



Federal Ministry  
of Education  
and Research



GERMAN-ISRAELI  
Year of Science and Technology  
2008

# Germany – Israel

Science and Technology, Education and Research



RESEARCH

Igniting Ideas!

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Federal Ministry  
of Education  
and Research

# Germany – Israel

**Cooperation in Science, Technology and Education**

# Preface

Germany's and Israel's leading research institutions and universities have been working together for almost 50 years to find solutions to the most pressing issues of our time. In recent decades, these efforts have become one of the main pillars of our partnership.

In the early days, scientific contacts paved the way for the establishment of diplomatic relations between our two countries. That is why we have chosen 'Science as the Diplomacy of Trust' as the motto of the German-Israeli Year of Science and Technology 2008.

Our close cooperation in the field of technology has the aim of promoting economic progress and social prosperity in both countries. However, the German-Israeli Year of Science and Technology also places special emphasis on the humanities and cultural sciences. After all, these fields are particularly important when it comes to reflecting on the past, the present and the future. They can identify potential courses of action for policy-makers.

For this reason, we also want to support networking among young scientists from both countries. We hope that young researchers will continue Germany's and Israel's successful scientific relations in the future. That is why we have decided to introduce a new award for young scientists, which will be conferred annually and will alternate between three areas: the humanities and cultural sciences, the natural sciences and engineering, and the life sciences.

The German-Israeli Year of Science and Technology 2008 will trigger important new developments in the partnership between our two countries. After all, science and research not only lay the foundations for our future prosperity; they can also provide solutions to the main political, economic and social challenges of the 21st century.



Dr. Annette Schavan, Member of the German Parliament  
Federal Minister of Education and Research



The year 2008 was declared as the German-Israeli Year of Science and Technology to highlight the fruitful long-standing cooperation and to strengthen the already existing excellent collaboration in this important sphere within the German-Israeli relations.

Emerging from the dark memories of the Shoah, the scientific relations between Israel and Germany have developed over the last five decades to become a flourishing cooperation of highest level. This is reflected by the fact that Nobel laureates and winners of the Wolf Award, the Leibniz Award and the Israel Award are involved in a large number of joint research projects within the framework of our cooperation programs. It is also reflected by the research activities, which deal with the cutting edge topics in the world.

We have the responsibility of ensuring the continuity of our scientific cooperation by integrating young researchers in the various programs. The fellowships for the young scientists of our two countries provide them with the opportunity to get acquainted with the culture and society of each other and establish personal contacts which may later evolve to a true cooperation.

I salute the many talented scientists and administrators whose efforts and dedication by scientific as well as personal relationships brought this cooperation to such a success.

We look forward to equally productive and mutually beneficial results from the next decades of German-Israeli scientific cooperation.



Galeb Majadle  
Minister of Science, Culture and Sport



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# German-Israeli Cooperation and Its Significance

Today, in the early years of the 21st century, cooperation between Germany and Israel in the fields of science and technology has reached an intensity that would have been unthinkable when the two countries started working together almost 50 years ago. Scientific cooperation between Germany and Israel has been increasing continuously since the end of the 1950s and has played an important role in normalizing political relations. In the early days, Germany's main motive was to make amends. Today, this has given way to an equal partnership between the high-technology country Israel and Germany.

## From Past to Present



*Image: The Max Planck Society delegation departing from Zurich airport for its first visit to the Weizmann Institute in Rehovot in December 1959. From left to right: Prof. Feodor Lynen, Prof. Wolfgang Gentner, Alice Gentner, Prof. Otto Hahn, and Dr. Josef Cohn*

Until 1933, scientists of German-Jewish descent played a very important role in the German-speaking scientific world. Their successful work was brought to an abrupt halt during the Nazi regime. After the Federal Republic of Germany had been founded, the members of the German scientific community wanted to revive their fruitful collaboration with their German-Jewish colleagues. In the early 1950s, contacts between Germans and Israelis started developing sporadically at international conferences. However, the big breakthrough did not come until 1959, when the Weizmann Institute (WIS) extended an invitation to a delegation from the Max Planck Society (MPG). Establishing relations with the Weizmann Institute gave young German scientists, who had been emigrating to the USA in increasing numbers since the 1950s, the opportunity to do post-graduate work at an outstanding research institution without Germany running the risk of losing them forever. On the Israeli side, scientists at the Weizmann Institute – and later their colleagues at Israeli universities – hoped that cooperation with German scientists would stimulate continued growth of the research infrastructure at their institutions.

The contact between the MPG and the Weizmann Institute marked the beginning of a long-term scientific partnership between the two countries. The Minerva agreement, which was concluded in 1964 and remains valid to this day, firmly established the collaboration between the MPG and the WIS.

As a result, science became a cross-border instrument of rapprochement between Germans and Israelis and paved the way for the establishment of diplomatic relations in 1965. Now, 60 years after the birth of the state of Israel and 59 years after the establishment of the Federal Republic of Germany, scientific cooperation between the two countries has proved to be a success.

Today, Israel is one of the world's leading scientific nations. It has developed into one of Germany's most important partners worldwide in the fields of science and industry. Israel's development into a high-technology nation and the close scientific ties between the two countries have resulted in an increasing commitment from German companies in Israel. In return, numerous Israeli companies use Germany as a base for their European operations.





*Federal Chancellor Adenauer and Israeli Prime Minister Ben-Gurion at their historic meeting in New York, March 14, 1960*

## Israel – A High-Tech Nation

The fact that Israel is a small country with almost no natural resources helped the country's founding fathers recognize the importance of science and research at a very early stage. As a result, Israel has always pursued an economic policy that is strongly geared toward the export of high-tech goods. The country's greatest resources are the high quality of its education system and its intellectual capital.

## Education and Research

Chaim Weizmann (1874-1952), the first president of the State of Israel and the first president of the Weizmann Institute, which he founded and which bears his name, recognized early on that intelligence "is the only natural resource we have." That is why he started working toward the creation of a Jewish university in Palestine as early as 1902. His dream was realized in 1925 with the establishment of the Hebrew University of Jerusalem. Weizmann subsequently founded the Daniel Sieff Institute in Rehovot in 1934, which was modeled on Germany's Kaiser Wilhelm Institutes and was the predecessor of the Weizmann Institute. The immigration of German-Jewish scientists who had fled Germany in the 1930s was an important factor in the development of this and other outstanding scientific institutions in Israel.

For many years now, Israel has been investing more in research than any other country in the world. As a result of these efforts and of the waves of Russian scientists who immigrated to Israel in the 1990s, Israel now has one of the world's

highest concentrations of scientists and engineers (measured in terms of its overall population).

Israeli scientists are actively involved in the international scientific community, and this is reflected in international scientific publications. One third of all scientific publications published by Israelis are co-authored by scientists of other nationalities.

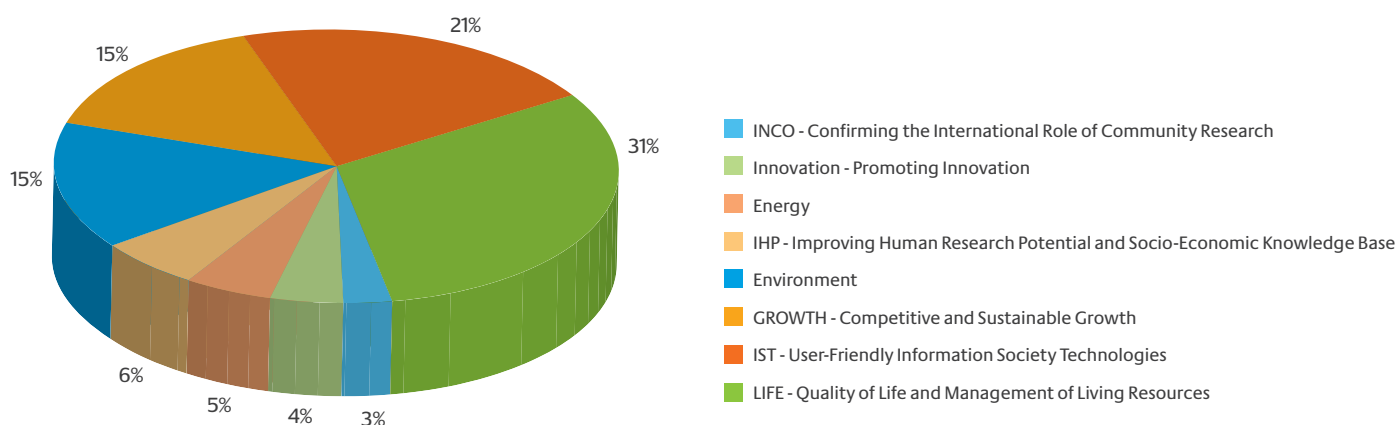
## International Scientific Cooperation

Israel's small population size sets certain limits on the country's research activities. The country engages in international cooperation in order to broaden its high-quality research base and take some of the financial pressure off it. The USA is Israel's most important partner for collaborative international research activities. Research contracts from American companies, venture capital from American investors, and grants from a variety of major foundations in the USA are the source of a significant proportion of Israel's research funding. The USA is also the most important destination for young Israeli scientists. Spending a period of time conducting research at a top American university is considered very important for an Israeli post-doc's career. After the USA, Germany is Israel's second most important scientific partner, and this is true not only with regard to bilateral cooperation: Israel's partnership with Germany has made it possible for Israel to receive research funding from the European Union (EU), and has thus made a significant contribution to Israel's integration into the European Research Area.

Israel has participated in the European Union's Framework Programs for Research and Technological Development since 1996 on the basis of special association agreements.

Israeli scientists submitted more than 4,000 proposals under the 6th Research Framework Program (FP6), almost 800 of which were approved. Universities participated in 55 percent of these projects; industry in 27 percent. Germany is Israel's main partner country, and German scientists played a significant role in nearly 43 percent of all approved collaborative projects that Israeli researchers carried out under the EU's 6th Framework Program. The total number of projects in which both Germany and Israel participate is impressive. Until late 2006, a total of 248 projects were approved, in which 527 German and 184 Israeli research institutions and companies were involved. The programs LIFE (Quality of Life

German-Israeli participation in the programs of the EU's 6th Research Framework Program. Approved projects until the end of 2006



and Management of Living Resources) and IST (User-Friendly Information Society Technologies) were particularly important. Israel's participation in the EU's research activities is continuing under the 7th Research Framework Contract. In recent years, Israel has also become significantly more involved in a large number of other European and international research organizations and associations, either as a full member or an associated member with observer status. Israel is a fully-fledged member of the European Network for Market-Oriented Research and Development (EUREKA) and a 'cooperating state' in COST, which is an instrument for European cooperation in the field of scientific and technological research. In 1998, Israel acquired the status of 'scientific associate' (without voting rights) of the European Synchrotron Radiation Facility (ESRF) in Grenoble. It is a founding member of the European Molecular Biology Organization (EMBO) and the European Molecular Biology Laboratory (EMBL) and a member of the European Science Foundation and the Euro-

pean Academy of Sciences. In addition, Israel has observer status in the bodies of the Organization of Economic Cooperation and Development (OECD) and in the European Organization for Nuclear Research (CERN).

## Industry

With a real economic growth rate of 5.3 percent and continuously decreasing unemployment, Israel can look back on a successful 2007. The country's economy has recovered from the global economic crisis and the effects of the Second Intifada and has been experiencing a boom in recent years. High-tech companies in particular are mushrooming everywhere. Israel currently has some 3,000 (primarily smaller-sized) R&D-intensive companies, more than a third of which are IT companies. The fields of communication technology, biotechnology, medical technology and alternative energy sources are in the focus of industrial research and development activities.

Extensive government funding, particularly from the Ministry of Industry, Trade and Labor (MOITAL), is an important factor in the success of Israel's high-tech companies. Israel spends 4.8 percent of its gross domestic product (GDP) on research and development, more than any other country in the world. According to the Global Competitive Report for 2006, Israel ranks 15th in the world when it comes to technological competitiveness, ahead of Canada, France and Korea. Israel actually ranks first when it comes to the availability of scientific staff and engineers.

The high level of private venture capital is a further important factor. Israel is the European leader in the mobilization of venture capital, ahead of the United Kingdom, Germany, France and Sweden, among others.

Israel's attractiveness as an investment location is also reflected in the continuously high level of foreign investment, a large proportion of which comes from the USA. The areas of high technology and biotechnology attract particularly strong interest. The positive attitude of foreign investors is partly due to the fact that the assets of Israeli companies are primarily derived from patents and employee know-how, which can easily be moved abroad in times of crisis.

Siemens, SAP, Volkswagen, Daimler AG, Deutsche Telekom, Bosch Siemens Hausgeräte, Henkel, BASF and Bayer are the main German investors. SAP, Siemens and Deutsche Telekom in particular have made new direct investments in recent years. This commitment is also reflected in the number of research contracts awarded to Israeli universities and scientific institutions.

By the same token, Israeli companies are also active in Germany. Examples include Federmann Enterprises in the semi-conductor materials sector and ISCAR in the machine tool business. These activities include research contracts for German research institutions.

As part of the first German-Israeli Intergovernmental Consultations, Federal Minister Dr. Annette Schavan and her Israeli counterpart, Minister Galeb Majadle opened a science forum entitled "From the Workbench to the Market – The Contribution of Academic Basic Research to Industrial Development in Israel and Germany" in Jerusalem on March 17, 2008.

An economic forum with leading representatives of industry from both countries was held at the same time, under the leadership of Michael Glos, the German Federal Minister of Economics and Technology, and Eliyahu Yishai, the Israeli Minister of Industry, Trade and Labor. This event had the aim

of identifying specific, forward-looking projects, particularly in the areas of investment, industrial cooperation and regional cooperation.

German companies are generally willing to support the Federal Government's "Future of Palestine" initiative, to participate in regional projects (Israel/Palestine/Jordan), and thus to make a contribution to peaceful coexistence in the region.

# Research Structures in Israel

In Israel, only a small proportion of civil research and development – less than 20 percent – is carried out by the country's six universities, the Weizmann Institute, and the numerous government and public-sector research institutions.

Medical clinics and a number of public service providers in the telecommunications, energy production, and water supply sectors also conduct important research work. However, the lion's share of Israel's research and development is carried out by the private sector.

## Universities

The universities and the Weizmann Institute account for virtually all of the basic research carried out in the country. Each of these institutions strives to be highly competitive at an international level in as many scientific disciplines as possible. In addition, the universities and the government set certain priorities, for example by setting up so-called centers of excellence in selected fields. These centers are either associated with outstanding researchers or focus on fields that seem particularly promising for Israel's future technological development.

Since the mid 1990s, Israel's universities have increasingly directed their efforts toward application-oriented research, and their inclusion in European research programs has reinforced this trend. Today, approximately 15 percent of all patents granted in Israel are held by a university or a university employee. With the exception of the University of Haifa, all Israeli universities have long had commercial subsidiaries through which they market their research findings and conduct contract research for Israeli and non-Israeli companies. With the help of governmental support, Israel's universities have also set up industrial parks near their cam-

pus with a view to encouraging the private sector to take up forward-looking technologies.

On average, roughly half of the universities' budgets are financed by the Israeli government. This basic funding is calculated on the basis of an allocation formula that uses criteria such as teaching and research results, teaching quality, and student services offered. The remaining amount comes from tuition fees, third-party funding, for example from bilateral foundations such as the German-Israeli Foundation for Scientific Research and Development (GIF), and contract research, particularly for EU research programs. The extensive network of circles of friends from other countries, Jewish organizations, and individual donors, especially from the USA, is another important source of funding.

The universities also receive public funds for special research projects. The Israel Science Foundation (ISF), whose activities are comparable to those of the German Research Association (DFG), allocated funds of almost US\$59 million for project promotion.

## Government Research Institutions

In addition to the universities and the Weizmann Institute, Israel also has several government research institutions that are responsible for specific areas. The **Israel Space Agency (ISA)**, which belongs to the Ministry of Science, Culture and Sport (MOST), has been supporting and coordinating a small space research program since 1983. The ISA currently focuses on the development of space research infrastructure and individual projects such as TechSAT, a small satellite that was launched in 1998 and is still operating; TAUVEK, an ultraviolet explorer that is scheduled to be launched in late 2008; and VENUS, a micro-satellite that was developed in cooperation with the French space agency CNES. The launch of Israel's first geostationary telecommunications satellite AMOS and of several OFEQ earth observation satellites are further successful examples of Israeli space research. Another highlight in Israel's space efforts was the participation of the first Israeli astronaut, Ilan Ramon, in the 28th mission of the Columbia space shuttle in January 2003. The tragic end of its voyage, which led to the death of all seven astronauts on board, was an enormous loss.

The **Agricultural Research Organization (ARO)**, also known as the Volcani Center, belongs to the Ministry of Agri-

culture and Rural Development. With its seven institutes, it has developed into the leading institution for agricultural research and development in Israel.

The **Earth Science Administration** is part of the Ministry of Infrastructure and runs three research institutes:

- Geological Survey of Israel,
- Israel Oceanographic and Limnological Research Institute,
- Geophysical Institute of Israel

The following institution reports directly to the Prime Minister's office:

- Israel Institute for Biological Research

This institute is based in Ness Ziona and carries out basic and applied research in various fields, including biotechnology, pharmacology, and toxicology.

