

IMPACT



WINTER 2019



AMERICAN ASSOCIATES
Ben-Gurion University
of the Negev

From the desert for the world...

FROM THE NEGEV TO ANTARCTICA

A FAUX REEF FOR
REAL FISH

WHEN GENES GO WRONG

STUDENT COMPETITIONS
BREED ENTREPRENEURS

GIVING EX-SOLDIERS
A NEW START

FROM THE DESERT TO THE ANTARCTIC



BY **TONI YOUNG** AABGU PRESIDENT

Every issue of *Impact* highlights how integral Ben-Gurion University is to Israel and the Negev, but this one brings home to me how, at the same time, BGU connects with the larger world.

For example, BGU’s Dr. Roi Granot spends extended time on icebreakers. Why does a geologist from the Negev Desert study the movement of tectonic plates under the Antarctic Ocean? Because connecting with faraway phenomena helps us understand the faults that produce earthquakes in California, and much more. Such knowledge will someday help scientists predict natural catastrophes. Read the story to discover more ways BGU geologists are connecting past to present, near to far.

Back home in Israel, Prof. Nadav Shashar’s efforts to protect the coral reef in the Red Sea, which was attracting too many divers for its own good, created Tamar—an artificial reef. As hoped, it draws a number of underwater tourists and also demonstrates a way to save endangered reefs elsewhere in the world, and possibly even the world’s waning fish populations.

And while physician-scientist Prof. Ohad Birk’s lab is discovering the genetic causes of dozens of diseases in the Bedouin community, the same research is yielding clues to treating globally common diseases such as autism, atrial fibrillation, gout, and multiple sclerosis.

You’ll also enjoy knowing how the University’s students are learning to become entrepreneurs while tackling real-world problems in the process. And, feel inspired by a unique BGU program that helps exiting soldiers achieve the high school diploma they missed and gain a better start on their future lives.

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Cover: A research vessel in Antarctica carrying equipment for Dr. Roi Granot’s study of tectonic plates. Story about BGU’s geologists begins on page 12.

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SHALOM TO BGU'S PRESIDENTS

Farewell to Prof. Rivka Carmi

FOR MORE than 12 years, Prof. Rivka Carmi, M.D., has served as president of Ben-Gurion University of the Negev. Her inspiring and visionary leadership comes to an end on December 31, 2018.

American Associates, Ben-Gurion University of the Negev paid tribute to Prof. Carmi at a farewell celebration in New York last month. In her honor, more than \$600,000 dollars was raised for the Rivka Carmi Endowment Fund for Women's Academic Achievement.

"We celebrated the inspirational role Prof. Carmi has played, leading a life of firsts as a woman, an academic, a physician, a researcher, and a university

president," says Doug Seserman, AABGU's chief executive officer.

Prof. Carmi brought 200 new faculty members to the University, established the National Center for Biotechnology in the Negev, and forged the *Heksherim* Institute, a showcase of Israel's leading authors. She presided over a \$100 million building boom, including 15 new buildings, the Advanced Technologies Park and the American Associates Village at Sede Boqer.

By her final term, with her leadership in the advancement of nanotechnology, cyber security, brain tech and quantum physics, visitors from around the world were coming to Israel to learn from the

BGU model. Prof. Carmi's passion for game-changing alliances, including partnerships with world-class companies like Dell and IBM, put BGU on the map, not just nationally but internationally.

"So we say shalom and thank you to Rivka Carmi for her tremendous contributions to Ben-Gurion University," says Seserman. "During her tenure as president, BGU has become a leading, world-class research university—one that enshrines values of social equality and equal opportunities for all segments of the population, and is, of course, a major force in empowering the women of Israel."

Welcome to Prof. Danny Chamovitz, Pennsylvania Native

AT THE SAME TIME, we are delighted to welcome and say shalom to Prof. Daniel (Danny) Chamovitz, who will become Ben-Gurion University's seventh president on the first of January, 2019. Prof. Chamovitz (pronounced Sham-avit) is currently dean of the George S. Wise Faculty of Life Sciences at Tel Aviv University (TAU).

Alex Goren, chairman of the BGU board of governors and a former AABGU president, says, "We believe

that Prof. Chamovitz is the right person to fill Prof. Carmi's very large shoes and that he will continue to improve BGU's already remarkable advances as a world leader in research and education. We welcome him and his family to Beer-Sheva and wish him success."

The American-born biologist hails from Aliquippa, a city in the Pittsburgh metropolitan area. He studied at Columbia University in New York City before making *aliyah* in 1984 and then

at The Hebrew University of Jerusalem, where he earned a Ph.D. in genetics. He did a postdoc at Yale University before accepting a faculty position at TAU.

When asked why he made *aliyah*, Prof. Chamovitz replied, "In short—to be whole. Growing up in a small town in the Rust Belt magnified the tension inherent in being an American Jew." He added that the reason he stayed is because "life in Israel is great; I can't

Continued on page 6

CELEBRATING ISRAEL'S 70TH AT BGU'S 48TH BOARD OF GOVERNORS



THERE'S NO BETTER place to mark the 70th anniversary of Israel than Ben-Gurion University of the Negev, our “home away from home” in Israel’s Negev desert.

Together, the American delegation to the 2018 Oasis of Innovation, along with friends from around the world, enjoyed three meaningful, action-packed days, learning from and connecting with BGU students, researchers and faculty; hearing about the latest ways the University is transforming Israel and the world; and recognizing fellow supporters who are securing Israel’s future through their generosity.

The inspiring opening plenary celebrated Israel’s first 70 years through video, dance, a sing-along, and a torch-lighting ceremony featuring seven representatives from various

fields that reflected how, as one torchlighter stated, “BGU is the definition of Israeli *chutzpah* that makes the world a better place.”

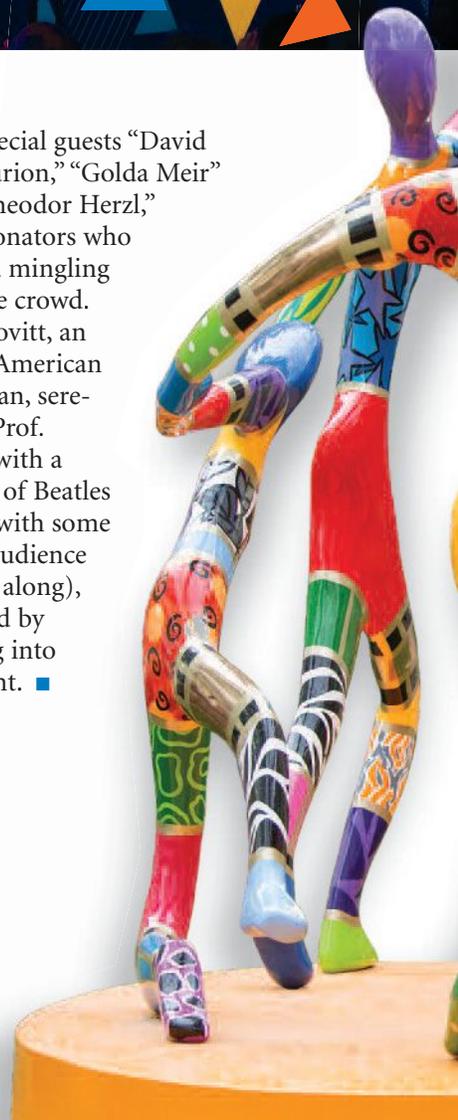
The speakers included Liat Tsoran, a student from BGU’s iGEM team which is working on a way to slow the progress of ALS (see page 17); Prof. Emeritus David Faiman, BGU’s original solar energy pioneer; Yifat Tubiner, a business development mentor at Inno-Negev, BGU’s technology accelerator; and Rachel Gur-Arie, a Fulbright scholar who made *aliyah* from the U.S. and is pursuing a Ph.D. focused on ethical disease prevention, to name a few.

Also at the opening plenary, we welcomed three American women and AABGU leaders — Rochelle Etingin, Donna Weiss Lam and Lite Sabin — as new members of the BGU board of governors.

Our journey concluded with a festive final night gala at the Dead Sea

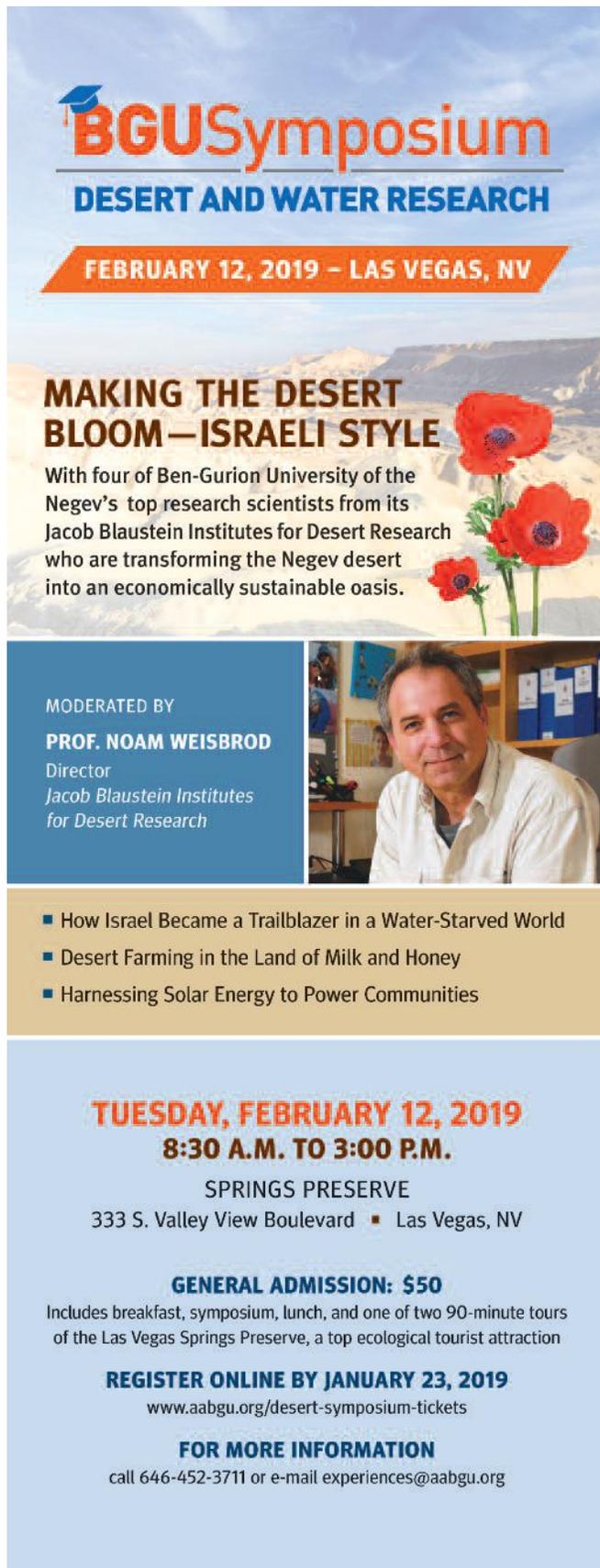
with special guests “David Ben-Gurion,” “Golda Meir” and “Theodor Herzl,” impersonators who enjoyed mingling with the crowd. Benji Lovitt, an Israeli-American comedian, serenaded Prof. Carmi with a medley of Beatles songs (with some of the audience singing along), followed by dancing into the night. ■

Top: An Israeli folk dancing troupe from the Negev kicks off the opening plenary session with a salute to Israel at 70.





1. The international delegation to the 2018 Oasis of Innovation proudly holds the Israeli flag handmade by Israel's "Betsy Ross," and flown from her window on the day the State of Israel was declared; it was recently donated by AABGU to the Ben-Gurion Archives. 2. Max Gitter is welcomed to the Ben-Gurion Society by BGU President Prof. Rivka Carmi. 3. Bringing laughs to the final night gala: impersonators "Theodore Herzl," "Golda Meir," "David-Ben-Gurion," and comedian Benji Lovitt as himself 4. Coby and Riki Dayan with "The Dancers" (after Matisse) by Israeli artist Dorit Levinstein, the outdoor sculpture they commissioned in honor of BGU President Prof. Rikva Carmi. 5. Marjorie Kaiz Offer and her late husband Daniel Offer z"l are inducted as new Founders by BGU President Prof. Rivka Carmi.



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With four of Ben-Gurion University of the Negev's top research scientists from its Jacob Blaustein Institutes for Desert Research who are transforming the Negev desert into an economically sustainable oasis.

MODERATED BY
PROF. NOAM WEISBROD
Director
Jacob Blaustein Institutes
for Desert Research

- How Israel Became a Trailblazer in a Water-Starved World
- Desert Farming in the Land of Milk and Honey
- Harnessing Solar Energy to Power Communities

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SHALOM TO BGU'S PRESIDENTS

Continued from page 3

imagine it being more enjoyable and fulfilling anywhere else." His sister made *aliyah* in 1977 and his parents shortly followed him.

While he has spent most of his adult life in the Tel Aviv area, his ultimate move to the Negev, he says, is long overdue. "My love for Israel, and also for plant sciences, sprouted during a gap-year stay at Kibbutz Ketura [slightly north of Eilat] in 1981. Back then, I thought my future was in the desert. Little did I know it would only take me 38 years to fulfill that destiny!"

Prof. Chamovitz is among the most prominent researchers in the field of plant science and is often invited to give lectures at leading universities worldwide. He is on the editorial board of several important scientific journals and has published extensively on developmental biology, computational biology and botany in peer-reviewed scientific journals. He is the founder of the Manna Center Program for Food Safety and Security at TAU.

His book, *What a Plant Knows*, has been published in 18 languages, was voted Top 10 on Amazon, and is often referred to in discussions on plant senses and intelligence. He has been interviewed in newspapers and magazines around the world and also on live media such as BBC, NPR and CBS, to name a few. He has given popular talks at venues such as the California Academy of Sciences, Harvard Arboretum and Seattle Town Hall.

