once run by the government, have been privatized.

Israel invests 4.7% of its GDP in R&D, which is the highest ratio in the world (IMD World Competitiveness Yearbook 2011)



Customized Research Infrastructure

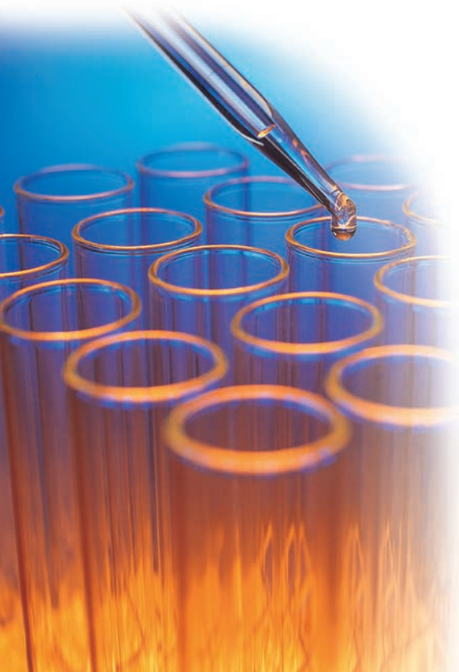
Having recognized the difficulties involved in attempting to commercialize small biotech projects emerging from Israeli universities, Teva, Hadasit and two leading VCs established **BiolineRX** in 2003. Under the guidance of an elite management team, the best early-stage projects are licensed to BiolineRx and developed through to the second stage of clinical trials. At this more advanced stage, a product can be commercialized with a large pharmaceutical company, returning the highest ratio of value increase to investment. BiolineRx recently announced positive interim results from its Phase 2b clinical trials of BL-1020, a treatment for schizophrenia.

BiolineRx has screened close to 900 projects so far and its pipeline includes 15 active projects. It is traded on the Tel Aviv Stock Exchange (BLRX).

Interdisciplinary Connections

A number of Israeli achievements in the sector are based on expertise developed in other disciplines and industries. Market leadership in communications technology, electronics, computer science and even advanced materials has been key to the development of innovative life sciences products. For example, **Medinol**'s original cardiovascular stents were based on principles learned in the development of metals and structures for the aviation industry.

Many advances also stem from innovations developed within the defense technology industry including **Given Imaging, Galil Medical,** and **Topspin**. The Rafael Development Corporation was established as a think-tank/incubator to identify medical applications for Israel's defense technologies.



Government Initiated Biotech Fund

In 2012, the Government of Israel initiated an investment fund dedicated to life sciences venture capital opportunities together with OrbiMed, a leading global investment management firm, with an $80 million anchor investment by the government. The $222 million fund, **OrbiMed Israel Partners Limited Partnership**, invests in biotechnology, pharmaceutical, medical devices and diagnostics companies at varying stages of maturity, from seed stage through growth equity, and has made two investments already: **Keystone Heart**, which is developing an embolic protection device for interventional cardiology procedures and **Otic Pharma**, developing foam formulations for ear medication.

Government Support

The Israeli government is involved in various efforts to encourage global companies to increase their direct involvement in the life sciences sector in Israel. Generous incentive packages are provided to companies interested in developing R&D or manufacturing facilities in Israel.

The Law for the Encouragement of Industrial R&D, administered by the Office of the Chief Scientist (OCS) in the Ministry of Industry, Trade and Labor is the principal government tool for supporting R&D. According to the guidelines, biotechnology is defined as a **preferred sector** by the OCS. The support available:

Criteria

Sector	Preferred Sectors (Biotechnology)	Regular Sectors
Grant per project	50% of approved R&D budget	Between 20%-40% of the approved R&D
Duration of project	2 years	1 year
Accelerated depreciation of new equipment that is a part of the R&D expenses and costs more than NIS 100K	66% during the first year	33% during the first year
Timing for submitting a request for R&D support	During the entire year (flexible)	Once a year (a fixed date)

*Other benefits in the biotechnology sector are related to start-ups and incubator companies or to academia-industry collaboration and include increased grant and longer project support.

The Law for the Encouragement of Capital Investments includes a competitive grants program administered by the Israel Investment Center and a tax benefits program administered by the Israel Tax Authority, both of which offer substantial advantages for foreign investors.

Invest in Israel

is the Investment Promotion Center of Israel's Ministry of Industry, Trade and Labor.

The center serves as a focal point for foreign-based companies and individuals interested in investigating direct investment and joint venture opportunities in Israel.

Invest In Israel provides a wide range of personalized services, and assistance to potential investors. It also serves as a resource for investment-related information about Israel.

For more information or assistance, foreign investors are invited to contact Israel's economic representatives or "Invest in Israel" at:
investinisrael@moital.gov.il

Production: LAPAM 2012

Investment Promotion Center
MINISTRY OF INDUSTRY, TRADE & LABOR

5 Bank of Israel Street,
Jerusalem 91036 ISRAEL
Tel: +972-2-6662607
Email: investinisrael@moital.gov.il

www.investinisrael.gov.il