### Ministry of Science, Culture and Sport (MOST)

The Ministry of Science, Culture and Sport (**MOST**) is responsible for implementing national research programs, supporting and promoting the development of new technologies, and realizing the economic potential of science. Between 1995 and 2007, the Ministry invested a total of US\$173 million in a program for strategic research that combines basic and applied research. This program focuses on the fields of information technology, biotechnology, electro-optics, microelectronics, material research, and research on environmental and water quality. In addition, MOST supports interdisciplinary research, particularly between the life sciences and the exact sciences, and provides funding for knowledge centers that aim to give all members of the local scientific community access to the most innovative technologies and facilities. MOST also provides financial resources for the support of regional research and development centers in economically underdeveloped areas. Not least, it is responsible for developing and implementing international scientific relations at government level, which includes not only bilateral cooperation, but also participation in international scientific organizations such as the OECD, EMBL, and CERN.

### Ministry of Industry, Trade and Labor (MOITAL)

Due to its large budget, the Ministry of Industry, Trade and Labor (**MOITAL**) plays an important role in the government's research funding activities. It mainly supports commercial companies, but also provides funding for collaborations between companies and universities in research projects that are geared toward solving specific problems.

Like many Israeli ministries, MOITAL has an Office of the Chief Scientist (OCS), an advisory body that is also responsible for allocating funding. The international R&D programs of MOITAL's OCS are supported and implemented by Matimop (the Israeli Industry Center for R&D). These programs are bilateral and multilateral EU programs such as Eureka, Eurostars, Galileo, the 7th Research Framework Program (FP7) and the Competitiveness and Innovation Framework Program (CIP).

In 2006/2007, MOITAL's OCS had a total budget of US\$350-400 million. A significant proportion of this budget originated from repayments from successful companies that had received financial support from the R&D fund. These financial resources are invested in promoting new projects. The funds are not subdivided into specialist programs. The three fields that receive most of the funding are communication technologies, electronics and software, followed by medical equipment, pharmaceutical products, biotechnology and chemicals.

In addition to the R&D fund, the OCS runs other funding programs aimed at increasing the innovative strength of companies, intensifying cooperation between companies and research institutions, and facilitating the transfer of technology. In the following programs, funding grants do not have to be paid back from subsequent earnings:

#### Generic R&D Program

Encourages companies that invest heavily in R&D to invest more in generic, long-term R&D. Grants amount to up to 50 percent of the approved budget.

#### Magnet Program

It supports the creation of consortia consisting of commercial companies and academic institutions with the purpose of jointly developing generic, pre-competitive technologies comparable to collaborative research at German and European level. Grants amount to up to 66 percent of the approved budget. In the pre-competitive phase, the program supports

collaborative research projects that include the participation of at least two companies and one research institution. An average of US\$5-6 million in funding is given to each consortium.

#### Magnet Program

This program is part of the Magnet Program and a miniature version of it. It promotes cooperation between a single company and a single academic research program, thus supporting the transfer of technology from academic institutions to industry. Grants amount to up to 66 percent of the approved budget. This program has become increasingly important in recent years.

#### NOFFAR

NOFFAR is also part of the Magnet Program and supports the transfer of technology, particularly in the fields of biotechnology and nanotechnology.

#### Technological Incubators

So-called technological incubators (TI) play an important role in encouraging the transfer of technology. They are non-profit organizations that help fledgling start-ups develop their innovative technological ideas and launch new business undertakings with the potential to attract private investors. During the first two years, the incubator – which holds a 20 percent interest in the venture – is in charge of the entire administrative management of the start-up and provides all business training for its staff.

### Spending on Research and Development (R&D) in Israel

	Israel	Year	OECD overall	Year
<b>National R&amp;D expenditure</b>	US\$ 9,221.3 m	2006	US\$ 773,998.3 m	2005
<b>Percentage of GDP spent on R&amp;D</b>	4.57%	2006	2.25%	2005
<b>Year-on-year growth in R&amp;D spending</b>	9.17%	2006	7.68%	2005
<b>Public R&amp;D expenditure</b>	23.3%	2003	29.5%	2004
<b>Private R&amp;D expenditure</b>	69%	2003	62.7%	2005
<b>R&amp;D expenditure from foreign sources</b>	3.3%	2003		
<b>Private R&amp;D expenditure</b>	US\$ 1,267.3 m	2005	US\$ 136,585 m	2005
<b>Number of researchers in private companies</b>	26,900	1999	2,496.422	2005
<b>Triadic patent families</b>	395	2005	51,386	2005

Source: OECD Main Science and Technology Indicators, 2/2007

The program allows private investors to become the owners of the incubators and to invest in the start-up companies at an early stage.

Grants amount to up to 85 percent of the approved budget.

There are currently 24 incubators that support approximately 200 young companies. The focus is on the fields of engineering, electronics, medical equipment and software development. The Technological Incubator Program has a 50 percent success rate, making it Israel's most successful program to date for the support of start-up companies. Most of the companies participating in this program have also been able to mobilize private investment, amounting to a total of US\$150 million to date.

Further programs (TNUFA & HEZNEK Seed Funds) provide funding and support for the development of business structures in order to help companies obtain private seed money, venture capital and corporate partners as well as to encourage investments and increase the number of start-ups.

## Research Funding Instruments

The work of the ministries MOST and MOITAL is supported by the **National Council for Research and Development (NCRD)**. The council, which was appointed by the Knesset in 2004, consists of 15 members from the fields of science, technology, and industry. It advises the government on issues relating to national research and development policy, including budget allocation.

According to the foundation act of 1958, the **Council of Higher Education** is the central body for the management and budgeting of Israel's institutions of higher education, the Weizmann Institute, and most of Israel's colleges. Its main responsibilities are the accreditation of new universities, the authorization of new faculties and degree courses, the granting of permission to award academic degrees, the allocation of financial resources to institutions of higher education, and the implementation of university reforms.

The **Israel Academy of Sciences and Humanities** is primarily responsible for maintaining international relations

with NGOs (non-profit organizations) and for concluding bilateral cooperation agreements. However, it also acts as an advisory body in Israel's decentralized research landscape and thus exerts a good deal of influence on Israel's research policy. This includes recommending researchers for the Israel Prize, which is awarded annually by the Ministry of Education for special achievements in different fields.

The **Israel Science Foundation (ISF)**, which emerged from the Israel Academy of Sciences and Humanities in 1972, is becoming increasingly important for the funding of basic research at universities. Its initially modest budget of US\$ 300,000 has increased to almost US\$59 million and is expected to reach US\$80 million in a few years. Approximately US\$1.5 million of this budget comes from private donations and foundations. The ISF is mainly responsible for supporting projects, granting research scholarships, administrating the new FIRST program, and allocating financial resources for infrastructure measures, for instance large-scale research facilities.

## Israel's Universities and Research Institutions

Approximately 117,500 students are enrolled at Israel's six universities and at the Weizmann Institute, which offers advanced degrees to university graduates who hold a degree in one of the natural sciences.

There is also a distance learning university with 36,700 students and more than 40 colleges with a total of approximately 63,200 students. Some of these colleges are increasingly conducting research on a limited scale. In addition, there are 10,000 students studying abroad, including some 1,000 in Germany, plus students enrolled at foreign universities in Israel, most of which are branches of British and American universities.

Colleges are becoming increasingly important in Israel. Over the last six years, the number of students at these institutions has more than doubled. The number of engineering students who choose colleges over universities shows a particularly strong growth. To some extent, colleges have a mission that is similar to that of Germany's institutions of higher education. They aim to give broad segments of the population access to a university education, while universities give priority to training young scientists.

Broken down by major, over 60 percent of all students in Israel are pursuing a degree in the social sciences or humanities. Another 30 percent are studying natural sciences or engineering, and 6 percent study medicine.

Approximately 55 percent of all freshmen are female. Due to the long military service in Israel, most students are relatively old when they start their studies compared to students in other countries – usually between 20 and 22 years of age. Tuition fees at Israeli universities average US\$2,500 a year per student, but 40 percent of all Israeli students receive government assistance or scholarships through special programs.



### Bar-Ilan University (BIU)

Established in 1955, Bar-Ilan University has developed into one of the largest universities in Israel. The main campus is located in Ramat Gan outside of Tel Aviv, but the university also has five associated regional colleges located throughout Israel.

A total of 1,600 instructors teach more than 30,000 students working toward a wide range of academic degrees at the university's faculties for the exact sciences, life sciences, social sciences, humanities, Jewish studies, and law as well as at its interdisciplinary post-graduate training centers and institutes. Bar-Ilan University is also home to Israel's largest schools of education and social work and one of the world's leading faculties of Jewish Studies.

New buildings include facilities for brain research, music, psychology, Jewish philosophy and ethics, law, language teaching, humanities and interdisciplinary graduate studies.

BIU operates internationally acclaimed research institutes in the fields of physics, medical chemistry, materials sciences and nanosciences, applied and pure mathematics, cancer research, brain research, economics, strategic studies,



developmental psychology, archeology, and Jewish law and philosophy, among others. The university's libraries hold over 1 million books, including unique collections of ancient Judaica.

Bar-Ilan University is associated with about 60 universities around the world via cooperation agreements, including 13 universities in Germany. Like other Israeli research centers, BIU has received German funding under a variety of programs such as Minerva, DIP, GIF, BMBF-MOST, and the DFG. Some of the most successful EU networks started as collaborative projects between BIU and German researchers.

The Bar-Ilan Research and Development Company (BIRAD) is in charge of transferring new technologies and pharmaceuticals from the laboratory to the marketplace. Bar-Ilan University holds almost 100 active patents. Some project findings are commercially exploited by German industrial companies.



*Bar-Ilan University*

**BIU is privileged to participate in the German-Israeli Year of Science and Technology. This year, the 60th anniversary of the establishment of the State of Israel also marks a milestone in German-BIU research cooperation. German-BIU scientific and technology projects, academic exchange programs, and research networks and partnerships form an essential and growing component of BIU's research portfolio. To continue and strengthen our German-BIU scientific collaboration, BIU will dedicate its human, financial, and technological resources to recruit post-doctoral students, expand its academic exchange programs, and increase collaboration in both basic and commercial research ventures.**

**Prof. Harold Basch, Vice-President for R&D,  
Bar-Ilan University**



*Ben-Gurion University*

### **Ben-Gurion University of the Negev (BGU)**

Ben-Gurion University of the Negev is Israel's youngest university. It was established in Beer-Sheva in 1969 at the initiative of Israel's first Prime Minister, David Ben-Gurion, who believed that Israel's future lay in the Negev, a desert region that covers more than sixty percent of the country.

Today, Ben-Gurion University is a major center of learning and research, with faculties of humanities and social sciences, health sciences, engineering sciences, and natural sciences, as well as the Joyce and Irving Goldman Medical School, the Guilford Glazer School of Business and Management and the Kreitman School of Advanced Graduate Studies. It is also home to the National Institute for Biotechnology

in the Negev. The university has campuses in Beer Sheva, Sede Boker and Eilat. Special emphasis is placed on desert studies and research, which are conducted at the Jacob Blaustein Institutes for Desert Research and at the Albert Katz International School for Desert Studies. The Blaustein Institutes are recognized by the European Union as a 'Large Scale Facility' for desert research.

Some 750 scientists work at Ben-Gurion University. Student enrollment has increased very rapidly, from approximately 6,400 students in 1991 to more than 17,000 in 2007. Ben-Gurion University took in many of the scientists and students who emigrated from the former Soviet Union. It plays a key role in collaborative activities with neighboring Arab states.

New research priorities at Ben-Gurion University include biotechnology, nanoscience and -technologies, and water research and technologies. The International Center for Combating Desertification in Sede Boker was established with the help of a loan from Germany's Kreditanstalt für Wiederaufbau (KfW; Bank for Reconstruction and Development). In 1995, Volkswagen AG built a magnesium extraction plant at Dead Sea Works and founded the Magnesium Research Institute together with Ben-Gurion University and Dead Sea Works.

In 2006, Deutsche Telekom opened its first T-Lab outside of Germany at BGU and agreed to provide it with a total of US \$ 12.1 million, initially for a period of three years. Its research activities focus on the field of Internet security. The T-Lab now works successfully with about 100 scientists and students in 14 ongoing projects and already received 24 patents.

Since the 1970s, the Ben-Gurion University has received considerable financial assistance from a Friends of the University association in Germany, from private enterprises, the City of Berlin, and the Land of North Rhine-Westphalia.

**The extensive collaboration between researchers at Ben-Gurion University and researchers from German research institutes and companies in scientific and technological projects has had a major impact on the development of BGU as a young research university in the Negev. We look forward to continuing and enhancing this fruitful cooperation.**

**Prof. Moti Herskowitz, Vice President for R&D, Ben-Gurion University**



*The Hebrew University of Jerusalem*

### **The Hebrew University of Jerusalem (HUJI)**

The Heidelberg mathematics professor Hermann Zwi Shapira published an essay outlining the first plans for the establishment of a Jewish university in Palestine as early as 1882. In subsequent years, this idea was taken up by the same intellectuals who also strove for the creation of a Jewish state. According to their vision, the university would serve as the intellectual, cultural and scientific center of the Jewish people and the Jewish society that was developing once again in the land of their forefathers. This dream became true in 1918, when the cornerstone of the Hebrew University was laid on Mount Scopus in Jerusalem. The first board of governors included several prominent personalities, including Martin Buber, Sigmund Freud, Judah Magnes, Albert Einstein and Chaim Weizmann.

Chaim Weizmann, who later became Israel's first President, believed that the Hebrew University should also serve as a bridge of understanding between the Jewish people and the Arab population living in Palestine and the entire region. With the rise of the Nazi regime in Germany, the Hebrew University became an academic heaven for the victims of growing anti-semitism and discrimination at European and especially at German universities.

In the early years, academic life at this "temple of science" (as the Zionist leader Menahem Ussishkin described the university on the occasion of Albert Einstein's inaugural lecture in 1923) revolved mainly around two poles: the natural sciences and Jewish studies. In addition to researching the flora and fauna of the region, studying the country's geology and geography, and fighting the diseases that were prevalent in the area (such as malaria), the Hebrew University also contributed to the revival of the Hebrew language by insisting that the language of instruction would be Hebrew. As a result, the Hebrew language was adapted to the requirements of scientific work.

Today, the seven faculties of the Hebrew University have 12 institutes that focus on teaching and some 100 institutes dedicated to research. The Hebrew University is represented among the 100 best universities in the world and HU researchers are at the forefront of international science in a wide range of fields – from biotechnology and computer sciences to astrophysics and cancer research, from microbiology to solar energy. The Hebrew University is home to a number of centers of excellence, including centers for German history, neural computation, cognitive sciences, bioinformatics, nanotechnology and environmental sciences.

The Israeli-German Year of Science and Technology will serve as an excellent magnifying glass throughout 2008 and will continually highlight the manifold contributions of Israeli-German research collaboration to science.

The Hebrew University of Jerusalem, which was founded in 1925 as the first research university in Israel, acknowledges the contributions of Jewish scientists from Germany to the establishment and development of academic excellence in Israel. The renewed ties with Germany and research collaboration with German scientists are an integral part of academic life in our university today.

In honor of the German-Israeli Year of Science and Technology, the Hebrew University plans to carry out a series of events, celebrating Israeli-German research collaboration at our University, welcoming high-ranking representatives from German academia and politics, and organizing several conferences in Israel and Germany. Special emphasis will be placed on top-class research and on promoting cooperation between young scientists in both countries.

**Prof. Hillel Bercovier, Vice President for R&D, Hebrew University of Jerusalem**

The university's faculties of Humanities and Social Sciences focus on studying different human cultures, societies and religions. Jewish studies are a central element of academic activities, but there are also important centers for the study of Islam, the civilizations of the Middle and Far East, and Christianity.

The Hebrew University currently has four campuses, three of which are located in Jerusalem and one in Rehovot. There are more than 1,000 faculty members. Approximately 24,000 students are enrolled at the university, including 12,000 Bachelor's degree students, 7,200 Master's degree students, 2,800 doctoral students and 950 students of the Rothberg School for Overseas Students and other programs.

The university has always conducted both applied and basic research. Nearly 30 percent of all civilian scientific research in Israel is conducted at the Hebrew University. About 4,400 research projects are currently underway at the university, and 1,500 new projects are launched each year. Sixteen percent of all the research conducted at the university finds application in the high-tech sector. The university's research budget amounted to US\$106 million in 2006/07, approximately one third of the total amount spent on research by Israeli universities that year.

The Hebrew University has more than fulfilled its original vision of becoming a focus of academic excellence in the region. It is one of the major players in internationally funded research projects with neighboring Arab states and the Palestinians, most significantly in the areas of conflict research, agriculture, health and the environmental sciences. Nine of these projects currently receive funding from the Deutsche Forschungsgemeinschaft (DFG, German Research Association). German scientists are also involved in the projects. The Hebrew University cultivates a densely woven network of collaborative activities with Germany. It also has the largest number of Minerva Centers in Israel.

During her second visit to Israel in April 2007, Federal Chancellor Angela Merkel received an honorary doctorate from the Hebrew University.

## Technion in Haifa

The Technion, Israel's oldest university, was initially modeled on Germany's technical universities. In 1909, the Hilfsverein Deutscher Juden, a Jewish welfare association in Germany, took the initiative to found the "Jüdisches Institut für technische Erziehung in Palästina" (Jewish Institute for Technical Education in Palestine) in Berlin in order to prepare the establishment of a technical university in Palestine.