Asher Heled, head of BGU's executive and search committees, said in an announcement, "The search committee was impressed by his academic stature in Israel and abroad. We believe he has the leadership skills, vision and the ability to lead significant processes of change and development, combined with proven academic administration experience. He is intimately acquainted with the higher education system and with trends in academic development in Israel and abroad."

Prof. Chamovitz is passionate about teaching and has been awarded "Outstanding Lecturer" at TAU several times. He volunteers as a teacher in a local middle school and encourages high school students to pursue careers in science. He has also been known to show up at obscure bars and clubs with a guitar in hand.

The president-elect is married to Dr. Shira Yalon-Chamovitz, who is dean of students and head of the Israeli Institute on Cognitive Accessibility at Ono Academic College near Tel Aviv. They have three children, ages 27, 23 and 17. His father, the late Dr. David Chamovitz, was one of the founders of the Aliquippa Hospital. His mother, Marcia, z"l, is recently passed. ■



WE NEED TO TALK ABOUT SOMETHING NEW

By AABGU CEO Doug Seserman

Excerpted from

THE JERUSALEM POST

WHEN THOUSANDS of diaspora Jews converge in Tel Aviv for the Jewish Federations of North America General Assembly (GA), there will be much to discuss. In fact, this year's ominous "We Need to Talk" theme is tacit recognition that the relationship between some groups of North American Jews and Israel "needs work."

This past year, many American Jews struggled with African asylum seeker deportations, escalating Gaza border tensions and a stagnant peace process. Nation-State laws, kotel prayer restrictions and Orthodox marriage regulations stretched democratic sensibilities in a Jewish country that some may consider are at odds with Jewish values. To be sure, these issues need to be discussed and addressed.

But there's a more positive conversation to have with those wondering what happened to the pioneering State of Israel that founding father and first prime minister David Ben-Gurion envisioned. After all, it was Ben-Gurion who said, "The State of Israel will prove itself not by material wealth, not by military might or technical achievement, but by its moral character and human values." Has that been diminished?

Quite the contrary. It is being reborn again—in Beer-Sheva and in the Negev desert—with the realization of David Ben-Gurion's prophesy that "the future of Israel lies in the Negev."

His vision of Zionism was that science, education and a moral compass were crucial for the Jewish state to survive and to be *a light among nations*. For those who are ardent supporters

and those who are straying from the tent, let's give them something to talk about. How about the Negev?

We can talk about how there is general agreement that the Negev—a vast, untapped region encompassing 60 percent of Israel's small landmass with only 10 percent of the country's population—is uncontested land that holds the key to Israel's future.

"Let's turn from what the problems are to why Israel matters. The Negev is a perfect place to start. Now that's a pioneering 21st century vision of Zionism we can rally behind."

— DOUG SESERMAN

And we can talk about how Beer-Sheva is the melting pot for Jews emigrating under the right of return who face special challenges that are met by students who opt to live among these families and mentor them as part of a community outreach program run by the university in Beer-Sheva that bears Ben-Gurion's name and shares his vision.

It is in the Negev that the major innovation for a thirsty world was developed. Desalination technology, constantly being improved, has created a surplus of water in Israel, quenched

a parched California and may help its neighboring Arab countries.

Too few are talking about the most vital real estate project for the future of Israel that is blooming in the desert. The Israel Defense Forces is moving its elite intelligence groups, including the prestigious 8200 Intelligence Unit, to new facilities in Beer-Sheva, to take advantage of the innovation ecosystem that includes Ben-Gurion University, its partnering Advanced Technologies Park, Soroka University Medical Center, and the city municipality.

Ben-Gurion University is building a new campus that will double its footprint in Beer-Sheva because it must meet the needs of this unprecedented growth in the region that will maintain Israel's security and ensure *tikkun olam* through technology and research.

Global companies acquiring technology and seeking to collaborate reinforces not only Israel's right to exist, but how Israel adds value to the world separate from what is happening within the Knesset or its borders.

In the Negev, the pioneering spirit of Ben-Gurion and Israel in its infancy is unfolding once again.

Let's talk about re-engaging those wandering Jews by changing the conversation from the negative to the positive. Let's turn from what the problems are to why Israel matters. The Negev is a perfect place to start. Now that's a pioneering 21st century vision of Zionism we can rally behind. ■

Read the full article at
www.aabgu.org/We-Need-To-Talk

STEVE HALAJ'S enthusiasm for Ben-Gurion University is a personal legacy of his father, Ivan Halaj z"l, and an important ingredient in the close relationship they enjoyed.

"My father personified the American dream to me," Steve says. "He came to the U.S. after the Holocaust with maybe \$100 in his pocket and a skill—how to fix things. Here was a guy without formal schooling or business background but with a real acumen for business opportunities. Always hard-working, hands-on, passionate about everything he did, including helping other people. The more financially successful he became, the more philanthropy he wanted to do."

Ivan Halaj (pronounced Ha-lidge) began his life in the U.S. by establishing an auto body shop, later moving successfully into the real estate business. In 1997 he created what would become the Halaj Foundation Scholarship Endowment Fund at BGU.

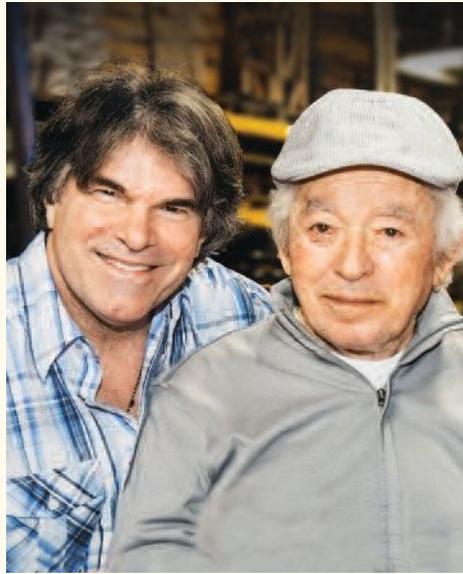
"He'd had maybe an eighth-grade education himself but was always wanting to learn new things," Steve says. "Education to him was essential, and he felt he could best contribute to the future of Israel by providing new generations with opportunities for a higher education."

BGU particularly resonated with the elder Halaj because of his admiration for David Ben-Gurion. As with many Holocaust survivors, he felt the leadership of Israel's founder symbolized the future for the world's Jews. Steve explains: "When my father learned there was a university in Ben-Gurion's name, it seemed like a perfect fit with his philosophy. The future is what the University is about."

Over the years the family has helped hundreds of BGU students with scholarships. In 1998 the Halaj Foundation was created and continues to support BGU as well as other Jewish organizations. Steve has headed the foundation since shortly after its establishment.

Steve tells the dramatic life story of his father—who passed away in July—with admiration. Ivan was born in Chust, a Czechoslovakian community, into a family of 10. Other than himself, only two sisters and one brother survived the war.

"As a teenager, he'd gone to a mechanics school. Because of this skill he was not placed in a concentration camp but put to work repairing vehicles. He was locked up at night and always guarded.



THE HALAJ FOUNDATION
PALOS VERDES, CALIFORNIA

FATHER TO SON: A SHARED LEGACY

"One night he overheard one guard ask another, 'What are you going to do with him when the Hungarian army retreats?' The first guard said, 'I'm just going to take him out and shoot him.' Somehow he escaped from that locked room," Steve marvels.

A family friend hid Ivan for a while; the Russian army conscripted him to work on a bridge and then vehicles; ultimately he became a soldier in the Czech army. When the war ended, he immigrated to Cleveland to join his surviving sisters. There he met his future wife, Vilma, and set up an auto body shop. Discovering California sunshine, the couple moved to San Pedro and Ivan continued his trade, establishing a new shop, Quality Auto Body.

Ivan's giving spirit came with him to his new home. "He was always helping others—the San Pedro community, Jewish causes, the local synagogue, the State of Israel," Steve says. Ivan had maintained contact with the couple

who hid him during the war and sponsored their relocation from Brazil to San Pedro, where he provided them with both work and housing.

Gradually Ivan moved his focus to a different endeavor—real estate. He began investing, often taking on properties no one else wanted. Steve, whose original work had been in government, decided to shift his own focus to real estate and began assisting Ivan. Today Steve continues to manage the business and has also become increasingly busy with philanthropy.

The Halaj Foundation contributes annually to BGU "for dorms, cyber security—whatever the University needs," Steve says, "but always keeping in mind the scholarship fund for needy, deserving students. I am proud to be carrying that on. I share my father's thoughts about BGU and the desire to help individuals who want to study at the University."

A special pleasure for Steve—as it was for Ivan—is to read the letters that come from students who benefit from the financial support. "It's fascinating to see how the opportunity impacts their lives," Steve says, "especially those coming from immigrant communities. They talk about how this tremendous opportunity is a dream they couldn't envision.

"It's a joy to hear about that and know we're enabling individuals to follow their paths to their future, and helping the State of Israel grow and prosper." ■

HOLLY AND JEFF ULLMAN believe that education is the paramount resource to nurture in Israel. “It’s giving Israel the power to resist the countries who want the land Israel is founded upon,” says Jeff, more formally known as Prof. Jeffrey D. Ullman. “But ultimately it’s about the idea of ‘soft power’. When a country is viewed as an intellectual leader in science and technology, you want to be friends with it. Universities are a key ingredient in developing this soft power.”

Building a great educational system requires support from outside Israel, Holly adds. “We want to see Israel flourish as a place for vibrant activity. It’s satisfying to contribute to this cause.”

The Ullmans’ interest in supporting Ben-Gurion University developed so gradually that they find it hard to pinpoint the beginning. Jeff, an internationally renowned computer scientist, Stanford University professor emeritus, and author of 19 seminal books, was invited to speak when BGU’s Department of Computer Science was dedicated in 2000.

The connection grew with ongoing communication from, and involvement with, AABGU’s Northwest Region. The Ullmans were open to learning more about the University because it aligns with their shared interest in developing the Negev as well as education.

“Both of us want to see the region turn into a viable place,” Jeff says. “You can’t know where the borders of Israel will be in the future, so we want to see this huge territory put to use.”

In 2004 Google made its first public offering of stock. The Ullmans benefited as investors. One of the company’s co-founders—Sergei Brin—had been Jeff’s student at Stanford. This sudden influx of money led them to think more seriously about contributing to BGU, whose location struck a further chord: Its desert environment echoes that of the Silicon Valley, where they have made their home and careers.

Jeff stayed in touch with BGU’s growing computer science department. In consultation with Prof. Shlomi Dolev, the department’s founding chair, the Ullmans agreed to establish the Martha and Solomon Scharf Prize for Developing Excellence in Computer, Communications and Information Sciences. Jeff also continues to supply personal support as a research advisor and periodic lecturer



HOLLY AND JEFF ULLMAN
STANFORD, CALIFORNIA

NURTURING EDUCATION IN THE NEGEV

to the department. In recognition of his world-renowned expertise in database theory, the University presented Jeff with an honorary doctorate in 2016.

Recently the Ullmans decided to establish a \$1 million chair in computer science, designating the funds for a new computer science building on the North Campus. Holly is a member of BGU’s board of governors.

Since retiring from Stanford in 2002, Jeff has remained involved. He has worked with commercial computer enterprises, is a valued speaker, consultant and member of advisory boards, and helps tech innovators start companies.

After the couple’s three sons were grown, Holly pursued a lifelong interest and obtained a law degree. Today she is a busy family lawyer who helps women, and occasionally men, obtain fair treatment in divorce. She takes a special interest in custody issues, making sure that the

children’s needs and feelings are taken into account. Many of these cases she takes on pro bono, especially when one party has been the victim of domestic abuse.

Some of her work seems particular to Silicon Valley. A number of women come to the area, sometimes from other countries, brought by husbands who work in the tech sector. A husband then may abandon the family, hoping the wife will lose her visa status and have to return to her home country.

“Holly has made sure a number of these women receive support from their husbands, and often they are able to get a visa on their own,” Jeff is proud to report.

The Ullmans visit Israel regularly and are happy that a granddaughter has decided to live and work there for a year after graduation. “For us, it’s satisfying to contribute to Israeli causes,” Holly says. “It’s important for both of us to see Israel thrive and we’re happy we can support that.”

Jeff notes one more reason for his high regard of the University: “BGU is becoming a destination university for foreign students and this is very good for Israel. When these young people move on to the U.S. or elsewhere, like one postdoctoral student from India I know, they speak out against anti-Semitism and defend Israel from haters at every opportunity.” ■

AN ARTIFICIAL REEF FOR FISH AND DIVERS

PROF. NADAV SHASHAR wants to change a common assumption: When you have people and nature coming together, nature loses. But does it always have to?

“I’m not in favor of eliminating humans,” Prof. Shashar muses. “Therefore, I’m drawn into the idea that we can’t let things stay the way they are. In general, the world does the same old thing and we hope things will go better, but in the marine world they don’t.”

One arena where nature has steadily been losing is the coral reef. Growing hordes of divers, photographers and nature lovers are contributing their share to a worldwide deterioration, amplifying the effects of pollution and temperature changes. Formerly colorful reefs become “bleached”; resident marine life dies or moves out; vital fish nurseries vanish.

In 2007 Prof. Shashar moved from The Hebrew University to Ben-Gurion



Prof. Nadav Shashar

University of the Negev to open the Marine Biology and Biotechnology Program on the Eilat campus. “It was exciting to create the only program in Israel to study biology in the marine environment from the highest academic viewpoint,” he says. Today, 50 bachelor’s, master’s and doctoral students study there annually. The program’s goal is to equip future researchers and resource managers with a broad understanding of the biology and physiology of marine organisms and the ecological processes that structure marine communities.

In collaboration with Jordanian scientists and students, Shashar’s team began working a dozen years ago on a project that would test a number of their pet theories: It involved building an artificial reef for the Red Sea.

“The thinking is that if we want to have people visit and see nature in large numbers, we have to find an alternative to the most pristine and sensitive places. I’ve spent thousands of hours underwater myself, but I may still break a coral.”

Because Eilat hosts a quarter million divers per year, it was essential to protect the reef without denying visitors the firsthand experience that leads them to care about, and preserve, these fragile resources.

