

IMPACT



AMERICAN ASSOCIATES
Ben-Gurion University
of the Negev

FALL 2008

**GOLD FROM
POMEGRANATES AND
OIL FROM OLIVES**

**NEW PARTNERS:
MICROSOFT AND BGU**

DONORS MAKE AN IMPACT

MEN AND HOUSEWORK

FROM ALGAE TO ENERGY

FROM THE TOP



Dear Friends,

As AABGU draws near to the conclusion of our 36th year of support for a university that has become an oasis of innovation, it is hard not to reflect upon its achievements, many of which could not have been possible without the dedication and support of all of you.

Today, BGU is a world leader in sustainable development and environmental science. From blooming the desert to water purification, biofuel and solar energy research, BGU is at the forefront.

This issue of **Impact** takes a look at some of these innovations. You'll read about the research being done to develop high-value industries ranging from energy to health products from olives, dates and pomegranates. You'll learn how scientists are uncovering the secrets of plant survival in harsh conditions in order to provide more food for the world, and you'll discover how algae, water lilies and fish can combine to create effective water conservation systems.

Enjoy the issue and let us know what you think. Send your comments to Impact@aabgu.org.

Shanah tovah,

Carol D. Saal
President



Dear AABGU family,

The year 5769 begins with Israel once again contending with a complex geopolitical landscape and a host of security challenges and concerns. Iran's advancing nuclear program, a rearmed Hezbollah in Lebanon, heightened tensions with Hamas in Gaza, and the ever-present shadow of terrorism fill all who care for and cherish the Jewish State with apprehension.

Against the backdrop of a region in turmoil, Ben-Gurion University continues its inexorable march toward greater achievement in research and the continued up-building and development of the Negev.

AABGU's work on behalf of the University is a shining light—illuminating the future and the unlimited potential of our young people, our impact on the world and our crucial role in Israel's growing success. May 5769 bring us ever closer to fulfilling our dreams.

Wishing you all a happy, healthy and sweet new year,

Doron Krakow
Executive Vice President

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IMPACT

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ON THE COVER: A pomegranate tree blossom.

BGU STUDY PROVES LOW-FAT DIET NOT ALWAYS BEST

A TWO-YEAR study led by BGU researchers and reported in the *New England Journal of Medicine* in July concludes that low-carbohydrate and Mediterranean diets may be more effective in achieving weight loss than the standard, medically prescribed low-fat diet. Further, various health indicators suggest that the first two may have additional benefits.

Conceived by Dr. Iris Shai, a researcher at the University's S. Daniel Abraham International Center for Health and Nutrition and the Department of Epidemiology, the research was conducted in collaboration with Harvard University's School of Public Health, the University of Leipzig, Germany and the University of Western Ontario, Canada.

During the two years, 322 moderately obese people in Israel's Nuclear Research Center in Dimona were closely monitored and randomly

"...this study will open clinical medicine to considering low-carb and Mediterranean diets as safe, effective alternatives for patients..."

—DR. IRIS SHAI

assigned to one of three diets: a low-fat, calorie-restricted diet; a Mediterranean calorie-restricted diet with the highest levels of dietary fiber and mono-unsaturated/saturated fat; or a low-carbohydrate diet with the least amount of carbohydrates, highest fat, protein, and dietary cholesterol. The low-carb dieters had no calorie



restrictions.

After one year, it was found that the low-fat diet produced a net weight loss of 6.5 lbs; those on the Mediterranean diet lost 10 lbs., and those on the low-carb diet lost 10.3 lbs.

In terms of cholesterol, the low-carb diet was most successful, generating a 20 percent increase in HDL ("good" cholesterol) and a 20 percent improvement in the total cholesterol to HDL ratio. The low-fat diet, by comparison, improved that ratio by 12 percent.

In all three diets, inflammatory and liver function indicators improved equally. For diabetic participants, the Mediterranean diet proved most effective in decreasing fasting glucose levels, a major goal of treating the disease, while the standard low-fat diet actually increased them.

The study is especially significant

because 85 percent of the participants stayed with it for the full two years, and because the trials were rigorously controlled. Active support for the workplace cafeteria, nutritional counseling for participants and education

of their spouses kept the assigned diet strategies consistent.

"Clearly, there is not one diet that is ideal for everyone,"

Dr. Shai observes.

"We believe that this study will open clinical medicine to considering low-carb and Mediterranean diets as safe, effective alternatives for

patients, based on personal preference and the medical goals set for such intervention."

Additionally, Shai notes, while maximum weight loss was achieved by six months, some indicators continued to improve. "This suggests that healthy diet has beneficial effects beyond weight loss," she says. ■



Dr. Iris Shai

38TH ANNUAL BOARD OF GOVERNORS MEETING MARKS ISRAEL'S 60TH ANNIVERSARY

MORE THAN 100 AMERICAN supporters of Ben-Gurion University joined 200 delegates from around the world at this year's Board of Governors Meeting that took place on the Marcus Family and Sede Boqer Campuses from May 25 through May 28, 2008, comprising AABGU's largest delegation in several years. Participants were treated to a series of events that showcased the brilliance and vitality of Israel's youngest and most dynamic university.

Beyond the committee meetings and annual business of the Board, highlights included scholarly, artistic and literary presentations; lectures and performances; desert science and technology tours; student-led events; sumptuous meals and festive celebrations; and dedication and award ceremonies.

DEDICATIONS AND HONORS

A keystone event each year, the annual meeting provides a celebratory environment for honoring BGU's most generous supporters. Seven new American Associates were inducted into the prestigious Ben-Gurion Society, their names inscribed on the Ben-Gurion Wall that stands prominently in the center of the Marcus Family Campus. Supporting Founders were also honored. Forty-eight new inscriptions were unveiled on the Founders Wall. (See page 31.)

Several delegates were invited to participate in the dedication of facilities made possible by their generosity. Ben-Gurion Society members Eric F. and Lore Ross of Palm Beach, Florida traveled to Israel for the first time in more than 20 years to participate in

the moving dedications of the Eric F. and Lore Ross Atrium for Community Action and the Eric F. and Lore Ross Lecture Hall in the Ruth and Heinz-Horst Deichmann Building for Health Professions.

In memory of her late husband Stan, Ruth Flinkman of Los Angeles, California, accompanied by her sons



and grandson, dedicated the Stan Flinkman Foyer in the Henry and Anita Weiss Family Building for Advanced Research, in support of nanotechnology. BGU was also proud to welcome Ruth as a member of the Ben-Gurion Society.

Long-time supporter and Ben-Gurion Society member Ernest Scheller, Jr. of Philadelphia, Pennsylvania and his wife Roberta had the pleasure of inaugurating the Ernest Scheller, Jr. Chair in Innovative Management presented to incumbent Professor Amos Drory of the Guilford Glazer School of Business and Management. (See page 8.)

Philadelphians Marilyn and J. Robert Birnhak dedicated the Tracey Ann Birnhak Classroom in the Deichmann Building for Health Professions in

memory of their late daughter. Members of the Philadelphia delegation joined Harriett Sofa in a tour of the Brain Imaging Center, honoring Harriet's generosity in funding essential equipment. Sylvia Brodsky and her family celebrated the second anniversary of the Sylvia A. Brodsky Psychological Walk-in Service.



AABGU PRESIDENT RECEIVES HONORARY DOCTORAL DEGREE

AABGU's president Carol D. Saal was one of six outstanding individuals upon whom an honorary doctoral degree was conferred by BGU President Prof. Rivka Carmi and Rector Prof. Jimmy



5

the honor with touching humility: "My days are filled with the joy of commitment. I am gratified by what I'm able to do on behalf of Israel but, equally important, I am enormously enriched by what I get in return... My deepest thanks go out to my dear friends and family gathered here tonight, whose encouragement, support and love allow me to live my passion each and every day."

The other doctoral recipients included Prof. Amos Oz, world-renowned author and recently retired member of BGU's Department of Hebrew Literature; Prof. Avishay Braverman, member of Knesset and BGU's fifth president; Prof. Claude Cohen-Tannoudji, a physicist; Baron David René James de Rothschild, a distinguished banker and pillar of the French Jewish community; and Prof. Agnes Heller, an eminent philosopher.



6



7

Weinblatt. Her citation read: "In honor of a true friend of Ben-Gurion University and a partner to its vision; in recognition of her initiatives in the world of high-tech, the application of her entrepreneurial gifts to the social sector, her passionate advocacy of many worthy and important causes and the centrality of volunteerism as her life's work...including her activities as a member of the Board of Governors and the Ben-Gurion Society and her dedicated leadership as president of American Associates, Ben-Gurion University of the Negev."

Surrounded by a large contingent of family and friends, Carol accepted

CELEBRATIONS

The Board of Governors marked Israel's 60th anniversary with a festive celebratory dinner that included multiple and delicious courses, and a spectacular multi-media performance in Park Golda in Ramat HaNegev.

Prof. Amos Oz was the keynote speaker at the opening plenary session. He spoke eloquently about "Israel at 60: the Conflict of Dreams and Reality." Another session continued the theme by celebrating 60 years of Israeli culture with a panel of distinguished contemporary literary and performing artists. Emceed by Prof. Nissim Calderon of the Department of Hebrew Literature, the program examined how music and contemporary Hebrew tells the story of an ancient people in a new land, struggling with multiple identities.

The Annual Student Evening, hosted by BGU's students, and sponsored by AABGU donors Dorian Goldman and Marvin Israelow, Alex Goren, Arline and Ben Guefen, Fred and Marlene Levinson, Joel Reinstein, Carol and Harry Saal, and Marjorie and

Max Schechner, celebrated AABGU's 36th anniversary and featured several student performances and presentations. The annual student auction raised needed funds for student programs.

Also commemorated were the 25th anniversary of the Charlotte B. and Jack J. Spitzer Department of Social Work and the 30th anniversary of the Open Apartments Program, where students live in the neighborhoods of the underprivileged people they mentor. A celebration of community intervention, the program showcased the inspiring outreach of this University with a mission to develop the Negev and reach out to its neighbors.

Participants engaged in stimulating lectures from Nobel laureates and toured the Sede Boqer campus. The meeting concluded with a standing-room-only-attended discussion about Sderot and the daily rocket attacks this BGU neighbor-town has endured for seven years, led by a lecturer in the Department of Middle East Studies and resident of Sderot, Dr. Dror Zeevi.

SAVE THE DATE

This annual event is open to all BGU supporters at any level and all are invited to attend. The 39th Annual Board of Governors Meeting will take place May 24 through May 27, 2009. ■

1. Lewis Flinkman, Noah Flinkman, Dr. Ron Folman, Ruth Flinkman, Prof. Rivka Carmi, and Russell Flinkman at the dedication of the Stan Flinkman Foyer in the Henry and Anita Weiss Family Building for Advanced Research

2. Ernie Scheller, Jr. (right) at the inauguration of the Chair in Innovative Management with incumbent Prof. Amos Drory

3. Prof. Rivka Carmi (center) with Lore and Eric Ross at the dedication of the Eric F. and Lore Ross Atrium for Community Action

4. Prof. Rivka Carmi confers an honorary doctoral degree upon AABGU President Carol D. Saal.

5. A festive Israel at 60 dinner celebration featured a spectacular multi-media presentation.

6. Delegates from AABGU's Northwest Region

7. BGU students presented a birthday cake to AABGU President Carol Saal in celebration of AABGU's 36th birthday.

A “FIRST IN ISRAEL”: COLLABORATION WITH MICROSOFT

BGU WILL PARTICIPATE IN JOINT

research projects and other collaborations with Microsoft, one of the world’s leading technology companies. The agreement was announced in July, and is the first arrangement of its kind in Israel.