The cornerstone for the first building was laid in 1912. The question of which language should be used for instruction – Hebrew, German or English – developed into a protracted dispute that was settled in favor of Hebrew in 1914 with the outbreak of World War I. Due to the war, however, the Technion could not actually open its doors until 1924.

Following some initial difficulties, the Technion found its footing in the 1930s, particularly following the influx of German immigrants, many of them university teachers and researchers, who established new fields of study at the Technion.

Today, the Technion has 18 faculties that operate 40 research centers and institutes dedicated to a variety of technical, scientific and medical fields. The approximately 850 members of academic staff provide instruction to about 13,000 students. Having trained more than 80,000 engineers, scientists, doctors, and architects, the Technion can claim to have made a significant contribution to Israel's rise as a high-tech nation. In the field of engineering, it continues to be the country's foremost training and research center, with a research budget of over US\$ 50 million per year from external sources. The Technion is also the first and only university in Israel whose researchers have received a Nobel Prize in the natural sciences.

The Technion maintained close contacts with industry even before the State of Israel was founded – longer than any other university in Israel. It also has a network of subsidiary that have played an important role in the founding of many

high-tech companies. The Technion is particularly active in the area of contract research. Its clients are companies from all over the world, including Germany.

The university's first contacts with Germany were established through the German Land of Lower Saxony and the Volkswagen Foundation. The Technion and Lower Saxony's Ministry of Science and the Arts agreed in 1983 to launch a joint research program that would be financed primarily with funds that the Volkswagen Foundation earmarks for use by Lower Saxony. With the help of this program, more than 106 joint projects have already been carried out by scientists from the Technion and research institutions in Lower Saxony.

Researchers from the Technion and their German colleagues are represented in all German-Israeli R&D funding programs and in the EU's Research Framework Programs.

There are excellent interactions between the Technion and many German universities, including RWTH Aachen University, the Technical University of Berlin, the Ludwig Maximilian University in Munich, the Karlsruhe Institute of Technology, the Ruprecht Karls University of Heidelberg, and the University of Stuttgart.

In addition, the Technion maintains close relations with various research institutions, including Max Planck Institutes, Fraunhofer Institutes, the Research Center Jülich, and the German Aerospace Center (DLR).

The Minerva Research Centers, which are financed by the Max Planck Society's Minerva Foundation, support cooperation between German and Israeli scientists in various fields of research.

In some of the Minerva Centers, the Technion conducts research under its sole management; other centers are managed in cooperation with other Israeli universities.

Technion scientists also work together with German companies, including Bayer, Roche, Siemens, Bosch, Henkel AG & CO. KGaA, SKT (Schunk Kohlenstofftechnik GmbH), Carl Zeiss, STEAG, and Vodafone



*Technion*

The interaction between the Technion and German science and technology institutes is extremely important and should be maintained and even enhanced. Germany is a country with outstanding scientific and technological achievements, and the Technion, as the leading science and engineering school in Israel, wants to cooperate with the best institutions in the world. This scientific interaction also serves as a bridge between the two nations. The German-Israeli Year of Science and Technology can mark this cooperation by highlighting some of the joint scientific and technological activities.

**Prof. Moshe Eizenberg, Vice President for R&D, Technion Haifa**



*Tel Aviv University*

### **Tel Aviv University (TAU)**

Located in Israel's cultural, financial, and industrial center, Tel Aviv University is the country's largest teaching and research institution. It consists of nine faculties, 95 departments, 27 schools and more than 130 research institutes. The university's origins go back to 1956, when three smaller educational institutions were joined together to form Tel Aviv University. It became autonomous in 1963 and moved to its current Ramat Aviv campus in the North of the city in 1964.

Tel Aviv University offers its 28,000 students an extensive range of study programs in its Faculties of Engineering, Mathematics and Natural Sciences, Life Sciences, Medicine, Humanities, Law, Social Sciences, Arts, and Management. Special emphasis is put on the introduction of innovative and

interdisciplinary new programs in important areas of nanoscience, biophysics, bioinformatics, stem cell research, and renewable energy. Many of the university's 1,100 faculty members are internationally renowned scientists who have produced significant research results in their respective fields. The university's researchers are involved in approximately 3,500 projects every year. In the 2005/2006 academic year, TAU's research budget totaled US\$ 80.5 million.

As one of its numerous international activities, TAU confers one of the world's most important annual awards: the Dan David Prize. The university has close ties to Jewish communities abroad and offers study programs to teachers and students in the USA, Canada, and Europe. It also enjoys extensive research contacts with leading academic and scientific institutions across the world. This is reflected in more than



Tel Aviv University (TAU) welcomes the German-Israeli Year of Science and Technology as a platform for strengthening the long-time and fruitful links between TAU and German institutions. TAU has promoted binational cooperation in research and education through grants and fellowships. In addition, we have participated in numerous German-Israeli programs, among them MINERVA, GIF, DIP, MOST-BMBF, and Bio-Disc. In the area of cooperation with the industry, TAU can present best practices in fields such as communications, bio-informatics, electronics, and others. We look forward to utilizing our local contacts, as well as those abroad, to try and expand our collaboration with industrial and technology partners as well as academic organizations in Germany.

In the German-Israeli Year of Science and Technology, TAU hopes to see increased opportunities for establishing joint science and technology projects. To this end, we plan to organize workshops, seminars and other meetings aimed at encouraging greater interaction between our scientists and German researchers from academia and industry.

**Prof. Hagit Messer Yaron, Vice President for R&D, Tel Aviv University**

150 cooperation agreements, including agreements with the following German institutions: the Ludwig Maximilian University in Munich, the Johann Wolfgang Goethe University in Frankfurt, the University of Constance, and the GeoForschungsZentrum in Potsdam.

In addition to financial resources from BMBF-funded programs, Tel Aviv University has also received substantial financial support from Germany over the years via the German Friends of TAU Association as well as from foundations and private individuals. The Minerva Institute for German History, which was founded at Tel Aviv University in 1971, has been funded by the German Ministry of Education and Research since 1980 through an endowment fund from the Minerva Foundation in Munich. Other German contributions have supported the faculties of law and performing arts, Jewish-Arab coexistence, student scholarships, research in

fields ranging from biotechnology to peace research, the integration of new immigrants, and many other important TAU activities and institutions. Cultural Sciences and cultural relations have further been strengthened by the establishment of the Marcel Reich-Ranicki Chair for German Literature at Tel Aviv University as well as by visits of the German conductors Christoph von Dohnanyi and Helmuth Rilling to the university's conservatory.



*University of Haifa*

## University of Haifa

The University of Haifa was established in 1963 to meet the special needs of the Haifa area and the north of Israel. Initially under the auspices of the Hebrew University, the University of Haifa gained full academic autonomy in 1973. Today, it is home to more than 17,000 students. Over 750 scholars and scientists make up the academic staff of the university's six faculties: Humanities; Social Sciences and Mathematics; Education; Law; Social Welfare and Health Studies; and Science and Science Education. There is also a thriving Graduate School of Business.

Among the most prominent of the university's 60 multifaceted research centers are the Institute of Evolution, the Institute for the Study of Affective Neuroscience, the Max Wertheimer Center for Cognitive Processes and Human Performance, and the Research Institute for Alternatives in Education. The IBM Haifa Science and Technology Center, which is located on the university's campus, is dedicated to the field of user-friendly information society (IST).

What sets the University of Haifa apart from its sister universities in Israel is the high representation of Israeli Palestinian students and the substantial number of students from immigrant families.

The University of Haifa's research and teaching activities have been supported by German initiatives for a long time. In 1974, the Friedrich Ebert Foundation in Bonn sponsored the creation of the Jewish-Arab Center and the Gustav Heinemann Institute for Middle Eastern Studies, both of which have been receiving funding from the Land of North Rhine-Westphalia since 1991. The latter also helped establish the Bertha von Suttner Special Research Program for Conflict Resolution in the Middle East.

The ZEIT Foundation finances the Center for Multiculturalism and Educational Research and founded the Bucerius Institute for Research of Contemporary German History and Society in 2000. The central driving force behind the ZEIT's activities has been Prof. Manfred Lahnstein, the former German Federal Minister of Finance and president of the German-Israel Society (DIG). In April 2008, the Bucerius Center established the "Manfred Lahnstein Fellowships", which will be awarded to European doctorate students every year and will enable them to study at the Center.

In 2007, the German Academic Exchange Service (DAAD), on behalf of the Federal Government, chose the University of Haifa as the site for one of the two new Centers for German and European Studies, whose mandate is "to provide the young elite in Israel with knowledge about Germany." In concrete terms, the Center has three pillars of activity: teaching, research, and public outreach, which are already fully underway.

**Israel, of course, is a small country, but it boasts a vibrant academic community. International ties are at the heart of all successful academic research. The resources made available through the years by the German Federal Government and other funding agencies have facilitated numerous state-of-the-art research projects, have helped create and consolidate various top-ranking research institutes and have encouraged many fruitful partnerships between German and Israeli scientists as well as scholars from the Palestinian Authority and other Arab countries. As Vice President and Dean of Research of the University of Haifa, I firmly believe that science and scientists should create not just scientific knowledge, but also help promote understanding and build bridges towards peace among the peoples of the Middle East. German research ties also provide significant support for this mission.**

**Prof. Majid Al-Haj, Vice President and Dean of R&D, University of Haifa**



*Weizmann Institute*

### **Weizmann Institute of Science in Rehovot (WIS)**

The Weizmann Institute of Science is one of the leading basic research institutions worldwide in all areas of the natural and exact sciences. The Institute's 18 departments are organized into five faculties: Mathematics and Computer Science, Physics, Chemistry, Biochemistry and Biology. The Feinberg Graduate School is the Institute's educational branch, which grants M.Sc. and Ph.D. degrees. The Davidson Institute of Science Education operates and coordinates the Institute's educational activities, including the Science Teaching Department; Perach, a mentoring program; the Clore Garden of Science; and numerous after school activities and student and teacher enrichment programs.

The presence of scientists from different fields on the Institute's campus provides fertile grounds for interdisciplinary research, giving rise to encounters between diverse scientific fields that rarely converge elsewhere. Some 1,200 research projects of international science are underway at the Institute at any given time.

The Weizmann Institute grew out of the modest Daniel Sieff Research Institute, which was founded in 1934 by Israel and Rebecca Sieff from the United Kingdom in memory of their son. The driving force behind its establishment was the Institute's first President, Dr. Chaim Weizmann, a noted chemist who headed the Zionist movement for many years and later became the first President of Israel. The Institute was renamed Weizmann Institute of Science in honor of

Dr. Weizmann's 75th birthday in 1949, with the agreement of the Sieff family.

In subsequent years, the Institute was substantially expanded: Its present-day campus of more than 100 buildings sprawls over 300 acres (1.2 km<sup>2</sup>). The Institute employs approximately 2,500 people, including 250 professors heading their own research groups; 850 engineers, technicians, and scientists with Ph.D. degrees; some 1,000 M.Sc. and Ph.D. students; and roughly 400 administrative members of staff. The Institute's annual budget is approximately US\$200 million, a little over one third of which is provided by the Israeli government. The rest comes from research grants won by Institute scientists as well as from donations and royalties.

The Weizmann Institute has the oldest contacts with German researchers among all Israeli research centers. The Weizmann Institute and German scientists carry out more than 100 joint projects every year in bilateral cooperation or as part of EU initiatives. The Institute maintains particularly close ties with the Max Planck Society, which established the first contacts between German and Israeli scientists in 1959. The BMBF has provided funding for the Weizmann Institute since 1964 via Minerva Stiftung GmbH, a subsidiary of the Max Planck Society.

**The Weizmann Institute of Science maintains close ties with many German institutions of higher learning and research, in particular with the Max Planck Society, which established the first contacts between German and Israeli scientists in 1959. Today, Weizmann scientists are engaged in over 100 joint research projects with German colleagues in all areas of the exact and natural sciences. These are funded by the Minerva Foundation, DIP, GIF and EU research programs, and also by German philanthropy. As we celebrate the German-Israel Year of Science and Technology and mark 50 years of fruitful scientific cooperation, we look forward to deepening and strengthening our mutual scientific ties.**

**Prof. Haim Garty, Vice President for R&D,  
Weizmann Institute**

# Cooperation Programs

The four BMBF-funded collaborative programs are the pillars of Germany's scientific cooperation with Israel.

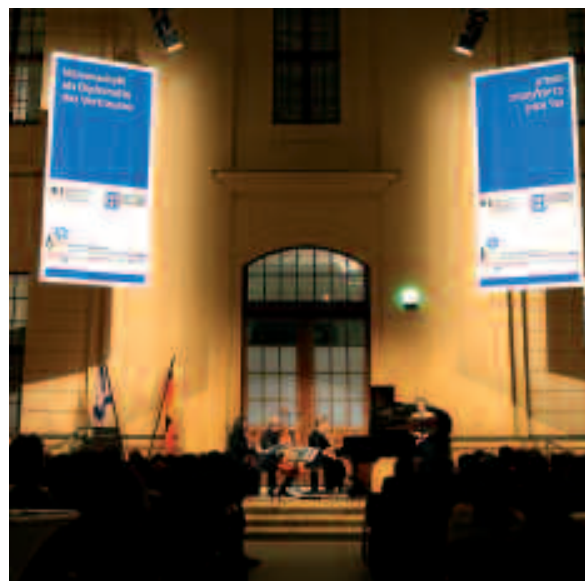
Each of them pursues different objectives.

The partnership between Germany and Israel is not only promoted by the BMBF's cooperation programs, but also by various organizations that receive their funding from other public authorities. They include the German Research Association (DFG), the Alexander von Humboldt Foundation (AvH), the German Academic Exchange Service (DAAD), but also private foundations, particularly the Volkswagen Foundation and the Fritz Thyssen Foundation.

- Minerva Programs
- Interministerial research cooperation between the BMBF, MOITAL, and MOST; including the program for cooperation in vocational education and training
- German-Israeli Foundation for Scientific Research and Development (GIF)
- German-Israeli Project Cooperation in Future-Oriented Fields (DIP)

The future of Germany and Israel's cooperation in the fields of research and technology depends on the active participation of the younger generation. For this reason, measures for the inclusion of young scientists have been integrated into all existing scientific and technological cooperation programs. In recent years, new programs have been launched and expanded, particularly in the fields of energy research, neuroscience, and marine research. The field of water technology deserves special mention: bilateral projects in this field have been supplemented by multilateral projects for the entire region. The short-term Minerva Fellowships and the GIF Young Scientists' Program are complemented by a range of programs offered by the major German exchange organizations. Since 2000, a total of 120 Germans have spent research periods in Israel and about twice as many Israeli scientists have visited Germany as part of the German-Israeli cooperation programs.

*The opening of the German-Israeli Year of Science and Technology in the glass courtyard of the Jewish Museum in Berlin on April 7, 2008 triggered new developments and offered participants an opportunity to look back on the 50-year cooperation between the two countries*



# Minerva Foundation Programs

**The first contact between scientists from the Max Planck Society (MPG) and the Weizmann Institute took place in 1959. It led to a partnership that has lasted for almost 40 years and is overseen by the Minerva Foundation.**

The cooperation was launched at the historic meeting between Israel's Prime Minister David Ben-Gurion and Germany's Chancellor Konrad Adenauer at the Waldorf-Astoria Hotel in New York City on March 14, 1960. At the close of the meeting, Adenauer announced that Germany would be donating DM3 million to the Weizmann Institute.

The outstanding quality and central importance of the Minerva Programs for the German-Israeli research partnership was confirmed in 2007 by an international evaluation committee appointed by the BMBF.

## Minerva-Weizmann Project Program

These beginnings gave rise to the idea of awarding research contracts to the Weizmann Institute for projects that would include the participation of German scientists. In 1963, this led to the first arrangements between the Max Planck Society and the Weizmann Institute on the funding of such projects. Initial funding in the form of a DM2 million grant was provided by the Volkswagen Foundation. Starting in 1964, German's Federal Ministry of Research provided DM3.5 million in funding under the first Minerva agreement with the Weizmann Institute. These funds were used to finance 19 projects in the fields of physics and biology. The Volkswagen Foundation also helped finance scientist exchanges.

Funding is provided for basic research projects in fields that are of interest to both sides. New fields of research have been added continuously. The research areas now include physics, biology, chemistry, mathematics, and computer science. A total of €3.57 million in funding is allocated every year for up to 80 individual projects.

Projects are selected by the Minerva-Weizmann Committee, which consists of an equal number of scientists from Germany and the Weizmann Institute. In its decision-making process, the Committee draws on expert opinions from all over the world and on symposia that are held locally. When deciding between project proposals of equal quality, the Minerva-Weizmann Committee gives priority to projects that involve German scientists and to applications from younger scientists. The findings produced in these projects are made available to German research institutions with an eye to initiating further contacts between the two countries.

Since early 2008, young German researchers have had the opportunity to apply for short research visits to work on ongoing projects. This has the aim of increasing the participation of young scientists in the program and generally strengthening the partnership. The funding for this initiative is provided by the WIS.



*Federal Chancellor Angela Merkel signs the visitors' book at Chaim Weizmann's former residence at the Weizmann Institute in March 2008*



*Minerva Weizmann Committee in Rehovot: Prof. R. Jahn, Chairman (far left), with Prof. D. Zajfman, President of the Weizmann Institute (3rd from right) and his wife, Ambassador Dr. H. Kindermann (3rd from left), Prof. Uzy Smilansky (2nd from left), and Prof. Israel Pecht (far right)*

A further priority of the Minerva project program is to increase the links between the MPG and the WIS when it comes to supporting young scientists and training graduates.