After a few years of study, the Tamar Reef was built and settled on the ocean floor. It contained corals cultivated from small fragments developed in nurseries and Shashar’s lab but offered a substantial bare-bone structure for natural corals and animal life to inhabit. The experiment worked, three times faster than Shashar expected. “It’s flourishing,” he says. “The coral has been growing naturally and the fish are coming.” Studies show the BGU-built reef is successfully drawing people away from nearby natural reefs.

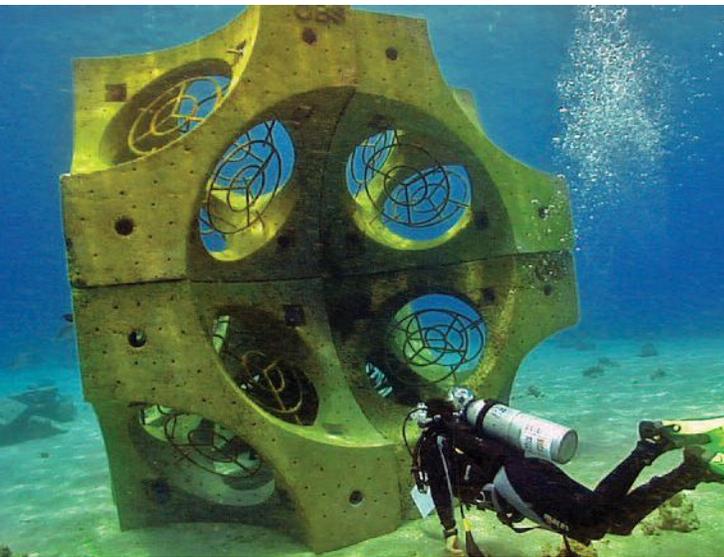
“We planned a lot, and we hoped we knew what we were doing. But we were surprised to find out how many small fish were ready to settle in our reef. We’d been afraid of drawing fish away from the natural reefs. But it was amazing how many fish larvae are swimming along looking for an opening—and in they go!”

Ordinarily only a tiny percentage of these future fish survive, he explains,

Top: Eleven years after installation in the Red Sea, the artificial reef Tamar is thriving with living coral and attracting both fish and divers.

because in natural settings the oceans offer limited reef space. Without places to harbor, most larvae are eaten within a few weeks. “When you open a new space, you give them a chance to survive and do better.” This is important because it’s estimated that 80 to 90 percent of the global fish population has been lost to over-fishing, so in opening up new safe places for the fish to grow up in, “we may get more fishes afterwards. The reef changed our understanding of fish larvae dynamics.”

Even more surprising to Shashar was that large fish are also attracted to Tamar. “We thought we were building a place for small fish but found groupers three to five feet long. They move into small crevasses they can hardly fit into, then stay around. I thought there’d be a separation of predators and prey.”



Tamar after initial installation 11 years ago: The material is a special mix of concrete with a highly porous surface that prevents sand from accumulating and offers hiding places for fish. The configuration allows high flow and safety for divers.

Another surprise: “I did not expect that photographers would pose a threat to Tamar. But they are very determined people and will risk injury to get a picture and may cause damage. So now we must find a way to give them good photo ops, under control.” He’s also been intrigued to see that while the reef’s fish hide at first, they appear to get used to people. This suggests more close-up experiences for future divers.

Shashar now focuses on supporting conservation programs to help them become self-sustaining locally, rather than needing to depend on outside temporary specialists. “We’re trying to figure out a way to make tourism an engine for restoration. We need an economic base for conservation — it’s not so simple but it’s realistic: Money talks.

If you can get money into the equation on nature’s side, then nature has a chance.” Shashar runs projects along these lines in Australia and Honduras as well as Eilat. In Honduras, where he is currently on sabbatical, Shashar is working on a different aspect — anticipating future damage.

“The coral reef in Honduras is doing fine, but the goal is to prepare, so once damage does occur, we’ll be able to go in and fix it immediately.” He works with local associations and dive shops, which will be ready to continue after his year there is up.

Shashar also continues his research as a sensory ecologist, pursuing projects on communication, perception and problem solving, particularly among the cephalopod family — octopus, squid and cuttlefish. Cephalopods navigate in three dimensions, in contrast to humans, he says, who typically function in two. For example, when a person walks down a corridor and encounters an object in the way, he

will circle around it. But a cephalopod will move above the object to observe its height and, when possible, continue in a straight line above it.

Shashar looks forward to using a new lab that will benefit both his research and the local school system. “We’re getting high school students involved in sciences like hydrodynamics — it’s the first time we’ve used them for lab work, and they are very good!” ■

WHEN DOLPHINS SCHMOOZE

PROF. NADAV SHASHAR’S TEAM

operates a lab at the Dolphin Reef, an Eilat tourist attraction that maintains five semi-captive dolphins able to go in and out of the facility. A student has been recording the dolphin chitchat and the playback has been enlightening.

When dolphins communicate, explains Shashar, they use an individual signature whistle. “If they’re far apart, they can’t see each other so it’s a way to let other dolphins know who’s speaking.” The mammals introduce themselves with their personal whistle when meeting a new dolphin and call each other by the same whistle when they want to communicate. And, because their exchanges include the whistles of dolphins who are not part of the conversation, they appear to gossip about each other.

Recently the scientists were startled to find that the dolphins also keep mentioning the names of dolphins who have died or been relocated.

“We’ve recognized the signature whistles of four dolphins no longer here. We don’t know what the dolphins are saying, but we know of no other animal that talks about dead individuals, and sometimes a long time afterwards. This raises all kinds of questions about memory, social structure, the differences between animals and humans.”

The team will experiment with playbacks of recorded signature whistles, but will not use the voices of animals no longer living to avoid panic and confusion.





CONNECTING THE PLANET'S PAST AND PRESENT FOR OUR FUTURE

OUR PLANET IS 4.6 BILLION years old. We know that because scientists “read” the rocks, study fossils, and examine the landscape above ground and under the ocean. If you think that piecing together the earth’s history sounds like dry and dusty work disconnected from life as we know it, you need to meet BGU’s Department of Geological and Environmental Sciences.

This relatively small but growing department houses 10 faculty members with different specializations. Two more will be added this year. With the help of their students—150 undergraduates and 50 master’s and doctoral candidates—the researchers work to answer questions that relate to today’s big-picture issues: how to assess the impact of human activity on the planet, protect plant and animal life, predict catastrophic natural events, and find the resources our modern life depends on.

“This basic science is rarely taught in high schools,” says Prof. Yaron Katzir, head of the department, “but new students keep coming.” In addition to those who want to know how the Earth works, they’re interested in sustainable water and energy sources, gas and oil

exploration, geological engineering, conservation, security, and restoration.

Geologists, Katzir says, are the best scientists for facing the threat of global climate change. “We know the Earth’s past climate, the extremes, what has happened and can happen, and we have the tools to see where we’re headed.”

“The past is the key to the present—but the present is also the key to the past.”

— PROF. YARON KATZIR

Essentially, geology remains a basic science in which knowledge is pursued for its own sake. Faculty members’ work varies in its immediate relevance, and some say they are surprised at the practical applications already materializing from their research.

The geology department was founded in 1971, one of the University’s firsts. Its connection with environmental

studies evolved as concern for the Earth’s resilience grew. The department’s name was changed to include the environmental component in 1997, creating a combination that is rare among universities.

The department encourages dual degree programs to combine geology with other disciplines such as structural engineering, life sciences and computer science. Most recently, a Master of Science track in oil and gas geology was created to address an observed need. Israeli geologists had long believed that the Levant Basin should be explored for fossil fuels, but because the expertise and finances were unavailable, an outside company came in to do the work and reap much of the benefit.

“Few Israeli geologists were involved because we lacked the education,” Katzir says. “We decided we can’t leave such a gap, so we’re bringing in outside faculty and industry people to develop a gas and oil degree program.”

Today’s geology involves a unique interplay between understanding the past (as counted in billions of years), observing today’s world, and predicting what it portends for the future.

“The past is the key to the present—but the present is also the key to the past,” Katzir says.

Each faculty member focuses on a different point of a broad spectrum. One investigates the processes that produce methane, a very significant greenhouse gas. Others study fossils, relevant because we are now seeing the extinctions of species, an event that occurs large scale every one or two hundred million years.

Prof. Yossi Hatzor, who led the department from 2013 to 2017, is an engineering geologist and tunneling specialist. This knowledge is instrumental both to big infrastructure projects, such as the high-speed railway from Tel Aviv to Jerusalem now under construction, and in developing technology to deal with the tunnels Hamas builds from Gaza into Israel.



Prof. Yaron Katzir

THE STORIES ROCKS TELL

Prof. Katzir himself is a “classic” geologist: “My main motivation is to understand the story that the rocks tell us about Earth tectonics.” In his Oxygen Isotope Lab, he investigates isotope ratios of minerals from hard rocks such as igneous and metamorphic rocks in order to learn about high-temperature processes in the Earth’s interior.

These rocks have crystallized from hot magma or metamorphosed under high stresses in Earth’s deeper crust and upper mantle. “We look at thin sections under the microscope to see the textures, identify the minerals and understand the relationships between different rocks.

This tells the story of the rock, and hundreds of samples let you tell a more complete story of the terrain.”

Recently Katzir has been investigating copper mines in Southern Israel near Eilat, where modern processing follows in the footsteps of ancient mining. “Thirty-five hundred years ago our ancestors knew how to mine and refine copper and melt it for use. This was huge progress for mankind—the Bronze Age was dependent on it.

“As geologists, we ask, how did the copper get into the rocks, and when? Why do we find it in an ancient sandstone branch stream? Why is so much copper entrenched in sedimentary rock, deposited from an ancient sea? How did it get into the sea and to the bottom at a specific time in Earth history? In general: How does mineralization come into being?”

Katzir agrees that the usefulness of such research is not obvious nor need it be, he says. “Basic science is not applied,” he emphasizes. “Why is it important to know more? Because it’s interesting. Pure curiosity drives science, not profit. In 1905, when Einstein made discoveries about the photoelectric effect [the emission of electrons when light shines on a material], nobody dreamed that in 60 years the idea could become so enormous. You never know when basic science becomes applied science—the connection between the two is sometimes hard to explain.”

The geologist’s big contribution, Katzir believes, is “to go through huge tracts of time and try to translate this to the small changes we see on a day-to-day basis.” Knowledge proceeds in small steps, he says. “Then someone makes a big jump. Then more very small steps.

“I hope someone here will make a big jump someday—and I believe it will happen.”

TECTONIC PLATES AS TIMELINES

Dr. Roi Granot is fascinated by tectonic plates—massive slabs of dense rock under the Earth’s surface that change over time and move against each other. There are approximately 50 plates, he explains, ranging in size from more than 621 million square miles on down. How they change over time—meaning hundreds of millions of years—shapes the Earth as we know it: the oceans, continents, mountains. Plus, the course of earthquakes, volcanos and shifting riverbeds, as well as the location of oil and gas, minerals, methane, and just about everything else.

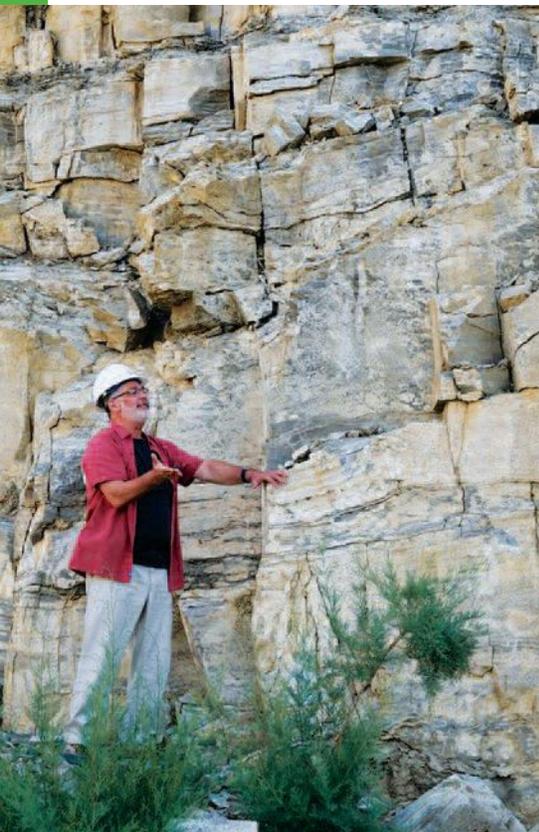
“Reconstructing the speed and direction of the tectonic plates is the most fundamental kind of knowledge,” Granot says. “It provides the framework to understand the chemistry of the atmosphere and ocean currents that dictate past and present climate. And it influences the migration of animals throughout history, how sea levels change, how ice forms in the Antarctic. The list goes on.”

But the tectonic plates under the Earth’s surface are for all practical purposes inaccessible. Researchers therefore try to decipher past plate movement by studying the ocean crust.

This is in itself challenging because the ocean floor



Dr. Roi Granot



Prof. Yossi Hatzor, the Dr. Sam and Edna Lemkin Professor of Rock Mechanics and former head of the Geological Environmental Sciences Department, leading a field trip to the open-pit gypsum quarry at Makhtesh Ramon for the course “Geological Mapping.”

may be covered with miles of sediment and water. Consequently, a primary research technique is to quantify the plates’ movement by measuring magnetic anomalies.

These variations occur due to the way the ocean crust is formed: The rising and cooling of hot magma under mid-ocean ridges leads the magnetic particles to acquire magnetization parallel to the Earth’s magnetic field. “The rock records the temporal variations of the Earth’s magnetic field over time, thereby creating a unique barcode that provides a time stamp for the process of crustal formation,” Dr. Granot says.

Data is collected with magnometers towed by large research vessels. A two-year project completed in 2014 demonstrates what this technique can reveal. During four research cruises, Granot and his team towed magnetic sensors to map

4,300 miles of the sea floor in the Eastern Mediterranean between Israel, Greece, Turkey, and Egypt.

