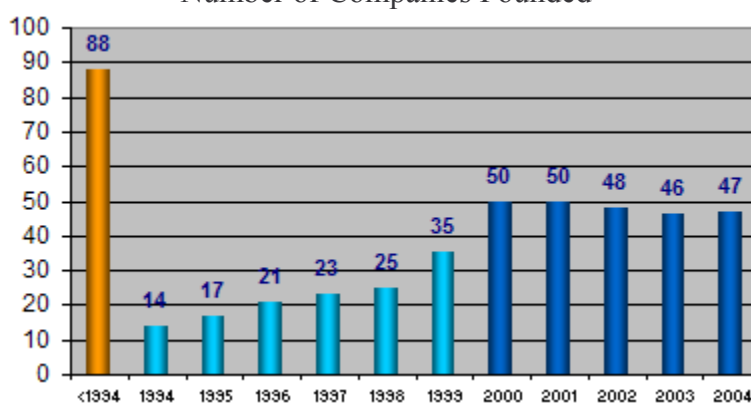


The Israeli Life Science Industry
Dr. Raphael Hofstein, CEO and President,
Hadasit Ltd. Hadassah Medical Organization (HMO).
And one of the founders of
ILSI (“Israel Life Science Industry”)

1999-2004: A Decade of Growth

The Israeli Life Science Industry is young, growing and exuberant. Of the existing 466 companies, 81% were founded during the last decade. A closer look reveals that an amazing 52% of the Industry was established in the last five years. Figure 1 depicts the trend and growth experienced by the industry in the 1994-2004 period. 88 companies were established prior to 1994, with the oldest one, Teva Pharmaceutical, founded in 1901. From 1994 to 2000, the industry experienced significant annual growth equaling 24%. In 1994, the life science industry grew by 14 companies while in 2000 the industry saw its number increase by an additional 50 companies. In total, the industry grew by an additional 185 companies in the 1994-2000 period. In the past five years, industry growth has remained stable with approximately 46-50 new companies, annually. Altogether, the industry experienced a 16.4% compounded annual growth in the decade of 1994-2004. It is important to note that Figure 1 depicts the number of companies established in each of the year and exists today.

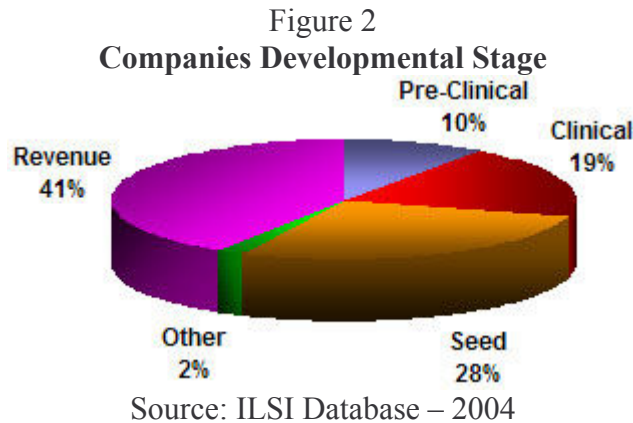
Figure 1
The Israeli Life Science Industry
Number of Companies Founded



Source: ILSI Database – 2004

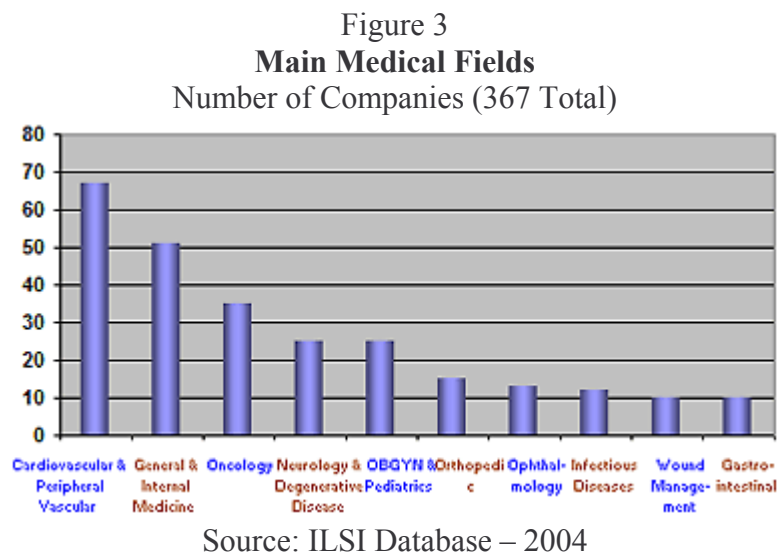
Companies Developmental Stage

80% of the companies were created within the last decade. Yet, 41% or 189 companies are revenue generating entities. Of those, 77 companies are mature and were created prior to 1994. More impressive is the fact that 38 companies or 20% of all revenue producing companies were established within the last five years. Approximately 30% of the life science industry or 131 companies are at the seed stage, 10% or 46 companies are at the preclinical stage and 89 or 20% of the companies are at the clinical stage.