In 2005, the Minerva-Weizmann Committee decided that funding would be provided for cooperation between the Feinberg Graduate School and the International Max Planck Research School (IMPRS) for Molecular Biology in Göttingen. This project has received excellent evaluations and is considered to be exemplary. To date, the BMBF has provided approximately €134 million for Minerva research projects at the Weizmann Institute. The publications produced in these research projects account for more than 10 percent of all publications generated by the Weizmann Institute in the last ten years.

## Minerva Fellowship Program

The Minerva Fellowship Program is the oldest of the existing programs for the support of German-Israeli cooperation. It began back in 1961/62, when the first visiting researchers from Germany came to the Weizmann Institute.

The program was extended between 1964 and 1973 with the help of the Volkswagen Foundation, which enabled the first Israeli post-docs to work at Max Planck Institutes in Germany. Continued funding from the Federal Ministry of Research made it possible to steadily expand the contacts and to include Israeli universities in the exchange program.

The BMBF allocated approximately €37.1 million for this purpose in the years up to 2007. This has enabled 803 Israeli and 885 German scientists to spend long research periods in each other's country.

Funding for the Minerva Fellowship Program has been gradually increased to €1 million per year. This is sufficient to provide some 50 one-year fellowships to scientists from both countries. The Minerva Fellowship Program is open to scientists in any scientific field. Funding is primarily granted to doctoral and post-doctoral candidates. As a rule, fellowships are awarded for periods of at least six months and up to three years for doctoral students.

Short-term Minerva grants for periods of one to eight weeks are awarded to young German and Israeli scientists in order to give them the opportunity to establish initial contacts with colleagues in the host country. This program also enables the researchers to participate in seminars and workshops. Approximately 35 short-term grants are awarded every year.

Minerva Schools were introduced in 1997 to give advanced students in all fields of science an opportunity to establish contacts while still studying. The schools bring promising students and outstanding German and Israeli



scientists from their fields together for meetings that last for several days. The aim is to stimulate young scientists' interest in the partner country and encourage them to spend longer periods of time conducting research there. Twenty-two Minerva Schools took place in the years up to 2007.

Annual bilateral symposia have been held since 1972. These Gentner Symposia – named after Wolfgang Gentner, one of the driving forces on the German side during in the early years of Germany's scientific cooperation with Israel – focus especially on the fields of physics, biology, chemistry, geosciences, and mathematics. They are held alternately in Germany and Israel. The Minerva Fellowship Program provides up to €60,000 in funding for each symposium. Particularly talented young scientists are encouraged to take part in the symposia. The Fellowship Committee, which consists of an equal number of German and Israeli scientists, is responsible for allocating the fellowships.

### Minerva Research Centers

Since 1975, a number of Minerva Research Centers have been established at research centers throughout Israel, especially at Israel's universities and the Weizmann Institute. Conceived as centers at which cutting-edge research can be conducted in collaboration with German scientists, Minerva Research Centers not only help strengthen the scientific infrastructure at Israeli research facilities, but also serve to intensify researcher exchanges and the exchange of experiences.

The 33 Minerva Research Centers are financed from the return on capital that was originally provided by the German Research Ministry and invested on a long-term basis in Israel (currently about €60 million) and an equivalent amount from the participating Israeli research institutes (according to the so-called matching principle).



*Members of the Minerva evaluation committee with representatives of the Hebrew University in fall 2006*

These internationally recognized centers of excellence have become an important part of Israel's research landscape. The spectrum of disciplines they cover ranges from physics to historical research, bioscience, geosciences, chemistry, informatics, computer science, environmental research, religion, law, and literature. In order to meet the program's high scientific standards, the Minerva Foundation has set up the Minerva Center Committee, which is made up of internationally renowned scientists from various disciplines. It is responsible for selecting and evaluating applications and appointing independent scientific committees that evaluate the Minerva Centers every seven years.

A new Minerva Center for the Humanities and Cultural Sciences is to be established during the course of the German-Israeli Year of Science and Technology 2008.

# Interdepartmental Research Cooperation

## BMBF-MOITAL-MOST

Research cooperation between the German Federal Ministry of Education and Research (BMBF) and the Israeli Ministry of Science and Technology (MOST) is based on an agreement that was concluded in 1973. Research projects in the natural sciences and technology are supported through bilateral calls for proposals; the approved proposals are funded mainly by the BMBF. These projects are more application-oriented than the Minerva programs.

Since 2000, the funding of German-Israeli collaborative projects between science and industry has been focusing on application-oriented and industry-relevant research. The activities of the German participants in these projects are financed through the BMBF's funding programs and meas-

*Prof. Erich Hecker from the DKFZ and Dr. Yair Degani from MOST, the two long-standing coordinators of the BMBF-MOST cooperation in the field of cancer research, Berlin, March 2003*



ures, while the activities of the participating Israeli companies are financed through the programs of the Office of the Chief Scientist (OCS) of the Israeli Ministry of Industry, Trade and Labor (MOITAL).

One of the aims of the German-Israeli Year of Science and Technology 2008 is to strengthen cooperation in innovative and application-oriented research and development (R&D) projects under industrial leadership.

In 2007, the BMBF provided approximately €9 million for ongoing projects through its specialist funding programs. As a rule, the ministries focus on topics that are covered by the BMBF's specialist funding programs and are of special interest to MOITAL (applied R&D) and MOST (scientific R&D). The resulting research findings are published in numerous scientific articles and are also shared with the general public at status seminars.

Interdepartmental research cooperation currently focuses primarily on the following fields:

### Cancer Research

The BMBF and MOST have been cooperating in the field of cancer research since 1976. The German Cancer Research Center in Heidelberg (DKFZ) and various Israeli research institutions and universities are responsible for implementing this partnership.

The fields of genetic engineering and molecular biology are current priorities. Each of the joint science projects runs for a period of three years and consists of an Israeli subproject and a DKFZ subproject. In exceptional cases, the German subproject can be headed by a scientist from a university, instead. By late 2007, funding had been provided for 127 projects conducted by the DKFZ and its partners as part of the BMBF's cooperation with MOST, and 113 of these projects had been successfully completed. The findings were described in almost 900 publications. A total of €23.74 million in funding had been provided for German and Israeli projects by the end of 2007.

An international expert commission gave the program a very positive evaluation in March 2007.

At the first Winter School, which was financed by the Helmholtz Association and took place in Pichl (Austria) from March 4-7, 2008, 19 students from Germany and Israel gave presentations about imaging in the fields of molecular cancer research, molecular biology, and epigenetics.

## Biotechnology

The BMBF and MOST have been working together in the field of biotechnology since 1976. Their partnership was restructured in 2000 and now focuses on application-oriented collaborative projects between Israeli research groups and German companies.

The new funding activity “German-Israeli Cooperation in Biotechnology – BIO-DISC” is based on this partnership. It was launched in cooperation with MOITAL/OCS and supports bilateral research collaborations between German and Israeli companies. The Israeli partners receive their funding from the OCS; the German partners from the BMBF. Universities and research institutions from both countries can participate as subcontractors in industrial collaborations or submit joint feasibility studies to help prepare industrial R&D projects.

In the three calls for proposals that have been carried out since the first publication, the BMBF and the Israeli Ministry of Industry, Trade and Labor (MOITAL) have each provided €8 million for collaborative projects. The BMBF is also providing €4 million to finance a total of eight feasibility studies that are being conducted by German and Israeli research institutions. The projects focus on subjects ranging from technology development to the improvement of plants, genome analysis, the discovery of therapy-relevant genes, and the further development of medical implants. A fourth call in this successful area of German-Israeli cooperation involving industrial companies is to be published in summer 2008.



*German-Israeli Symposium on Cancer Research, Weizmann Institute, Rehovot, Israel, March 2006*

## Neurosciences

The BMBF supports bilateral research projects in the field of biomedicine under an agreement on scientific cooperation in the field of health research that was concluded between Israel and the Federal Republic of Germany in 1976. In 1998, the focus of this program shifted from cardiovascular research to neuroscience. The research topics include epilepsy, Alzheimer’s disease, neuronal degeneration, and molecular and cellular mechanisms at work in the brain. A total of 23 bilateral research projects have been funded to date; an exchange program for young scientists has been operating since 2003.

*The BMBF's stand at the water and environmental technology exhibition WATEC 2007, Tel Aviv, Israel*



## Water Technology and Environmental Research

Water is of vital importance, especially in regions in which water resources are as scarce as they are in Israel. Since the BMBF and MOST started working together in the field of water technology in 1974, approximately 130 research projects have been carried out at Israeli research institutions with the participation of German scientists. The priorities of their work are the treatment, storage, and reuse of wastewater, groundwater analysis and decontamination, drinking water treatment, the public health-related aspects of the drinking water supply, and integrated water resources management. The general goal is to improve the availability and quality of usable water. A Young Scientists Exchange Program (YSEP) has been in place since 2000, offering young scientists – from undergraduates to post-docs – the opportunity to spend up to six months conducting research at partner institutions in Germany or Israel.

The two countries intend to strengthen their industrial R&D cooperation in the field of water technologies in 2008 by carrying out joint 2+2 projects.

In addition to the technology-based activities, the BMBF is also helping secure the availability, quality, and distribution of water with the help of scientific strategies in its program for Global Change in the Hydrological Cycle (GLOWA). The



*Well drilling in the Judean desert near the Dead Sea*

GLOWA Jordan River Project (GLOWA JR) is a sub-project in which German, Israeli, and Jordanian partners have been working together since 2001. It is an interdisciplinary project that aims to evaluate the vulnerability of people and ecosystems and to examine different methods of water and land management and their ecological and socioeconomic effects. The integrated study of natural scientific and socioeconomic processes is a pioneering achievement of environmental research that is to be transferred to other semi-arid regions with cross-border water resources. GLOWA JR will enter the implementation phase during the German-Israeli Year of Science and Technology 2008.

### Multilateral Cooperation in the Field of Water Technology

A multilateral collaborative project involving German, Israeli, Jordanian, and Palestinian research institutions was launched in 1997 with the objective of increasing our understanding of the interdependencies between the aquifers located along the Jordan Valley between the Sea of Galilee and the Dead Sea by means of cross-border collaboration.

This successful multilateral collaboration in the field of water technology was continued in a second funding phase from 2000 to 2005. An exchange program for doctoral candidates from the participating institutes was added in mid 2002.

The project was concluded in late 2005 with the publication of a report on the sustainable use of water resources on both sides of the Jordan River. The multilateral project “Integrated Water Resources Management in the Lower Jordan Rift Valley: SMART – Sustainable Management of Available Water Resources with Innovative Technologies” started in 2006. A total of 17 partner institutions, including universities, research institutions, government authorities, companies, and NGOs from Israel, the Palestinian territories, Jordan, and Germany are working together on this project. It is a multidisciplinary initiative that has the aim of developing transferable approaches for integrated water resources management in semi-arid regions. In order to achieve this, all exploitable and previously unused water resources within the project area are being evaluated extensively, including groundwater, wastewater, strongly saline water, and floodwater. This project is linked to other projects in the region, such as GLOWA, to ensure that the research results can be exchanged.



*The Commission for Education and Research of the Bundestag during a visit of bilateral and multilateral water technology projects at the Dead Sea, December 2007. Guided tour by Prof. Heinz Hötzl, University of Karlsruhe (upper row, far left), and Prof. Akiva Flexer, Tel Aviv University (front row, far right)*

### Marine Sciences and Geosciences

Germany’s cooperation with Israel in the field of marine research began in 1995 with a German-Israeli collaborative project for the development biological of indicators for an early warning system, including a supra-regional statistical data analysis in Israeli waters (Mediterranean Sea, Red Sea) and German waters (North Sea). The “German-Israeli Cooperation in Marine Sciences and Geosciences” action plan, which was passed in 2002, marked the beginning of a realignment of this area of cooperation. The six collaborative projects that have been running since 2006 focus on the interdependencies between sea, land, and atmosphere, seismic and other natural risks, and changes in marine ecosystems as indicators of global change. A bilaterally funded exchange program for young scientists is to be launched in fall 2008.



*Civil security research is a new field of German-Israeli cooperation*

## Energy Research

From 1974 to 1998, the field of energy research was funded from the BMBF's budget. The Energy Research and Technologies program was then placed under the responsibility of the Federal Ministry of Economics and Technology (BMWi). Part of it was subsequently assigned to the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) in 2003. Despite all these changes, cooperation with Israel in this field is still part of the BMBF-MOITAL-MOST partnership. Initially, the projects focused on solar energy research, with research topics related to photovoltaics (development of solar cells) and energy savings and storage. Today, the priorities include solar and wind energy, geothermal power, and hydrodynamic power.

## Security Research

Due to the general political situation and the constant threat of terrorist attacks against the population, Israel has developed an extraordinary ability to react to new security challenges and threat scenarios in a quick and flexible manner. In view of the increasing risks of terrorism and natural disasters, the German Federal Government has also made civil

security research a priority. In early 2007, it launched the first research program to focus exclusively on this area.

Israel and Germany want to pool their expertise in science, research, and industry by carrying out joint civil security research projects. The aim is to protect critical infrastructures such as energy and water supply, road traffic, and the movement of goods and to maintain high security levels for the citizens of both countries.

The first collaborative projects between German and Israeli companies, research institutions, and universities are to be launched before the end of 2008. They aim to develop new security products and solutions, accelerate innovation processes, and gain joint competitive advantages in international high technology markets.

## Vocational Training

The German-Israeli Program for Cooperation in Vocational Training, which is funded by the BMBF and MOITAL, has been running since 1969. The BMBF has charged InWEnt (Internationale Entwicklung und Weiterbildung gGmbH) with the implementation of this program.

In the early years, the program mainly served to provide individual training for skilled Israeli workers in Germany.



*Members of the InWEnt cooperation project on renewable energy sources, Israel, 2006*

Since 1976, it has also been giving specialist and managerial staff from Germany and Israel the opportunity to become acquainted with each other's vocational training systems. This is mainly accomplished by means of workshops and bilateral cooperation projects.

The workshops give specialist and managerial staff from Germany and Israel the opportunity to exchange experiences on specific areas of vocational training, for example "Continuing Training in IT" and "Entrepreneurial Initiative in Vocational Education and Training".

One of the ongoing German-Israeli collaborative projects focuses on the field of microsystems engineering. The aim is to develop new curricula and teaching material and to adapt them for didactic and multimedia-based use. The IT sector is a further area of cooperation. In the next two years, the collaborative work in this field will focus on developing approaches for the promotion of professional mobility among Israeli and German IT specialists in the context of the current European debate about competency frameworks and credit transfer points.

### Laser Technology and Optical Technologies

Cooperation with MOST under the BMBF's LASER 2000 program focused on laying the groundwork for new generations of lasers and opening up new fields of application for laser technology.

In 2004, the collaborative work was reoriented with the aim of supporting the R&D activities of commercial enterprises. The BMBF's partner on the Israeli side is now MOITAL's Office of the Chief Scientist (OCS).

### Nanomaterials and Chemical Nanotechnology

Cooperation between the BMBF and MOST in the field of materials research started in 1981 and was restructured in 1995. In accordance with MaTech, the BMBF's materials research program at the time, the collaborative work in this area focused on the development of magnesium alloys and materials for new batteries.

With the publication of the BMBF program "WING – Materials Innovations for Industry and Society" in 2003, a new cooperation model for international projects was introduced. At least two partners – one company and one research institution – must participate in collaborative projects on each side. Research institutions can participate either as sub-contractors of the commercial companies or as independent partners. The German partners receive funding from the BMBF; the Israeli partners from OCS/MOITAL. WING's current priorities include bionic materials, computational accuracy in material sciences, lightweight construction, and electromagnetic materials.

### Coordinating Bodies

A joint committee made up of representatives from all participating ministries and national authorities is responsible for coordinating the interdepartmental research collaboration. The committee meets once a year, with the venue alternating between Germany and Israel. At the scientific level, these activities are supported by steering committees. They issue recommendations for project funding and evaluate the results and findings. In addition, the steering committees strengthen and coordinate bilateral cooperation in European platforms in which both countries participate (EUREKA, Eurostars, FP7).

Germany will hold the EUREKA chairmanship in 2009; Israel will take over in 2010 – this will offer both countries an opportunity to work together to give shape to Europe's innovation policy.

# German-Israeli Foundation for Scientific Research and Development (GIF)

The German-Israeli Foundation for Scientific Research and Development (GIF) was established in 1986 as an independent corporate body headquartered in Jerusalem.

The foundation's mission is to promote basic and applied civilian research and development projects of mutual interest.

The foundation finances its activities through the interest generated by its endowment capital, to which Israel and Germany contributed in equal parts. After the two governments gradually increased GIF's capital by €50 million between 2005 and 2007, the endowment capital currently amounts to €211 million. The interest averages between €8 million and €10 million a year.

The foundation's decision-making body – the board of governors – consists of an equal number of German and Israeli members. They include the Israeli and German research ministers plus scientists from both countries. Funding is granted on the basis of a stringent evaluation process that includes the participation of experts from Germany, Israel, and other countries. The selection procedure is partly patterned after the procedure used by the German Research Association (DFG), which was one of the models used during GIF's founding phase. The board of governors generally meets once a year, with the venue alternating between Germany and Israel.