Scientists have long debated whether this little-studied ocean floor was the edge of the African continent or an ancient oceanic crust. Analyzing the data showed not only that the sea floor was in fact made out of oceanic crust, but that the Eastern Mediterranean is by far the oldest known ocean. “I was quite shocked,” Granot says. “It’s somewhere between 360 to 260 million years old, and the ocean closest in age is 180 million.” The discovery was published in the monthly peer-reviewed journal *Nature Geoscience*, garnering wide media attention.

**The Eastern Mediterranean
“is somewhere between
360 to 260 million years
old, and the ocean closest
in age is 180 million.”**

— DR. ROI GRANOT

“It’s a piece of the tectonic plate puzzle that helps you make sense of the rest. It tells us how the region evolved and relates to present-day seismic risk in the area, the potential for finding gas and oil, and a lot more.”

Currently Granot is continuing the research in Antarctica that he began as a Ph.D. student at California’s Scripps Institution of Oceanography. “Almost all of Antarctica is covered with ice so we know almost nothing about its geology—we know more about the moon and Mars! The main way to study its tectonics is to investigate the ocean crust surrounding it.”

His newest data shows how East Antarctica has moved relative to the western part, producing the Transantarctic Mountains, one of the longest mountain chains on Earth. This motion stopped completely 11 million years ago and the plates have been unified ever since.

The tectonic plates are connected across their boundaries, and therefore their evolution of motion produces a chain reaction. Antarctic’s geologic history has affected geological events all the way to California. The new knowledge helps explain the events that shaped its geology, including the San Andreas Fault and the Basin and Range Province, the area that comprises much of the western and southwestern U.S.

The study of plate tectonics just celebrated its 50th anniversary, making it a young theory; its potential grows dramatically as new technologies are applied. “Everything has changed,” Granot says. “We have instruments and opportunities to investigate issues we were never able to study before. Satellites, ship technologies, sensor technologies—we’re using all these to study plate tectonics and we’re incorporating geophysics and geochemistry. We’re gaining whole new perspectives of our planet.”

Granot notes that 30 years ago, researchers collected magnetic measurements by writing the values on paper, one by one, and plotting them on a graph. “Now every sensor takes 100 measurements every second so I get around 10 million measurements an hour. After the cruise it takes the computer just a few minutes to process all the information collected.”

Granot hopes for more expeditions using the big ships and icebreakers needed to carry the different sensors—



Foraminifera shells from the Red Sea reflecting their great variety. These are in the one millimeter range. Photo: Dr. Shai Oron

and more. “My goal is to fly the most advanced sensors on airplanes, which is much cheaper per mile of data. But this takes some development—we’re not there yet.”

Meanwhile, he is embarking on another unique opportunity: His team just won funding to study magnetic data collected by the U.S. Navy via 70 across-the-globe flights.

COMPUTING THE EARTH’S SECRETS

“I want to understand why the Earth looks the way it does—how the patterns we see in the landscape were formed,” Dr. Liran Goren says. As a geomorphologist, she explores how the Earth evolved by focusing on its surface rather than what lies below.

Dr. Goren’s interest in geology was piqued by what she saw as a hiker. On a whim, she also looked into computer programming and ended up with degrees in both disciplines at BGU. With this dual background she analyzes topography—mountain ranges, river valleys and drainage patterns—and the forces that shaped them: tectonic forces that uplift the surface and climatic forces like precipitation, snow and ice.

She also studies granular dynamics. Many geologic systems such as soils and fault gouges are made up of grains torn from the interface of sliding blocks of rock. The strength of these layers of grain determines the potential for earthquakes.

Goren began as a theoretician, trying to describe the processes with mathematical equations. “But to solve the equations you need to write computer codes and do simulations. Then you can describe the process over time.”

To know how a specific topography has evolved, for example, a number of equations are used to represent the interactions between the rate of erosion, the variability of slopes, and the changes in the tectonic and climatic forces that

act on the landscape.

Until recently, Goren found herself spending all her time at the computer, working on such puzzles. Now she collaborates with other geologists and students doing fieldwork and modeling. “Making observations yourself is much more exciting.”

Goren is already recognized as a leader in creating numerical models of landscape evolution. Among her honors, she was selected as an “Outstanding Early Career Scientist” by the Geomorphology Division of the European Geosciences Union in 2018.

“I want to understand why the Earth looks the way it does—how the patterns we see in the landscape were formed.”

— DR. LIRAN GOREN

She is clear on her goals: “The questions I choose to explore are motivated by my desire to understand how the Earth works.” Some of her research holds promise in predicting the potential for catastrophes like earthquakes. “We can infer from the landscape the existence of tectonic forces and their long-term effect,” she says. “This lets us identify active zones that could be prone to earthquakes and may be the only way to find the faults over which earthquakes occur.”

Currently, Goren concentrates on the fluvial network, especially the processes by

which rivers and tributaries are “captured” or “pirated” to flow in a new direction. “The drainage pattern we see today is completely different than it once was. People generally don’t appreciate how dynamic the landscape is.” That is, of course, in context of millions and perhaps tens of millions of years.

To study river reorganization and geodynamics, Goren is developing an innovative tool that she is excited to begin using. “It’s like a sandbox, but it’s filled with silica powder, and it will help us create mock landscapes and experiment with their evolution.”

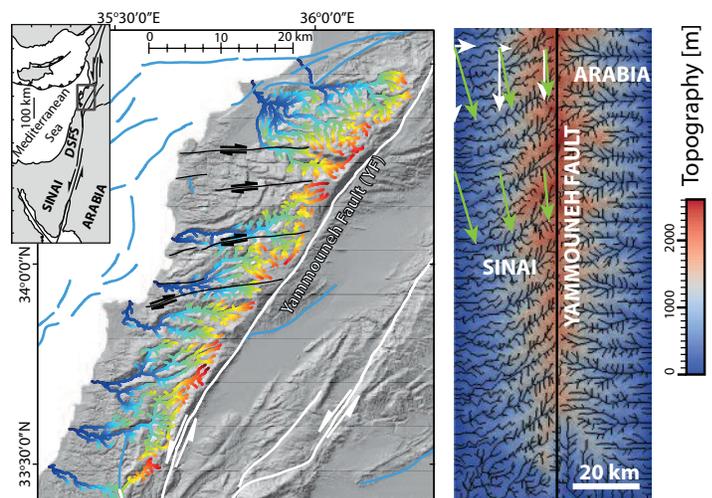
WHAT ANCIENT ONE-CELLED CREATURES KNOW

Prof. Sigal Abramovich’s Forams Lab, more specifically known as the Laboratory for Foraminiferal Research, focuses entirely on a one-celled creature that few people have heard of. *Foraminifera* have been the planet’s most abundant form of sea life for millions of years. Happily for researchers, after a one-month lifespan, they leave behind an enormous trove of miniscule fossils for scientists to study.



Dr. Liran Goren

When a river crosses a tectonic plate boundary it is expected to bend. This model shows that rivers draining the west flank of Mount Lebanon flow diagonally instead of taking the shortest route to the Mediterranean, indicating a complex plate motion that may have implications for earthquake generation in the region.



Mount Lebanon drainage system

Computer simulation showing rotated rivers



Prof. Sigal Abramovich

These shells range from microscopic to some large enough to be seen by the naked eye. They are preserved in very ancient sediments and rocks, enabling geologists to determine the rocks' age. "Various species had their own evolutionary time range, such as a few hundred thousand years," Dr. Abramovich says, "and we can tell exactly which period each belongs to and its exact age within that period."

Abramovich became captivated by forams while earning her Master of Science degree in the department that now employs her. "I thought, they're really cool and I have to work with them." She moved on to a doctorate in geology at Princeton, becoming one of the world's relatively few micropaleontologists.

"How some species of forams have changed over time tells us how the environment changed," she says. "Their response to differences in an ocean's temperature, pH and salinity makes them extremely sensitive indicators of environment and climate." She focuses on both living foraminifera from the Eastern Mediterranean and the Red Sea, and on fossil species from the Cretaceous period, up to 66 million years ago, when the dinosaurs became extinct.

Deciphering the forams' tell-tale message in the Mediterranean is significant well beyond academic circles.

"We've got organic sediment and the source rock for oil there. Analyzing the forams provides much more accurate knowledge of when these sediments

were deposited and how deep you must go to reach the richest part, where the oil is." Oil companies come to work with Abramovich's lab, an application that continues to surprise her: "No way did I expect the work to be practical!"

In the last few years her research has taken an intriguing path that holds further "real-world" potential. "When I started, the field was dominated by geologists working with fossils, as they have been for 150 years. But along with a few others, I thought, why not study living forams?" To do this, her team collects foraminifera and cultivates them in the lab.

"How some species of forams have changed over time tells us how the environment changed... [They are] extremely sensitive indicators of environment and climate."

—PROF. SIGAL ABRAMOVICH

Abramovich finds that beyond providing a unique way to study Earth's marine history, forams may have a good future as monitors of today's environment and the ways it changes.

For one study, her Ph.D. student Danna Titleboim collected regular samples from a coastal area with factories and power plants, then analyzed each shell. "They showed distinct signs of pollution—lead, zinc, manganese. These minerals had been overlooked by the usual monitoring, which is done sporadically and can miss pollution that lasts only a few hours. Forams shells calcify on a daily basis, and they only live a month, so they record the release of heavy metals even at low concentrations."

In another experiment, Dr. Shai Oran, a former Ph.D. student, used forams to investigate the aftermath of a fish farm closure in Eilat. The fish cages had been operated for 20 years, but eight years ago the government declared them a pollution source and shut them down. It took almost a year for the ocean floor to become "ventilated" and signs of life to appear, which surprised Abramovich. "But even more surprising, the new foram inhabitants were a species we didn't expect to see. We thought it was

Continued on page 35



Dr. Roi Granot's team, deploying a magnetometer sensor from an icebreaker to investigate tectonic plate activity on the ocean floor



STUDENT COMPETITIONS BREED REAL-WORLD ENTREPRENEURS

“TIMES ARE CHANGING,” says Dana Gavish Fridman, vice president of entrepreneurship of BGN Technologies, which works to translate University discoveries into businesses. “The academy’s role in research and creating theory remains as important as ever, but it’s also expected to give students practical tools so they are ready for the real world.”

“Readiness” for today’s complex career place dictates a need to work well with others—specifically, by teaming with people of different disciplines, skillsets and viewpoints to accomplish goals. Employers across the board demand this skill. Teaming is also core to successful entrepreneurship, a national concern for Israel. Although Israeli researchers achieve important breakthroughs in many arenas, too often they have failed to create sustainable enterprises based on their discoveries.

At BGU, strategies are being put in place across departments to create more teaming opportunities and raise awareness of their value. “There is huge support from the faculty,” Gavish Fridman

observes. “So many ideas are coming from BGU research that there’s a feeling many of them could mature into successful businesses. We want to see that all students across faculty lines have the opportunity to build entrepreneurial skills and be exposed to everything that teaches them how to think like businesspeople.”

Gavish Fridman, who came to BGU last year with a background in technical transfer, is working to connect entrepreneurial activity in all corners of the University and tell the larger world about what is

happening. Part of this effort involves creating communication systems “to make sure the various groups talk to each other more.”

The Bengis Center for Entrepreneurship and Innovation, operated by the Guilford Glazer Faculty of Business and Management, has just introduced a three-session course called Startup 101, available to students in every discipline.

Many of BGU’s young people, such as the examples that follow, are already involved in competitive team projects

that offer firsthand, collaborative experience in meeting market-place challenges.

TARGETING AN INCURABLE DISEASE: ALS

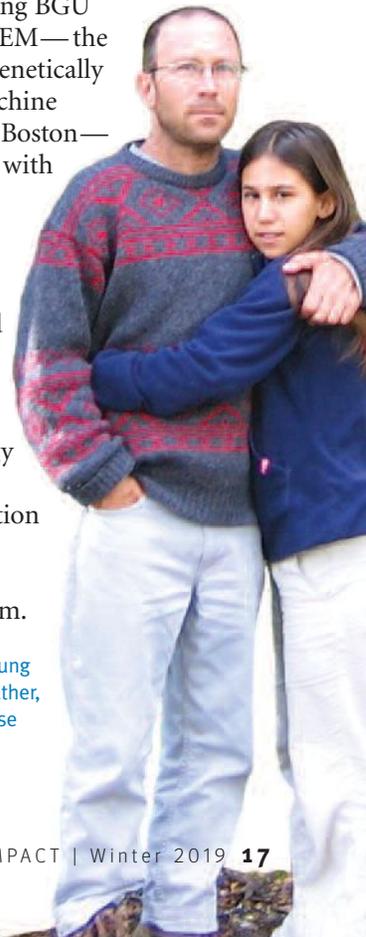
In late October, a nine-student team representing BGU competed at iGEM—the international Genetically Engineered Machine Competition in Boston—and came away with a gold medal.

Nearly 6,000 students from around the world presented projects using tools in the new field of synthetic biology to devise an innovative solution for a medical, environmental or social problem.

Liat Tsoran as a young girl with her late father, Nir Tsoran z”l, whose illness inspired her research.



Dana Gavish Fridman





Standing left to right: Prof. Lital Alfonta (co-advisor), Sagi Angel, Mor Pasi (team leader), Liat Tsoran, Avital Bailen, Daniel Deitch, Einan Farhi, Mor Sela **Sitting:** Dror Aizik (instructor and M.Sc. student), Ori Tulchinsky, Nitzan Keidar, Dr. Ramon Birnbaum (co-advisor), Eden Ozer.

For Liat Tsoran, a third-year biology student in the Department of Life Sciences, choosing the right project was easy. When she was 11, her father, Nir, was diagnosed with ALS—also known as Lou Gehrig’s disease (or, more formally, Amyotrophic Lateral Sclerosis).

“At that time no research on ALS was being done in Israel at all,” Tsoran says. “My dad created an organization to support patients and decided the cure should come from Israel. He gathered doctoral students and researchers and talked to them, convincing them to study ALS and the other nerve diseases.” When he died, two research labs had been established; Liat worked in one of them for three years.