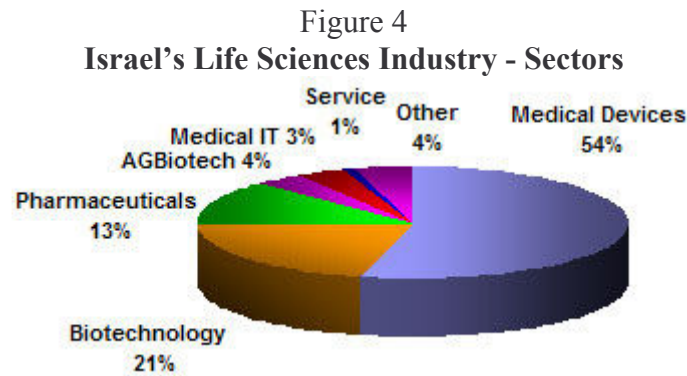
Industry Areas of Focus

The Israeli industry focus is on unique opportunities of major diseases for which existing therapies are largely ineffective. Thus many Israeli companies are working on treatments for cardiovascular and peripheral vascular disease (67 companies), oncology (35), neurodegenerative disease (25), and other age related diseases such as ophthalmic and orthopedic (15) (see Figure 3).



Israel's Life Sciences Industry - Sectors

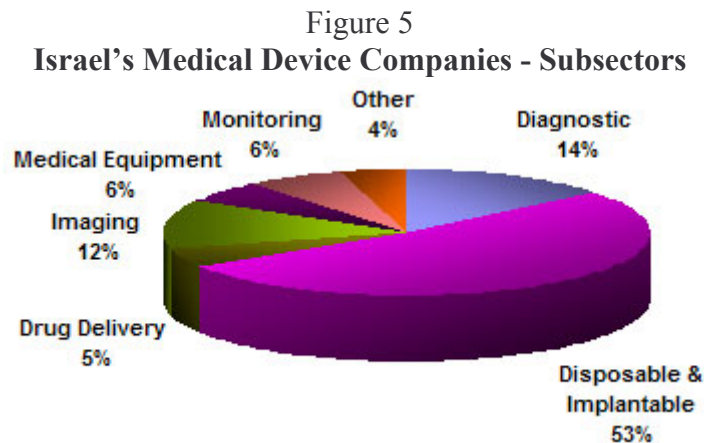
The Israeli Life Science Industry is heavily biased towards the medical device sector, with approximately 250 companies or 54% of the total. Biotech is the second largest sector with 96 companies or 21% and Pharmaceutical is the third with 60 companies or 13% of all life science companies operated in Israel (see Figure 4). Presently, Agbiotech is poorly represented in the database with only 18 companies or 4% of the total.



Source: ILSI Database – 2004

Medical Device

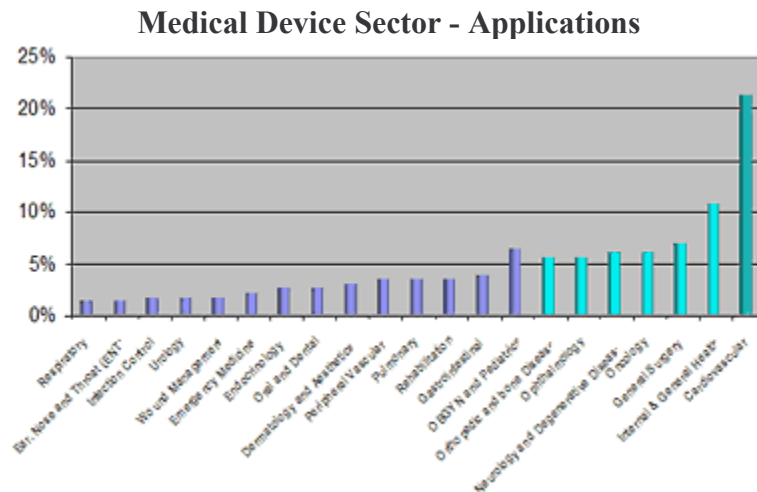
The largest sub sector in the medical device arena is the one containing therapeutic devices, both implantable and disposable. The latter comprises 53% of the total medical device body of companies, followed by diagnostic, imaging and monitoring companies contributing 14%, 12% and 6%, respectively (see Figure 5).



