

Academia-Industry Cooperation and TT

The Israeli Experience

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The Israeli Experience



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The Record



The World Economic Forum has designated Israel as one of the leading countries in the world in technological innovation. Further Israeli highlights from the reports include:

- ✓ ranked **1st** for total expenditure on R&D *
- ✓ ranked **1st** for business expenditure on R&D *
- ✓ ranked **1st** for availability of qualified scientists and engineers *
- ✓ ranked **2nd** for venture capital availability *
- ✓ ranked **2nd** for information technology skills *
- ✓ ranked **3rd** for Quality of Scientific Research Organizations **
- ✓ ranked **3rd** for Registered Patents Per Capita **
- ✓ ranked **3rd** for flexibility and availability of the workforce *
- ✓ ranked **4th** for higher education achievements *
- ✓ ranked **6th** for overall innovation **

* IMD Global Competitiveness Yearbook 2007-2008

** WEF Global Competitiveness Report 2008-2009

The Record



Israel's Competitiveness

| Country Rank | 1st | 2nd | 3rd | 4th |
|--|-------------|-------------|-------------|-------------|
| AVAILABILITY OF SCIENTISTS AND ENGINEERS | ISRAEL | JAPAN | FINLAND | INDIA |
| VENTURE CAPITAL AVAILABILITY | USA | ISRAEL | NETHERLANDS | FINLAND |
| JUDICIAL INDEPENDENCE | GERMANY | NETHERLANDS | ISRAEL | NEW ZEALAND |
| TECHNOLOGICAL READINESS | SWEDEN | SINGAPORE | ISRAEL | ICELAND |
| QUALITY OF RESEARCH ORGANIZATIONS | SWITZERLAND | USA | UK | ISRAEL |

WEF Global Competitiveness Report 2006-2007

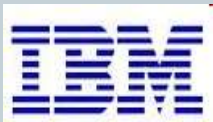
Synergy Between Academia and Industry



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- All seven universities have their own Technology Transfer companies, which take out thousands of new international patents each year.
- Many of the world's leading IT and medical equipment companies have set up R&D centers and laboratories in Israel either on or close to Israeli campuses amongst them.



Bridging the Gap



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Academia

- Academic freedom
- Creative personnel
- Working environment
- Exposure to the world

Industry

- Focused Activities
- Product Oriented
- Funding
- Demanding customer



Governmental Driven Initiatives

Governmental Driven Initiatives



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Government expenditure on civilian R&D amounted to about **NIS 4.9 billion in 2009**

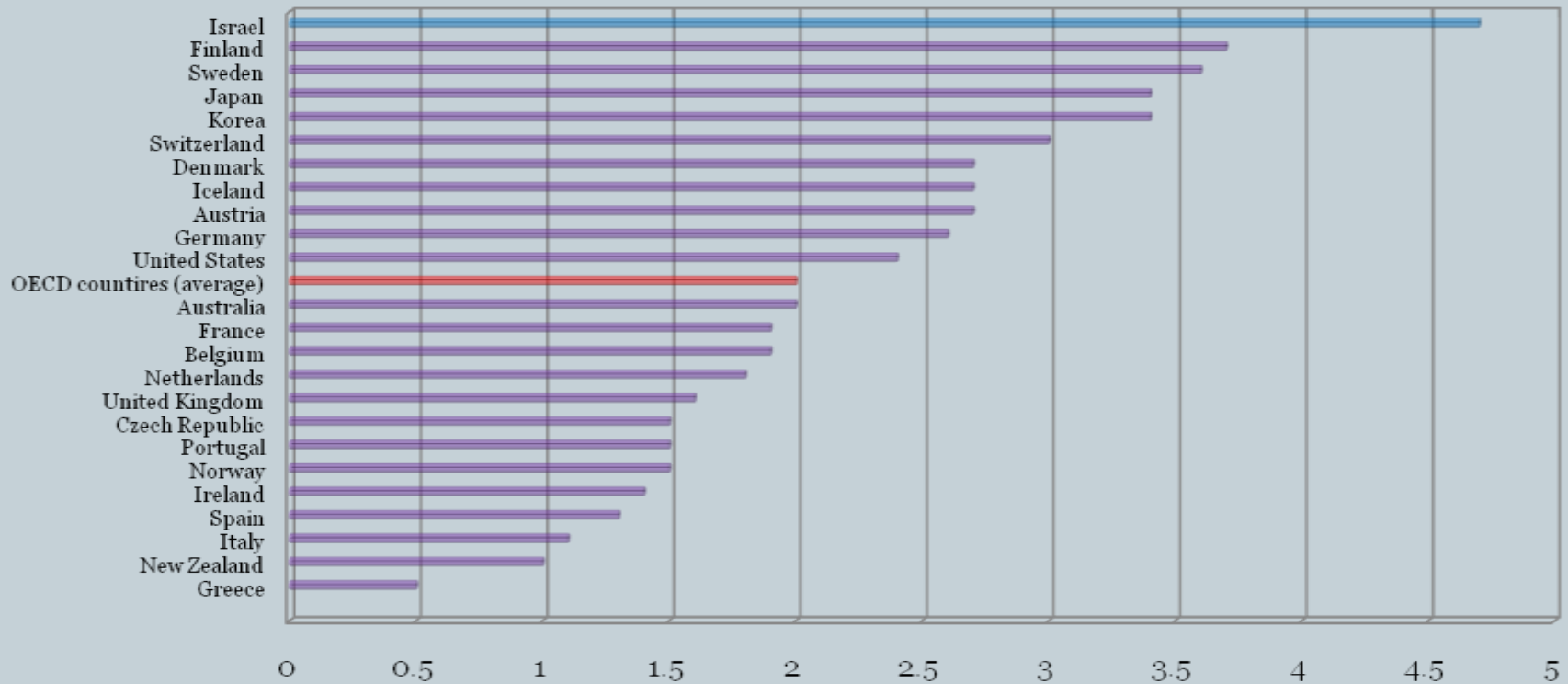
In 2008, national expenditure on civilian R&D in Israel was **4.7%** of the GDP. Higher than in all countries that are members of the OECD¹.