Outstanding BGU computer



President Prof. Rivka Carmi and Microsoft’s Chief Technological Officer Yoram Yaacovi announce unique collaborative agreement.

students will complete internships with Microsoft’s R&D Center in Israel and its special Innovation Labs, established by the company to integrate academic research and the commercial market. The agreement will also facilitate joint research projects, global entrepreneurship programs, mentoring of final projects, and the creation of long-term relationships with BGU’s Departments of Computer Science, Electrical Engineering and Computer Engineering.

The announcement was made by BGU President Prof. Rivka Carmi and Yoram Yaacovi, chief technological officer of Microsoft’s R&D Center, at the opening ceremony of the University’s Annual Project Day. This is the event that sparked *New York Times* columnist Thomas Friedman to publish a column on the ingenuity of BGU’s students, calling them Israel’s “oil wells,” after witnessing Project Day last year.

Prof. Carmi noted that the University teaches some 20 percent of the country’s students in high-tech fields and sees expansion in the Negev as a national mission. “BGU is the second largest educational institution in the country training engineers,” she said, and described the University’s development of an Advanced Technologies Park, which will help keep talented graduates in the region and attract more.

Speaking at the ceremony, Microsoft’s Yaacovi noted “the cooperation with Ben-Gurion opens doors for excellent students, giving them direct access to the core of the global technology industry. We are creating a talented and exceptional group of programmers that will join the R&D Center and participate in developing the next generation of technology innovations.”

Each year, Microsoft will select 18 BGU students for the program. ■

PLAN FOR ISRAELI-PALESTINIAN ENVIRONMENTAL COOPERATION UNVEILED

THE MODEL for an Israeli-Palestinian environmental cooperation agreement was introduced during the 38th Annual Board of Governors Meeting in May at the Jacob Blaustein Institutes for Desert Research (BIDR).

Detailed in a presentation called “Creating an Environment for Peace,” the proposed plan was developed by Professor Alon Tal, of the Swiss Institute for Dryland Environmental Research at the BIDR, and Dr. Mohammed Said Al-Hmaida of Birzeit University, situated just

outside the West Bank.

Mutual interest in preserving and maintaining the land’s natural resources was the starting point for several months of research and negotiations. The plan encourages joint management of shared resources for sewage treatment, water purification and use, nature preservation, air pollution control, and planning for areas near borders.

“For example, Israelis and Palestinians would both be directly involved in the physical planning of areas on both sides which are adja-

cent to the borders,” explains Tal. “Israel would have a say in the sewage treatment strategy in the Palestinian sector—which directly affects our water resources, just as the Palestinians would have access to monitoring of Israeli air pollution sources that are transboundary and impact their air quality.”

The model agreement has been submitted to Israel’s Ministry of Environmental Protection and the Palestinian negotiating team on the environment. ■



Surgeons at Washington Hospital Center using BGU-developed technology during a brain biopsy.

GESTURE RECOGNITION DEVICE FOR SURGEONS REDUCES RISK OF INFECTION

A NEW HAND GESTURE recognition system, called Gestix, enables doctors to manipulate digital images by using hand motions.

The technology, developed at BGU, can potentially replace the need for surgeons to use a touch screen, keyboard or mouse during medical procedures. This allows them to review onscreen medical information without risking contamination and spreading infection.

Prof. Helman Stern, of BGU's Department of Industrial Engineering and Management and a principal project investigator, explains how Gestix functions: "There is an initial calibration stage where the machine recognizes the surgeon's hand gestures, and a second stage where surgeons learn and implement navigation gestures, rapidly moving the hand to and from a neutral area on the screen." Gestix users can zoom in and

out of the screen by moving the hand clockwise or counterclockwise.

The device was tested at the Washington Hospital Center in Washington, D.C. in May, and proved to be the first time a hand gesture recognition system was successfully implemented during a neurosurgical brain biopsy. The results were printed in the June issue of the *Journal of the American Medical Informatics Association*. ■

CREATING "GREEN" STANDARDS FOR PUBLIC BUILDINGS

A TEAM OF ARCHITECTURAL and planning experts from BGU's Jacob Blaustein Institutes for Desert Research has been selected to create "green" building standards for Israel's publicly funded buildings.

Led by Prof. Isaac Meir, chair of the Department of Man in the Desert, the team was chosen by the Israeli National Lottery, which funds the construction of educational, community and public buildings. Meir is an architect and urban planner who specializes in sustainable, environmentally sound architecture in arid zones.

Buildings that conform to the new criteria will be granted a "green label," certifying those public buildings for resource-use efficiency



Professor Isaac Meir

and low environmental impact. In addition to advancing green building in Israel, the project will focus attention on the University's sustainable development expertise. ■

“I BELIEVE THAT the greatest gift I can give, the most important thing I can do, is to provide education for others,” Ernest Scheller, Jr. says. “I support Ben-Gurion University because everything about it fits my ideals—where it’s situated in the desert, all the obstacles it faces, the people who are actually *doing* and have made it a success. I want to help them in their effort to continue that success.”

The Scheller family has generously supported the Ginsburg-Ingerman Overseas Student Program and the University’s groundbreaking work in nanotechnology. Now Ernie has funded the Ernest Scheller, Jr. Chair in Innovative Management for the Guilford Glazer School of Business and Management.

The Schellers are action-oriented people who commit personal time to AABGU and fill major leadership roles. Ernie and his wife Roberta have both served for years on the Philadelphia chapter’s board of directors, and Ernie serves on the national board. They have continuously played important roles as members of the Heritage Society, the International Society of Founders, and more recently, the Ben-Gurion Society.

Daughter Lisa and her husband Wayne Woodman are also founders; they are active in the chapter, and Wayne recently joined the national board. Ernie’s brother Joe and his wife Rita are involved with the chapter’s board; Joe’s serving as an officer. “It’s a family affair,” Ernie proclaims.

It began when Scheller was introduced to the University by Isaac Auerbach, a BGU benefactor who served as vice governor on BGU’s board of governors from 1988 to 1992. “I knew him from another organization and he knew my desire to help out in education—I’m a supporter of my



ERNEST SCHELLER, JR. PHILADELPHIA, PA GIVING IN MANY DIMENSIONS

college, Georgia Tech. He said I should learn a little something about BGU, which I did, and was very inspired to do more than just learn about it. I wanted to play more of a part in helping them educate young people.”

The Schellers visited BGU for the first time 18 years ago, and have since made several more trips. They are impressed with the enthusiasm of the professors and students, Scheller says. “It’s exciting to see things come to life.”

Establishing the Chair in Innovative Management is an outcome of his own business experience. He devoted his career to building the family business, Silberline Manufacturing Co., a supplier of high quality pigments in the paints and coatings industry. He was also active in a number of business associations and widely recognized for his leadership.

The idea for the Chair, he explains, connects to Thomas Friedman’s observation after he visited a student engineering exhibit at BGU, published in *The New York Times*, that Israeli oil is its educated people who are

making and commercializing new discoveries.

Ernie Scheller is also delighted that the Chair will be filled by Prof. Amos Drory, former AABGU executive vice president and past dean of the Guilford Glazer School of Business and Management. Drory is currently serving as BGU’s vice president for external affairs.

“Discoveries aren’t more than pipedreams unless they are managed into something that’s useful and profitable,” Scheller says. “Management techniques are changing as the world goes on and I felt strongly that it would be a service to the people of Israel to learn about these techniques and develop them.”

Scheller’s business perspective also gives him a particular viewpoint on the value of supporting BGU through AABGU: “They’ve proven any support or money you give them is well used and many, many people benefit. Giving makes you part of a successful enterprise which is going to compound itself by educating students who in turn are going to contribute to the world’s development and help so many people.”

In May, Scheller began a term as chair of the Philadelphia chapter. He previously served as associate chair and vice chair. He has set a goal: to attract as many people in the 40 to 60 age range into the organization as possible, “and hopefully convey to them the same feelings about the University that Isaac relayed to me.”

In addition to supporting BGU, the Schellers contribute to a wide range of Jewish, national and local charities.

Does Scheller have a method for promoting intergenerational philanthropy at home? “Let kids participate in the giving. Arrange for them to have a certain amount of money they can contribute—but not just money, their time and effort, too.” ■

LIS GAINES FIRST HEARD about Ben-Gurion University in 1973: “A relative had gone to Israel and someone dragged him down to see this just-started university.” BGU was barely four years old.

His account was enough for Lis, and she took the initiative to make herself a charter member of AABGU. She remembers clearly her first task on its behalf: “Three of us, my sister-in-law Carol Green, Bobbie Abrams and I, sat down and wrote 100 letters asking friends to send \$100. On a typewriter! AABGU has come a long way.”

And during that journey, Lis Gaines has been consistent with unflagging commitment, energy and generous support. Besides continuing to stuff envelopes when the opportunity presents, she served as chair of the Greater New York Region for more than a decade, as national vice president and as AABGU’s first woman president from 2003 to 2005. She also works part of the year on behalf of the Greater Florida Region.

She continues to draw her friends into the AABGU world. And every year since 1975 except one, Lis, who is now 87, has visited BGU, which she calls “absolutely spectacular, the most unbelievable campus I’ve ever seen.”

Last year, Lis’ generosity was recognized with membership in the Ben-Gurion Society. She will also be honored for her many years of support on November 9, 2008 at AABGU’s symposium on environmental sustainability in New York.

Lis has contributed to BGU’s Center for Advanced Mathematics since its infancy and has been instrumental in fostering its growth. Holding a master’s degree in Educational Psychology from Harvard herself, she has a specific view on what matters in education today: “The more I studied the more I



LIS GAINES NEW YORK, NY THERE FROM THE BEGINNING

realized that math is really the basis for all the sciences. And the world is about science now—it’s what makes it advance. A famous Swiss mathematician I knew once told me that without an institution of higher mathematics BGU would never be a top university.”

“It’s very hard to attract young people to continue the work... we absolutely must find ways to do it.”

— LIS GAINES

During her trip to attend the Board of Governors Meeting this year, Lis took particular delight in seeing middle and high school students who

come to the University for the Kidumatica program, an after-school mathematics club for gifted youth. “The youngest was 14. It was amazing; they spoke in English about what they were doing, and none of us understood a thing they were talking about.” What makes BGU so special to Lis? “The students are extremely happy to be there—they feel it’s a gift. You don’t get that atmosphere in the states. And they are very connected. Every student who gets a scholarship must tutor kids or do some social outreach in underprivileged neighborhoods. They really have to want to be BGU students because it’s very demanding.”