Source: ILSI Database – 2004

The devices developed are concentrated in several main areas of which cardiovascular is the leading one with 49 companies or 21%, followed by internal and general health (11%) and general surgery with 15 companies or 6%. Figure 6 depicts the various medical applications. The medical device companies focus their product offering in over 20 applications. The leading one being cardiology, oncology, neurology and neurodegenerative disease, ophthalmology and orthopedic. A smaller number of companies focus on medical fields such as endocrinology, wound management and respiratory disease.

Figure 6



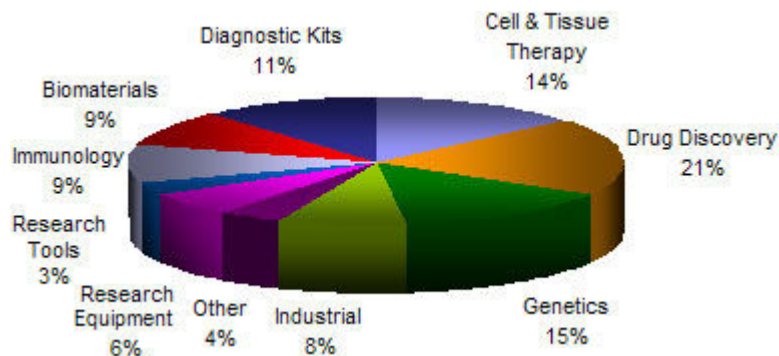
Source: ILSI Database – 2004

Biotechnology

The biotechnology sector is the second largest with 96 companies. The sector is fluid with new companies being established and old one being abandoned. Of the universe of 96, 28 companies, or 29% of total are **revenue** generating. It is interesting to note that most are selling diagnostic kits or research equipment. 25 companies or 26% are in the **seed** stage, 15 companies in **preclinical** stage and 14 in **clinical** stage.

Figure 7 depicts Israel's biotech companies categorized by sub sectors. Bioinformatics/Drug Discovery is the largest sub sector with 19 companies or 20% of the total biotech sector, followed by genetics – 13 companies or 14%, and immunology with 9 companies or 10% total.

Figure 7
Israel's Biotech Companies - Subsectors

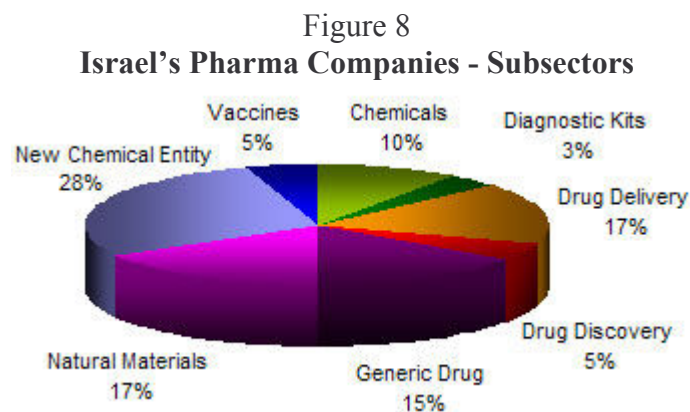


Source: ILSI Database – 2004

Pharmaceutical

Pharmaceutical is the third sector with 60 companies. Although smaller in number of companies, it is by far the largest and most established sector in the Israeli Life sciences industry. It is the largest revenue producer with 23 companies such as Teva, Agis, Taro and Dexcel Pharma, which are also the largest employers in the Israeli industry. These companies are generally mature and focus their business on generic drugs. Concurrently, 34 pharmaceutical companies are younger and small with less than 10 employees.

Although Israel's Pharma companies are well known for their generic drug emphasis, 28% of the sector is involved in the development of "New Chemical Entity-NCE". Several others are involved in the development of drug delivery and vaccines while others are focusing on the development of new drug using natural compounds (see Figure 8).



Source: ILSI Database – 2004

AgBiotech

Israel's agriculture research is a major success story dating to 1909 when Aaron Aaronson discovered the wild ancestor of domestic wheat. Agriculture and scientific developments have produced increasingly sophisticated and efficient agriculture systems with considerable economic impacts. Israel began with an agriculture – dominated economy largely based on citrus exports. Today, Israel's agriculture biotech related products and research fall into the following categories:

- Replacing usage of toxic pesticides that endanger both man and the environment by biological control
- Developing plants with desired characteristics based on molecular genetic technology
- Developing poultry and farm animals vaccines

As mentioned earlier this description is incomplete due to the small and potentially non-representative database of 18 companies.