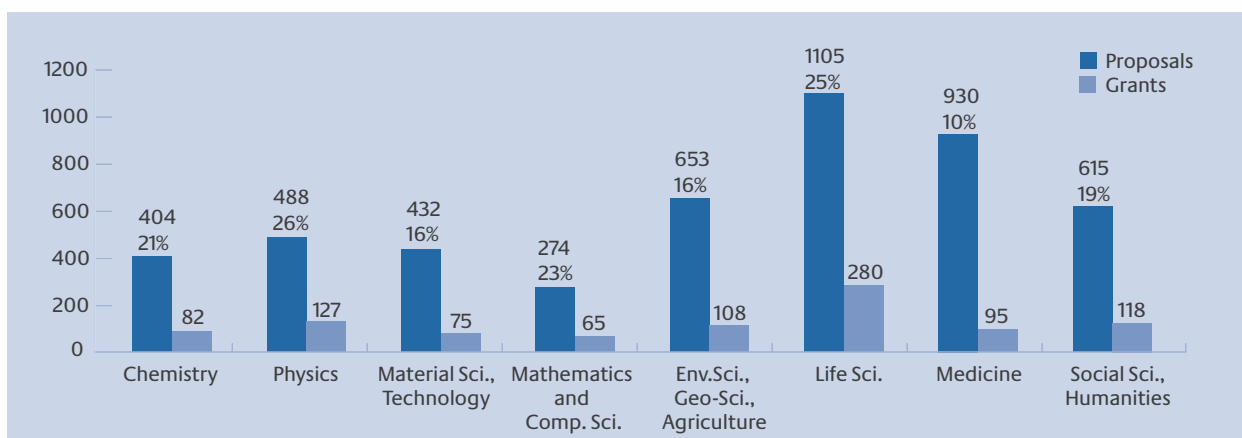
Participants of the GIF conference on job-related migration, Berlin, December 2003



The German-Israeli Foundation funds some 40 projects a year. As of February 2007, the Foundation had approved a total of 948 bilateral projects from all fields of science, providing a total of €165 million in funding. Initially averaging €175,000 per project, funding has risen to an average of €225,000 per project since 2000. Funding is provided for periods of three years. Project proposals must be submitted jointly by German and Israeli scientists. A preselection procedure was introduced in 2006. The application, review, and classification procedure is now carried out electronically via the GIF website.

The GIF funding program is flanked by regular symposia on subjects of topical interest, which are held alternately in Israel and Germany.

In 2000, GIF launched a special program for young scientists. It enables scientists below the age of 40 who received their PhDs no more than 7 years prior to application to submit independent research proposals to GIF. Until 2006, a total of 731 projects had been submitted, of which 164 received funding.



Proposals and grants from the establishment of GIF to 2006



## German-Israeli Project Cooperation (DIP)

The BMBF launched the “German-Israeli Project Cooperation (DIP)” in 1996 to support top-class bilateral cooperation projects.

Since the program was established, a total of 38 projects from all scientific fields have received up to €1.25 million each for periods of five years per project. Since January 1, 2008, the DFG has been responsible for coordinating the DIP program, which has an annual financial volume of €4.75 million.

Every year since 1997, DIP has been publishing a call for proposals in which the Israeli side can submit proposals for joint research projects. The six leading Israeli universities and the Weizmann Institute can submit up to two proposals each. The submitted projects are then reviewed by experts. The priority fields are life sciences, physics, and chemistry.

DIP has become an extremely competitive interdisciplinary funding program for projects that address highly topical research topics. The quality of the proposals submitted by Israeli research institutions has been rising continuously. The experts now rate over 80 percent of all proposals submitted every year to be of high or very high quality. This is also reflected by the award of the Nobel Prize in chemistry to Professor Aaron Ciechanover, who received DIP funding between 1999 and 2003.



*Nobel Prize winner Prof. Aaron Ciechanover from the Technion in Haifa at a presentation in Berlin in June 2005*

# Programs of Other German Funding Organizations and Foundations

## Funding Organizations

### Deutsche Forschungsgemeinschaft (DFG)

Scientific cooperation between the Deutsche Forschungsgemeinschaft (DFG; German Research Association) and Israel dates back to the 1960s. Since 1970, it has partly been based on an agreement between the DFG and the National Council for Research and Development (NCRD) on the exchange of scientists and the joint funding of bilateral symposia. Today, this partnership is being continued with Israel's Ministry of Science, Culture and Sport (MOST). In addition, an agreement on scientific cooperation was signed with the Israel Academy of Sciences and Humanities in 1993.

The DFG cooperates with the Israel Science Foundation (ISF) on the development of joint funding options. The ISF, whose responsibilities are similar to those of the DFG, has been independent since 1995. Until then, the DFG supported German-Israeli research projects by providing financial assistance for the Israeli side of the projects, too. Proposals must be submitted by eligible scientists in Germany. A substantial number of collaborative activities are funded through the DFG's Collaborative Research Centers. Funding is also made available through the DFG's Priority Programs, which offer individual Israeli scientists the opportunity to work on their own sub-projects in collaboration with German groups.

The DFG started funding trilateral cooperation projects between German, Israeli, and Palestinian scientists in 1995, making it the first German organization to pursue such activities. The application procedure is similar to the one

used in German-Israeli projects, with the added option of applying for extra funding for the Palestinian group. The difference is that this program has a two-step application procedure: During the first stage, preliminary proposals are submitted by an April 1 or October 1 deadline. These pre-proposals are then reviewed, and a limited number of applicants are invited to submit full project proposals.

By the end of 2007, a total of 45 projects had been approved under these programs, some of which included the participation of Jordanian scientists. On the Israeli side, the Hebrew University has been particularly open to such projects.

### Deutsche Forschungsgemeinschaft (DFG)

The DFG is Germany's central self-governing science organization. Its primary mission is to promote university research in all disciplines. The DFG finances research projects and promotes cooperation among researchers. It advises parliaments and public authorities on scientific issues and cultivates ties between the scientific community and industry and between the German scientific community and scientists in other countries. It also represents the interests of researchers at an international level and maintains bilateral scientific relations with numerous countries.

The DFG puts special emphasis on the support and promotion of young scientists.

The DFG's research funding activities revolve around the funding of individual projects. However, the DFG also supports ongoing collaborative research efforts (collaborative research centers, research centers, postgraduate research groups, priority programs, and research groups) and research infrastructure (such as the Meteor research vessel and IFQ, the Institute for Research Information and Quality Assurance).

In addition, the DFG supports scientific libraries, including the development of new information structures at universities. Last but not least, the DFG is involved in the provision and replacement of large-scale research facilities needed at universities.



Head office of the German Research Foundation (DFG), Bonn

## Max Planck Society (MPG)

The oldest and most important pillar of the MPG's partnership with Israel is its cooperation with the Weizmann Institute. The MPG and the WIS have built strategic alliances and networks as part of cross-institute research initiatives.

### Max Planck Society for the Advancement of Science (MPG)

The Max Planck Society for the Advancement of Science (MPG) was founded in 1948 as a non-profit research organization with the legal form of a registered association. It is a successor to the Kaiser Wilhelm Society, which was founded in 1911. The MPG currently runs 78 research centers and institutions that independently conduct knowledge-oriented, non-application-specific basic research. It has an annual budget of €1.43 billions and employs approximately 12,600 people, a quarter of whom are scientists. In addition, some 11,300 young scientists and visiting scientists carry out research at the MPG's institutions every year.

The MPG is responsible for conducting top-class research in selected fields and for supplementing the work of universities. The support of young scientists is particularly important to the MPG. It cooperates closely with universities and other research organizations in Germany and runs numerous cooperation programs with partners in other countries. Since 2000, the International Max Planck Research Schools (IMPRS) have been an important part of the Max Planck Society's efforts to support doctoral students. These schools offer especially talented young scientists from Germany and abroad the opportunity to carry out their doctoral studies under outstanding research conditions. There are currently 24 IMPRS in the chemistry, physics and technology section, 15 IMPRS in the biology and medicine section, and 10 IMPRS in the humanities section.

Lab exchanges are a particularly important part of these efforts. They give research units at Max Planck Institutes and at the Weizmann Institute the opportunity to enter into initial scientific dialogs in order to explore the possibilities for future cooperation. Cooperation between the Weizmann Institute's Feinberg Graduate School and the very successful International Max Planck Research Schools (IMPRS) is a further important pillar of the partnership.

Via its institutes, the MPG has also established contacts with Israel's six universities. These close scientific ties are also reflected by cooperation under the EU's 7th Research Framework Program. Furthermore, the institutes make good use of the joint project funding opportunities offered by other German-Israeli research funding organizations, such as the German-Israeli Foundation (GIF) and the German-Israeli Project Cooperation (DIP) program. In 2007, a total of 118 joint projects between Max Planck Institutes and their partners in Israel were carried out, and 95 visiting scientists from Israel conducted research at Max Planck Institutes.

## German Academic Exchange Service (DAAD)

The DAAD has been involved in scientific cooperation since 1960 by offering different kinds of scholarships. The DAAD provides research fellowships to doctoral candidates and young scientists, financial assistance for scientists who want to carry out research periods abroad, grants for university summer courses, funding for German students and graduates to go on summer language courses and study periods in Israel, and financial support for study trips. It also helps find German language teaching staff, particularly for German Studies programs at Israeli universities.

In the years since 1960, the DAAD has awarded extendable research grants to several hundred university graduates. In 2007 alone, the DAAD's various programs provided financial assistance to 337 people. They included 129 Israeli students, university graduates, scientists, administrators and artists, plus 208 German students and scientists, most of whom received support for short stays in Israel, while others received funding for periods of several years.

The Israeli doctoral students and young scientists who receive DAAD research fellowships usually specialize in the humanities (particularly Jewish Studies), political science, sociology, history, art, and music. Fourteen fellowships were

### German Academic Exchange Service (DAAD)

The German Academic Exchange Service (DAAD) was established in 1925, dissolved in 1945, and re-established in 1950 as a registered association under private law. Universities represented in the German Rectors' Conference and their student bodies are eligible to become full members of the DAAD. In 2007, a total of 127 universities and 129 student bodies were members of the DAAD. The DAAD promotes international academic exchanges and serves as an intermediary for German foreign policy in the fields of cultural affairs, science, and development. It also acts as a "national agency" and advice center for EU funding programs. The DAAD provides information about Germany's education and university system, about university studies and degree programs in other countries, and financial assistance and scholarship options. In addition, it offers funding for students, university graduates, and scientists from Germany and other countries through more than 200 programs. Using funds from the Federal Government and other sources, it finances bilateral scientist exchanges and special programs for young German scientists and promotes the internationalization of German universities.

awarded in 2007. In addition, 20 Israeli students received grants for language courses.

In 2007, 17 German students, university graduates, and doctoral candidates were awarded fellowships that enabled them to carry out research in Israel in the fields of the humanities, social sciences, and natural sciences.

One DAAD priority program awards partial grants to German theology students. Since it was launched more than 30 years ago, over 700 German theology students have received financial assistance through this program. In the 2007/2008 academic year, 19 grants were awarded under this program.

In addition, internships were found for 19 Israeli and 23 German students through the International Association for the Exchange of Students for Technical Experience (IASTE). The Walter Benjamin Chair for German-Jewish Intercultural Relations was created at the Hebrew University's German Department in the 2000/2001 academic year. Several prominent professors of German language and literature from Germany have since been appointed to this chair. The DAAD also funded two assistant professorships and two long-term lectureships in Israel in 2007.

In fall 2007, both the Hebrew University of Jerusalem and the University of Haifa started setting up centers of German studies. Both centers will receive funding from the DAAD. They will carry out interdisciplinary research and teaching activities and will focus on the critical and discerning study of Germany and Europe after 1945.

### Alexander von Humboldt Foundation (AvH)

To date, funding provided by the Alexander von Humboldt Foundation has enabled 136 scientists from Israel to spend long periods of time conducting research in Germany. The AvH has also financed similar long-term stays in Israel for 15 young German scientists under its Feodor Lynen fellowship program. Almost 48 percent of these researchers work in the natural sciences, approximately 43 percent in the humanities, and some 9 percent in engineering.

In January 1991, the AvH and Israel's Ministry of Science, Culture and Sport (MOST) agreed to confer the Lise Meitner-Alexander von Humboldt Research Award on a reciprocal basis. Every year, this award gives two recipients from each country the opportunity to spend a long period of time conducting research in the partner country. On the German side, funds for this award are provided through the AvH's BMBF-funded award program for highly qualified students from other countries. To date, 92 Israeli scientists have received this award.

In addition, 14 Israeli scientists have been given the Max Planck Research Award for International Cooperation, which is jointly conferred by the Alexander von Humboldt Foundation and the Max Planck Society. This award gives the recipient's research group the opportunity to collaborate with partners from the other country on a long-term basis.

The AvH is also in charge of the Bert Sakmann Foundation. Named after the German 1991 Nobel laureate in medicine,

### Alexander von Humboldt Foundation (AvH)

Established in Berlin in 1860 in honor of the distinguished scientist and explorer Alexander von Humboldt, the Alexander von Humboldt Foundation financed foreign expeditions by German scientists until its capital was destroyed by galloping inflation in 1923. The AvH was then re-established in 1925 with the mission of helping foreign scientists and doctoral candidates study in Germany. It ceased operation following the collapse of the German Reich in 1945. At the initiative of former Humboldt scientists, the AvH was established once again in 1953 as a non-profit foundation under private law with its headquarters in Bonn-Bad Godesberg. Today's Alexander von Humboldt Foundation grants research fellowships and awards to highly qualified scientists from other countries, giving them the opportunity to spend long periods of time conducting research in Germany, and supports the resulting scientific ties. Following the initial grants, AvH alumni enjoy an extensive support program. Through its Feodor Lynen research fellowships, the AvH gives young scientists the opportunity to work together with former Humboldt visiting researchers at the latter's institutions abroad. Since its re-establishment, the AvH has provided financial support to more than 25,000 scientists from approximately 130 countries.

who donated part of his prize money to establish it, the Bert Sakmann Foundation finances a series of lectures given by young German and Israeli scientists in each other's countries.

The largest number of Alexander von Humboldt Foundation researchers currently work at Tel Aviv University (44), followed by the Hebrew University of Jerusalem (43), the Weizmann Institute in Rehovot (21), and the Technion in Haifa (20).

## Political Foundations

### Friedrich Ebert Foundation (FES)

In 1978, the Friedrich Ebert Foundation (FES) became the first German political foundation to open an office in Israel. The initial aim was to work together with Histadrut, Israel's labor federation, on the development of an adult education concept and to organize seminars for participants from Israel and various developing countries. Today, the FES's work in Israel has also extended to other areas.

Deepening German-Israeli relations is an important aspect of the foundation's work. Programs range from training courses for youth leaders to joint workshops for unionists and advice programs offered by high-ranking German politicians on specialist subjects in Israel.

In view of the countless ethnic, religious, and social conflicts in Israel, the FES works together with its Israeli partners to promote democracy, peace, equality, and social justice. These efforts are mainly aimed at the people directly affected: the Palestinian-Arab minority, the large group of Russian-speaking immigrants, and people living in particularly underdeveloped areas. However, the FES also works together with high-ranking decision-makers and experts to develop specific, practice-oriented solutions to the different problems.

The FES supports the peace process in the Middle East by bringing together people of different nationalities through its network of regional offices. The main aim is to develop and support the Israeli-Palestinian dialog, but also to work towards rapprochement between the civil societies of Israel and its neighboring countries Jordan and Egypt. Due to the extraordinarily difficult political conditions, the FES plays an especially important and sensitive role as an international, "neutral" non-governmental organization.

In close cooperation with the German Trade Union Federation (DGB) and its members, the FES promotes social dialogue in Israel. In doing so, it is important to support the social partners in their efforts to become part of the social decision-making structure. In addition to Histadrut, the FES's partners in these activities include the Israeli federation of employers' associations, the ministry of labor, and the labor courts.

The FES also aims to help deepen European-Israeli relations and lessen mutual distrust. In recent years, it has been able to develop civil society advice networks with the help of renowned institutions and high-ranking opinion-makers.

In 2007, the Friedrich Ebert Foundation's office in Israel carried out a total of approximately 100 measures in these five areas.

### **Friedrich Naumann Foundation (FNSt)**

The Friedrich Naumann Foundation for Freedom (FNSt) has been active in Israel since 1983.

Since 2007, the foundation's activities are focused on the "Liberal Project", which has the aim of pooling liberal forces from politics, the economy, and civil society in order to revive the liberal movement in Israel. To this end, the FNSt establishes contacts to liberal organizations and individuals and carries out programs in the area of adult political education. Its target groups are liberal political groups, the liberal-minded public, national and ethnic minorities such as Palestinians in Israel, and Russian-speaking immigrants.

The topics addressed by the educational programs of the FNSt and its partners include classic liberal issues such as individual freedom and democracy, the rule of law, market economy, and human rights, but they also touch on relevant issues related to the Israeli-Palestinian conflict and internal social problems.

Further programs that are relevant at a national and regional level are the foundation's measures for the improvement of the socio-political dialog between the Jewish majority and the Palestinian-Arab minority in Israel, Israeli-Palestinian dialog programs, and the consolidation and support of German/European-Israeli relations.

The FNSt gives Israeli students the opportunity to participate in the foundation's scholarship program. It also offers internships to qualified applicants from Germany and other European countries.