Lis notes that she is a very happy woman herself. Born in Switzerland and raised in a traditional middle class milieu, she came to the U.S. on vacation with her family when she was in her late teens. She recalls that on the last two nights of a luxurious voyage aboard the Normandy, passengers were told to pull the shades down. A few days after the family arrived, the war broke out. Lis’ parents delayed returning to Europe, and ultimately decided to settle in New York.

Lis went off to college. In the ensuing years she worked with handicapped and hospitalized children and was a psychologist for the army. Twice widowed, she raised six children. One grandson, Aram Green, chaired AABGU’s Young Professionals Group.

This is a mission close to Lis Gaines’ heart. Ensuring the future is the major challenge she sees ahead for AABGU. “It’s very hard to attract young people to continue the work,” she observes. “The well-to-do 40, 50 and 60 year olds—we absolutely must find ways to do it.”

Lis Gaines has ideas about that. ■



THE DAVID & INEZ MYERS FOUNDATION CLEVELAND, OH FOSTERING JEWISH LIFE

DAVID AND INEZ MYERS believed fervently in giving to the community and supporting Jewish life, especially in Israel, recalls their good friend Lee Kohrman, who is now president of their foundation.

The Myers established the David and Inez Myers Foundation to foster Jewish life in America and in Israel. It is a supporting foundation of the Jewish Community Federation of Cleveland.

The Myers were blessed with long lives: David died in 1999 at the age of 99, and Inez passed away two years later at age 97. Originally in the asphalt business, David Myers was later an investor.

“They enjoyed their capacity to help others very much,” says Kohrman, who is an attorney. “It is gratifying to have a capacity to make a difference in institutions and, more importantly, in people’s lives.” He and the Myers also shared the belief that Israel has “a central role to play in the continuity of Jewish life in America. That was extraordinarily important to Mr. Myers, and to me,” Kohrman says.

It was just one step further to realize the centrality of universities in the life of Israel, he explains. “We decided early on to make

substantial investments in Israel’s universities because we believe that they are critical to the success of Israel, more so than in any other society. Concentrating on the universities fosters the entire range of Jewish life.”

“We’ve always taken the view that investing in young people is best. What else gives you 40 to 50 years of return?”

— LEE KOHRMAN

The Foundation has long been a generous benefactor of BGU. This year, it made a significant grant to fund the recruitment and support

of young faculty members in the life sciences.

“We believe it is one of the more important needs for an Israeli university—the capacity to recruit young faculty is an especially acute situation,” Kohrman says. “We thought that supporting the faculty is the most productive philanthropic investment to make right now.”

Kohrman has paid a number of visits to BGU and has been impressed with “the significant construction and progress made. It’s well run, has good management, and is exquisitely located to address hugely important needs of Israel.”

In his opinion, all who are motivated to give to Israel, even modestly, should consider supporting institutions of higher learning.

“We’ve always taken the view that investing in young people is best. What else gives you 40 to 50 years of return?”

“Beyond that, to have the opportunity to identify with an important successful enterprise like Ben-Gurion University is gratifying. It feels good to share the opportunities and fortunes of such a significant body of people—faculty, students and administration. In fact, it’s very rewarding.” ■

WHAT SOCCER TELLS US ABOUT MAKING DECISIONS

WHAT DOES SOCCER have to do with economics, business management and psychology?

For more than three decades, Professor Michael Bar-Eli has pursued multiple tracks: business organization, psychology, and the behavioral aspects of sports management. Most people saw little connection among these fields. Prof. Bar-Eli saw a potential for investigating important questions of human behavior.

“Judgment and decision-making are very important for the world of work, and sports is a field of interest where human performance under stress can be examined,” says Bar-Eli, who teaches in the Guilford Glazer School of Business and Management’s Department of Business Administration.

“In soccer, a player decides to shoot but misses, and the coaches say he should have passed; he made the wrong decision. A manager sees the stock market going down, panics and

sells. The decision-making process under stress when the stakes are high is basically the same—a human being is a human being.”

Bar-Eli was a sports management consultant and a practicing sport-psychologist for many years, advising



Professor Michael Bar-Eli



Dr. Ofer Azar

teams and individual players on improving performance; he has also published widely on the psychology of sports and sports management.

One recent scholarly article was written with BGU colleague Dr. Ofer

Azar, a lecturer in the Department of Business Administration who specializes in business strategy and behavioral economics, Professor Ilana Ritov from Hebrew University, and two former graduate students. The article, titled “Action Bias Among Elite Soccer

Goalkeepers: The Case of Penalty Kicks,” appeared in the *Journal of Economic Psychology* and received significant attention from the media, uncommon for academic articles.

The investigation originated at a world championship soccer game exactly 34 years ago, Bar-Eli explains. “It was a penalty kick, and the player shot the ball very sharply into the center of the goal. The goalie jumped and the ball went in—if he had just stood there the ball would have hit him. I asked, why do they jump all the time?”

It took Bar-Eli 20 years to find other researchers interested in seriously pursuing the question, and then a lot

of research time, involving a number of students to collect and analyze the data.

As Dr. Azar explains, 286 penalty kicks from archived video recordings of high-stakes games were reviewed and the probability of what would block the kicks was computed. Staying in the center gave the goalie a 33.3 percent chance at halting a penalty kick, compared to 14.2 percent when jumping left and 12.6 percent when jumping right. Yet the goalies jumped 93.7 percent of the time and stayed in the center only 6.3 percent.

This highlights a marked difference between optimal behavior and actual behavior, and the researchers theorized that the reason was psychological.

stayed in the center. We did find this in their behavior, and then to support that conclusion, we interviewed Israel's top 32 goalies. We asked them short, specific questions about what would cause them more regret and it was confirmed: they feel worse when they stay in the center and miss the ball than when they jump and miss the ball."

The study was first published in scientific sections of several leading European newspapers. The article suggested, however, that the findings hold broader implications and apply also outside the sport world. Recently, American newspaper reporters expanded on some of these implications. *The New York Times* suggested,

action, even though doing nothing could be better, and so they act.

However, what has pleased Bar-Eli even more than the extensive media

"In Western society we are very active people; we run all the time, so we're troubled by this idea—that doing nothing can sometimes be the best way."

—PROF. MICHAEL BAR-ELI

coverage was the enthusiastic response of top scholars in the field. To him, it demonstrates that the scientific world is coming to recognize the relevance of his lifelong interests in judgment and decision-making in sports.

Bar-Eli sees far-reaching concepts to ponder. "We discovered that the goalkeepers' behavior substantially deviates from the optimal model of best response. Why? You could think people are irrational. But the question is really whether there's another type of rationality. Human beings say 'this is the correct solution' but still do otherwise. So from my humble question of 34 years ago, we come to deep thoughts and see that we probably need to define rationality in different ways."

Bar-Eli is also thinking about what it means to show, as the article does, that there are circumstances in life where the optimal solution is not to do anything. "In Western society we are very active people; we run all the time, so we're troubled by this idea—that doing nothing can sometimes be the best way," he says. He observes that the famous 17th century French mathematician and physicist Blaise Pascal advised people to sometimes simply sit still and do nothing.

Or as Bar-Eli would say, "There are times in life when you just have to wait patiently, and maybe the ball will hit you." ■



This goalie had only a 12.6 percent chance of blocking the shot.

It is summed up as the "action bias," the tendency to *do* something rather than do nothing.

"It's a matter of how the goalies expected to feel," says Azar. "Our conjecture was that if they eventually missed the ball, doing something active—jumping to one of the sides—would cause less regret than if they

for example, that the action bias can explain a tendency of investors in bad times to sell their stocks when keeping them would produce better results. *The Washington Post* put the research in a political context: when leaders react to a crisis, for example, they anticipate that inaction is more likely to draw criticism than taking

MEN AND HOUSEWORK: IS THE NEW WORLD HERE YET?

DO 21ST CENTURY AMERICAN MEN contribute more to childcare and housework than their counterparts did 30 years ago?

Definitely, says Professor Oriel Sullivan, a sociology lecturer in BGU's Department of Sociology and Anthropology. Summarizing a mass of data from her own and others' research, she has demonstrated that since 1975, U.S. men's share of childcare and household work has increased from 20 percent to nearly one-third.

In terms of hours, men's contribution to childcare has increased from four hours weekly to six hours, and for other family work, has risen from eight hours weekly to 10 hours. By comparison, today's employed women are doing 11 hours of childcare (up from seven hours in the 1970s) and 19 hours of other family work (a decrease of three hours in the same period).

Prof. Sullivan's analysis is in line with many people's experience, she believes. "I think most people have seen something of this change within their own families, particularly in successful marriages where the families have stayed together over time. Compared to our parents and grandparents, it's clear that what is expected from men and women is different today."

Nevertheless, Sullivan's conclusions are controversial. Until recently most gender research literature, she points out, has focused on the idea that the gender revolution has "stalled." Progress toward more equal household responsibilities has been far less than women had hoped for, or merited, according to this school of thought.

"As a young researcher I was going to conferences and trying to present data on change, and saying that men contribute more, and it

was making some people quite angry because their own research was very much based on stalled gender progress.

"I wouldn't want to invalidate those studies—a lot of important work has been done on why there's been less change, particularly in



Professor Oriel Sullivan

public sector employment—but this diverts from the longer perspective. It takes attention away from investigating the change that has occurred, and the reasons for it."

...the total hours invested
by mothers and fathers is
amazingly equal—about 67
hours per week.

So Sullivan decided to write a book on the subject. *Changing Gender Relations, Changing Families: Tracing the Pace of Change Over Time* was published in 2006. The book presents the quantitative evidence and explores associated changes, including shifting attitudes toward gender equality. Issued by a respected imprint in the field, Rowman & Littlefield's Gender Lens Series, the book was

well received but did generate argument in gender research circles.

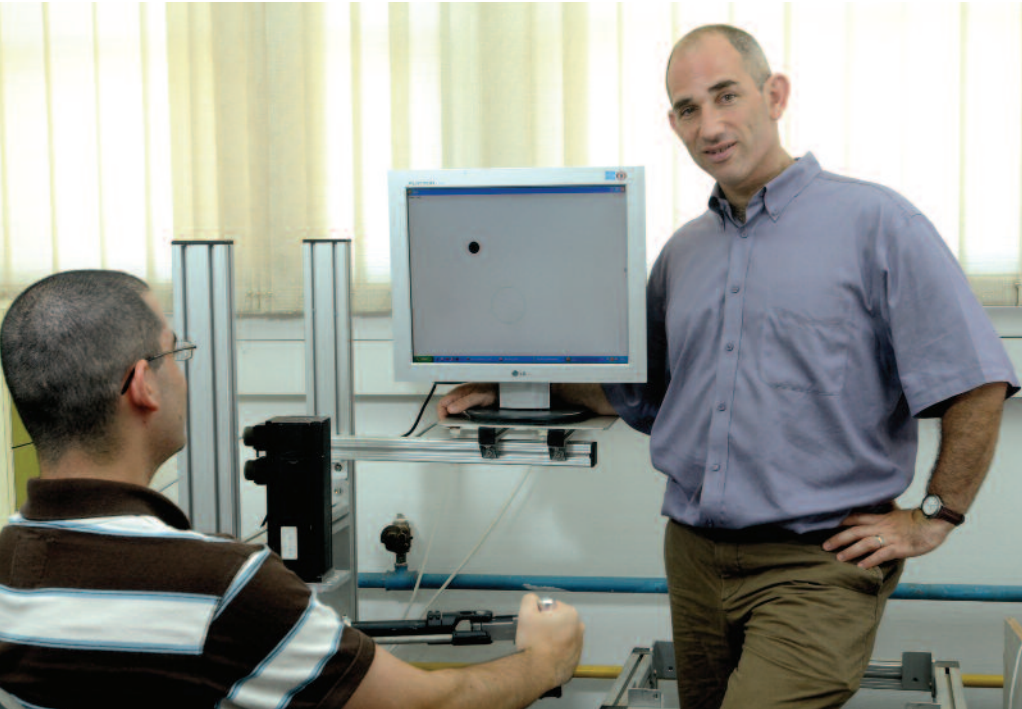
Subsequently, Sullivan was asked to co-author, with Scott Coltrane of the University of California, a discussion paper by the Council on Contemporary Families. The organization is based at the University of Illinois and is dedicated to bringing solid academic research into the public view. "Men's Changing Contribution to Housework and Childcare" was presented at the Council's national conference in April.

