

Funding Israel-U.S. collaborations in science



From left: Eleazar Eskin and Eran Halperin

Eleazar Eskin helps scientists understand the genetic basis of human disease. His field of expertise — bioinformatics — involves creating algorithms and software to analyze genetic data — data entailing huge numbers of permutations.

Since 2013, the associate professor of computer science and human genetics at UCLA has been receiving money from a grant to work with Eran Halperin, an associate professor at Tel Aviv University involved in the same field. “This is one of my best collaborations,” Eskin said. “It’s not just the two of us working together — the ... grant lets our groups work together as well. Some of my students have visited Israel and [Halperin’s] have come here. This has taken our collaboration to the next level.”

The joint effort is made possible by the United States-Israel Binational Science Foundation (BSF), which promotes collaboration between American and Israeli researchers.

The foundation was established in 1972, in an agreement signed by Yitzhak Rabin, Israel’s ambassador to the United States at the time, and U.S. Assistant Secretary of State Joseph Sisco. The BSF provides funding to research partnerships in such disciplines as physics, chemistry, biomedical science, behavioral science and computer science.

The scope of BSF-generated papers and collaborations is staggering,” Eskin said. “It’s not that big of an organization, yet it has supported a huge amount of research and scientists.”

Since its inception, the BSF has awarded more than 5,000 research projects for a total of approximately \$600 million — close to \$16 million annually. California has among the highest number of recipients, with 151 currently active grants at institutions including Caltech, UCLA, USC, UC San Diego, UC Berkeley and Stanford.

“The goals of the BSF are to promote collaborative research between U.S. and Israeli scientists in order to advance scientific progress and strengthen the ties between the two scientific communities,” Albert Teich, chairman of the BSF board of governors, said in an email. “Both countries stand to gain from this exchange of people and ideas.”

Based in Israel, the BSF is directed by a board of governors consisting of five American and five Israeli members, appointed by their respective governments. Funding comes from the annual interest earned on an endowment, to which both countries contribute to equally. (A similar fund for industrial research and development was founded in 1977, and one supporting agriculture was created in 1978.)

Grants typically range between \$150,000 and \$200,000 and are paid over a period of two to four years. Applications undergo a rigorous peer-review process that involves scientists around the world.

Forty-three researchers who received BSF funding have gone on to win Nobel Prizes. Professors Avram Hershko and Aaron Ciechanover of the Technion-Israel Institute of Technology and Irwin Rose of UC Irvine received the 2004 Nobel Prize in Chemistry for their joint discovery of the ubiquitin system for protein degradation, the mechanism by which the body disposes of dead and sick cells and replaces them with new ones. This research, which received five consecutive grants from the BSF beginning in 1979, helped spur development of Velcade, a drug used to treat bone cancer.

The BSF focuses on basic research and young researchers. This approach is designed to assure “a pipeline of scientific talent for generations to come,” according to the foundation’s website.

“The BSF’s mission of supporting basic research is especially important to the development of science and technology, and, ultimately, to economic growth and human welfare,” said Teich, research professor of science, technology and international affairs at George Washington University. “Scientists often liken basic research to the ‘seed corn’ of science [because it] advances our understanding of nature and the physical and biological world.”

That understanding may not have immediate applications, but it can serve, often in unpredictable ways, as the knowledge base on which we draw for the solution of practical problems ...”

Governments, Teich said, may be reluctant to fund this type of research because its benefits may not be immediately obvious, might take a long time and are not guaranteed. BSF helps to fill this gap.

One example of BSF-funded basic research that led to a practical application involves the work of professors Shlomo Rozen of Tel Aviv University and Michael Welch of Washington University in St. Louis. They developed an isotope used for imaging with positron emission tomography (PET) — technology that was almost abandoned due to the lack of radioactive isotopes necessary for imaging. Rozen and Welch’s isotope was used for more than a decade.

Another project involves BSF-funded researchers Yariv Amnon of Caltech and Abraham Katzir of Tel Aviv University, who developed a sophisticated infrared optical fiber that helps land-based telescopes detect atmospheric characteristics of planets that are otherwise invisible to the human eye. NASA and the European Space Agency are using this technology to look for habitable planets outside our solar system.

Despite its successes, BSF has not seen an increase in its endowment since 1984, and the foundation is looking to collaborate with others wishing to fund specific projects.

The Los Angeles-based Rosalinde and Arthur Gilbert Foundation, for example, has partnered with BSF to supplement certain projects, including the collaboration between Eskin and Halperin. The BSF also initiated a series of joint funding programs with the National Science Foundation for projects involving chemistry, biology, brain research and computer science.

“When the BSF was established in the 1970s, Israel was seen as the principal beneficiary of the relationship,” Teich said. “Today, as Israel has developed into a world power in science and technology, the connection to the U.S. is much more of a partnership, where both sides benefit and each learns from the other.”

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