¹Central Bureau of Statistics

% R&D of GDP



Expenditure on Civilian R&D, as a percent of the GDP in Israel and in OECD countries 2008



Governmental Driven Initiatives



MAGNET – The Central Program

This program involves pre-competitive R&D within a consortium that includes a number of commercial companies together with research personnel from at least one academic or research institution.

The R&D focuses on new generic technologies that will lead to new generation advanced products.

The industrial partners enjoy a grant amounting to 66% of approved R&D costs, whereas the academic partner will receive 80% of said costs. A foreign company may be included in the consortium if it can bring a unique contribution to the relationship.

Governmental Driven Initiatives



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Magnet Routes

Consortium -Technology R&D

Forming a consortium of companies and academic units to achieve common vision by developing new technologies.

Distribution and Implementation

An association of industrial companies to assimilate and expose generic developments.

Learning from each others experience.

Governmental Driven Initiatives



- MAGNET- celebrating a decade of joint industry academia research activities
 - 150 companies collaborate in joint R&D programs with academia
 - 500 team research programs
 - 49 consortia
 - 145 MAGNETON's
 - 15% of the budget to academia
 - Over 120 R&D groups per annum
 - 6 development labs
-

Governmental Driven Initiatives



Katamon

Promote water technology projects by triple cooperation between industrial company, academic research group and water infrastructure company.

Project's budget is up to US\$1M, and its duration is up to 30 months.

Grants are up to 50%.

Research Institutes

Supports R&D programs carried out by Research Institutes according to criteria.

Grants are up to 90% of approved budget.

Governmental Driven Initiatives



Generic R&D

Encourages companies investing heavily in R&D to invest a significant percentage of funds in long-term generic R&D.

Grants are up to 50% of the approved budget.

R&D Centers in Universities

Aims to create and develop technological infrastructure for industry use.

In 2005, the “Russell Berrie Institute for Nanotechnology” was established at the Technion in Haifa.

In 2008, the new "National Institute for Biotechnology Research and Development" was established at the Ben Gurion University.

In 2010, The Multi disciplinary Institute for Nano science was established at the Bar Ilan University.

Support is offered in cooperation with the Ministry of Finance, the Council for Higher Education the Ministry of Defense the Universities and donors.



Academia Driven Initiatives

Academia Driven Initiatives



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The Israel Tech Transfer Organization (ITTN) serves as the umbrella organization for Israel's technology transfer companies.

These companies are affiliated with the country's world-renowned universities and research institutions.

<http://www.ittn.org.il/about.php?cat=18&incat=0>

Academia

Driven Initiatives



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ITTN's partners are affiliated with some of the world's leading educational and research institutions.

- [Bar-Ilan Research & Development Ltd.](#)
- [BGN Technologies](#) (Ben-Gurion University of the Negev)
- [BioRap Technologies Ltd.](#) (Rappaport Research Institute of the Technion-Israel Institute of Technology)
- [Carmel-Haifa University Economic Corp. Ltd.](#) (University of Haifa)
- [Gavish Galilee Bioapplications Ltd.](#) (MIGAL Galilee Technology Center)
- [Hadasit Ltd.](#) (Hadassah Medical Organization)
- [Mor Research Applications](#) (Clalit Health Services)
- [Ramot at Tel Aviv University Ltd.](#)
- [T3 – Technion Technology Transfer](#) (Technion Research & Development Foundation Ltd.)
- Tel Aviv Medical Center
- [Yeda Research & Development Company Ltd.](#) (Weizmann Institute of Science)
- [Yissum Ltd.](#) (Hebrew University of Jerusalem)



Success Stories

CHERRY TOMATOES AND LONG SHELF-LIFE TOMATOES

The world's most popular cocktail hybrids for greenhouse production with improved shelf-life, yield, and quality, which revolutionized the fresh market industry, both indoors and in open fields. The Daniela variety is only one example of the novel developments. Its genetic make-up combines a ripening inhibitor gene with some selected polygenes for firmness and slow ripening, together with other genes generating high yields of large, quality fruit. Since its initial release, Daniela was further improved and the number of built-in pest and disease resistances was greatly extended. More than 15 years after its first release, Daniela and related cultivars are considered today to be among the world's leading greenhouse varieties. In Europe, they have become an industry standard.