Some of Prof. Sullivan's specific findings include:

- Men are contributing more across the socio-economic spectrum—in fact, men from blue collar households increased their share more dramatically, starting off from a lower level but catching up to men in the managerial-professional groups.
- Children are getting more attention from both men and women and less housework is getting done. Does this mean people are generally doing less household work? There is plenty of socio-economic data that confirms this, Sullivan says. In some cases, higher-income families hire help to make up the difference.
- Women's employment and men's contributions are linked. Men begin to change their behavior when women work, and there is evidence that when women work full time, and when they earn equivalent money, men contribute more time.
- Counting paid and family work together, the total hours invested by mothers and fathers is amazingly equal—about 67 hours per week. While women still contribute more time to childcare and household tasks, many work part time, and on average do fewer hours of paid work.

Continued on Page 31

BRAIN RESEARCH PROMISES DRAMATIC HELP FOR DISABLED



Dr. Opher Donchin (standing) and graduate student Ofer Livne monitor perturbed motion in patients suffering from cerebellar damage.

IN JUNE, the Fourth Computational Motor Control Workshop at Ben-Gurion University of the Negev drew 120 international presenters and participants to Beer-Sheva, where they heard about new research on how the brain interacts with the body to produce movement.

Topics like “Brain and Machine Learning” and “The Neural Encoding of Eye Movements in the Primate Midbrain” might make you roll your eyes, but they represent progress in a field that may improve the lives of millions of mobility-impaired people in the near future.

Since 2004, the subject has been the focus of the Motor Learning Laboratory at BGU’s Zlotowski Center for Neuroscience. The lab’s principal investigator, Dr. Opher Donchin of the Department of Biomedical Engineering, organized the conference in collaboration

with Dr. Amir Karniel, who heads the Computational Motor Control Laboratory.

Dr. Donchin—who is a martial artist with a background in dance and athletics—acknowledges a life-long fascination with simple everyday movement like reaching for an object. His work at the lab is devoted to understanding exactly how the brain controls this process, something of which we are seldom conscious. “We notice how complicated it is when we watch babies learn to control their movement and see how long it takes,” he notes.

But we also notice how complex motor control is when something goes wrong because of injury or illness. Then we often look to rehabilitation to re-learn what is no longer easy and natural. However, rehab has long been a practical rather than science-based art. If the brain’s

functioning were better understood, imagine what could be done for amputees, the wheelchair bound and people suffering from motor diseases.

Donchin believes that a theoretical base could radically improve the rehab process. “Now it’s all done one-on-one with physical therapists, which seems to work, but it’s not based on deep understanding of what’s going on with the nervous system and the muscles—that’s new knowledge. Many in the field work on transferring the ideas to rehab paradigms. The more we know, the better we can do that.”

The field of motor control has gotten a big push with a recent breakthrough widely covered by the media. An American research team successfully trained two monkeys with tiny sensors in their brains to control a mechanical arm with their thoughts alone. The monkeys were able to reach for food, grab it, and even adjust for the size and texture of the pieces as necessary.

While many technical problems need to be solved before the technology becomes truly practical, Donchin says, the expanding vistas are enormous. “Imagine if people could use their brains to control robots, or drive their wheelchairs, or use prosthetic limbs.”

Donchin focuses on studying the cerebellum’s role in movement. The cerebellum makes movements smooth and coordinated, and is the first part of the brain to become impaired by alcohol. “We want to find the neurons that make it happen and understand the process—how all the pieces are put together into a coherent system that makes movement and enables adaptation to the environment and perturbations.”

The lab’s activities range from observation of complex tasks like

Continued on Page 31

AABGU's nine regional offices around the country play a vital role in helping BGU develop the bold vision for the Negev, the focus of the future of Israel and the world. Regional events include symposia, luncheons, dessert receptions, gala evenings, and missions to Israel. The following pages provide a glimpse of the regions' recent and upcoming activities. We invite you to get involved and become infused with the spirit of discovery.

GREAT LAKES

Judy Rosen, *Director*
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Dr. Leslie Lobel, senior lecturer and researcher at BGU's Department of Virology and Developmental Biology, was hosted at Temple Beth-El and the Veritext office in Northbrook in February. He discussed his research on infectious diseases and cancer. He highlighted a unique technology that enables vaccines to be stored at room temperature. This innovation will increase and improve vaccine distribution throughout the world. Dr. Lobel had a captivated audience as he described his recent research in several African countries.

Professor Fred Lazin, chair of BGU's Department of Politics and Government, discussed Israel's achievements during this celebratory year of its 60th birthday at two Chicago events in April. He was hosted at a luncheon sponsored by Chicago's American Israel Chamber of Commerce and friends of AABGU, and at a reception co-hosted by Bank Leumi, Highland Park and AABGU. He offered insight about Israel's struggles, incredible survival and unprecedented achievements, and how BGU is advancing the development of Beer-Sheva, the Negev Desert and Israel.

Professor Lazin and Regional Director Judy Rosen traveled to St. Louis for a dinner reception hosted by the Central Reform Congregation and Rabbi Susan Talve. Lazin discussed "The Changing Israeli Society." He presented fascinating anecdotal stories about Israel's historic founders and the leaders of today's Israel. Before the evening was over, the congregation was so inspired they invited Lazin to return next year.

In July, a dessert reception was held at the home of Tova and Michael Rothschild in Glencoe, featuring Ethiopian-Israeli writer, director and actor Sirak Sabahat and BGU Professor Emeritus Michael Alkan, M.D. The event described the challenges faced by the Ethiopian community



Rabbi Susan Talve, Professor Fred Lazin and Steve Engelhardt at the Central Reform Congregation in St. Louis



Dr. Leslie Lobel, Rabbi Sidney Helbraun and Ernie Simon at Temple Beth-El in Northbrook, IL

and how AABGU's new Fund for Ethiopian Students seeks to fill an important gap.

The Great Lakes office has moved. Our new address is: 250 Parkway Drive, Suite 150, Lincolnshire, Illinois 60069.

GREATER FLORIDA

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AABGU is pleased to announce that it is restructuring its southeastern operations to develop a unified Greater Florida Region. The reorganization will optimize management efficiency, enhance engagement with the current Florida community and attract a growing network of new supporters. The next issue of *Impact* will profile the region's new director and exciting plans.

In January, the AABGU Winter Weekend Spectacular at the Jupiter Beach Resort and Spa in Palm Beach proved an exciting introduction to 2008. The weekend began with the *Miracle in the Desert* Gala Dinner Dance at the Mar-A-Lago Club, which honored Lore and Eric Ross for their extraordinary support of BGU. The evening featured a riveting performance by entertainer Tovah Feldshuh. The weekend's activities concluded with "Oasis of Innovation: A Symposium for the Curious." Five BGU researchers shared their work on greening the planet, the detection of bacteria and enriching the Negev community.

In Sunny Isles Beach, the Israel at 60 Honorary Gala paid tribute to Rubin Salant in March. BGU President Prof. Rivka Carmi conferred upon him an honorary doctorate degree in a moving ceremony. Additionally, AABGU Executive Vice President Doron Krakow presented David Ben-Gurion Awards to: Adele and Sam Borger; Neomi and Michael Dezer; Sandra and the Hon. Billy Joel; Rina and Yoel Saraf; and Ethel and David Sommer. The festive evening featured special guest speaker Ambassador Dennis Ross and world-renowned comedian Shecky Greene at the Trump International Sonesta Beach Resort.

"The Buzz from BGU," a luncheon and speaker series,



Actress and singer Tovah Feldshuh flanked by Miracle in the Desert Gala honorees Eric and Lore Ross at the Mar-A-Lago Club



BGU President Prof. Rivka Carmi conferring an honorary doctorate degree upon Rubin Salant

was launched in West Palm Beach, Boca Raton and Sunny Isles Beach, featuring presentations by BGU scholars on topics from nutrition and health to combating bioterrorism. A new series is being scheduled for the winter 2009 season. Watch your mail for the brochure, or call (954) 962-3440 for information.

GREATER NEW YORK

Lite Sabin and Jessica Sillins, *Chairs*
Kevin M. Leopold, *Director*
Wendy Clarfeld, *Associate Director*
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kleopold@aabgu.org
wclarfeld@aabgu.org

Sunday, November 9, 2008
Environmental Sustainability Symposium
The Harvard Club, New York City
Saturday, March 21 through
Sunday, March 29, 2009
The Young Professionals Israel Experience



Young Professionals' pre-Passover wine tasting at Pomegranate Gallery in Soho. Pictured are: Wendy Clarfeld, associate regional director; Oded Halahmy, Pomegranate Gallery owner and Jen Mittelman

On November 9th, world-renowned Professors Zeev Wiesman, Isaac Meir and David Faiman will explain their groundbreaking research in biofuels, desert architecture and solar technologies. Their research offers applications for improving the Negev region, Israel and drylands around the world. The symposium will feature an interactive discussion about the University's achievements in combating desertification and greening the planet.

Lis Gaines will be the guest of honor during the evening's dinner reception. A member of the prestigious Ben-Gurion Society and former AABGU president, Lis' tireless efforts and bold visions since AABGU's founding have led to unprecedented exposure and financial support for the University (see pg. 9).

Join young professionals from March 21 through March 29 on an adventurous Israeli vacation to explore the miraculous desert. Hike through the Negev; tour desert vineyards; climb Masada and float in the Dead Sea. Discover Israel's magnificent natural beauty.

Explore BGU's innovative research laboratories, where scientists and students are creating miracles in the desert, and lunch with students and faculty who are improving the world for future generations. Visit and participate in the University's Open Apartments Program, an unprecedented community outreach program that assists 15,000 local residents.

The Israel Experience will highlight the Negev's environmental and unique multicultural gifts, and demonstrate how BGU fulfills the dream of David Ben-Gurion, Israel's founding father, to make the desert bloom.

For more information about the symposium, the Israel Experience or local events, including an ongoing lecture series, please call (212) 687-7721.