### **Hanns Seidel Foundation (HSS)**

The Hanns Seidel Foundation's work in Israel and the Palestinian territories has the aim of "strengthening civil society in order to improve communication between the administration and the population in Israel and the Palestinian territories". It focuses on supporting minorities and disadvantaged groups and promoting citizen-friendly administrative practices.

This has the aim of reducing the existing divide between the different social and ethnic groups, strengthening the population's openness to dialog, communicating basic democratic values, and promoting the peace process in the region. The target groups range from decision-makers in administration to low-income social groups, high school students, Bedouin women, and teachers at specific schools.

The HSS's activities include seminars, courses, discussion days, subject-specific educational measures, continuing education and training for teachers, and activities for citizens. All of the HSS's partners are NGOs like Shatil in Israel and Panorama and Al Muntada in the Palestinian Territories.

### **Heinrich Böll Foundation**

The Israel office of the Heinrich Böll Foundation took up its work in spring 1998.

The foundation's activities in Israel have the aim of supporting civil society and thus strengthening social democratization. Its partners are independent, non-party NGOs that engage in close cooperation with the foundation's office and help it develop new concepts.

The work of the Israel office is divided into four program components: support of civil society, women's rights and gender democracy, ecology, and German-Israeli and European-Israeli political dialog.

The Israel office works towards fulfilling the responsibilities associated with German-Jewish history. One example



*Meeting with Arab-Israeli project partners, 2005*

was the publication of an anthology about Chernivtsi, which consisted of testimonials by Shoah survivors from Jewish communities in Europe before these communities were destroyed by the Nazis. The foundation also supports forward-looking cultural exchanges, for example by organizing Israeli literature days in Berlin.

The foundation's offices in Ramallah and Beirut and their partners are important bases for the foundation's subject-specific and organizational work in Israel. The Heinrich Böll Foundation's Israel office receives financial assistance from the German Federal Ministry for Economic Cooperation and Development (BMZ). It has an annual budget of approximately €660,000.

As part of its BMZ-funded dialog and networking program, the foundation supports the annual Leo Baeck Summer University at the Humboldt University in Berlin. It gives selected students from the USA, Canada, and Germany the opportunity to work on issues related to Jewish life.

### Konrad Adenauer Foundation (KAS)

The KAS has been active in Israel since 1980. Its priorities are to strengthen democracy and the rule of law, to work toward the peaceful coexistence of Israel and its neighbors as well as between the different ethnic groups within Israel, and to maintain and deepen the ties between Germany and Israel. The KAS works together with universities and researchers from Germany and Israel in all three of these areas.

Cooperation with Israeli universities and Israeli scientists plays a particularly central role when it comes to promoting democracy and the rule of law. Together with the Minerva Center for Human Rights at the Hebrew University of Jerusalem, the KAS organizes academic conferences with the aim of promoting the international dialogue on human rights.

The KAS's cooperation with Netanya College, the Truman Research Institute for the Advancement of Peace at the Hebrew University, and the Jerusalem Institute for Israel Studies is dedicated to finding solutions for peaceful coexistence in the Middle East. To this end, there are academic conferences at which researchers discuss subjects such as Israeli-Jordanian relations and the basis for a continuation of the peace process.

There is also an active exchange of views on issues such as the role of international law in asymmetric conflicts. The social and political role of Israel's Arab population has been analyzed since 2004 in the Konrad Adenauer Program for Jewish-Arab Cooperation (KAP), which was set up jointly by the KAS and Tel Aviv University.

In cooperation with Ben Gurion University's Center for Bedouin Studies and Development in Beer Sheva, the KAS also studies the integration of Bedouins in Israel's modern society. A research program finances and evaluates various programs for the support of Bedouin students.

The KAS is also active in the field of German-Israeli and European-Israeli relations. Cooperation with Ben Gurion University in Beer Sheva and its Center for the Study of European



*International academic conference organized by the KAS and the Minerva Center for Human Rights in Israel, Jerusalem, December 2006*

Politics and Society is particularly important. In cooperation with Dr. Sharon Pardo, the director of this center, the KAS organizes conferences and workshops about the future of Israeli-European relations. These events are attended not only by researchers in the relevant fields, but also by decision-makers from Europe and Israel. The KAS's close cooperation with the Helmut Kohl Institute for European Studies at the Hebrew University is another important instrument of Israeli-European understanding. Lectures and simulation workshops are held to give young Israeli academics a basic understanding of European politics and society.

## Private Foundations

### Bertelsmann Foundation

The German-Israeli Young Leaders Exchange lies at the center of the Bertelsmann Foundation's activities in Israel. It aims to initiate and support forward-looking dialog and cooperation between young leaders in Germany and Israel.

A practical understanding and assessment of each other's social, political, economic, and cultural conditions is of vital importance for the future relations between Israelis and Germans. This responsibility lies at the core of the exchange program.

Its target group are young leaders from the spheres of politics, industry, the media, and culture. Each program has a specific thematic focus and offers benefits that are geared toward the professional needs of the target group. In addition to transferring information, the main aim is to develop networks based on personal relationships.

The program organizes encounters in Germany and in Israel, each lasting approximately 9 days. The lectures, excursions, case studies and methodical training units are offered by prominent personalities and experts from the relevant



*German and Israeli participants of the Bertelsmann Foundation's Young Leaders Exchange, 2002*



fields. These intensive encounters offer participants the opportunity to examine central questions related to their political and social self-image and the associated attitudes, values, and opinions. Many participants experience this as a deeply emotional and moving event that triggers an intensive learning process.

The participants are chosen through recommendations from mentors who are contacted directly by the Bertelsmann Foundation. However, speculative applications are accepted in exceptional cases.

### **Fritz Thyssen Foundation**

The Fritz Thyssen Foundation was founded in 1959 and has supported numerous research projects at Israeli universities and research institutions.

The foundation runs scholarship and exchange programs with Israeli institutions and supports the projects of Israeli researchers, scientific conferences, and lecture series in Israel. It also offers support for establishing scientific contacts between Germans and Israelis and promotes cooperation between German and Israeli scientists.

Since 2003, the foundation has been sponsoring a series of lectures on German-Jewish studies at Ben Gurion University. They are carried out in cooperation with the university's Center for German Studies and are geared toward both an academic and a non-academic audience. The lectures are published both in German and in Hebrew.

The Fritz Thyssen Foundation also supports the international Leo Baeck Fellowship Program, which was set up in 2005. As a fellowship program for doctoral and post-doctoral students, it contributes towards researching and teaching the history and culture of German-speaking Jews in Central Europe and offers highly-qualified young scientists an opportunity to spend a year working in London, Jerusalem, New York, or Berlin.

### **Hubert Burda Foundation**

The Hubert Burda Society's activities in Israel are centered on Ben Gurion University in Beer Sheva. In 1999, the publisher Hubert Burda founded the Hubert Burda Center of Innovative Communications at Ben Gurion University. It promotes intercultural and forward-looking exchanges between media experts, businesspeople, and politicians.

The Good Neighbors Blog (<http://gnblog.com>) is one of its current projects. This website was launched in May 2007 and contains articles by authors from Egypt, Israel, Iraq, Iran, Jordan, Lebanon, Palestine, Saudi-Arabia, Sudan, and Syria. It offers young people from the Middle East a platform on which they can exchange views across borders and disciplines. Monthly, over 30,000 people read the blog.

The interdisciplinary and international transfer of knowledge plays a key role in forming politically open, tolerant, and future-oriented societies. That is why Hubert Burda Media also supports student research projects at the university. They are presented annually at the "BGU Project Days", which enjoy an excellent reputation in Israel.

However, the partnership also extends beyond the borders of the university campus. For example, Hubert Burda and the Israeli technology investor Dr. Joseph Vardi were the patrons of "Digital, Life, Design", an international digital lifestyle conference that took place in Munich in January 2008 for the fourth time and included the participation of over 150 companies and investors from Israel.

Providing training grants for Israeli university graduates to study "the tradition of Jewish-German thinking" is a further aspect of the Hubert Burda Foundation's work. On November 2, 2006, Charlotte Knobloch awarded Hubert Burda the Leo Baeck Award of the Central Council of Jews in Germany in recognition of his extraordinary commitment.



*A doctoral student from the Technion in Haifa takes a water sample from the Mediterranean as part of a project for the study of microbial life in different oceans that is supported by the VW foundation, August 2007*

## Volkswagen Foundation

Since its foundation in 1961, the Volkswagen Foundation has been supporting research cooperation between Israel and Germany in many ways. The foundation provided financial assistance to Israel for the first time in 1963 by giving the Weizmann Institute of Science in Rehovot DM2 million for staff and equipment to be used for work in the fields of physics and physical biology.

The establishment of new institutes was also partly financed by the foundation. Approximately DM354,000 went to the Hebrew University of Jerusalem in 1964 to fund the establishment of an Institute of Geography. In 1970, the University of Tel Aviv received funding for an Institute of International Relations and an Institute of German History. In 2004, the Volkswagen Foundation financed the pilot phase of a German Innovation Center at the Interdisciplinary Center Herzliya, which is designed as a scientific platform for Germany in Israel's academic environment.

German-Israeli scientist exchanges are another area in which the foundation is active. Even before 1968, a scholarship holders' exchange program financed over 80 visits of German researchers to the Weizmann Institute and of Israeli scientists to Germany. Other initiatives included a student exchange program in the fields of economics and social sciences between the Friedrich Ebert Foundation and the Fritz foundation in Tel Aviv as well as an exchange program

run by the Max Born Chair of Natural Philosophy at the Hebrew University.

The Volkswagen Foundation has always funded German-Israeli cooperation projects. Since 1977, however, it has been pooling these activities in an independent program that is financed through the advanced funding from the Land of Lower Saxony (the so-called "Niedersächsisches Vorab"). These efforts are carried out in cooperation with the Ministry of Science and Culture of Lower Saxony. The scientific support especially benefits universities and research institutions in Lower Saxony. The Hebrew University in Jerusalem and the Technion in Haifa are the main recipients of this two- to three-year funding program. Since 1977, over 280 joint projects have received approximately €26 million in funding. The Lower Saxon and the Israeli partners each receive half of the funding. The research topics come from all scientific fields, but particularly medicine, the natural sciences, and engineering.

### **ZEIT Foundation**

In its scientific funding activities in Israel, the ZEIT Foundation Ebelin and Gerd Bucerius in Hamburg concentrates on the University of Haifa. It founded the Bucerius Institute for Research of Contemporary German History and Society, which is based at the University of Haifa and offers young

scientists and visiting professors the opportunity to carry out long-term research visits. The institute also organizes conferences with high-ranking participants, lecture series, and events that are open to the general public. In addition, the Bucerius Institute acts as a gateway to Europe – it encourages an exchange of ideas on topical social issues and organizes young scientist exchanges.

The Manfred Lahnstein Scholarships were launched in 2008. They are awarded to two or three doctoral students every year who are working towards a degree in any of the subjects offered at the University of Haifa. The scholarship holders can spend 10 months at the university working on their doctoral theses.

In addition, the ZEIT Foundation supports various research projects at various centers of the University of Haifa, including the Center for Multicultural Studies, the Jewish-Arab Center, and the Brain and Behavior Center. It also provides funding for the Community Leaders project for the qualification of Arab students, which was set up by the German Friends of the University of Haifa.

The annual Bucerius Lectures in Jerusalem are organized every year in fall in cooperation with the conference center Mishkenot Sha'ananim. The guests since 2005 have been Prof. Gesine Schwan, Wolf Biermann and Prof. Jutta Limbach.

# The Fruits of German-Israeli Cooperation

The jointly developed research results illustrate the enormous potential of German-Israeli cooperation. German-Israeli projects have produced outstanding results, especially in the fields of medical research, water technology and water management, the humanities and social sciences, and chaos research.

## Medical Research

The project funding program that the Minerva Foundation runs for the Weizmann Institute gave funding to Prof. Michael Sela for his pioneering work on **synthetic polypeptides** in antigens. This research was a key factor in the later development of immunogenetics and of drugs for the treatment of certain forms of multiple sclerosis.

The research that Prof. Ruth Arnon of the Weizmann Institute conducted on the **immunochemistry of enzymes** between 1973 and 1978 led to the development of synthetic vaccines and the use of synthetic peptides (artificially produced short protein fragments) in diagnostics. Synthetic peptides are indispensable for many diagnostic testing procedures. Doctors use them to diagnose cancer and AIDS, for example.

The pioneering work of Dr. Michel Revel of the Weizmann Institute on the **industrial production of interferon** was also made possible with the help of funding from the Minerva Foundation and the BMBF-MOST cooperation. Interferon is a protein with immunostimulatory properties that is used in the treatment of multiple sclerosis, hepatitis, and cancer, among other illnesses. Visiting researchers from Germany played an important role in this work. The development and production of interferon is benefiting to German pharmaceutical companies to this day.

Scientists from the German Cancer Research Center (DKFZ) in Heidelberg and their colleagues at the Weizmann Institute, the Hassadah Medical Center, and the universities of Jerusalem, Tel Aviv, and Beer Sheva have been cooperating for 32 years and have produced significant findings in the field of **cancer research**.

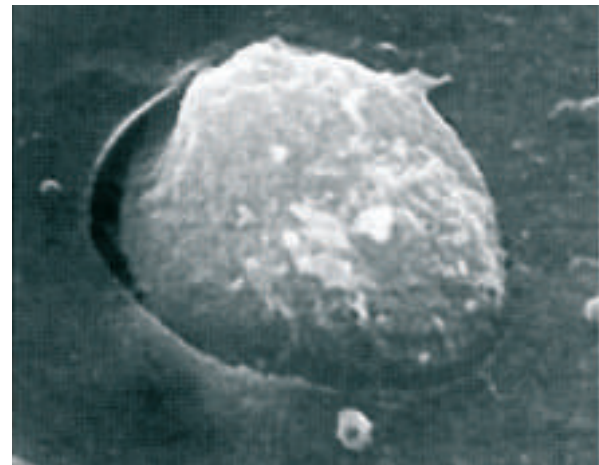
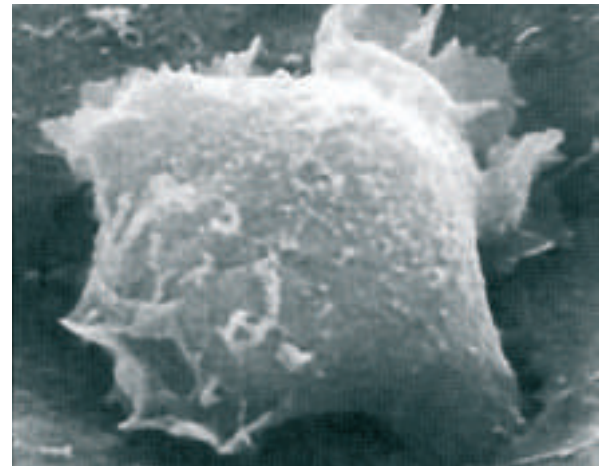
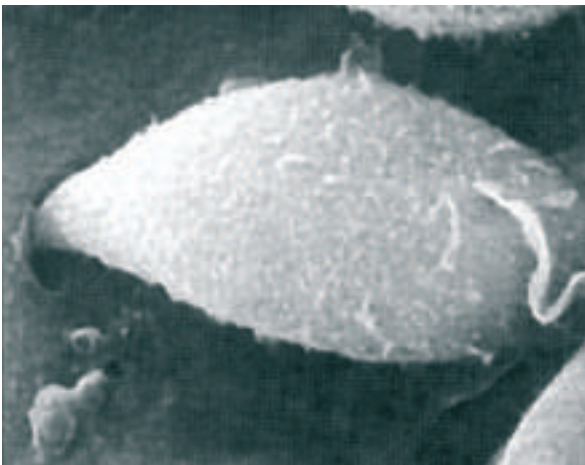
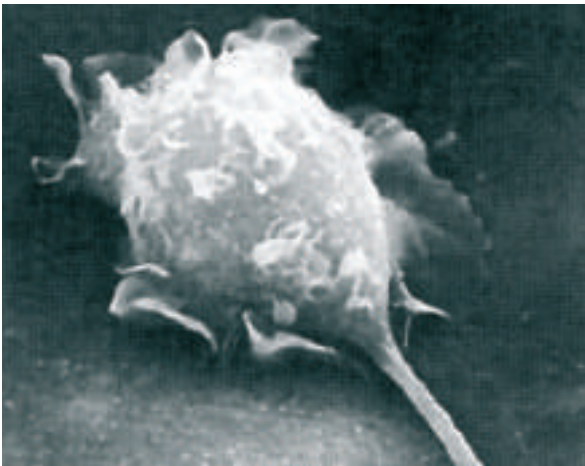
A project headed by Prof. Volker Schirmacher from the DKFZ and Prof. Israel Vlodavski from Hassadah University Hospital in Jerusalem has been providing ground-breaking findings on **how tumor cells metastasize** to establish secondary tumors since 1983. The two research groups were able to take the first electron microscope photographs of tumor cells loosening the tight contacts between the endothelial cells in the walls of a blood vessel and eventually breaking through. The researchers also demonstrated that heparin-like substances prevent melanoma and breast cancer cells from lodging in the lungs and forming metastases.