The BGU team members came together from chemistry, biotechnology engineering, medicine, and the life sciences, and voted to pursue the ALS project under the name OriginALS. Their goal is ambitious: to slow down the disease’s progress.

“ALS is a complicated disease with no cure,” says Mor Pasi, team leader and fourth-year biotechnology engineering student. “Virtually all the research has focused on finding a cure, but our goal is to slow down the disease’s progression and we believe this is more achievable.”

The team hopes to develop a new therapeutic application that will pro-

long survival of the motor neurons that ALS progressively destroys. Ordinarily several types of cells nourish and support the motor neurons. In a healthy

“It’s important to create doctors who know how to work with entrepreneurs, and economists who know how to work with engineers.”

— SHIR MILSTEIN, MEDICAL STUDENT

brain, one set of cells, the microglia, acts as the central nervous system’s main immune defense. They scavenge for damaged neurons and plaques that accumulate to clog the system.

A second set of cells, the astrocytes, plays a role in repairing the nervous system and transmits messages among its cells. Under disease conditions the astrocytes become toxic and signal the microglia to destroy the motor neurons.

“By targeting these two cells we believe we can increase survival of the motor neurons so the disease doesn’t progress so fast,” Tsoran says.

“I got a lot of experience planning long-term experiments,” says Pasi, who hopes to begin a Ph.D. program

in biotechnology next year. “Getting to work with different tools and using mammalian cells has been really exciting. And we learned how to write and build a presentation for a conference.”

In fact, the team organized the conference in cooperation with ALS Israel. The members hosted more than 100 researchers from all over Israel and received “really good feedback about our approach and milestones,” Tsoran says.

The team members plan to continue their research together and believe their discoveries will apply to other neurodegenerative diseases as well as ALS.

The effort is especially gratifying for Liat Tsoran. “I feel like I’m continuing my father’s work from my own direction. He was a high school teacher but his subject was not biology. The research in Israel today is because of what he did. So, to be part of this is very special for me.”

IMPROVING ONLINE SERVICES FOR CARETAKERS

Like Liat Tsoran, Shir Milstein thought about a family problem when it came to choosing a topic for the BGU/Google competition. “Students Innovating in the Public Sector 4.0” challenged student teams to help government services function more effectively by designing new technology applications.

“My grandma is currently being taken care of by my mother and her sisters every day,” explains Milstein, a first-year student at BGU’s Joyce and Irving Goldman Medical School. “They have all kinds of trouble with handling medication and communicating with the government office and the different agencies to get help. I felt it was a common problem.”

The cross-disciplinary team he headed agreed to address the disconnect between government services and the needs of the elderly and their family caretakers. They named their project AppOptropus, which reflects the concept of guardianship in Jewish law, *apotropus*. Along with 33 other teams, the four team members developed a proposal to help a specific government agency. They qualified as one of five

projects selected for development.

The students worked with the Office of the Administrator General in the Justice Ministry and in collaboration with the staff of the Fighting for Long-Term Care Patients organization. After a full semester of work and frequent meetings, a one-stop platform materialized for caretakers to manage paperwork and day-to-day care of their dependents, plus an information database about rights and responsibilities.

AppOtropus took first place in the competition.

“The ministry wants to keep working with the students to further develop the system,” says Milstein, who with his fellow teammates welcome the opportunity.

“I met a lot of really nice people and saw that they’re doing what they do because they want to help people and make their lives better. Our team wants to keep going with the idea, and we also want to work with each other in the future.”

The project expanded Milstein’s personal horizons as well. “In the beginning I talked to my family and then interviewed more people to understand whether we’d be filling a real need. I learned that to market an idea to other people, you need to do a lot of checking to be sure

it’s really needed—my earlier ideas weren’t so good. Then we needed to learn to work as a team, not only to develop our ideas but to present them.”

While he doesn’t envision becoming an entrepreneur, Milstein does recognize a role for the way of thinking he learned. “I see that you can think of ideas in everything you do—for me as a doctor, and in other parts of my life too: Find a problem; understand the need; try to solve it.

“Ideas can come from people who aren’t engineers or programmers. For instance, it’s important to create doctors who know how to work with entrepreneurs, and economists who know how to work with engineers. Knowing as a doctor how to work with technology people could be a big advantage for me.

“This collaboration is what makes ideas happen and it’s where BGU wants us to go.”

RACING TO BUILD A COMPETITIVE CAR

“BGRacing started in 2006 when a few crazy mechanical engineers decided to enter a Formula SAE competition,”



In the workshop: Lital Ben Shitrit (left), new BGR team leader, with Roni Behagen, who is in charge of design and production of the wheel system. Both are mechanical engineering students. Shown is the 2016 electric car.

explains Alon Asherman, the 2018 project leader and a graduating mechanical engineering student himself. Since then, BGU students from a number of disciplines have joined forces to collaborate on a mind-boggling challenge: to design and build a working car from scratch. “We operate like a startup company,” Asherman says.

SAE, originally known as the Society of Automotive Engineers, began sponsoring events in 1971 as a way for the industry to close the gap between classroom theory and the practical world.

It took a series of volunteer teams three years to build BGR’s first successful combustion car, which must be created with parts that are either readily available or made by the students. This is especially tough because unlike teams from countries like Germany and the United States, Israel lacks a strong auto industry to sponsor and support the work.

A few years ago, the team decided to build an electric car as well as a combustion model. Competing in Italy, the more traditional car placed an impressive eighth. The electric car? “It drove okay,” Asherman says, “but in the middle of the competition it overheated and burned. Still, we felt it was strong enough to keep building.”



BGU’s winning team AppOtropous. **Bottom row:** Amit Turner, computer engineering; Roi Hershkovitz, software engineering; Rotem Baruch, mechanical engineering; Shir Milstein, medical school; **Top row:** Judges Ami Palmor, Shimon Shmueli, Dana Gavish Fridman, Yogev Shamani, Dror Margalit

Asherman became a team member in his second semester, initially contributing to sales and marketing. He later joined the suspension team, and as overall project leader this year, heads a 60-student team with tightly coordinated sub-teams focused on suspension, chassis, wheels, aerodynamics, battery system, and more. His motivation was personal.

“I love the car very much,” Asherman says. “It’s my passion. I tell people I’m doing my degree in BGR. I believe this is the best project in the University to take students from the academic to the real world, whatever you’re studying.”

Most team members are from the engineering faculty, Asherman says, “but we have students from management, economics, a girl from biology who wanted to do something different, and next year someone from the medical school.” The current team is 15 percent female, the most so far.

One of these young women is Lital Ben Shitrit, a mechanical engineering student who has assumed the team leader role. “Leading a team to build an electric race car is definitely not something I ever learned,” she says.

“But I know I need the experience and chose to do it with all my heart.”

The event is not a race, Asherman emphasizes. “First, we have to create a cover story about our car, including a cost analysis in real numbers, and pitch a panel of three judges who look at our car as potential investors.” The team must report in full detail on their car’s

“A lot of things that are supposed to go one way go exactly the opposite from what you expected. So you learn how to put out the fires and solve the unplanned problems.”

— LITAL BEN SHITRIT, BGR TEAM LEADER

costs, which can take hundreds of Excel pages, and defend every building choice. A set of industry experts also joins the team in the pit and poses questions. “We don’t know what they’ll ask—questions about geometry, integration, materials—we give the best answers we can,” Asherman says.

Finally, the car is put into motion with a brief speed test, some maneuverability challenges, and ultimately, the all-important endurance test: The car must drive for 30 minutes trouble free. “A wrong detail can lose it all—or the energy use may not be good—that is, how much gas the 20 or 30 laps took.”

Neither Asherman nor Ben Shitrit questions the value of the mission. “In class, if it looks good, we don’t

talk about how a manufacturer will see it,” he says. “But for BGR we have to analyze the price versus the time it takes, the relative quality, the investment risk.”

Ben Shitrit appreciates what she learned about translating theory into practice: how to start the process of designing and manufacturing a product from the parts through computer modeling, then deciding when to move to manufacture and assembly. “A lot of things that are supposed to go one way go exactly the opposite from what you expected. So you learn how to put out the fires and solve the unplanned problems.”

Then there are the lessons involved in coordinating 60 specialists. “We’re from different departments with completely different knowledge and language,” Asherman says. “At first we don’t know what some of the others are talking about. But you learn fast when you’re responsible to other people—if your job isn’t good enough, 60 students will suffer. If a small part is wrong, all the rest is garbage.”

Because each competition builds on the last, leaders plan for the coming year and beyond. Asherman began a training program to help new team members pick up where the current ones leave off. In thinking about his successor, another lesson took hold.

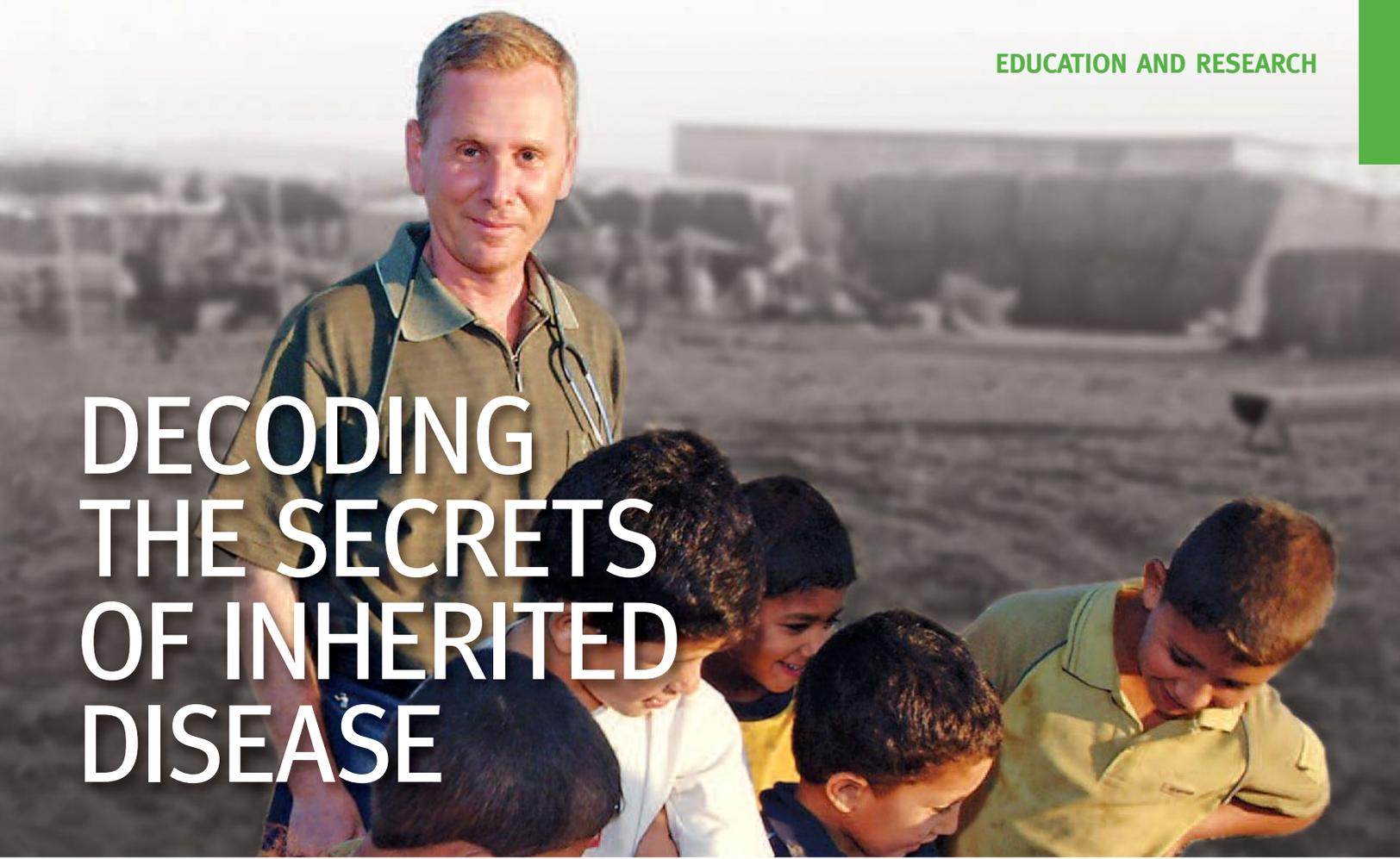
“I asked myself, what’s the most important thing to the job? Engineering expertise, yes, but it needs someone good with human relationships—engineers usually are not. I know Lital is very good with people. When everyone is a volunteer, you need to be more than a manager. Lital leads people to want to do what she wants, not because they have to.”

Both young people are sure the experience will benefit them. Eventually Alon Asherman expects to create an enterprise of his own.

“What’s most important to me personally,” Lital Ben Shitrit says, “is that BGR showed me my options and what I can do. I found out that mechanical engineering can be many things, some of which I’m better at—so it gives me a bright future.” ■



Project leader Alon Asherman and one piece of the car he loves.



DECODING THE SECRETS OF INHERITED DISEASE

MIDYEAR IN 2000, Prof. Ohad Birk decided to return to Israel from the U.S., where he had been engaged in postdoctoral research at the National Institutes of Health. He brought with him both M.D. and Ph.D. degrees, research experience at the Weizmann Institute, and some background in clinical pediatrics—credentials that earned him attractive job offers. But the academic positions that interested him would not begin for eight months. How to fill the time?

He met Prof. Rivka Carmi, then head of the Genetics Institute at Soroka University Medical Center, in affiliation with Ben-Gurion University of the Negev. She suggested he join her. He thought the opportunity might give him interesting material for his own research so he decided to spend the time there. Little did he suspect that he would never leave.

“What happened was that for two or three days every week patients walked

[Top: Prof. Ohad Birk with children in a Bedouin village](#)

“Diseases we see in this generation will persist forever in generations to come. People will continue to be carriers so testing needs to go on.”

— PROF. OHAD BIRK

in with diseases no one knew anything about—diseases caused by genetics. It was like a mass casualty in front of my eyes. It felt so obvious that this was the research I wanted to do that I don’t remember making a decision—it was as if I had prepared for it my entire life.”