June "lunch and learn" reception. Back Row: Lis Gaines; Lite Sabin, regional co-chair; Edwin Hantman; Jean Young; Zvi Muskal; Tim Boxer; Madeleine Agai; Guest Speaker Prof. Steve Rosen of the Department of Bible, Archeology and Ancient Near Eastern Studies. Front Row: Ronald Guttman; Carol Slotkin; Rochelle Etingin; Sue Stevens

GREATER TEXAS

Sandra and Steven Finkleman, *Chairs*
Deborah K. Bergeron, *Director*
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dbergeron@aabgu.org

Over 40 major AABGU donors attended this year's Chef's and Patron's Reception at the new Ibiza Lounge Next Door, one of Houston's hottest wine rooms. Guests enjoyed champagne, chocolate mousse and tea sandwiches. The kosher event, underwritten by Jenny Tavor, Tavor Catering, Kroger on Belfort, and Chef Charles Clark of Ibiza and Ibiza Lounge Next Door, was chaired by Jean Goldberg, Dora Klaff and Jenny Tavor.

Chai donors (\$18,000 and over) received a beautiful paperweight engraved with the BGU logo, designed by famous glass artist Bill Meek. Honored chefs received a framed picture of the "Chefs of 2008," along with a much deserved standing ovation for their sensational meals prepared for the Seventh Annual Kosher Dining Extravaganza held in March.

New founders (\$36,000 and over) received framed



Deborah Bergeron, regional director; new Founders Golda Baker, Robin Vinegar and Gil Baker at the Chef's and Patron's Reception

artwork of Negev flowers surrounded by famous David Ben-Gurion quotes. In honor of AABGU's 36th anniversary, new founders will be given a beautiful set of handcrafted crystal candlesticks.

"Fulfill the Promise: The Jewish Ethiopian Journey Home" was held in partnership with the Jewish Federation of Houston and Rice University on Sunday, September 14 and

REGIONAL NEWS

Monday, September 15. The programs featured *Live and Become*, a film about an Ethiopian Christian boy whose mother pushes him into the arms of a Jewish woman fleeing to Israel so he can have a better life.

Ethiopian-Israeli writer, director and actor Sirak Sabahat was the guest speaker. He shared his own story about his journey, and discussed the challenges faced by the Jewish Ethiopian community in Israel. The programs highlighted how AABGU's new Fund for Ethiopian Students will help young Ethiopian-Israelis achieve higher education.



Fred and Velva Levine with Professor Miriam Amit (center), director of BGU's Center for Science and Technology Education, on their most recent visit. The Levines are generous benefactors of Kidumatica, an after-school mathematics club founded and led by Prof. Amit for gifted underprivileged youth in the Negev.

MID-ATLANTIC

Jack R Bershad, *Regional Chair*
Ernest Scheller, Jr., *Philadelphia Chapter Chair*
Mona & David Zeehandelaar, *Philadelphia Chapter Vice Chairs*
Claire Winick, *Director*
(215) 884-4510
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Marsha and Martin Brait hosted Dr. Mony Benifla, an epilepsy expert at BGU's Faculty of Health Sciences, where he addressed a group of physicians specializing in epilepsy research. A presentation he made to AABGU supporters resulted in a pledge to purchase much needed equipment.

During the board's Chanukah luncheon, Prof. A. Mark Clarfield, M.D., a geriatric and Alzheimer's specialist, addressed the group. At a January board meeting, Dr. Simon Barak of the Albert Katz Department of Dryland Biotechnologies shared his remarkable research on identifying genes that will help plants grow in the desert (see pg. 24).

In March, the Negev Forum and Tomorrow's Leadership, sub-committees that are engaging younger members of the community, sponsored a reception featuring Dr. Yuval Harari of the Department of Hebrew Literature.

The annual Israel Bonds Evening of Honor held in April recognized Marla Zipkin for her efforts on behalf of AABGU.

In May, a group of 50 leaders gathered for the installation ceremony of new officers. Ernest Scheller, Jr. assumed the leadership of the Philadelphia chapter (see pg. 8).

Prof. Steve Rosen of the Department of Bible, Archeology and Ancient Near Eastern Studies was the keynote speaker at a June reception hosted by Pam Stein. The next day he addressed a board luncheon sponsored by Jack Bershad.

On July 13th, the Philadelphia chapter celebrated the milestone of raising \$5 million for programs at BGU's Faculty of Health Sciences. The featured speaker was Dr. Michael Alkan, professor emeritus of medicine.

Exciting plans are on the drawing board for the



Myron and Tanya Buchman, past chairs of the South Jersey Chapter and club sponsors of the Ninth Annual Snowbird Reception in Boca Raton, Florida, greet Dr. Ron Folman, director of BGU's Weiss Family Laboratory for Nano-scale Systems.



Enjoying the installation of officers luncheon: Philadelphia Chapter Vice Chairs David and Mona Zeehandelaar; Chapter Chair Ernest Scheller, Jr.; outgoing Chapter Chair Ann Waldman; AABGU Executive Vice President Doron Krakow; and Regional Chair Jack R Bershad, guest speaker and installing officer

next annual community gala scheduled for November 2, 2008 in Philadelphia. Stanley D. Ginsburg will receive an honorary doctorate degree from BGU.

NEW ENGLAND

Max Schechner, *President*
 Mark Goldman and Ralph Kaplan, *Chairs*
 Ben Shamir, *Director*
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 bshamir@aabgu.org

Professor Isaac Meir, architect, chair of the Department of Man in the Desert and head of the Center for Desert Architecture and Urban Planning at BGU's Jacob Blaustein Institutes for Desert Research (see pg. 7), discussed his work on desert architecture and habitation at the home of Dorit and Dan Trajman, in the Foley Hoag offices and in the office of CBT Architects.

Dr. Natan Aridan, researcher at the Ben-Gurion Research Institute for the Study of Israel and Zionism and faculty member in the Department of Jewish History, was hosted at Temple Reyim in Newton in February. The topic was "Why the World Needs Israel as a Jewish State Today."

"The Environment's Role in the Mideast Peace Process" was the topic of Professor Alon Tal's presentation at the Boston office of Nixon Peabody in April. Professor Tal, lecturer and researcher in the Swiss Institute for Dryland Environmental Research at the Blaustein Institutes discussed water contamination in developing countries, and described how BGU is leading the way to improve water resource management throughout the world.

The 25th Annual Pops Night, honoring Bea and Mel Fraiman, was held in June. The Fraimans are providing the lead contribution that will permit the establishment of the Bea and Mel Fraiman Career Development Chair in Women's Health. The keynote speaker was noted cancer researcher Professor Benjamin Piura. Dr. Piura is a lecturer at BGU's Joyce and Irving Goldman Medical School and the head of the Gynecologic Oncology Unit at Soroka University Medical Center. Max Schechner, regional



AABGU Founders Ralph and Harriett Kaplan; Boston Pops Conductor Keith Lockhart, and residents of the North Shore Jewish Rehabilitation Center



Mel and Bea Fraiman accepting their award at the 25th Annual Pops Night from Max Schechner (center), regional president

president, reported on BGU's 2008 Annual Board of Governors Meeting. The evening culminated with a sparkling performance by the Boston Pops.

The New England Region will host a symposium on environmental sustainability on November 12, 2008. Call (617) 232-2300 for details.

NORTHWEST

Sonny Hurst, *President*
 Daphna Noily, *Director*
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 dnoily@aabgu.org

Dr. Leslie Lobel, senior lecturer and researcher in BGU's Department of Virology and Developmental Biology, discussed his ongoing research on the spread of infectious diseases at a San Francisco parlor meeting hosted by Zehava and Reuven Itelman and at a Los Altos Hills meeting hosted by Riki and Coby Dayan in February.



Steve Hurst and Regional President Sonny Hurst with Melissa and David Hurst at the National Solar Energy Center on BGU's Sede Boqer Campus during the 2008 Board of Governors meeting in May

REGIONAL NEWS

The audiences were mesmerized as he discussed his virology research in collaboration with several African countries, which has the potential to impact the world. Lobel's research involves technology that can potentially be used to provide biodefenses.

Professor Avigad Vonshak, director of BGU's Jacob Blaustein Institutes for Desert Research, spoke in Washington in March. He was the guest speaker at a reception hosted by Kathleen and Rob Spitzer in Seattle, and at a Bellingham reception hosted by Audrey and Bernard Jaffe. Vonshak discussed the phenomenon of transforming harsh desert living conditions into a sustainable habitable environment. He described how BGU's research is leading the world in combating desertification and creating sustainable green technology.

More than 20 regional associates attended BGU's 38th Annual Board of Governors Meeting in May. Several new regional founders' names were inscribed on the Founders' Wall, including Covenant Mortgage Company; Jerry J. Cohen; Lorry I. Lokey; Walter and Vera Obermeyer; and Regina and Dan Waldman.

In July, "Fulfill the Promise" programs were held in the San Francisco Bay Area and Seattle, featuring Ethiopian-



Dr. Leslie Lobel; AABGU President Carol D. Saal; Coby and Riki Dayan

Israeli writer, director and actor Sirak Sabahat and BGU Professor Emeritus Michael Alkan, M.D. The receptions raised money to support AABGU's new Fund for Ethiopian Students.

An exciting symposium on international health will be held on January 11, 2009 in the Bay Area. Call (415) 927-2119 for details.

The Northwest office has moved. Our new address is: 240 Tamal Vista Blvd., Suite 260, Corte Madera, CA 94925.

SOUTHWEST

Ruth Flinkman, *Campaign Chair*
Philip Gomperts, *Director*
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Ruth Flinkman, regional campaign chair, accompanied by two of her sons, Lewis and Russell, grandson Noah, and lifelong friend Carolyn Fried, was surrounded by a large group of AABGU friends at the Stan Flinkman Foyer dedication at BGU's Henry and Anita Weiss Family Building for Advanced Research. The dedication, in memory of Ruth's late husband Stan Flinkman, is a fitting commemoration for such a fervent University supporter. Ruth and Stan had been BGU supporters for more than 20 years. This latest gift will support nanotechnology research.

Professor Isaac Meir, head of the Center for Desert Architecture and Urban Planning at BGU's Jacob Blaustein Institutes for Desert Research, was the guest speaker at a dessert and coffee reception at the elegant home of Raquel Vert and Dr. Chaim Meital. Meir, an expert in desert architecture, gave an inspiring presentation, "Bracing for Climate Change – Adapting Cities, Buildings and Lifestyles." (See pg. 7.)

The Halaj Family Foundation and the AABGU Southwest Region sponsored a cocktail reception and premiere film screening of the historical documentary *Ben-Gurion Remembers* at the Israel Film Festival on June 16. A large



Professor Isaac Meir; Raquel Vert; Regional Director Philip Gomperts; Campaign Chair Ruth Flinkman; Dr. Chaim Meital; and Babette Goldberg



Ivan Halaj, Steve Halaj, Maria Hernandez and Ruth Flinkman at the premiere screening of *Ben-Gurion Remembers*

group of University supporters attended the evening's events to celebrate Israel's 60th anniversary at the Laemmle Royal Theater in Los Angeles.

A full-day symposium is being planned for

November 16, 2008 in Los Angeles. Cutting-edge research on environmental sustainability and medicine and health will be explored. Call (310) 552-3300 for details.