Students and Employees

Students

As seen in the Table 1, the number of Israeli students who seek and receive higher education and degrees reached approximately 27,000 in the 2001/2002 academic year. Of those 1,386 or 5.1% are graduates of biology, which includes biochemistry, microbiology, genetics, physiology and biotechnology. It is interesting to note that 13.8% of biology graduates have received their PhD. However, these 191 students comprise 22.1% of all PhD receivers in Israel, suggesting that a larger proportion of life sciences students continue their studies towards a PhD degree. Concurrently, 481 students have finished their medical education concluding 6 years of medical school. An additional 39 students have received both an MD/PhD degree.

Table 1
Number of Graduating Israeli Students in Life Sciences
Academic Year 2001/2002

	Total Num. of Students	% of the Total	Biology	% student from the Total	Medicine	% student from the Total
First Degree	18,018	67	764	4.2	401	2.2
Second Degree	8,170	30	431	5.3	481	5.9
Third Degree	863	3	191	22.1	39	4.5
Total	27,051	100	1,386	5.1	921	3.4

Source: Israel Central Bureau of Statistics – 2002/2003

One should keep in mind that total number of students in the Life Sciences is estimated to be 2.5 times larger as students spend an average of three year completing their undergraduate studies, and 2-3 years completing their advanced degree.

Life Sciences studies take place primarily (65%) in seven academic universities and institutions: Hebrew Universities, Technion, Tel Aviv University, Bar Ilan University, Ben Gurion University and the Weizmann Institute.

Employees

Tables 2 and 3 need to be viewed together. The Israeli Life Science industry employs an estimated 25,200 individuals in 466 companies. Of those, 82% or 20,770 employees work in 52 companies with over 50 employees each. The largest employer is the pharmaceutical sector with 16,500 employees. Teva Pharmaceuticals employs over 11,000 people while Agis employs over 2,000. It is important to note that an estimated 30% of Teva's and Agis' employees are international employees that work outside of Israel. On the other extreme there are the 273 companies or 59% of all Life Sciences companies that employ between 1-10 workers or 1,365 employees.

Table 2
Number of Employees in the Life Sciences Industry

No. of Employees:	1-10	11-20	21-30	31-50	More than 50	SUM
Ag BioTech	40	60		120	250	470
Biotech	315	180	100	360	945	1,900
Medical Devices	745	645	450	560	3,140	5,540
Pharma	170	120	100	120	16,035	16,545
Other	95	135	50	80	400	760
Tot. No. Emp.	1,365	1,140	700	1,240	20,770	25,215

Source: ILSI Database – 2004

Table 3
Number of Companies in the Life Sciences Industry

No. of Employees:	1-10	11-20	21-30	31-50	More than 50	SUM
Ag BioTech	8	5		3	3	19
Biotech	63	12	4	9	8	96
Medical Devices	149	43	18	14	26	250
Pharma	34	8	4	3	11	60
IT	7	4		3	2	16
Service	2	1	1		1	5
Other	10	4	1	2	3	20
Total Number of Companies	273	77	28	34	54	466

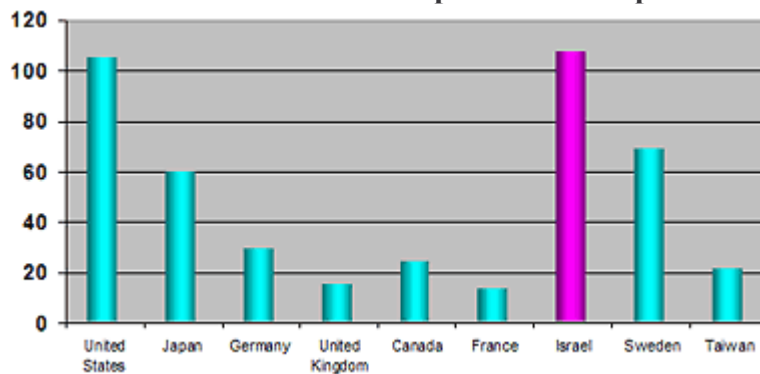
Source: ILSI Database – 2004

Patents

Israel's patent position is very strong and impressive:

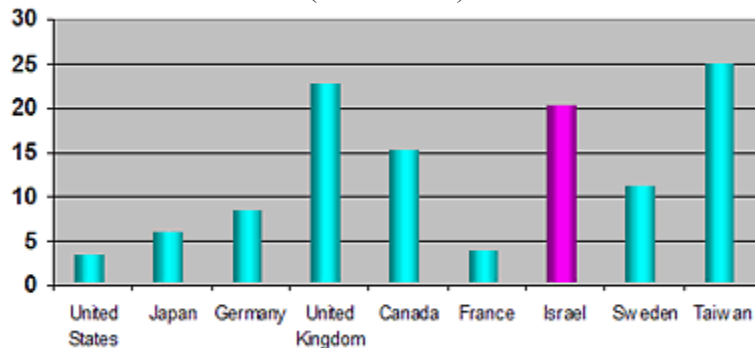
- Israel's total number of granted patents in the medical device area positions it in first place, worldwide in patents per capita and number seven in absolute number of patents (see Figure 9). Moreover, the number of medical device granted patents increased at a compounded annual growth rate of 20% during the years 1999-2003, placing Israel number three globally after Taiwan (1st) and United Kingdom (2nd). This high growth rate is indicative of the innovative activity in the Israeli medical device field (see Figure 10).
- Israel's total number of granted patents in the biopharma field puts it in fourth place worldwide in patents per capita and number 12 in absolute number of biopharma patents (see Figure 11)
- Israel's total number of Life Science patents as percent of total patents written by Israeli inventors, places the country in first place worldwide (see Figure 12)

Figure 9
Medical Devices Patents per Million Capita



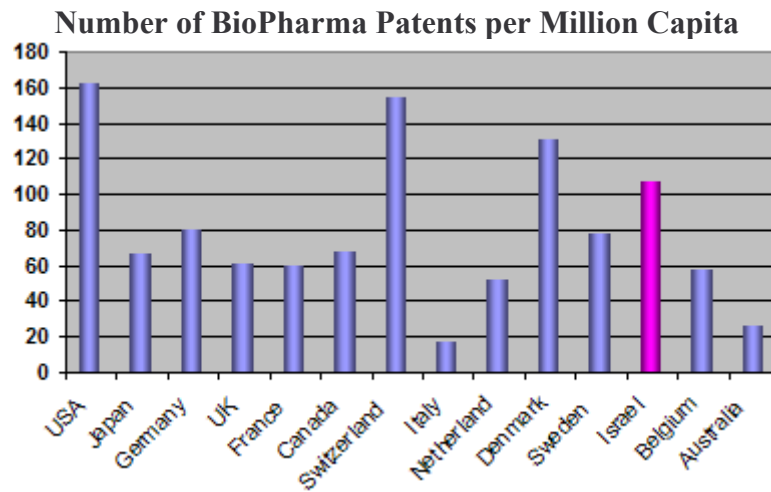
Source: www.uspto.gov

Figure 10
Medical Devices Patents
Compounded Annual Growth Rate
(1999-2003)



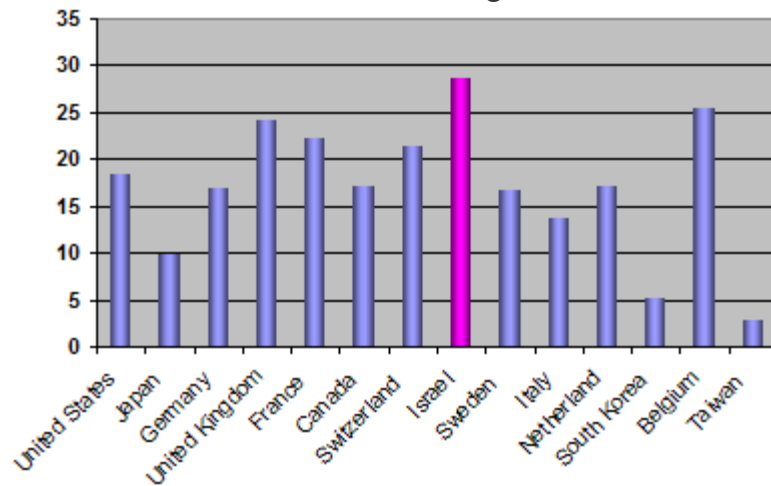
Source: www.uspto.gov

Figure 11



Source: www.uspto.gov

Figure 12
Life Science Patents
% of Total Patents Registered



Source: www.uspto.gov

* All data except otherwise noted is based on information gathered by ILSI. As such, it may be incomplete and at times inaccurate.