When in 2001 Prof. Carmi left the Institute for other BGU positions, culminating in the presidency of the University, Birk became head of Soroka’s Genetic Institute. He also established the Morris Kahn Human Molecular Genetics Lab at BGU with an ambitious target: “To find,

in our own hands, in Beer-Sheva, the genetic causes of human disease—what’s going on at the molecular level.”

The region’s Bedouin population gave him a unique window into this work. Nearly 60 percent of marriages in the Bedouin community are between first cousins, a tradition that creates a heartbreaking number of infant deaths and children with severe birth defects.

In less than three years, Birk’s lab made its first discovery: a gene responsible for one of the most common Bedouin diseases and its precise biochemical mechanism. Since then, Birk’s lab has discovered more than 40 genetic diseases. Many are common not only to the Negev’s Bedouin, but to the Arab world overall, where the same marriage tradition persists. And Birk has also discovered the cause of two of the most common genetic diseases among Sephardic Jews—Progressive Cerebello Cerebral Atrophy (PCCA) and PCCA2. As a result, both have been nearly eradicated by prevention, much as Tay-Sachs disease was eliminated among Ashkenazi Jews.



Bedouin nurses, from the Nursing Project for the Bedouin Community, BGU's Recanati School for Community Health Professions

IDENTIFYING GENETIC FAULTS

Unlike most of the genetics labs in Israel and the world at large, Birk's team seeks to understand the deep science behind diseases. The researchers introduce the mutations to fruit flies, zebra fish and mouse models. Recently they have also begun generating stem cells from human patients' skin cells.

"We can test exactly what's going on—in the dish," Birk says. "We discover the biochemical and molecular pathways of human embryo development, normal and abnormal, which have not been known before."

Focusing on the genetic diseases of inbred communities provides a huge advantage: They are monogenic, created by a single gene or a few, rather than by a whole complex of genes that interact to cause most of the widely prevalent diseases. These "orphan" diseases—so called because they affect a relatively small number of people—are easier to investigate. "It's hard to find the pathways for diseases that involve so many genes and so many patients."

Birk has found, however, that the monogenic disease discoveries offer important leads to the more common diseases as well. "We're now working very effectively with diseases such as autism, gout, multiple sclerosis, rheumatoid arthritis, atrial fibrillation,

and ADHD (attention deficit and hyperactivity disorder). We're finding totally new mechanisms. When you understand why something happens, what goes wrong, you can design effective drug therapies."

"I'm amazed at the level of our graduate students. They're the backbone of future research."

— PROF. OHAD BIRK

Birk, who wears an additional hat as scientific director of the National Institute for Biotechnology in the Negev (NIBN), is taking the first steps toward developing medication for illnesses that include cardiac atrial fibrillation, gout and ADHD. But the drug development process, he says, is "a whole different ballgame" and will require commercial partnerships which may materialize soon.

CHANGING THE FUTURE FOR NEW GENERATIONS

But more often, the processes called for are testing and education. At Soroka,

Birk sees patients and oversees a team of Ph.D.s, medical doctors and counselors. Many are Bedouins, including 10 nurses who go to the villages, explain the goal and conduct tests. They currently screen for more than 70 human diseases; Birk expects the number to reach 100 within a few years. Additionally, a genetic counselor visits the community's schools and talks to the young people.

Changing traditional marriage behavior is the best solution to the genetic diseases that burden many Bedouin families. This challenge goes far beyond the Negev because first-cousin marriage is common throughout the Arab world. "Many groups migrated from the Saudi Arabian area hundreds of years ago so the mutations are the same," Birk points out.

"But change must come from the inside," he adds. Redirecting this long tradition must take into account its intrinsic logic. For centuries, cousin marriages among the region's nomadic people functioned to strengthen bonds between extended families and helped them survive difficult environments.

Today the practice keeps young women close to their families rather than relocating should they marry an outsider. The sustained practice over generations leads young people to expect a cousin marriage.

"I tell them preserving tradition is nice, but marrying a first cousin is a much higher risk than marrying a third or fourth cousin. We have families who've suffered a lot because their children inherit diseases that result from first-cousin marriages. Some are prominent people, and they help in convincing others. And we meet with religious leaders and explain the issues." Birk would like to collaborate with scientists in Arab countries facing the same problems, but they have thus far been unreceptive. He hopes that this will change in the future.

Birk's team of genetic counselors at the Naomi Fisher Bartnoff Genetic Counseling Unit within the Genetics Institute aims to test couples before they marry, and before they have a

child. If both prove to be carriers of one or more diseases, and therefore likely to deliver sick children, the information is shared and the couple receives genetic counseling.

They can choose to come for tests during the first three months of pregnancy to see if the embryo is healthy (Muslim law allows abortions for the first 120 days). Or, they can choose in vitro fertilization with pre-implantation diagnosis: sperm and eggs are combined to incubate in the lab. A healthy embryo is selected to be implanted, and additional good ones may be frozen for the future.

This strategy has produced a 30 percent reduction in infant mortality, Birk says. “But the rate is still three times higher than the rest of Israel, so we have a ways to go.” He envisions bringing the rate down another 30 percent within five years, in part by expanding the program to remote villages his team does not yet reach. In the longer run he hopes to test for nearly 200 diseases, as well as look for remedies, helped by emerging technology like CRSPR (a new gene-editing technique that triggers

“In the beginning I didn’t know whether to be a pure scientist or a medical doctor. I’m both, and the great joy of that is seeing the fruits of it: healthy kids.”

— PROF. OHAD BIRK

cells to repair their own damage).

Birk anticipates that drugs created to treat an orphan disease will generate wide interest as more applications emerge. For example, he discovered a gene for brittle bone disease, a rare genetic disorder that is currently incurable. “Understanding the mechanism gives us a drug target. We know there are similarities with how osteoporosis happens, so it’s logical that a drug for brittle bone may also work for osteoporosis.”

Another hope for the future: BGU students. “I’m amazed at the level of our

graduate students—they’re extremely bright, motivated and hardworking,” Birk says. “Each one comes out with a discovery that helps solve at least one human disease!” His Ph.D. graduates are starting to populate labs all over Israel as well as postdoctoral programs at major U.S. universities.

“They’re the backbone of future research,” Birk says.

But can diseases be eradicated once they are understood? “No,” Birk says. “Diseases we see in this generation will persist forever in generations to come. People will continue to be carriers so testing needs to go on. You can prevent cases from happening, as with Tay-Sachs, and now some of the Sephardic diseases. But until we know a lot more, you don’t fool with germ cells—sperms, eggs and embryos. Changes to them would be inherited. So every generation must test, again and again.”

Birk is happy to be part of both the research *and* the clinical results. “In the beginning I didn’t know whether to be a pure scientist or a medical doctor. I’m both, and the great joy of that is seeing the fruits of it: healthy kids.” ■

SEEING THE HUMAN SIDE

In the words of Prof. Ohad Birk

“A Bedouin couple came to us and we discovered a new disease caused by a gene that no one knew anything about. And then an Ethiopian couple came in with a similar disease. In the lab we discovered that both couples had the same disease, the same defective gene, and the same mutation. And based on our studies, we showed that the two families are actually related—nearly a thousand years ago. At the time merchants were traveling between Egypt and Ethiopia, so the similarity was not by chance.

Each family had two very sick kids and worried about having more. The Ethiopians’ children were near death and they’d given up on having another. We asked if the couples wanted to meet—and they did.

Both families then chose to have another child: the Bedouins because they knew they could have an abortion,



while the Ethiopians opted for IV fertilization and diagnosis. Both had healthy children.

We discovered scientifically, in frog cells, exactly what the gene does and how it causes the disease. But it’s the impact on people that’s most exciting to see—families come into the clinic and carry out the prevention. ”

Hamama

GIVING ISRAELI SOLDIERS A NEW START IN LIFE

EVERY YEAR thousands of young Israelis complete their compulsory military service and begin their adult lives. Most find many paths open to them, but some lack the basic education essential to a good future.

For four years, BGU's Department of Community Action has partnered with the Israel Defense Forces and the Department of Education to give many of these soldiers the high school education that qualifies them for employment and unlocks the door to further learning. *Hamama*—the post-army completion program—is the only program of its kind in Israel.

"Hamama" means a greenhouse or incubator in Hebrew. Orly Bar Ami, who has worked in the Department of Community Action for 37 years and directs the adult education programs, finds this definition exactly on target. "Our *Hamama* is a special place—like a farm where plants can grow in a



Orly Bar Ami

secure environment," she says. "Many of the soldiers had tough lives and come from a place where the system gave up on them. Nobody took care of them or listened to them. In many cases their past studies left them with a sense of failure. Here we give them the spirit of success, of believing in themselves."

For three months before leaving the IDF, and an additional three months after discharge, the soldiers come to the BGU campus. Five days a week, they study math, computers, citizenship, Hebrew, and English in the University's state-of-the-art facilities, taught by experienced professionals. "Our teachers also work elsewhere but see *Hamama* as more than a job," says Bar Ami. "Here they work for the soul."

Fifteen BGU students chosen for their maturity and sensitivity help with tutoring and assist in class. On site, a team of women soldiers known as commanders helps guide the group. Course curriculum is set by the Ministry of Education, which also supplies exams and instructional guidance. The IDF funds the

program and the soldiers receive some personal financial support from the U.S. organization Friends of the IDF.

Building motivation and confidence are top *Hamama* priorities. "Some of the soldiers come to us from very difficult socio-economic situations and have sad stories to tell," Bar Ami says. "We see in them their power and ability. They can build their learning skills here. They realize they can become responsible citizens who contribute to

"Here we give them the spirit of success, of believing in themselves."

— ORLY BAR AMI

the community, and some choose to better fulfill their potential with more education."

Bar Ami herself is a valued source of encouragement. "Orly listens to their personal stories," observes Vered Sarousi Katz, head of the Department of Community Action. "She shows them

Top: Three proud former soldiers with their certificates of completion, qualifying them for jobs and educational opportunities they might otherwise miss.

their abilities and tells them the future they can have. This helps them put their problems aside or start to solve them.”

Thus far, 157 young people have benefited from *Hamama*. After only four years, long-range program results have not been significantly tracked, but the low dropout rate indicates success by any standard. Eighty-six percent of those who came to the program completed it and passed the exams. Graduates leave with a certificate that shows they have finished 12 years of education, necessary for government and other employment opportunities. Those who decide to pursue further education on their own can take a matriculation exam. If they pass, they qualify for higher-level jobs and education.

Hamama partners are universally enthusiastic about the program’s effectiveness. “For soldiers who served loyally but are uneducated, *Hamama* is a fertile ground for beginning social mobility,” says Yehudit Gigi, supervisor in the Ministry of Education’s Division of Adult Education. “Each learner is individually monitored throughout the process and this creates a commitment to succeed.”

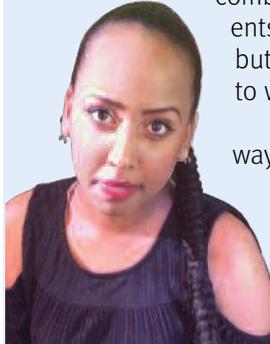
According to Major Raviut Zarfaty, who heads the Academic Education and Vocational Training Section at the Department and Foundation for Discharged Soldiers, “the program offers a second chance to those who have not succeeded in the past for various reasons and gives them the opportunity to begin their lives after the army at a better starting point.”

Orly Bar Ami, who works closely with every soldier, says: “This is the ninth course and I am thrilled each time we start. These young people come to us with personal, educational and social difficulties, but they see what the certificate will give them. They know the program is a great springboard. I am very proud of everyone who finishes — their achievements are remarkable. To me they are true heroes.” ■

In Their Own Words...

Maza Palka, 23, from Ashdod

Since I was little I dreamed of studying at a university. I was the best student in the class and even the outstanding student of the year. But at 16, I decided to combine work and school to be independent and relieve my parents of some of their financial pressure. The beginning was good, but soon I was absent a lot; my schoolwork declined. I left school to work. Without my realizing, the years passed by.



I joined the army and my service had a lot of bumps along the way. Then, before my release, I was offered the chance to take part in the high school diploma course. So I began a journey that opened the door to my dream again. The course wasn’t at all easy. Each of us came with our own personal baggage and background story. But we all had the same goal—to complete our education.

Tremendous support from the teachers, Orly, the director, and the other soldiers created a warm family atmosphere. My self-esteem and confidence grew dramatically—and so did my interest in pursuing my academic studies. This would never have happened if we hadn’t learned the tools to cope with our problems and achieve our goals.

Ron Abutbul, 23, from Kiryat Gat

As a teenager I was an honors student and social activist. When I was in junior high, my father became addicted to alcohol and gambling. He left home, leaving my mother to raise five children, with all the financial and emotional difficulties involved. In 11th grade, to prevent the family from collapsing, I decided to go to work. Gradually I neglected my schoolwork and my dream of graduating. I’d be lying if I said I haven’t regretted it.



The army wasn’t easy for me, and I was wounded as well. Near the end I was offered a place in the *Hamama* program. I didn’t believe in myself at first. I didn’t think I could handle the challenge. But I decided to try.

The path to success soon became clear and bright even though I was dealing with lawyers and working nights, trying to pay down my debts. I didn’t have a penny in my pocket. Yet I survived. I built faith in myself. I’m leaving with a toolbox for an effective life. The encouragement, the love, the family feeling—I really appreciate it.

Sapir Maman, 22, from Netivot

I’m one of a family of 10. When I was 12, my parents divorced and I had to shoulder part of the financial burden with my mom. I had many dreams, to study and become someone everyone can be proud of. But it was only in dreams—not reality.



I had to quit school and go to work. I joined the army and the beginning was tough, but I immediately realized it was an important opportunity for my development. The IDF for me is the first supportive framework I found as an adult. When I was offered a way to finish my education I didn’t think twice—I jumped on the opportunity.