WASHINGTON/BALTIMORE

Edie and Art Hessel, *Washington D.C. Chapter Chairs*
 Keren M. Waranch, *Director*
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 kwaranch@aabgu.org

The Washington/Baltimore Region co-sponsored several community and private events to maximize visibility of the University.

On June 1, AABGU participated in a community wide Israel at 60 celebration on the National Mall, which was sponsored by the Jewish Federation of Greater Washington and attracted over 30,000 attendees. Dr. Ofer Dahan, lecturer and researcher at BGU's Zuckerberg Institute for Water Research in Sede Boqer, demonstrated his new monitoring device for early detection of groundwater pollution, thanks to the generous sponsorship of Roy Zuckerberg, BGU's board of governors' chairman and AABGU board member. Other festival attractions included exhibits that highlighted Israeli culture and achievements, and performances by Mandy Patinkin and Regina Spektor.

Dr. Dahan was also hosted by two local synagogues. During his presentations, he described how his monitoring system will help governments worldwide ensure the quality of their drinking water and protect soil from contaminants.

BGU President Professor Rivka Carmi spoke during an evening plenary session at the June 2008 AIPAC Policy Conference in Washington, D.C. Following the conference, Professor Carmi was the guest of honor at a special reception hosted by Esther Coopersmith, former U.S. representative to the United Nations, and AABGU.

In July, Ahuva and Frank Dye hosted a dessert reception in support of AABGU's Fund for Ethiopian Students, featuring Dr. Michael L. Alkan, professor emeritus of medicine at BGU, and Sirak Sabahat, co-writer, co-director and actor in the critically acclaimed film *Live and Become*.

Next, Professor Alkan was hosted at the Beth Tfiloh Congregation in Baltimore. There, he discussed his experience assisting the Israeli-Ethiopian community's adaptation to



Dr. Ofer Dahan at the Israel at 60 celebration demonstrating a model of his new water pollution monitoring device



AABGU Executive Vice President Doron Krakow (left) and Writer, Director, Actor Sirak Sabahat (second from right) with members of the Ethiopian Jewish community of Washington D.C.

Israeli society, and his lifesaving work on AIDS in Africa and China. With increasing exposure, the Washington/Baltimore community of AABGU supporters continues to grow.

TINY PLANTS, BIG POTENTIAL

Q: WHAT KIND OF PLANT LIFE ONLY GROWS IN WATER, BUT FLOURISHES IN THE DESERT?

A: MICRO ALGAE.

“People are surprised that we can cultivate algae in the desert,” explains Professor Sammy Boussiba, head of the Microalgal Biotechnology Laboratory. He is also the newly appointed director of the French Associates Institute for Agriculture and Biotechnology of Drylands at BGU’s Jacob Blaustein Institutes for Desert Research. “But it’s actually a green environment for growing algae. We have a lot of brackish water and sunshine, the best conditions. Plus land is not expensive, and we’re remote from people and industry so we can avoid pollution.”

But why should anyone want to grow micro algae, plants so small they can only be seen with a microscope? Most of us associate them with polluted lakes or brown tides. And why devote a sophisticated high-tech facility—complete with marine

scientists, aquaculture technologists and 15 students—to such lowly organisms?

First of all, explains Prof. Boussiba, because you can. Not very much does grow in the desert, but algae can be cultivated both in open pond environments and closed systems like large test tubes, called photobioreactors.



Professor Sammy Boussiba

“We live in the desert and we need to see how we can sustain ourselves in this harsh environment,” Boussiba says. “We’re trying to do things people can’t imagine we can do in these conditions.”

Second, as Boussiba and his team have demonstrated after three decades

of working with micro algae, they are potential sources of high-value products.

One such product, of increasing commercial interest, is a substance called astaxanthin. It is a pigment derived from the *Haematococcus* algae and is customarily fed to farm-raised salmon. It gives them their red color, which in the natural environment is produced by a diet that includes algae.

Astaxanthin is also a potent antioxidant and fights free radicals, atoms with odd numbers of electrons that are theorized to cause age-related illnesses such as macular degeneration, heart disease, diabetes and Alzheimer’s. One result of the lab’s algal research is the world’s largest photobioreactor, developed to cultivate these organisms. Boussiba and a colleague hold a patent on the system and it is licensed to Algatech, a company owned by the Jewish Charitable Association. Algatech products are being developed and marketed in Japan, Europe and increasingly, the United States, as

market demand grows.

Another high-potential use for micro algae is energy production. "It's one of the options on the table for alternative, green energy," Boussiba notes. "Besides the fact that it can be grown in saline water, micro algae grows faster than plants, has a high lipid content, and can be cultivated in brackish water, which has no value at all. And it doesn't compete



Micro algae can be grown in closed photobioreactors.

with any food like corn or soybeans, so it's good for fuel biomass."

Boussiba has been working on the scientific challenges of turning algae into fuel since the mid 1980s, when the U.S. Department of Energy assigned the lab a project to evaluate micro algae as a source of lipids. Now, because of the world energy situation, the lab is re-focusing on this work. "We know the factors and the problems and think we can help put this technology a bit forward," Boussiba says. "We have world experts in the area of lipid metabolism and can build whatever photobioreactors are needed. We also know it can take a long time to reach the goal."

The main challenges, he explains, are to identify the right organism and be able to grow it fast; then it must be manipulated to have a high lipid content. The most efficient photobioreactor must be created, and systems for easily harvesting the algae and extracting the lipids must be developed.

BGU's contribution will be to

provide ideas and know-how. "Israel is too small to be a producer of oil from micro algae; it would need a much larger area. But with our 30 years of experience we can do the R&D and sublicense our discoveries to other companies and places with more land and capacity," Boussiba says.

Another high-interest area is the use of micro algae for environmental cleanup and to counteract pollution. Specific micro algae can support communities of micro organisms that interact to degrade toxic chemicals, and they are also able to absorb heavy metals.

But overall, it is the big-picture potential of micro algae for human use that most fascinates Boussiba. "We're trying to develop complete systems. We have a shortage of water in the desert and it's a major limiting factor in developing the desert regions. So we have to optimize the potential for water from artesian and other deep wells."

Boussiba and his lab are working to develop Integrated Desert



The micro algae can be fed to fish, which add ammonia to the water.

Aquaculture Biosystems. For example, the desert's brackish water (warm saline water found in abundance beneath the desert ground) can first be used to grow micro algae, which in turn is fed to fish. "It's good for their health and gives them a nice color." The lab already supplies micro algal food to a number of fish farms. Most raise tropical varieties

rather than edible fish, more appropriate in Israel because they are of higher value.

The fish add ammonia to the water, which can then be used to grow water lilies. And the water produced by the lilies' presence can be used to irrigate date and olive trees. "It's a nice system altogether," says Boussiba. "We can culture different products using the same limited water while



Ammonia is good for water lilies, which in turn produce water good for irrigation.

eliminating effluent problems and preserving the environment. It contributes to the combat against desertification, which is the degradation of drylands through non-sustainable development."

The system is generating international interest. Boussiba has been invited to talk with groups in China this fall.

Can micro algae help feed the growing world population? It's expensive to grow it for food, given the large quantities that would be needed, Boussiba says, but integrated systems may be a way to overcome the problems.

Given the 30 years head start BGU's pioneering lab has gained on micro algal research, Boussiba happily anticipates what the coming years may bring. "We are a group working on the whole concept of micro algae technology," he says. "We can work things out all the way from basic science to production, and not many groups in the world can do that.

"Is it exciting? I enjoy every minute. It's good to be a scientist." ■

BLOOMING THE DESERT AND FEEDING THE WORLD

MAKING ISRAEL'S DESERT BLOOM

is a goal that inspires Dr. Simon Barak's day-to-day work as a molecular plant biologist, but what he's doing doesn't apply just to Israel. "Hopefully it will benefit the rest of the world, as well," he says. "We have a major food problem that is only going to get worse with a growing world population. By 2025 we'll need food for another two billion people—where will we get it from?"

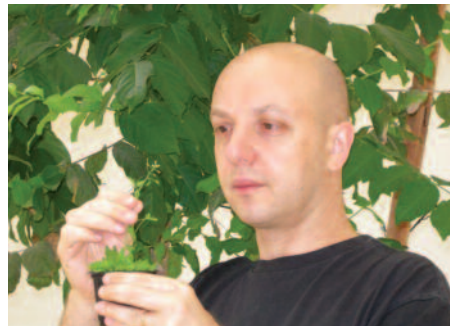
For Dr. Barak, a lecturer and researcher in the Albert Katz Department of Dryland Biotechnologies at BGU's Jacob Blaustein Institutes for Desert Research, investigating plant stress promises to help solve the problem. "People will look for new land to grow crops, but most of the land with potential for agriculture is situated in cold, hot or saline conditions. So we need to improve tolerance to these stresses.

"Even in currently grown crops, periods of stress cause 60 percent of losses—a huge penalty for farmers and the food supply. Add climate change and that will obviously exacerbate the problem."

Since 2002 Barak has worked to find genes that will enable plants to better tolerate stress. Other researchers have been similarly engaged, focusing on genes that control reaction to a single stress. But in the real world of the field, Barak says, the environment may be hot as well as dry. So with his student team he set out to find genes that control plant responses to multiple stresses.

And he succeeded: his team has found two genes that affect tolerance to heat, salt and drought. While understanding the mechanisms of how the genes work requires a lot more research, Barak believes they function to slow down the plant's response

to stress. "Stress causes a whole bunch of genes to activate and defend the plant against the stress itself. However, this uses a lot of energy and we know that if a plant's stress



Dr. Simon Barak

tolerance machinery is switched on permanently, the plant almost dies. So our genes are important to prevent the plant from over-reacting."

By disturbing the function of the two genes, the plant's stress defenses

"The technology has proven absolutely safe so far, while the potential for feeding the world and doing so many other things is astonishing."

—DR. SIMON BARAK

are activated a little bit more than usual and the plants therefore show increased resistance to harsh environments.

The breakthrough in finding the genes was made possible by recent dramatic changes in how biological research is conducted, as well as inventive lab work.

The team looked first for candidate genes that might be involved in

response to multiple stresses; but how do you sift through 30,000 genes?

"We now have the technology to measure the activity of all the plant's genes simultaneously in response to different stresses," Barak explains. "What would have taken many years now takes a few months."

And, just as the human genome has been sequenced, the genome of a mustard-like plant called *Arabidopsis thaliana* has been completed and is available to researchers. This makes *Arabidopsis* the plant of choice for most investigators and enables them to experiment far more quickly.

Thanks to advances in bioinformatics in the last few years—using computer programs, databases and statistics to analyze biological information—Barak was able to create a database by combining the lab's data with other publicly available data, and then queried which genes' activities were affected by more than one stress. Ultimately, narrowing that result down to those genes that regulate a process, the team emerged with nearly 300 genes as candidates.

How to test the theory? In fact, a complete range of mutant plants has already been created as a public resource to researchers. Once they knew which genes they were interested in, the team simply ordered the seeds of plants that are defective in those genes, Barak says.