Product developed by; Haim Rabinowitch & Nachum Kedar both from the Faculty of Agriculture, Food and Environmental Quality Sciences, Hebrew University (Yissum)



Copaxone



The first innovative drug to be developed in Israel and to receive FDA approval, Copaxone® is a unique MS Multiple Sclerosis immunomodulator: the first and only non-interferon agent for the treatment of relapsing-remitting multiple sclerosis. Copaxone® is licensed to Teva Pharmaceuticals Ltd (Yeda).

DOXIL (Caeylx)

DOXIL is indicated for the treatment of patients with ovarian cancer whose disease has progressed or recurred after platinum-based chemotherapy.

Product developed by; Yechezkal Barenholz, Faculty of Medicine, Hebrew University (Yissum) & Alberto Gabizon, Hadassah University Hospital Jerusalem (Hadasit)



Erbitux ®

An antibody based therapy presenting synergism with conventional chemotherapy. The synergistic effect was invented at the Weizmann Institute. Erbitux was developed by ImClone Systems and approved by the FDA in 2001. Imclone has a license to the synergism patent. Erbitux Sales in 2007 exceeded 1B\$ (Yeda).

EXELON

Exelon is a cholinesterase inhibitor, a type of medicine prescribed for people in the early or middle stages of Alzheimer's disease. Though not a cure, Exelon has been shown to be an effective medicine for treating the symptoms of mild to moderate Alzheimer's disease. Exelon provides hope for people with Alzheimer's disease and the people who care for them. It can slow the progression of symptoms and help people with mild to moderate Alzheimer's disease stay connected longer to the relationships and activities they value and enjoy.

Product developed by; Marta Weinstock-Rosin, Department of Pharmacology, Hebrew University (Yissum)



InterPharm Laboratories Ltd.

InterPharm Laboratories Ltd., founded in 1978 and today a subsidiary of Merck-Serono, was for many years the largest biotechnology company in Israel, developed recombinant cytokines for the treatment of viral infections, cancer and autoimmune diseases. All the products developed at InterPharm Laboratories (Interferon b, Interleukin-6 and soluble TNF receptors) emanated from Institute research. One product, Rebif®[®], is being commercially marketed (**Yeda**)

MobilEye Vision Technologies Ltd.

MobilEye was incorporated for the purpose of developing and marketing advanced products in the surging market of automated on-board driver assistant systems. The company has developed a number of proprietary algorithms and reference platforms that need only a single video camera for ACC, lane departure warning and collision mitigation. Multiple cameras are not needed for depth of scene calculation because MobilEye`s algorithms use an advanced spatio-temporal classification technique based on a novel machine learning approach that trains the system with static and dynamic visual information. (**Yissum**)



NDS Ltd

NDS Ltd. established in 1985, developing smart cards to prevent unauthorized access to computer data and satellite television broadcasts. The technology is based on an algorithm developed in the Institute's Faculty of Mathematics and Computer Sciences. NDS is traded on Nasdaq (NNDS) (**Yeda**)

PERIOCHIP

PerioChip is a small, orange brown, rectangular chip (round at one end) for insertion into periodontal pocket.

The active ingredient of PerioChip is Chlorhexidine, a gold standard broad – spectrum antimicrobial agent. Each chip contains 2.5 mg chlorhexidine.

PerioChip is indicated as an adjunct to scaling and root planing procedures for reduction of pocket depth in patients with chronic periodontitis. PerioChip should be inserted in pockets, 5-8mm in depth. After insertion into the pocket, PerioChip demonstrates a sustained release of chlorhexidine over a period of up to 7-10 days. After that period the PerioChip biodegrades and disappears. The chlorhexidine released from the PerioChip have been shown to suppress pocket flora till up to 11 weeks.

Product developed by; Michael Friedman, School of Pharmacy, Michael Sela, Doron Steinberg from the Faculty of Dental Medicine, Hebrew University (Yissum) & Aubrey Soskolne, Faculty of Dental Medicine (Hadasit)

Rebif®

(Recombinant interferon beta), identical to the native molecule and registered for the treatment of multiple sclerosis and several viral diseases, licensed to Inter-Lab Ltd., a Serono company (Yeda).