I came to this amazing place of warm and caring people—Orly, the director, the teachers, students, and commanders. I have skills and I know how to use them. I learned to believe I can be a good citizen, a creator and contributor to society.

GREAT LAKES

Robyn Schneider, *Director*
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SHARING INNOVATION IN BRAIN TRAUMA MEDICINE

Professor Alon Friedman, former chair of the Zlotowski Center for Neuroscience at BGU, visited the region in June to meet with brain science entrepreneurs and enlighten audiences about his research into detecting blood-brain barrier damage. Following meetings with startup companies at the health-care incubator MATTER, Prof. Friedman led a lunch discussion for members of The Standard Club and BGU supporters in the Chicago area.

Additionally, the Milwaukee Hillel, in conjunction with the Milwaukee Jewish Federation, co-hosted an interactive evening presentation where Prof. Friedman shared advancements in his enhanced MRI diagnostic approach for detecting damage to the blood-brain barrier—the body’s protective mechanism that prevents most substances in the bloodstream from entering the brain and spinal cord. The indicators his team has identified serve as promising biomarkers for predicting and potentially preventing Alzheimer’s, Parkinson’s, stroke, and trauma-induced epilepsy.

LIFE-CHANGING ENCOUNTER WITH DAVID BEN-GURION

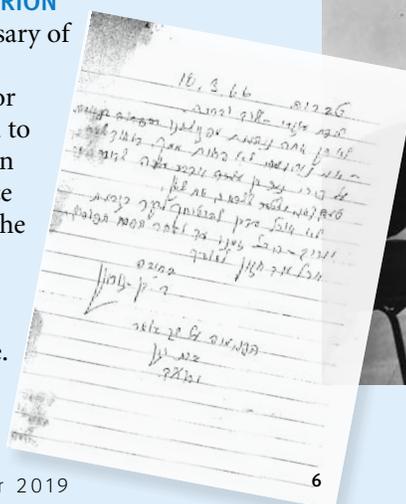
On the 40th anniversary of his *shlichut*, Senior Philanthropic Advisor Yefet Ozery returned to St. Paul, Minnesota in July to help introduce AABGU’s efforts to the area and share how his connection to David Ben-Gurion had impacted his life. During a luncheon

and afternoon reception co-hosted with the St. Paul Jewish Federation, Ozery shared his multi-year correspondence with Ben-Gurion, including the visit of the former prime minister to his boarding school in Jerusalem. Attendees remarked how interesting it was not only to learn of this connection but also how poignant it was that Ozery is now helping to fulfill the dream of the man from whom he once asked advice. “I feel fortunate to have had a lengthy personal correspondence and a meeting with

David Ben-Gurion during my formative youth years,” says Ozery. “The opportunity to be part of AABGU’s team, working to fulfill his legacy for Israel, is a special privilege and brings me full circle.”

WE DON’T WANT TO MISS YOU

In April, the Great Lakes Regional Office moved. Make sure to update your records to reflect our new address and phone number: 2825 N. Wolcott Avenue #L, Chicago, IL 60657; (312) 599-0876



1. Prof. Alon Friedman and Standard Club Vice President Susie Silver 2. Prof. Alon Friedman and Paul Goodman 3. Milwaukee Federation Vice President Rabbi Hannah Wallick and Great Lakes Regional Director Robyn Schneider 4. St. Paul Jewish Federation Associate Development Director Sharyn Effress Pesses; AABGU Senior Philanthropic Advisor Yefet Ozery; and St. Paul Jewish Federation CEO Rob Jacobs 5. Yefet Ozery and David Ben-Gurion at the Mae Boyar High School in 1966 6. March 10, 1966 letter from David Ben-Gurion to Yefet Ozery, following his visit to Mae Boyar High School

GREATER NEW YORK

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BGU'S HOLOCAUST EXPERT AT THE MUSEUM OF JEWISH HERITAGE

The Greater New York Region partnered with the Museum of Jewish Heritage: A Living Memorial to the Holocaust for a program during the annual *Night at the Museums* event on June 19. This event offered evening admission and special programming at 15 museums and historical sites in downtown Manhattan.

Ninety people attended the event in the beautiful Keeping History Center, overlooking the Statue of Liberty. Prof. Hanna Yablonka, the Aron Bernstein Chair in Jewish History, Department of Jewish History, gave a fascinating talk on “Memory, Narrative and Remembrance in Israel: 1945–2018.”

AABGU President Toni Young welcomed guests and introduced Prof. Yablonka. The presentation explored the complex dynamics of the personal narrative within the collective memory of the Holocaust and its profound impact on Israeli identity and psyche.

GETTING NEXT-GEN ENGAGED

“Startup Negev,” the first event as part of an initiative to engage the next generation of community leaders and professionals, was held in June. The evening began with wine, beer and hors d’oeuvres followed by a presentation by BGU Prof. Dan Blumberg, vice president and dean for research



1. Toni Young, AABGU president; Prof. Hanna Yablonka; Michael S. Glickman, president and chief executive officer, Museum of Jewish Heritage 2. Andrea Goren, Prof. Dan Blumberg, Efraim Chalamish 3. Startup Negev attendees: Ben Broad, Perrin Kirby, Rachel Barbakoff, Leechen Gerson, Josh Levy, Ilana Broad 4. Prof. Hanna Yablonka, lecturing how lessons from the Holocaust create a legacy for the next generation 5. Lite Sabin, upon seeing the inscription of her and her late husband, Arnold, on the Negev Society Arava Wall during the 2018 Board of Governors at BGU

and development and the director of the Homeland Security Institute at BGU. The 40 guests were wowed as Prof. Blumberg shared what makes Israel, and specifically BGU, the “startup nation,” highlighting many of the impressive advancements

happening at BGU and its Advanced Technologies Park (ATP) in the field of cyber security and high tech. He also spoke about the various cyber threats facing us today—from cell phones to hospital systems.

GREATER TEXAS

Elizabeth Grzebinski and Robin Stein
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 (646) 452-3710
 texas@aabgu.org

HONORING THE BIG HEARTS OF TEXAS

As it celebrates the 70th anniversary of its founding, Israel finds itself a “startup” nation, a global leader in innovation and forward-thinking, with nothing epitomizing that cutting-edge, can-do spirit more than Ben-Gurion University of the Negev.

Generous donors in the Greater Texas Region embody the passionate spirit that supports the groundbreaking work being done at BGU. We gratefully recognize the major philanthropic supporters who were recognized in May at BGU's Board of Governors:
 Howard L. Feldman z”l
[Negev Society, Eshkol](#)
 Jill z”l and Nat Levy
[Negev Society, Eshkol](#)
 Ellen S. Marcus, [Founder](#)
 Hilary and Carmelo Mauro, [Founder](#)

We also want to thank The Lewis and Joan Lowenstein Foundation for naming a lane in the American Associates Village at Sede Boqer; the Mauros for naming a conference room in the Carole and Marcus Weinstein Information Systems Engineering and Cyber Security Building; and Velva G. and H. Fred Levine for naming a lab in the Guzik Family Building for Biotechnology Engineering. Finally, thank you to all the contributors of the 2018 Kosher Extravaganza who made it possible for the Greater Texas Region to name a seminar room in the Weinstein building.

REVISITING BEN-GURION'S VISION

The Greater Texas Region held a private showing of the award-winning documentary “Ben-Gurion, Epilogue.” Some 30 guests attended the showing, which was followed by a group discussion led by Regional Director Deborah Bergeron. Guests and regional board members were fascinated by the intensity, knowledge and understanding that Ben-Gurion displayed in his decisions and prescient thinking.

TEXAS-ISRAEL CYBER SECURITY CONFERENCE

In May AABGU co-sponsored the Texas-Israel Chamber of Commerce watershed Texas-Israel Cyber Security Conference at Southern Methodist University in Dallas. More than 300 people, including cyber security leaders in industry and government from across Israel and the United States, gathered to learn how to secure our critical infrastructure with the best

cyber security technology available.

Prof. Dan Blumberg, BGU's vice president and dean for research and development and director of the Homeland Security Institute at BGU, was one of the featured presenters. He highlighted how BGU cyber security researchers are uncovering online vulnerabilities and developing technologies that safeguard Israel and its allies from cyber attacks—both in the government and private sectors.

Getting to meet and discuss options with the Israel cyber security community was a great inspiration to Julian Rachman, principal engineer at DFW Consulting Group, Inc. “This event brought awareness of how serious the threats of cyber attacks are and how important it is to combat them, especially in the utilities sector: power, water and natural gas. There is no doubt that in the near future, our firm and our clients will be deploying some of their solutions.”



1. Tracy Bell; Prof. Dan Blumberg and Toba Hellerstein, chief executive officer of the Texas-Israel Chamber of Commerce 2. Linda Suib, Dr. Ruth Katz and Ellen Marcus 3. Jim, Liz and Elizabeth Breslauer at Sandy's Place (the three on the right), a local activity center in Beer-Sheva named in memory of Jim's sister-in-law, Sandy Breslauer. 4. Elizabeth and David Breslauer (right) visiting the lab of Dr. Debbie Toiber in her lab at the Center for Evolutionary Genomics and Medicine

MID-ATLANTIC

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RECOGNITION FOR GENEROUS SUPPORT

Congratulations and appreciation are extended to these generous supporters who were recognized at the Board of Governors meeting last May.

Negev Society

Tamar:

Gerald B. Shreiber Foundation

Arava:

Muriel z"l and Samuel z"l Schwarzman

Dorothy and Leonard z"l Wasserman

Eshkol:

Marilyn z"l and J. Robert Birnhak

Maribeth and Steven Lerner

Lana R. Pinkenson

Founder

Kathy Katz Hall



Photo 1 and 2: At the 2018 Tribute Brunch, life-long educators Carol S. Rothschild and Joan Rosen Bloch, Ph.D., received the "Torch of Learning Award," and BGU Pres. Prof. Rivka Carmi, M.D., was recognized for her outstanding contributions to the University.



3. Dr. Paula Kabalo met with officers of the Delaware Chapter at the home of its chair, Dr. Barry Kayne. **Pictured:** Drs. Robin Karol Eng and Jerry Eng; Dr. Paula Kabalo; Lelaine and Dr. Stuart Nemser; Reiko and Barry Kayne



4. Prof. Haim Hames, now serving as rector of BGU, was the guest speaker at a Philadelphia Chapter dinner meeting. **Standing:** Prof. Hames and David Blumenthal **Seated:** Dr. Bettyruth Walter and Dr. Dinah Lovitch, members of the BGU/Philadelphia Academic Bridge executive committee, and Sandy King



5. The Negev Forum, an initiative to engage people in their 50s and 60s, sponsored a Student Meet and Greet, with AABGU Chief Executive Officer Doug Seserman and three BGU alumni: Eugenia Stanton, Dr. Itai Weissberg and Dr. Aviva Fohrer. Maribeth and Steve Lerner, Negev Forum co-chairs, received their Negev Society certificate. **Pictured:** Hosts Dr. Richard and Paula Mandel; Philadelphia Chapter Vice Chair Sherrie Savett; Doug Seserman



6. Zin Fellow graduates gathered to honor their beloved BGU teacher, Dr. Paula Kabalo. **Pictured:** Dr. Kabalo; hosts Debra and Mark Zweben; Michele Levin, Philadelphia chapter co-chair

NEW ENGLAND

Kevin M. Leopold
Executive Director—Northeast
 Eve Rubinstein
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CELEBRATION AT BRANDEIS

In March, BGU President Prof. Rivka Carmi, M.D., was honored at the Schusterman Center for Israel Studies at Brandeis University, Waltham, Massachusetts. The Center celebrated its 10th anniversary with a two-day conference featuring the Ilan Troen Lectures on Contemporary Israel Affairs. Prof. Carmi gave the keynote lecture titled “Personal and National Stories Intertwine: Israel at 70”—a remarkable and moving talk exploring Prof. Carmi’s early childhood experiences that inspired her sense of obligation and commitment to fulfilling David Ben-Gurion’s vision for the Negev. With BGU’s blessing, Prof. Troen spent the last decade establishing this remarkable center at Brandeis, during which time he also raised awareness about the threat of the Israel boycott movement on campuses and how to respond.

BRIDGING ISRAEL AND RHODE ISLAND

That same week, Prof. Carmi was hosted by Avi Nevel and the Rhode Island-Israel Collaborative. Stefan Pryor, Rhode Island’s first secretary of commerce, and Matan Zamir, Israel’s deputy consul general to New England, and business leaders who invest in and do business with Israel also attended. Many of them are also involved in Rhode Island’s URI Innovation Center, which will include BGU. We look forward to hosting more AABGU programs together and building our presence in Rhode Island.

A STEP IN THE RIGHT DIRECTION

STEP is a Boston-based program that takes place at BGU. It provides funds for graduate-level health science education for Israeli and Palestinian students who work and study in pairs (one Israeli, one Palestinian) throughout their training. The pairing fosters sustainable, cooperative relationships that result in enhanced services in the communities where STEP fellows live and work. STEP was founded by Dr. Allen Taylor, who for the last 35 years has been

director of the Laboratories for Nutrition and Vision Research at the USDA Human Nutrition Research Center on Aging at Tufts University.

Eve Rubinstein, the region’s new senior philanthropic manager, has been getting to know many members of AABGU’s community in New England and is eager to meet anyone in the area. Please contact Eve to arrange a meeting, share a comment or just say hello.



1. BGU Prof. Emeritus Ilan Troen, founding director of the Ben-Gurion Institute and the Schusterman Center for Israel Studies, Brandeis University, interviews President Prof. Rivka Carmi about her experience growing up as a “child of the state.” 2. Prof. Carmi with Rhode Island Governor Gina Raimondo, meeting to discuss opportunities to increase BGU’s presence in Rhode Island 3. Prof. Ilan Troen; Lisa Eisen, vice president, Schusterman Foundation; Rachel Fish, executive director, Schusterman Center; former Ambassador Danny Shapiro; Stacy Schusterman, chair, Schusterman Family Foundation; President Prof. Rivka Carmi; Lynn Schusterman, founder, Schusterman Family Foundation; President Ron Liebowitz, Brandeis University; David Ellenson, former director, Schusterman Center; Sanford Cardin, president, Schusterman Family Foundation

NORTHWEST

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THE INNOVATIVE MIRACLE THAT IS ISRAEL

In an afternoon program at Stanford University titled “The Innovative Miracle That Is Israel,” the Hon. George P. Shultz captivated a packed auditorium with stories about his official visits to Israel while serving as U.S. Secretary of State in the 1980s. Presented by the AABGU Northwest Region and co-sponsored by the Consulate General of Israel, Hoover Institution and Hillel at Stanford, the program also featured visiting faculty members from the Ben-Gurion Research Institute for the Study of Israel and Zionism. They also participated in an international Association for Israel Studies conference at University of California Berkeley.