"So we got the seeds, grew the plants and tested the mutants to see how they differed from normal plants. The first week we found the two genes and focused on them—that's luck." As hoped, the plants exhibit greater tolerance to heat, salt and drought conditions that characterize the Negev and many other parts of the world.

A provisional patent has been obtained on the function of the genes,



Behailu Birhanu of Ethiopia, a graduate student at BGU's Albert Katz International School for Desert Studies, examines *Arabidopsis thaliana*.

and the University can grant licenses should there be commercial interest. The full patenting process is expensive, Barak notes, so he is exploring interest from biotech companies.

Barak hopes to investigate the rest of the genes from the group of 300. The team is also looking at staple crops like corn and rice, and has already found similar genes in their genome databases. Additionally, eager to study *Arabidopsis*-related plants that are naturally tolerant of stress, Barak is looking right in the Negev.

"I'm going out with Prof. Gutterman [Yitzchak Gutterman of the Blaustein Institutes' Wyler Department of Dryland Agriculture] whose knowledge of desert plants is incredible," Barak says. "We found one that's amazingly tolerant to heat, salt, drought, and cold. We've begun working with European and Palestinian partners and developing grants to get the genome sequenced, to see why it's so tolerant. Hopefully that would give us a cutting-edge model."

A 17-page paper on the gene breakthrough was published in *Plant Physiology*, a high impact international journal, and a paper

on the screening technique recently appeared in *Plant, Cell and Environment*.

Barak is well aware that genetic manipulation of food crops is a complicated issue, and resistance in Europe is strong. His view: "The



Arabidopsis thaliana is studied for heat, salt, drought, and cold stresses.

technology has proven absolutely safe so far, while the potential for feeding the world and doing so many other things is astonishing. On the other hand, people worry about this technology being in the hands of companies only out to make profits. The environmentalists have been very good at making sure the processes

are regulated and companies have responded to this. However, banning the technology is not the answer."

The future holds infinite possibilities, and may come very quickly. "It used to be that physics was data rich and biology was not," Barak comments. "Now there's a mass of information—biology is so data rich we are still developing methods to deal with it. The rate of discovery is exponential."

Moreover, with so much intensive research under way on the molecular level, fields that were once far apart are beginning to meet. Plants, humans and bacteria share many similarities, Barak observes. For example, proteins in plants that perceive light at specific wavelengths, and control the plant's internal 24-hour clock, have been found in the human eye and are responsible for controlling our own 24-hour clock.

And, says Barak, "one of the plant genes we found has similarities to a gene found in human tumors. So understanding how these genes work in plants could have profound implications for other organisms." ■

EXTRACTING OIL FROM THE DESERT

THE NEGEV SEEDS ISRAEL'S FUTURE



FOR THOUSANDS OF YEARS, the olive tree has symbolized Israel in fable, history and image.

The Bible called Israel “a land of olive trees and honey.” When the floodwater receded it was an olive leaf that a dove brought to Noah, and it resonates even today as a universal symbol of peace and safety. Olive oil was used to light the temple candles, and to anoint the holy.

Fast forward to 2008 and the magic of olive oil is very much alive. In addition to becoming a gourmet product, olive oil magnetizes us with its health properties. It's a staple of the Mediterranean diet, widely considered the world's healthiest diet, and demand grows in the cosmetics and pharmaceutical industries. Without question, olive oil is major international business.

In Israel, though the appetite for olives and its products is strong, cultivation has languished. The industry has persisted as an ancient, simple enterprise of family growers, mostly in the Arab sectors of the Galilee. To become part of the global marketplace, the industry must meet

modern quality standards and apply new technologies to cultivate, analyze, process, and brand olive products.

For Israel, the first essential question was, where can we grow more trees? The Negev contains half of the country's available land, but few crops can grow in its harsh environment.



Professor Zeev Wiesman

Enter Professor Zeev Wiesman and his Phyto-Lipid Biotechnology Lab, of BGU's Department of Biotechnology Engineering. This busy lab engages in a range of activities centering on biotechnological manipulation of plant lipids—vegetable oils. Here the worlds of academia and industry connect, Wiesman says.

“We invest time in applications and technology that industry needs. We listen to what the real world wants and see if we can contribute, and when we think we see where industry is going, we try to be ahead of the demand.”

The olive tree is a perfect case in point. Wiesman began working with olives 20 years ago because he wanted to develop something that would grow well in the Negev.

He initially focused on surveying the different kinds of olive trees growing in Israel and elsewhere, and identifying the genetic, chemical and horticultural characteristics that determine their response to environmental conditions. “It took us a while,” he says, “but to make a long story short, we found that actually in terms of quantity, the olive tree can be cultivated very intensively in the Negev. The region has low humidity, high radiation, and while there's no fresh water, the Negev has plenty of low-quality saline water in the natural aquifer.”

Some of the olive genotypes were found to be well adapted to this water, and further, Wiesman's group

developed an irrigation technology that involves washing the soil at the root system, which stimulates fast growth.

Thanks to this work, new olive plantations in the Negev today cover about 1,600 acres, and with the help of an enthusiastic government, a new wave of plantations is set to follow.



However, quantity alone is not enough. “For the last five years our mission has been to see that the quality is not less than that of the other well-known olive oils like those of Spain, Italy, Greece, and the Galilee area.”

Moreover, to Wiesman’s excitement, the team recently found that Negev olives carry a happy surprise. Not only are they as tasty or tastier than their Italian counterparts, the environment creates a moderate stress situation for the trees that makes their oil unusually rich in antioxidant compounds. Because antioxidants are believed to combat many effects of aging and a number of diseases, the high concentration provides a real marketing advantage.

“So we feel full of confidence that Negev olive oil is even better in some aspects than competing olive oils,” Wiesman says. “To combine pure agricultural research with industry so people will have a better chance of improving their standard of living—that is our motivation.

“Olive cultivation is a success



story. We established a new industry starting from a high level.” Export efforts are underway, including small quantities to the U.S., and even to Italy. The local industry is still a very small one, Wiesman notes, and to be a bigger factor in the market, more olive trees must be planted.

GROWING NEW RELATIONSHIPS

And, Wiesman points out, his lab has generated a wider cycle of activities beyond pure technology and science. “I asked, who is living in the Negev? We saw that it was the Jewish sector adapting the technology we contributed, and felt that the Bedouins are looking for new technology but don’t know how to get it. So we started talking to them and interacting, reducing the mental and psychological borders. And we decided to share the technology and give the Bedouins open access to use it.”

Wiesman helped build a small olive oil mill, the first to be Bedouin-owned. Then he organized a successful workshop last December attended by Negev Bedouins, Israelis, olive oil producers, Palestinians, Jordanians, and others. The event was theory-oriented, and led to a second stage program of active help: “We train them, visit their plantations, try to provide the basic technology they need. In the long term we want them to share the technology and be part of whatever prosperity can come. They are fully cooperating and trying to trust us.”

A follow-up conference in March was geared to the entire Israeli olive oil industry, and drew 250 people from different disciplines and parts of the business.

Lectures ranged from the scientific to talks on the product’s health benefits, the problem of wastewater disposal and marketing issues. To Wiesman’s satisfaction, the conference produced a forum to address industry problems, and generated a common interest in advancing the industry and upgrading product quality.

“The industry was in a very deep sleep for many years,” he says. “Now people are starting to move and I hope we increase their optimism and continue the progress. Developing this industry will also benefit this neglected area of Israel.”

TURNING POMEGRANATES INTO GOLD

For Wiesman, his lab’s work on pomegranate oil is particularly promising. Sales of the fruit are booming in the U.S. and elsewhere, but mostly because of its juice, he explains. “The waste from a fresh pomegranate is mainly seeds. All seeds contain oil, but pomegranate oil has not been much studied—we’re in the forefront.”

What he’s found is that pomegranate seeds contain high quantities of polyunsaturated fatty acids and huge amounts of antioxidants, highly in demand by the food and pharmaceutical industry. “Our contribution is how to extract it efficiently from the waste after the juice is produced, and analyzing it chemically with very advanced technology. The more you



know, the better you can select the best variety and improve traits like color, taste, aroma, amount of juice.”

The lab works with five selected varieties that he thinks can easily be suited to growing in the Negev and other drylands. The potential is high because of pomegranate oil’s value: at \$3,000 per kilogram, it’s worth more than gold. Besides its use in cosmetics, it is employed to help

COMMERCIAL PRODUCTS DEVELOPED AT THE LAB

New Superior Olives:
a marketed line of olive varieties

New Superior Pomegranates:
a marketed line of pomegranate varieties

Hormone-Fertilizer:
stimulates roots and survival of plants in dryland conditions

FertiVant:
delivers agro-materials through plant leaf barriers

NutriVant:
delivers plant nutrients through the foliage

HarvestVant:
improves mechanical harvesting of olives

NutriVantPeak:
an environmentally friendly coated nutrient/salt mixture protects plants against fungal disease

FireVant:
retards and possibly prevents forest fires, in final stages of R&D

Biomaterials delivery systems:
nano-sized vesicles deliver valuable or toxic biomaterials for pharmaceutical and agro applications

Digital chemo-optic system to predict optimal harvesting of olive oil content:

a smart modeling system that is able to correlate olives' color to their oil content, currently in field-testing

Also in progress:
At the request of the Elsevier publishing company, the lab is producing a book on *Desert Oil Cultivation: Advanced Biotechnologies*, to be published in 2009.

treat various diseases. "We're not trying to develop a new drug," Wiesman says, "but to contribute as a good source of natural products for better health."

In this case too, Wiesman worked closely with the industry, asking the producers what they needed to better market Israel's pomegranates. The answer: a high-quality pomegranate that ripens earlier than October, the usual month. The lab came through: the five pomegranate varieties selected ripen at the beginning of September and the growers gained the marketing edge they sought.

FIGHTING CANCER WITH DATES

Balanites aegyptiaca, known also as "desert date," is a

tree that grows naturally in the southern Negev drylands and is highly adapted to the desert. It was known in Cleopatra's time and by the pharaohs before her. The Phyto-Lipid Biotechnology Lab is among the few academic facilities examining the species, and pure oil is only one of the reasons. What Wiesman found in dates' fruit pulp is a natural surfactant (chemical able to mix water and oils) called saponin. It is well reported that this natural compound acts as a protective system that helps the plant cope with adverse desert conditions and also with a wide spectrum of other biotic stresses.

The lab isolated and chemically identified more than 20 different saponins from different parts of the plant. What fascinates Wiesman is that similar saponin substances, from plants such as ginseng, agave and yucca, are reported to be active as antifungal agriculture products and as nutritional supplements, and are currently being intensively studied by the pharmaceutical

industry as anticancer agents.

To come up with an anticancer substance would be a dream, Wiesman says, and though finding the potential in the desert date was a matter of luck, he thinks its level of bioactivity holds real promise.

"What's fascinating is how potent Balanites saponins are," he says. In addition to assigning two of the lab's best students to work with various chemical and biological aspects of this plant, the lab is closely collaborating with BGU pharmacologist Dr. Shimon Ben Shabat, a well-known expert in medicinal chemistry.

"If you start with very potent compounds, as found in our studies on four lines of cancer cells, there's a chance that at least several new saponins will be effective in extremely low doses," Wiesman says. Also under way is large-scale data collection to justify development of a Balanites saponin integrated bioindustry in the Arava desert.