In another project, Prof. Ofer Mandelboim of the Lautenberg Center for General and Tumor Immunology in Jerusalem and Dr. Frank Momburg of the DKFZ worked together from 2001 to 2003 to study the processes involved in the recognition and destruction of tumor cells by the **immune system's natural killer (NK) cells**. The cell-destroying function of NK cells is regulated by numerous signals that either activate or deactivate the cells. The study of activating receptors on NK cells and their binding partners on tumor cells is of great interest to researchers, as there is reason to hope that strengthening the binding partners could help the NK cells attack tumor cells more easily.

Prof. Aaron Ciechanover of the Medical Department of the Technion in Haifa was awarded the **Nobel Prize** in chemistry for his research in a field that was funded by the German-Israeli Project Cooperation (DIP) between 1999 and 2003. This work had already been prepared in the 1990s with the help of funding from the GIF and the Volkswagen Foundation. Together with Prof. Avraham Hershko, his Israeli PhD supervisor, and the American scientist Irvin Rose, Ciechanover discovered **ubiquitin-mediated protein degradation**, a process that is of considerable importance in cancer research for the **protection against tumors**. This was the first Nobel Prize in the sciences to be awarded to Israeli researchers.

On the German side, researchers from the University of Stuttgart's Institute of Biochemistry and the Max Delbrück Center for Molecular Medicine in Berlin cooperated in this project.

A further project, which was funded by the DKFZ and MOST and lasted from 1999 to 2002, focused on the subject of the cellular response to **carcinogens and the triggers of inflammation**. A tight balance of regulatory processes that lead to cell proliferation, cell differentiation, or programmed cell death (apoptosis) determines the development and integ-



*A tumor cell forces its way between the endothelial cells and then breaches the blood vessel wall.*

rity of an organism. Dysregulation of parts of this regulatory network results in genetic programs allowing the cell to acquire tumor-specific functions. These genetic programs are based on a defined number of specific target genes (gene programs) whose expression (i.e. the reading of genetic information and subsequent translation into biologically active proteins) is regulated by the binding of so-called transcription factors to appropriate DNA binding sites in such genes. The project explored the function of specific endpoints of such signaling pathways from the outer membrane of a cell into the nucleus – the transcription factors AP-1 (members of the Jun and Fos protein families) and microphthalmia (MITF) – in the regulation of cell proliferation and apoptosis in response to ultraviolet (UV) light, chemical carcinogens, and allergenic substances.

With her work on immune system B cells, which received financial support from the Minerva Foundation, Prof. Idit Shachar of the Weizmann Institute's Immunology Department increased our understanding of **chronic lymphocytic leukemia**. She and her research team identified a receptor on the outer membrane of these cells that enables them to survive, and recognized that the same receptor could also be responsible for the abnormally high survival rate of B cells in chronic lymphocytic leukemia. They found that this receptor was overexpressed in the blood cancer cells, and that its activation leads to secretion of survival factors. When they blocked the receptor with specific antibodies, the B cells began to die.

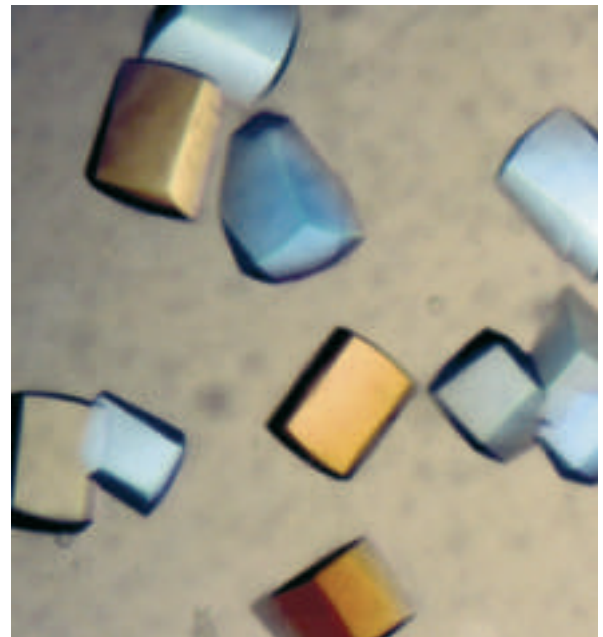
Led by Prof. Eliahu Zlotkin of the Hebrew University, a group of Israeli researchers worked together with the German company GATC from 2001 to 2004 to develop a **bioinsecticide made using one of the components of the venom of the Judean black scorpion**. The biological activities of the individual fractions of the scorpion venom were analyzed further. During the course of this work, it was discovered that some of the components could potentially be used for the **treatment of heart failure**.

The research carried out by Prof. Ada Yonath of the Weizmann Institute's Department of Structural Genetics and Heinz-Günther Wittmann, a former director of the Max Planck Institute for Molecular Genetics in Berlin (Wittmann passed away in 1990) led to the cultivation of the first well-formed crystals suitable for the high-resolution determi-

*Israeli and German research teams tried to develop the venom of the Judean black scorpion – seen here attacking a locust – into a bioinsecticide.*



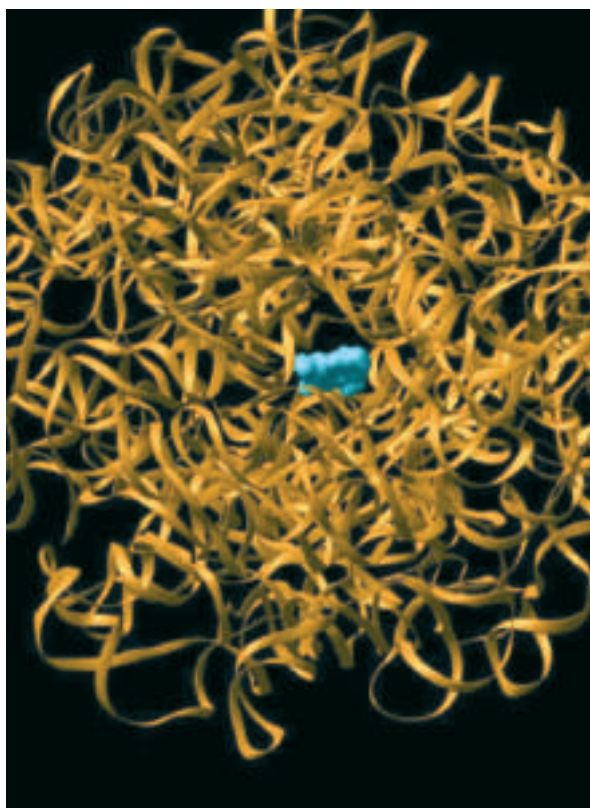
*Crystals in the large ribosomal subunit, with an average length of 0.3 mm*



nation of the structure of ribosomes, the cellular organelles that transform genetic code into proteins. Ada Yonath is continuing this work at a Max Planck Society research group at the German Electron Synchrotron (DESY) and at the Weizmann Institute in collaboration with the Max Planck Institute in Berlin.

In recent years, the team has been able to determine the molecular structure of both ribosomal subunits and identify the mechanisms involved in ribosomal functioning. Furthermore, the researchers have **deciphered the way a dozen antibiotics that target ribosomes work**, which has cleared the way for structure-based pharmaceutical design. The journal "Science" included these studies in its list of the **top ten achievements in 2000**, second only to the sequencing of the human genome. A large number of pharmaceutical companies have shown a growing interest in exploiting these findings.

*A typical antibiotic (macrolid) at the entrance of a protein exit tunnel that is beginning to develop in a large ribosomal subunit. The bands represent ribosomal RNA.*



### Environmental Research and Technology

The continuously growing scarcity of water is increasing tensions in the Jordan region. That is why integrated water resources management (IWRM) is an important area of the BMBF's funding activities. Examples from other regions have shown that IWRM can reduce the potential for conflict and even lead to collaboration between neighboring countries. With this in mind, the BMBF provides financial support for the project **SMART – Sustainable Management of Available Water Resources with Innovative Technologies**, which has

been running in the Lower Jordan Valley since 2006. The aim of this multidisciplinary and multilateral project is to develop transferable approaches for integrated water resources management in semi-arid regions. In order to achieve this, all exploitable and previously unused water resources within the project area are evaluated extensively, including groundwater, wastewater, strongly saline water, and floodwater. This project is coordinated with other projects in the region and research results are exchanged between the projects.

With its interdisciplinary **GLOWA Jordan River (GLOWA JR)** project, the BMBF supports cooperation between researchers from Germany, Israel, the Palestinian Territories Areas, and Jordan. The dialog between scientists and those responsible for water management has the aim of creating a basis for joint sustainable water use.

Apart from research on "blue" water (groundwater and surface water used by humans), one innovation of the GLOWA JR project is the investigation of "green" water (water found in natural ecosystems and forests) and its possible utilization in agriculture. GLOWA JR is also working on the possibility of desalinizing and reusing wastewater of different degrees of purification. In addition, GLOWA JR researchers are investigating the various possibilities of increasing agricultural yields using less water, and of increasing water productivity, for example by using different cultivation methods, choosing different plant varieties, or optimizing irrigation. Owing to the many years of experience with water scarcity, the Jordan region has more useful data on these issues than most other arid regions in the world.

The Mar Saba/Feshkha project, which was completed in 2007, was conducted by research teams from Tel Aviv University, Israel's state-owned water supply company Mekorot, and the University of Karlsruhe and was funded under the BMBF-MOST program. It offers great potential for meeting the drinking water needs of the Palestinian population in the Jericho area. The researchers identified the Mar Saba/Feshkha area northwest of the Dead Sea as a potential source of freshwater. This basin is estimated to have the potential to produce 20 million cubic meters of freshwater a year. At present, only some 5 million cubic meters are being extracted.



*The Mar Saba/Feshkha springs area*

In the Rainmaker Project, which will be concluded in September 2008, meteorologists from the Hebrew University of Jerusalem and the Karlsruhe Research Center are coming one step closer to realizing one of mankind's oldest dreams: controlling the weather. In the project "Numerical studies on the importance of aerosol effects to the precipitation dynamics of clouds in the Israeli coastal region", computer simulated model calculations have shown that cloud seeding – the injection of artificial substances into clouds that are forming over the ocean – can lead to an increase in precipitation. The data suggests that it would be possible to increase the precipitation volume by 20 to 25 percent by dispersing common salt (sea salt) particles with a size of 2 micrometers into the clouds. In doing so, it is important to ensure that the precipitation events are time-lagged so that the clouds have time to drift 50-60 kilometers inland from the sea before they start releasing water. Practical tests have already confirmed the results of the meteorological simulations.



*Cloud seeding aircraft using salt powder*

## Solar Energy

At the Weizmann Institute's solar tower, in collaboration with the German Aerospace Center, highly-concentrated sunlight is used to convert CO<sub>2</sub>-containing methane into a high-temperature synthesis of hydrogen and CO<sub>2</sub>. The synthesis gas produced in this way can be transported to consumers across long distances, while the stored solar energy can be used to produce electricity.

## Humanities and Social Sciences

The BMBF-funded German-Israeli **collaborative project 'Migration and Social Integration'** has been running since 2006 and includes the participation of the universities of Jena, Chemnitz, Leipzig, Mannheim, Bielefeld, Bremen and Berlin on the German side and the universities of Haifa, Jerusalem and Tel Aviv as well as Bar-Ilan University on the Israeli side.

It is a comparative project that studies the conditions of the process of acculturation and integration of second-genera-





*Solar tower at the Weizmann Institute in Rehovot*

tion immigrants in Germany and Israel. In particular, it focuses on comparing the situations of young migrants from the former Soviet Union (German resettlers and Russian Jews) with that of minority groups from other cultural backgrounds (the Turkish population in Germany and Arabs in Israel) and that of people without a migration background. The project mainly concentrates on investigating the way people cope with important life transitions between childhood and early adulthood. Special emphasis is put on aspects related to positive development, such as the acquisition of skills and mental well-being.

There are sub-projects that deal with the regulation of developmental status transitions in the acculturation process of second-generation immigrants, the situation of young immigrants in the education system of the host country, conflicts of norms and violence, identity formation and the conveying of values in young people and their families, and language acquisition as a precondition for the social integration of Russian-speaking children with migration background in Germany and Israel.

## Chaos Research

In recent years, physicists at the Weizmann institute have been studying the chaotic behavior of highly diverse systems, ranging from vortex formation in currents to quantum mechanics. One aim of their work is to describe and predict the seemingly unpredictable behavior of such systems. Quite simply, the researchers are trying to find order in chaos. This area of research received a significant boost through the establishment of the Minerva Center for Non-Linear Physics of Complex Systems at the Weizmann Institute and the Technion. Today, the center has close links with the Max Planck Institute for Physics of Complex Systems in Dresden, which was founded in 1993 with the help of Uzi Smilansky, who came to Germany in the 1960s as one of the first visiting scientists from Israel.

# New Impetus for the Future

*Dr. Annette Schavan, Federal Minister of Education and Research, and Angela Merkel, Federal Chancellor, at the German-Israeli intergovernmental consultations in Israel in March 2008*



In December 2007, Federal Minister of Education and Research Dr. Annette Schavan and her Israeli counterpart, Minister Galeb Majadle, agreed to declare 2008 the German-Israeli Year of Science and Technology. One of the main aims is to support and extend the long-standing and successful partnership between the two countries.

## Civil Security Research

On the occasion of the official opening of the German-Israeli Year of Science and Technology on April 7 and 8, 2008, Federal Minister of Education and Research Dr. Annette Schavan and her Israeli counterpart, Minister Galeb Majadle, signed an agreement on future cooperation in the field of civil security research. Further information can be found in the chapter "Interdepartmental Research Cooperation".

## Humanities and Social Sciences

Germany and Israel share a long cultural and intellectual history, which needs to be preserved and made accessible to future generations.

The establishment of a new Minerva Center for the Humanities and Cultural Sciences, which was announced by Federal Minister Schavan during the opening of the German-Israeli Year of Science and Technology, will be a key element of these efforts. The new center is to be set up before the end of the year.

In March 2008, Federal Minister Dr. Annette Schavan inaugurated the Center for German Studies at the Hebrew University in Jerusalem. It is one of only two centers in Israel and 15 centers worldwide to receive start-up funding from the German Academic Exchange Service (DAAD) on behalf of the German Federal Foreign Office. The center will conduct interdisciplinary work on modern Germany in Europe.

A similarly structured Center for German and European Studies has been inaugurated by Frank-Walter Steinmeier, Minister for Foreign Affairs, at the University of Haifa in summer 2008.

## Young Scientists' Award

The support of young scientists has always been a priority of German-Israeli cooperation. The aim is to ensure that the outstanding research relations between Germany and Israel continue to flourish in future generations. That is why the BMBF has decided to introduce an award for young scientists. It is to be conferred annually, alternating between the humanities/social sciences and the natural/life sciences. Every year, two German-Israeli teams of researchers will receive €200,000 each. The winners will be selected by the Minerva Fellowship Committee. The first awards will be granted in November 2008 to researchers working in the humanities and social sciences.

## Young Scientists

Germany and Israel's cooperation in science and research depends on people's willingness to engage with each other's countries, maybe learn a new language, and question their own attitudes and assumptions.

Since the early 1960s, there have been regular exchanges of students, graduates, doctoral candidates, and post-docs. Today, several hundred young people a year receive financial support from one of the many funding and exchange organizations, enabling them to spend a period of between several weeks and several years at a university or research institution in the partner country. These young scientists will ensure that the partnership between Germany and Israel continues in future generations.

### The past...



*Prof. Israel Pecht with his wife, Dr. Marit Pecht (many years ago)*

#### Prof. Israel Pecht

"In the late 60s, I came to Göttingen with my family for a three-year post-doc position at the Max Planck Institute for Physical Chemistry. Many of my friends and colleagues were very critical of my decision to come to Germany, of all places. But it was a very important step, both from a scientific and a personal point of view: Even today, we have contacts in Göttingen that date back to that period. I can honestly say that my time as a visiting scientist in Göttingen marked the beginning of my commitment to German-Israeli cooperation, which has lasted for over forty years now.

In the past, Germany had a significant influence on scientific institutions in Israel due to the large number of German-Jewish immigrants. Today, American structures are more dominant. What I admire about Germany is the substantial quality and range of its research activities. From my point of view, one of the disadvantages is the fact that young

scientists in Germany have to overcome so many hurdles, at least at universities. They have to "serve" under a professor for many years until they have completed the habilitation procedure. In Israel, post-docs are given their own laboratories after only a few years.

It is a shame that the number of Israeli students who choose to come to Germany as post-docs is so low. I think that the German language is certainly one of the obstacles. The USA is often the more obvious choice. I hope the German-Israeli Year of Science and Technology will raise awareness among both Germans and Israelis of the possibility of conducting research in the partner country.

### ... and the present



*Prof. Dr. Israel Pecht at the opening ceremony of the German Israeli Year of Science and Technology in Berlin, April 2008.*

#### Dr. Dirk Dorfs, Minerva fellow at the Hebrew University of Jerusalem (2008)

"I think it was a very good decision to spend some time at the Hebrew University as a post-doc. It is a very successful experience, and not just from a scientific point of view. Israel is a culturally diverse country, and the impressions I have gathered in daily life are completely different from what you usually hear in the German media. That is why I have applied for an extension of my stay, which was originally planned to last 12

months. I would recommend Israel to any doctoral student who intends to take up a post-doc position abroad and who wants to gather new experiences.”