Shultz, a Hoover fellow, lauded Israeli determination and ingenuity, while the faculty members shared specific examples of how BGU has transformed the Negev.

Ben-Gurion Institute faculty members Dr. Paula Kabalo and Prof. Arieh Saposnik also spoke at a dessert reception at the San Francisco home of Shlomi Kofman, consul general of Israel to the Pacific Northwest. They shared how founding Prime Minister David Ben-Gurion’s vision continues to be realized in the Negev as BGU emerges as a world

leader in cybersecurity, water and agricultural technology, and groundbreaking medical research.

COLLECTING AND SHARING TESTIMONIES OF MIZRAHI JEWS

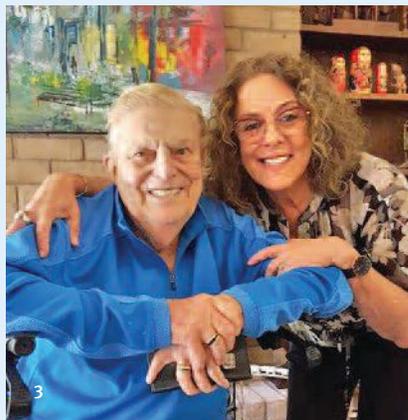
The San Francisco Bay Area nonprofit JIMENA (Jews Indigenous to the Middle East and North Africa) has begun a new partnership program with BGU, Israel’s Ministry of Social Equality and Beit Hatfutsot: The Museum of Jewish Peoplehood to produce a comprehensive collection of oral-history testimonies of Jews from Iran and Arab countries.

“This new collection will provide a database so that scholars will be able to study Mizrahi communities from the ground up,” says Dr. Adi Portugies, director of infrastructure information systems at the Ben-Gurion Research Institute for the Study of Israel and Zionism.

In 2012, JIMENA and BGU launched an initial partnership to preserve the memories of Jews born in the Arab world and Iran. Graduate students at the Ben-Gurion Institute transcribed, catalogued and added the collection to the University’s archives, where it now resides.

As part of Israel’s 2014 legislation to advance the heritage of Jews from Arab countries and Iran, MSE allocated \$2.6 million to launch a national initiative to collect video-recorded testimonies of Mizrahi and Sephardic Jews. JIMENA and MSE pledged resources and support to train BGU students to collect testimonies to add to Israel’s National Collection and JIMENA’s oral-history collection at the University.

Special thanks to AABGU donors Regina and Dan Waldman for initiating this important project.



1. Hon. George P. Shultz (seated) with faculty members of the Ben-Gurion Research Institute for the Study of Israel and Zionism: Founding Director Prof. Ilan Troen, Dr. Adi Portugies, Dr. Ben Herzog, Prof. Arieh Saposnik, and Dr. Paula Kabalo. 2. San Francisco Bay Area and Greater Seattle participants at the 2018 Board of Governors took a quick time-out between activities for a photo opportunity: Rob and Kathleen Spitzer; Coby and Riki Dayan; Senior Philanthropic Advisor Daphna Noily; Regional Director Judith Alterman; Carol Saal; Shami Noily; Marjorie Kaiz Offer; and Harry Saal. Former Regional President Sonny Hurst and Board of Governors member Steve Hurst also attended. 3. BGU President Prof. Rivka Carmi visited with Lorry I. Lokey

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BOARD MEMBER ALAN NEWMAN PUBLISHES FIRST NOVEL

Congratulations to AABGU national board member Alan Newman on the recent publication of his first novel, *Good Heart*, by Gefen Publishing. The novel is an outgrowth of Newman’s passion for pro-Israel political activism—he sits on the AIPAC National Council and on the boards of American Friends of the Ethiopian National Project and StandWithUs.

Good Heart interweaves a multi-generational history of two pro-Israel families, one Christian and one Jewish, with the miracles of IDF lone soldiers, the Ethiopian *aliyah*, Christian-Jewish shared values, and the rebirth of Israel.

Newman says: “I was motivated by the belief that a story revealing these miracles of the modern State of Israel could help educate the under-informed and rebalance the negative narratives that plague our Jewish youth. My hope is that it will be both an entertaining read and an invitation to learn more about Israel.”

MEMORABLE VISITS TO BGU

AABGU National Vice President Joel Reinstein and national board member Alan Newman and his wife, Phylis, attended the 2018 Board of Governors this past May.

Several first-timers also visited the Marcus Family Campus. Fay and Samuel Singer of Boynton Beach visited with their grandson Mark in April. Rabbi Michael Simon and his wife,

1. Mark, Sam and Fay Singer at BGU 2. Todd, David, Susie, and Evan Schwartzfarb visiting BGU 3. Guy Tessler, president, Conexx; Prof. Kobi Gal, BGU; Oded Shorer, director of economic and trade affairs, Consulate General of Israel for the Southeast; Prof. John McIntyre, executive director, Georgia Tech CIBER (Center for International Business Education and Research); James Hoadley, associate director, Georgia Tech CIBER; Reva Feldman, Southeast regional director, AABGU



Andrea, from Temple Beth Kodesh in Boynton Beach, enjoyed a general tour of the University in May. David and Susie Schwartzfarb of Delray Beach visited with two of their sons, Evan and Todd, in June. Sam Brindis, son of George z”l and Phyllis Brindis, and his wife, Sandra, visited the campus and saw the Negev Society’s *Eshkol* Wall, the Founders Wall and the Living Legacy Garden, where their parents’ names are inscribed. Lydia Sawyer and Julian Friedman of Bluffton, South Carolina, spent a day there during a summer visit to Israel.

BGU COMES TO ATLANTA

The Southeast Region, in collaboration with Conexx: America Israel Business Connector, the Consulate General of Israel to the Southeast Region, and the Georgia Tech Scheller College of Business, hosted Prof. Ya’akov “Kobi” Gal in

August. Prof. Gal met with a group of Georgia Tech faculty members, prominent corporate leaders and members of the consul general’s office for a luncheon presentation to share his research on artificial intelligence. In the evening the Atlanta law firm Morris, Manning & Martin hosted him for a presentation called “Friend or Foe? Exploring the Artificial Intelligence Revolution.”

Prof. Gal is head of BGU’s Human Computer Decision-Making Lab in the Department of Information Systems Engineering and a member of the University’s Artificial Intelligence Group. He is also an associate of Harvard University’s School of Engineering and Applied Sciences. Conexx is a nonprofit, nongovernmental agency committed to connecting Americans and Israelis through business.

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HOMELAND AND CYBER SECURITY BRIEFING

Prof. Dan Blumberg, vice president and dean for research and development at BGU, presented “Innovative Homeland and Cyber Security Technologies” to a group of AABGU donors and new friends in Denver. Prof. Blumberg is also the director of BGU’s Homeland Security Institute. Doug Seserman, AABGU’s chief executive officer, remarked on the importance of the Negev and BGU for Israel’s future. Community leader Amy Toltz-Miller hosted the event at the home of her mother, Ruth Toltz.

FIGHTING AGING

Prof. Alon Friedman, the Dr. Helena Rachmanska-Putzman Chair in

Neurology and former director of BGU’s Zlotowski Center for Neuroscience, spoke to a captivated audience in Los Angeles on “Can We Stop Our Brains From Aging? Hope Through Research.” Prof. Friedman shared his groundbreaking research as he seeks to halt blood vessel damage in the brain that can lead to neurodegenerative diseases such as chronic traumatic encephalopathy (CTE) and Parkinson’s disease.

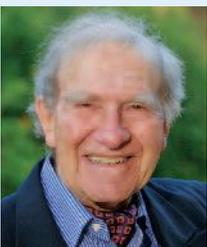
UNDERSTANDING TAX CHANGES

Neal Myerberg, Esq., renowned tax and financial strategies expert, presented the “Implications of the New Tax Law — Ideas for Philanthropic and Financial Planning.” Myerberg helped explain the recent tax changes and provided practical ways to participate in charitable giving in light of the new tax act.

OF BLESSED MEMORY

We are deeply saddened by the passing of longtime AABGU friend and benefactor Murray Fromson z”l. Together with his wife, Dodi, an AABGU national board member, he supported AABGU’s Annual Murray Fromson Journalism Fellowship for U.S. journalists (Fromson fellows). This resulted in more than 100 journalists experiencing the Negev and Beer-Sheva. Murray was a veteran CBS news correspondent and professor emeritus and former director of the University of Southern California’s Annenberg School for Communication and Journalism.

We also deeply mourn the passing of Ivan Halaj z”l (Yitzhak Heimfeld). For many years, Ivan and his son, Stephen, have been major supporters of BGU and other Jewish organizations. To learn more about Ivan and the legacy he passed on, please read page 8 of this issue.



1. Prof. Alon Friedman, Cantor Nathan Lam, Carole Flam, Donna Lam, Rick Flam 2. Prof. Dan Blumberg, Dr. Toby Mower, Dr. Morton Mower, AABGU CEO Doug Seserman 3. Prof. Alon Friedman, Ben Marandy, Ruth Flinkman-Marandy, Neal Myerberg

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THE NEGEV COMES TO RICHMOND

Co-sponsored by AABGU, the Weinstein JCC and Hadassah Richmond, “Ben-Gurion, Epilogue” premiered in Richmond to a packed house in May. The film is a documentary highlighting six hours of recently discovered David Ben-Gurion footage from 1968. Highlights included a Q&A from AABGU’s Chief Executive Officer Doug Seserman and introductions from Clare Sisisky, a Zin fellow, who spoke about her experience learning about the history and development of the Negev.

THE REGION GOES TO THE NEGEV

This year’s Board of Governors meeting included a large contingent from the Washington/Baltimore region. Alongside national board members Joanne Moore and Joel Shalowitz, BGU welcomed five others from the region. Highlights included marking the tenure of BGU’s remarkable outgoing president, Prof. Rivka Carmi, M.D., a special presentation overlooking the Zin Valley about the recent AABGU donation to BGU of a flag created by the “Betsy Ross of Israel,” and an honoring of the University’s most loyal and dedicated supporters. We also recognized new members of the University’s Living Legacy Society who were in attendance, including Elaine Mintzes and Lewis and Susan Winarsky.

BLOOMING WITH INNOVATION—BGU COMES TO LOCAL SYNAGOGUES

B’nai Tzedek’s Hazak Group and Congregation Har Tzeon-Agudath Achim’s *chavurah* welcomed Regional Director David Speer for presentations this spring and summer about BGU’s innovative and entrepreneurial spirit, its commitment to community, and its vibrant student life. Both presentations included a lively discussion about the importance of BGU for the Negev and the future of Israel.



1. AABGU CEO Doug Seserman; Elaine Ragone of Hadassah Richmond; Washington/Baltimore Regional Director David Speer at the Richmond premiere of “Ben-Gurion, Epilogue”

2. The American Jewish Committee’s Global Forum visited BGU. AABGU supporters from D.C. included Jerry Ostrov (far left) and Bobi Baruch (far right) and family members. Also pictured are national board member Marvin Israelow (second from right) and BGU President Prof. Rivka Carmi.

3. Esther and Bert Foer (left) and Susan and Lewis Winarsky (right) overlooking the Zin Valley at Sede Boqer

4. Donald and Lynne Myers visiting with Prof. Simon Barak (center) at his lab in Sede Boqer

5. DC area supporter Ruth Newhouse (third from the right) with her brother and sister-in-law having lunch with BGU students



CONNECTING THE PLANET'S PAST AND PRESENT FOR OUR FUTURE

Continued from page 16

sensitive to high organic concentrations; instead it thrived on the organic remains left by the fish cages and populated the entire area.

“With any disturbance—whether natural or human—you always see a major change in the forams. It may even be a dramatic shift to an entirely different population.”

Some of Abramovich’s methods have been integrated into a national environmental monitoring program. She hopes industry will widely adopt these self-monitoring techniques.

Thanks to her dual expertise in geology and biology, her lab is one of the few in the world moving to more complex analysis of the foram genome. By combining classic geology tools with geochemical and genetic research, she hopes to understand the forams’ response to global changes.

“Some species are able to live in temperatures like 40 degrees Celsius (104 degrees Fahrenheit). We don’t know why but we hope to identify the genes that allow them to survive such extreme temperatures.

“Everything about working with live forams is new,” Abramovich points out. “It will take us years to get closer to where other fields of biology are. But we have a wonderful research community—we collaborate globally, share information, support each other.” ■

THANK YOU FOR YOUR SUPPORT

AABGU salutes our philanthropic partners who joined BGU’s most prestigious giving societies this past year.* Their names were inscribed on recognition walls or pillars on the Marcus Family Campus.

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BERESHEET HOTEL, MITZPE RAMON, ISRAEL

Join AABGU for an **exclusive** journey through the Negev! We'll visit desert vineyards and cheese farms; meet modern-day pioneers and desert innovators; explore the spice route and an ancient city with an archeological expert; and spend three nights in the luxurious five-star Beresheet Hotel, overlooking the magnificent Ramon Crater and known for its exquisite beauty and spa.

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MAY 19 TO 23, 2019
BEN-GURION UNIVERSITY OF THE NEGEV, ISRAEL

Join fellow friends and supporters from around the world for an enriching four-day open house at BGU. Don't miss this spectacular celebration of innovation, scholarship and philanthropy.

An AABGU board of directors meeting is expected to be held on Tuesday, May 21, 2019.



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