PLANTS INTO ENERGY

Six or seven years ago, when oil sold at \$25 per barrel and alternative energy had not become a boom industry, Wiesman began working with biodiesel fuel as a matter of course: "Since I'm a plant oriented guy and dealing with lipids, we started to study this and set up a small-scale pilot plant to extract the oil from different plant tissues, especially desert-adapted plants and trees. We also showed they could be used to produce efficient biodiesel."

The next target was a fast and easy-to-operate system that could predict the energy potential of different plant sources. With support from an industrial donation, a low resolution Nuclear Magnetic Resonance (NMR) system was obtained. This powerful non-destructive system analyzes any fruit's oil content in 16 seconds, rather than the few days it otherwise takes to crush and distill each one.

Continued on Page 31

RACHEL BARNEY: NEW TOUR OF DUTY FOR NEW JERSEY MARINE

RACHEL BARNEY IS A UNIQUE student in a unique program: the Medical School for International Health (MSIH).

MSIH, a collaboration between BGU and Columbia University Medical Center, is the only medical school in the world that specifically trains future doctors to provide healthcare for people all over the globe. Founded 10 years ago, the program's mission is to equip a new type of physician with special skills, and an ability to relate to different and multiple cultures.

Rachel Barney's uniqueness comes from the life experience she brought to MSIH. As a United States Marine helicopter pilot, she flew reconnaissance, medi-vac escort and air support missions in Iraq for three years. During that time she earned nine Air Medal Awards for flight strikes and rose to company commander, with 150 marines reporting to her.

Now in her second year at MSIH, Rachel says that it was her first tour of duty in Iraq that made her decide that medicine was her true career goal: "My time in the military brought home the importance of service."

She thinks the experience also prepared her for the rigorous MSIH program. "The Marine Corps definitely helped me with time management, self-discipline and a little perspective on life," she says.

Rachel was born in New Jersey and earned a B.S. in Chemical Engineering from Columbia University. She got

her first medical experience as an undergraduate, working for the New York City Emergency Medical Services. After graduating she became a paramedic with the service, and in 1997 signed up for the Marines.

Rachel had not considered flying before joining up, but when she showed up at the Marines recruiting office, she learned that less than half the number of occupational specialties available to men were open to women. But women had been accepted as pilots in the U.S. military since 1993. "Being a pilot is a very transferable skill, so when the recruiting officer offered, I said, 'why not?'"



Rachel Barney

Continued

ISAAC BERZIN: LEADING A GREEN ENERGY FUTURE

"BGU PUT ME IN THE FRONT ROW of biotechnology in the world," says Isaac Berzin, when asked what part the University has played in his life and work. "It gave me the tools to combine both engineering and biology, and that was great and unique."

At just 40, Dr. Berzin has achieved a place that is truly front row center in biotechnology innovation. Recognizing what he has accomplished with a company called GreenFuel Technologies, *Time* magazine named him one of the world's most influential people of 2008.

Dr. Berzin was born in Israel. He earned both his Chemical Engineering B.S. in Biotechnology and a Ph.D. in Chemical Engineering at BGU. He then pursued post-doctoral studies at MIT, also working on a leading NASA project designing bioreactors for space stations.

Berzin found himself well equipped to hold his own with post-doctoral students from the best universities in the world, he said. But he felt frustrated not to be dealing with something that could really change the world: producing new forms of energy.

So he left MIT, borrowed some money, and launched himself totally into the entrepreneurial life. In 2001 he founded GreenFuel Technologies in Cambridge, Massachusetts, borrowing money from friends. GreenFuel's mission was to find practical ways to farm algae for biofuel, as well as for food and livestock feed, while reducing carbon emissions.

Berzin credits BGU—with its dedication to making the desert bloom and its many years of algae research—for the direction he took. He encountered some false paths and pitfalls, but pursued his vision, collecting a dozen patents along the way.

What really sparks interest is the method he developed for growing algae: GreenFuel builds algae farms next to power plants, and pipes from the smokestacks run directly into the closed-system greenhouses. The algae absorb the CO₂ and thrive on it. Thus carbon emissions are reduced while the algal biomass grows—10 to 100 times faster than any other biological form,



Dr. Isaac Berzin

Continued

RACHEL BARNEY

Continued

At the time, she did not expect war.

What was it like being a woman in the Marines, which has the lowest percentage of women of the various branches of the U.S. military (8 percent)? “You always had to prove yourself,” Rachel acknowledges. “There were expectations that maybe I wouldn’t be able to hack it, but I never felt I was denied an opportunity because I was a woman.”

Her athletics background proved to be a leadership asset. “I always tried to remain physically fit so I could keep up with the average guy in the company,” she says. “Once they saw that I could beat 90 percent of them in a run, well, there were fewer problems having men under my command.”

Rachel picked up another degree while in the service, an M.A. in Aeronautical Science.

After leaving the Corps she taught English in France for a year, and then followed through on her decision to enroll in MSIH. Rachel says she was drawn particularly to the BGU-Columbia program because of its requirement for an internship abroad. Students spend three months of their fourth year in third world countries including Kenya, Ethiopia, India, Peru, or Nepal. “And I value learning a foreign language. It makes you a better doctor and a better person,” Rachel adds.

Rachel felt somewhat prepared for living in Israel. “We had to study about the conflicts in the Middle East in the Marine Corps, including the Six Day War, so I knew a little bit more than the average non-Jew about Israel.”

How does the country strike her? “I really find Israel fascinating for its diversity,” says Rachel, who has volunteered to teach English to Ethiopian immigrants at the local absorption center. “I hadn’t known anything about Ethiopian Jews before, and certainly nothing about the different waves of *aliyah*.”

In addition to a basic American-style medical curriculum taught in English, students at MSIH also learn cross-cultural communication, nutrition in developing worlds, disaster relief, population-based medicine, and aspects of bio-terrorism.

The program’s international students come from a variety of cultures and backgrounds and most are non-Jews. “These are not the same kinds of students that are applying for residency programs at Columbia,” said Prof. Carmi Margolis, MSIH director. “They are more altruistic and idealistic, by definition.”

Rachel Barney is an inspiring example: “I am a firm believer in some sort of pay back for the benefits I received as a citizen,” she explains. “And I’ve had astounding benefits as an American.” ■

ISAAC BERZIN

Continued

Berzin points out.

GreenFuel currently has six pilot installations of its technology in various U.S. locations. The company recently signed a \$92 million contract to provide algae for biofuel.

While he remains connected to GreenFuel as an advisor, Berzin relocated to Israel this past year and plans to reside there permanently. He is a senior fellow of the Interdisciplinary Center in Herzliya, where he is establishing an Israel-based international institute to formulate alternative energy policies. He intends to build a center of excellence that works with a number of technology platforms to make alternative forms of energy viable.

Interviewed by the Israeli newspaper *Haaretz*, Berzin said he considers himself “a product of Israeli excellence, because I obtained my knowledge here,

Time magazine named him one of the world’s most influential people of 2008.

at Ben-Gurion University in Beer-Sheva. I had the privilege of being a student of incredible teachers, who watered me with a sea of knowledge.”

Berzin sees the recognition he has received not as belonging to him personally, but to the circles of those he has learned from and worked with.

He especially credits two BGU teachers he considers to be “both scholars and wonderful people”: Dr. David Mills, “a brilliant scientist and a mensch” who, until his death last year, taught at what is now known as the French Associates Institute for Agriculture and Biotechnology of Drylands, and Professor Jose C. Merchuk, head of the Department of Chemical Engineering until recently, “a father of biotechnology and a great friend.”

Berzin is working on several joint projects with BGU.

He believes that Israel’s decades of research into water technologies gives it the tools to be a leading country in this field, and also feels it offers the opportunity he wants. “I need to prove that ROI—return on investment—will be positive, and to prove it in Israel. This is a great place to demonstrate technology and take the risk out of the equation.”

How does he see Israel’s role in the emergence of biotechnology solutions?

“I think Israel shouldn’t just research things and then export them and have them never happen,” he said. “We need to combine technology with economic goals.

“ROI is the compass; it will guide you to what is practical. If you can’t calculate, where can you get? That’s a walk in the jungle without a compass.” ■

MEN AND HOUSEWORK

Continued from Page 13

What has produced these changes, which appear to be consistent throughout North America and many Western European countries?

Sullivan believes that political activism—the feminist movement and women’s rights initiatives—are important factors in changed behavior and attitude. “But I also think more emphasis should be put on individual interaction and women’s efforts on a day-to-day basis, persuading their significant others to contribute more at home. All these factors together create an atmosphere in which change is increasingly possible.”

Sullivan found herself quite surprised by the extent of interest the paper provoked. It was covered by a wide range of media including “Good Morning America,” CNN, BBC World Service, and major newspapers including *The New York Times* and *Jerusalem Post*.

The attention is all to the good, Sullivan feels. “It contributes to an atmosphere in which change is recognized, and therefore, further change becomes more possible. It gives support on an individual level to women in their day-to-day struggle toward equality.”

Change may be slow, she finds, but it’s happening surely. And, she believes, acknowledging that fact leads us to understand how it’s happening—and how it can be promoted. ■

HOW THE BRAIN CONTROLS MOVEMENT

Continued from Page 14

juggling to behavioral research, physiology and psychophysics experiments. One time-intensive series of experiments involves training cats to make reaching movements, and interfering with the movements to investigate how the cerebellum is involved in correcting errors.

There are also experiments, in collaboration with a German

researcher, on the specific deficits cerebellar patients suffer when their movement is disturbed. Theoretical work is also part of the mix, such as building a computer model of the cerebellum to simulate the adaptation process.

The idea for the conference originated because “Israel has a very strong motor community,” Donchin says, “and we thought it would be great to have an annual gathering with experts from throughout the world.” This year, as in the previous conferences, two-thirds of the speakers came from abroad.

What sparked Donchin’s own imagination this year? A speaker on brain-machine interface who showed films of monkeys moving cursors; and his colleague Amir Karniel’s talk on how time delays in our motor system might be explored to make tele-operation possible—for example, enabling surgeons in Israel to do surgery on sick people in China by operating a robot remotely via the Web.

“It’s a field on the move,” Opher Donchin affirms, unaware of his pun. “When people first started thinking about doing this stuff five to 10 years ago at most, the basic thinking was that it would take about 50 years for anything useful to result. Now, it looks like that will happen a lot sooner.” ■

DESERT OIL

Continued from Page 28

“We’re working intensively on a very ambitious industrial study to make a fast, reliable oilseed selection tool,” Wiesman says. The goal is to find a blend of seeds that are high in oil content and have the quality needed for the global biodiesel industry.

“We hope that when this screening project is over we will have a very technologically advanced tool, perhaps a sensorial digital system that tells us the oil potential of different seeds and can perhaps be applied also to waste materials. In this field the sky’s the limit.” ■

AABGU salutes our generous supporters who joined BGU’s prestigious Ben-Gurion and Founders Societies this year (contributions made through April 2008). Their names were inscribed on prominent walls on the Marcus Family Campus and unveiled at the May Board of Governors meeting.

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