**Dr. Aaron Fait, Minerva fellow at the Max Planck Institute of Molecular Plant Physiology in Golm (2008)**

This is the last year of my stay in Germany, and I must say that Germany’s efforts to heal the wounds of the past by investing in bilateral collaboration and other cultural initiatives with Israel are impressive. Having been born in Italy and knowing the European social and scientific arena, I have noticed that no other country does as much as Germany to promote dialogue with Israel. I would like to take this opportunity to thank the Minerva Foundation, the Max Planck Institute, and the German government for these last three years of work and life experience. The collaboration I have established in Germany will surely continue when I go back to Israel.

**Noam Zadoff, M.A., Minerva fellow at the Department for Jewish History and Culture of the Ludwig Maximilian University (LMU) Faculty of History (since 2006)**

Almost two years ago, I arrived at the Department for Jewish History and Culture at the LMU in Munich, which is directed by Prof. Michael Brenner. From the beginning, I was impressed by its high academic standards and by the good spirits in which the work was done. The challenge of getting used to a different place was relatively easy; I used it as a base for my archival research and took part in its most helpful methodological seminars.

An exchange is supposed to take one away from one’s own environment and protected surroundings and confront one with a new situation. The challenge of looking back at one’s home after absorbing the new perspective broadens one’s personal and professional horizons. For me, there could not have been a better place for this purpose than Munich.

**Florian Biermann, Minerva PhD student at the Hebrew University of Jerusalem (since 2006)**

I have been a PhD student at the faculty of economics of the Hebrew University of Jerusalem since 2006. My research field is game theory. I have been interested in Israel for a long time and paid several visits to the country before I started learning Hebrew and made the decision to do my PhD in Israel. In the field of game theory, which is a branch of applied mathematics, Israel is the world’s most important research location



*Florian Biermann*

after the USA. The Hebrew University’s “Center for Rationality” is absolutely unique. Approximately 25 professors from different faculties use instruments from game theory to analyze strategic issues in their own fields of specialization. I don’t see huge differences between the scientific work at my home university, the Freie Universität Berlin, and here in Jerusalem. The PhD programs have similar structures, and the hierarchies at both universities are flat. All in all, my impression is that there is a higher incentive to conduct research in Israel. Despite the scarce resources, the research output is very high.

As for my private life, I have made some very good friends among the Israelis. Some of them have started to learn German. I get the feeling that a lot of Israelis are interested in Germany and German people. Jerusalem is a city full of history with a rich religious and cultural life, so my time here has been a unique experience.

**Dr. Yair Pilpel, Minerva fellowship holder at the Max Planck Institute for Medical Research in Heidelberg (2008)**

First and foremost, I must say that my overall impression of Germany and the German people has been very positive, and I do see myself as a goodwill ambassador between Israel and Germany in the future. I have made many friends here. My wife and I are about to have our first child here and the medical care she has received at the Frauenklinik in Heidelberg

has been exceptional both professionally and personally. We have also been exposed to some of the less pleasant sides of Germany, but I have to say that these represent a small minority and are not normally tolerated by the vast majority of Germans.

Research-wise, it is my impression that research in Germany is perhaps the best on the European mainland. I have friends and have visited institutions outside of Germany (e.g. in Switzerland and France) and this is my general impression. I cannot claim to be an authority on the subject. However, I believe that in my future career, I will look for possible collaborations in Germany.

On the lighter side, Germany has proven to be a very culturally rich place. I have seen more fests and carnivals than I can remember, and it was a pleasant surprise to see that the Germans enjoy having a good time as much as any other nation, and perhaps even more. We have had the best bread and meat here, though Germany still has much to learn about hummus.

**Stefanie Gutschmidt, Minerva fellow at the Technion's Faculty of Mechanical Engineering in Haifa (2006-2007)**

Arriving in Israel, I was given a very warm welcome. I found great favor with the people from the Department of Mechanical Engineering in general, which was accompanied by several invitations by professors to religious holidays and other occasions. This has enabled me not only to get to know campus life at the Technion, but also to get to know and understand the research landscape with respect to the conditions of daily life in Israel. Aspects of life that differ very much from what we, coming from Germany, associate with everyday life conditions.

It is a fact that everything revolves around the political situation in Israel. In case of war, smaller local riots or external attacks, life adjusts accordingly. For instance, when rockets fell on Haifa during the 2nd Lebanon War, campus life stopped. Even the "hardcore" researchers had to stay at home, if not for their own sakes, then in order to protect their families. When the sirens went off, the most one was able to do was to press "Ctrl+S" and to run to the nearest shelter. Today, with those memories still fresh in my mind, I must admit that my appreciation for being able to carry out research in a peaceful setting is engraved into my mind forever.

**Dr. Noam Shoval, Humboldt scholarship holder at the Faculty of Geography of the University of Heidelberg (since 2007)**

In late August 2007, I arrived in Heidelberg with my wife, two children (11 and 7) and a six-week-old baby! We found accommodation in the superb facilities of the University of Heidelberg guest house, which is located in close proximity to the banks of the Neckar River. For somebody who had been living in the middle of the Judean desert not far from Jerusalem, it was definitely a major change.

Most of my time here in Heidelberg was devoted to promoting two projects that involve the use of advanced tracking technologies. One is focused on the study of the time-space activities of tourists visiting Heidelberg and the second deals with the analysis of outdoor mobility at different stages of Alzheimer's disease and related cognitive disorders. I am the principal coordinator of this five-year German-Israeli project. It is an interdisciplinary project consisting of five research teams in the fields of geography, social work, gerontology, psychology, and medicine.

Coming to Heidelberg had a strong family significance for me, since my grandfather spent several years studying at the University (1912-1914) almost a hundred years ago! He came from Odessa to study philosophy in Heidelberg, but he had to give up his studies and return to Russia at the outbreak of the First World War.



*Dr. Noam Shoval*

This was a significant year for us. We got to know new people and made new friends, lived in a different physical and cultural climate, and had a great opportunity to travel in Germany and Europe.

**Dr. Felix Benninger, Feodor Lynen fellow of the Alexander von Humboldt Foundation, neurologist at the Hebrew University of Jerusalem (since 2006)**

The sun has just set. I am looking out for the familiar green 480 bus that goes from the center of Jerusalem to Tel Aviv. Mevasseret – that is the name of this bus stop, right next to Highway 1, on which masses of people travel from Jerusalem to Tel Aviv every morning and from Tel Aviv back to Jerusalem again every evening. Mevasseret – “herald of Zion” – is a small, secular suburb of Jerusalem, on the way to Tel Aviv. I’m waiting. A family is standing next to me. The mother is wearing traditional Ethiopian clothing. She is with four children. They are speaking Amharic. Next to me, a language that sounds familiar. Two orthodox Haredim. Both on the phone. German, I think. Maybe tourists? No, they are speaking Yiddish. The soldier next to me asks for a light. I tell her I don’t have one. In the distance, you can see the new Calatrava bridge, the gateway to Jerusalem. It hasn’t been inaugurated yet. Its pylons rise into the sky like a spear. Graceful. Beautiful. Optimistic. Hope for a dynamic, modern Jerusalem. My move from Rechavia in Jerusalem to Tel Aviv was in line with that of most secular students, who tend to move back to Tel Aviv after finishing their studies. Closer to the sea, jobs, music, heat, shops that are open on the Sabbath, Bauhaus architecture, and restaurants that are open around the clock. The 480 bus arrives, and a cluster of people forms at the door. I have to fold away my bicycle, so I am the last one to get on the bus. All seats are taken. “En ma la’asot”, I think. “Never mind!”

**Dr. Bertram Gerber, GIF Young Scientists’ award holder, medical faculty, University of Würzburg**

At a point in my career at which practically no other source of funding was open to me, for formal reasons, the GIF gave me the opportunity to start an innovative research project. Two of our projects on the control of reasonable behavior by means of different sense modalities were made possible thanks to this funding.

I was able to spend 14 days in Israel to attend the meeting of the Israel Society for Neuroscience in Eilat, see the Clore Garden of Science at the Weizmann Institute in Rehovot, and pay a visit to the University of Haifa on the magical Mount Carmel.

Apart from the beauty of the desert, the corals of the Red Sea, and the beautiful lightness of the air at the Dead Sea, what made the strongest impression on me were the powerful contradictions of this country: Israel struck me as ancient but also brand new; deeply religious and very worldly at the same time; its people brusque and kind in equal measure. It was an incredible experience to see how a scientific structure of such high quality had been developed in such a short time with the help of immigrants from all over the world. Establishing contacts with the working group of Prof. Barkai in Haifa was a further highlight of my visit. We are currently working on setting up a joint research project on the relationship between the perceived, psychological similarities of smells and the physiological activation patterns in the brain.

**Dr. Uwe Bovensiepen, GIF Young Scientists’ award holder, Freie Universität Berlin, Department of Physics (2007)**

My trip to Israel in September 2007 was one of the most interesting and multi-faceted experiences of my life. The many fascinating conversations with expert colleagues came as no surprise, since the quality of science in Israel is outstanding. But I had not expected to experience such an intense encounter with Israel’s people and culture. I visited the Hebrew University of Jerusalem, Tel Aviv University, Kibbutz Hagroshim, and the Weizmann Institute in Rehovot.

The visit was important for my scientific work in many ways. First of all, it helped me expand existing contacts with the universities. We had the opportunity to prepare a joint publication and discuss open issues in as much detail as necessary. The visit to Rehovot showed great potential for future collaborations.

Finally, I would like to underline the great open-mindedness with which people approached me as a German. People showed great enthusiasm for German products and were delighted to experience an authentic encounter with someone from a different country and culture. This shows that well-planned and well-funded programs can help bridge historic divides and develop promising potential for the future.

**Hannah Sophie Boie, doctoral candidate, DAAD fellow and Friedrich Ebert Foundation scholarship holder, Center for Middle Eastern and African Studies, Tel Aviv University (2006-2008)**

“Hals- und Beinbruch!” (“Break a leg!”) my friends from Berlin told me when I set off for Tel Aviv for my two-year doctoral studies in international relations. “Hasloche un Broche”, the Israelis concurred and welcomed me warmly.

I quickly realized that Israelis do not mince their words and like to talk *tachlis*: they kept insisting that my Hebrew name, of which I had been so proud when I moved to the Levant, was only fit for a Yiddish *momme*. “Chutzpa!” (“The nerve!”), the Israelis shouted when they had to stand in an interminable line at the supermarket, while I waited with the patience of a *yekke*. It took me some time to get used to the directness of the Israelis and the *tohubohu* of political and social life in Israel. However, I found new friends very quickly, so the initial difficulties for me as a European newcomer were just a minor glitch. “Kumm, sitz!”, people called out to me, and offered me all kinds of delicious food at a barbecue. Israel’s outstanding, tried-and-tested language schools did their part, and soon I no longer had to rely on my few scraps of Yiddish, but could chat to people in Hebrew. I was able to start my studies at Tel Aviv University as soon as I arrived. Although the shortage of professors and the prolonged strikes made studying difficult, the academic and administrative staff always supported me, and I was able to make great progress with my doctoral thesis as well as with my studies of Hebrew and Arabic.

I have now come back to Berlin to finish my thesis. Israel has become a significant part of my life, and I will certainly go back there.



*Hannah Sophie Boie*

# Contact Addresses

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- Embassy of the State of Israel in Berlin  
<http://www.israel.de>
- German-Israeli Year of Science and Technology  
<http://www.gist2008.com>

### Cooperation Programs

- BMBF-MOITAL-MOST Cooperation in Science and Technology  
<http://www.cogeril.de>
- InWEnt German-Israeli Program for Cooperation in Vocational Training  
<http://www.inwent.org/israel/home/index.html>
- DIP  
German-Israeli Project Cooperation  
<http://www.internationales-buero.de/787.php>
- GIF  
German-Israeli Foundation for Scientific Research and Development  
<http://www.gifres.org.il>
- MINERVA  
Minerva foundation  
Gesellschaft für die Forschung m.b.H., München  
<http://www.minerva.mpg.de>
- DFG  
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<http://www.zeit-stiftung.de>



### Scientific Associations

- AiF  
German Federation of Industrial Cooperative Research Associations „Otto von Guericke“  
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- HGF  
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- MPG  
Max Planck Society for the Advancement of Science  
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- WGL  
Gottfried Wilhelm Leibniz Science Association  
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### Other

- Invest in Germany  
<http://www.invest-in-germany.com>
- German Business Portal  
<http://www.german-business-portal.info>
- German-Israeli Economic Association  
<http://www.d-i-w.de>

### Israel

- Ministry of Industry, Trade and Labor MOITAL  
<http://www.moital.gov.il>
- Ministry of Science, Culture and Sport MOST  
<http://www.most.gov.il/English>

- German Embassy in Tel Aviv  
<http://www.tel-aviv.diplo.de>
- Israel Science and Technology Homepage  
<http://www.science.co.il>

### Israeli Universities and Research Institutions

- Bar-Ilan University, Ramat Gan  
<http://www1.biu.ac.il/indexE.php>
- Ben-Gurion University of the Negev, Beer Sheva  
<http://web.bgu.ac.il/Eng/Home>
- Hebrew University of Jerusalem  
<http://www.huji.ac.il/huji/eng>
- Technion, Haifa  
<http://www.technion.ac.il>
- Tel Aviv University, Tel Aviv  
<http://www.tau.ac.il/index-eng.html>
- University of Haifa  
[http://www.haifa.ac.il/index\\_eng.html](http://www.haifa.ac.il/index_eng.html)
- Weizmann Institute of Science, Rehovot  
<http://www.weizmann.ac.il>

### Other

- Invest in Israel  
<http://www.investinisrael.gov.il>
- Economic Mission of Israel in Germany  
<http://www.israeltrade.gov.il>

# Minerva Centers

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## Ben-Gurion University of the Negev

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<http://bio.huji.ac.il>

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- Minerva Center for Optimization  
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### Weizmann Institute of Science

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[www.weizmann.ac.il/physics/einstein\\_physics.html](http://www.weizmann.ac.il/physics/einstein_physics.html)
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- Gerhardt Schmidt Minerva Center for Supramolecular Architectures  
[www.weizmann.ac.il](http://www.weizmann.ac.il)

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  - Hebrew University of Jerusalem
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- Max Wertheimer Minerva Center for Cognitive Processes and Human Performance
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		<b>Weizmann Institute of Science</b>	Berlin University of Technology

# List of abbreviations

ARO	Agricultural Research Organization	GKSS	Research Center Geesthacht
AvH	Alexander von Humboldt Foundation	GLOWA	Global Change in the Hydrological Cycle
AWI	Alfred Wegener Institute for Polar and Marine Research	GSF	National Research Center for Environment and Health
BIO-DISC	German-Israeli Cooperation in Biotechnology	HGF	Hermann von Helmholtz Association of National Research Centers
BIP	Gross domestic product	HRK	Association of Universities and Other Higher Education Institutions
BIRAD	Bar-Ilan Research & Development Company (marketing company for technologies and pharmaceutical products developed at the university)	IASTE	International Association for the Exchange of Students for Technical Experience
BMBF	Federal Ministry for Education and Research	IMPRS	International Max-Planck Research School
BMU	Federal Ministry for Environment, Nature Conservation and Nuclear Safety	InWEnt	Capacity Building International, Germany
BMWA	Federal Ministry of Economics and Labor	ISA	Israeli Space Agency
BMWi	Federal Ministry of Economics and Technology	ISERD	Israeli Directorate for EU Framework Program
BMZ	Federal Ministry for Economic Cooperation and Development	ISF	Israeli Science Foundation
BSF	United States-Israel Binational Science Foundation	IST	User-Friendly Information Society Program within the EU Framework Program
CERN	European Organization for Nuclear Research	IVC	Israeli Venture Capital
CHE	Council on Higher Education (central steering body for Israeli universities and colleges)	IWRM	Integrated Water Resources Management
COST	European Cooperation in the Field of Scientific and Technical Research	KfW	Kreditanstalt für Wiederaufbau (Bank for Reconstruction and Development)
DAAD	German Academic Exchange Service	KMK	Standing Conference of Ministers of Education and Cultural Affairs of the Leander in the Federal Republic of Germany
DESY	German Electron Synchrotron	LIFE	Quality of Life and Management of Living Resources Program within the EU Framework Program
DFG	German Research Association	M.A.	Master of Arts
DIP	German-Israeli Project Cooperation in Future-Oriented Fields	MOITAL	Ministry of Industry, Trade and Labour
DKFZ	German Cancer Research Center	MOST	Ministry of Science and Technology
DLR	German Aerospace Center	MPG	Max Planck Society
EMBL	European Molecular Biology Laboratory	MPI	Max Planck Institute
EMBO	European Molecular Biology Organization	NCRD	National Council for Research and Development
ESRF	European Synchrotron Radiation Facility	OECD	Organization for Economic Cooperation and Development
EUREKA	European Initiative for Market-Oriented Industrial Research and Development	OCS	Office of the Chief Scientist
FH	University of Applied Sciences	R&D	Research and Development
FhG	Fraunhofer Society	R&T	Research and technology
FIRST	Program for the support of research fields that are underrepresented in Israel	RWTH	Rheinisch Westfälische Technische Hochschule Aachen (Aachen University)
FRP, FP	Research Framework Program of the European Union	SMART	Sustainable Management of Available Water Resources with Innovative Technologies
FZJ	Research Center Jülich	TU	University of Technologies
FZR	Research Center Rossendorf	VC	Venture Capital
GBF	National Research Center for Biotechnology		
GDP	Gross domestic product		
GFZ	German Research Center for Geosciences		
GIF	German-Israeli Foundation for Scientific Research and Development		

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