

# SCOPUS

THE MAGAZINE OF THE HEBREW UNIVERSITY OF JERUSALEM

Volume 52, 2005

## THE AGE OF AGING

When Fire Was Tamed

Good BeeHavior

Road Sense

האוניברסיטה העברית בירושלים  
The Hebrew University of Jerusalem



## THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem, Israel's first university and a symbol of the cultural rebirth of the Jewish nation in its ancestral homeland, is a multidisciplinary institution of higher learning and research. It is a scientific center of international repute, with formal and informal ties extending to and from the worldwide scientific and academic community. It is an institution where thousands of young Israelis receive a university education with an accent on excellence; where advanced, postgraduate study and research are stressed; and where special programs attract many overseas students to pursue degrees or earn credits for transfer. This is a university with a three-fold function: to serve the State of Israel by training its scientific, educational and professional manpower; to serve the Jewish people by preserving and expanding the Jewish cultural, spiritual and intellectual heritage; and to serve humanity by extending the frontiers of knowledge.

**LOCATION** On four campuses: three in Jerusalem (Mount Scopus, Edmond J. Safra at Givat Ram, and Ein Kerem) and one in Rehovot

**ENROLLMENT** 24,000 full-time students including 12,000 undergraduates, 7,600 masters students, 2,300 doctoral candidates and 2,100 overseas and pre-academic students, as well as an additional 14,000 in continuing education and extension courses

**FACULTY** 1,100

**RESEARCH** Approximately 3,700 projects in progress in University departments and in 100 interdisciplinary research centers and institutes

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**THE** Hebrew University of Jerusalem is a magnet for scholars throughout the world. While their presence reaffirms Jerusalem's status as a city of diverse cultural and religious forces and a pluralistic crossroads, these scholars are attracted to Jerusalem by the breadth and diversity of research and learning at the Hebrew University — and by the opportunity to enrich their fields of expertise from previously unexplored perspectives.

It is this sweeping scope of scholarship and knowledge that provides the ideal conditions for a multi-faceted exploration of the subject of aging and the search to enhance well-being and activity in later life. In the cover story of this issue of *Scopus* you will meet a small sampling of researchers and students — of all ages — who are investigating specific aspects of aging: from members of the recently established interdisciplinary Israel Gerontological Data Center to stem-cell scientists seeking solutions to some of the more devastating phenomena associated with human aging. In other articles, a computer scientist-entrepreneur unveils an innovative technology that promises to revolutionize road safety, an archaeologist discovers the earliest known evidence of controlled use of fire in Eurasia, and scholars and students describe their involvement in the revival of Judaic studies in Russia and the study of East European Jewry.

Also on these pages we report on the launch of the second phase of the Student Priority Campaign and on the outstanding efforts of the University's worldwide network of Friends associations. It is largely due to the commitment and loyalty of our many friends and supporters that we have succeeded in withstanding the full impact of ongoing budget cuts and in planning a future where we can continue to offer our students excellent learning and living environments.

Yigal Arnon  
Chairman, Board of Governors

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Cover: MA student in the Department of History of Art Drora Lob (right) receives computer coaching from recent Hebrew University alumna Danna Philosoph in the Bloomfield Library for the Humanities and Social Sciences on the Mount Scopus campus  
Photograph by Hezi Hojesta

Editor: Lisa Clayton  
Associate Editor: Daniel Avihai-Kremer  
Design & Production: Janis Ben David  
Printed in Israel ISSN 0334-7591

Published by the Publications Department of the Division for Development & Public Relations  
The Hebrew University of Jerusalem  
Mount Scopus, 91905 Jerusalem, Israel  
Tel: 972-2-588-2843  
Fax: 972-2-588-0058  
www.hunews.huji.ac.il

Against the background of the increase in life expectancy, scholars in diverse fields are tackling the issues of aging and conducting research that seeks to enhance well-being and activity in later life

by Gail Lichtman



# The

**MORE** than the automobile or computer chip, it is becoming clear that the major revolution of the last 100 years has been the aging of the world's population.

In the first half of the 20th century, the increase in life expectancy was mainly due to lower death rates in early life. But the increases of recent years have been almost entirely the result of longer life spans. Indeed, if this trend continues, life expectancy at birth will reach 100 by the end of this century and, moreover, its impact will affect the structure of society from healthcare and pensions to the workplace, leisure activities and beyond.

At the Hebrew University of Jerusalem, faculty and students in a broad range of disciplines are expanding our understanding of aging with the aim of enabling people to enjoy longer, healthier and more productive lives. By elucidating the biochemical, genetic

and physiological mechanisms of aging, researchers in the life sciences hope to facilitate creative approaches to preventing many of the diseases associated with aging. Concurrently, the University's social scientists are both addressing the ramifications of longevity on society and social policy, and pursuing research that contributes directly to the promotion of the "golden years" as a period of beneficial activity, financial security and emotional well-being.

*'we want to make living cells more durable'*

## Battling Oxidation

"The purpose of studies in aging today is to enable people to live to over 100 and die without long, debilitating disease — thereby improving quality of life in later years," says Professor Ron Kohen, who researches free radicals, oxidative stress and antioxidants in the Department of Pharmaceutics at the School of Pharmacy. "Human life can be drawn as a bell curve:

## A One-Stop Research Infrastructure

The Israel Gerontological Data Center (IGDC) at the Hebrew University, which began its activities in 2005, is a pioneering one-stop research infrastructure for the study of aging in Israel.

Founded with an initial grant from Israel's Ministry of Science and Technology, the Center concentrates data and research on the elderly in Israel under one roof, making it

readily available to researchers, policy makers, professionals and students.

A virtual center accessed through the internet, the IGDC has four key functions: a bibliographic data center containing professional literature on research on aging in Israel published since 2000; a statistical center that, for the first time, brings together data from sources such as the national census, wage records and mortality statistics; updated and easily accessible statistical tables; and access to additional databanks.

"By pooling information and research in a way never done before in Israel, I believe that the Center will encourage innova-



# Age of



# Aging

a steep increase in functioning during the first trimester of life, a peak in the middle and a decline in the last trimester. If we can square the curve in the last stage, people will have high quality of life through the last trimester.”

Human aging is usually accompanied by a decrease in physiological capacity

and reduced ability to respond to environmental stresses. This leads to susceptibility and vulnerability to disease. Avoiding this process involves understanding how we age. Among the more than 100 theories that attempt to explain human aging, the Free Radical Theory of Aging (D. Harman, 1956) and its modification — the Oxidative

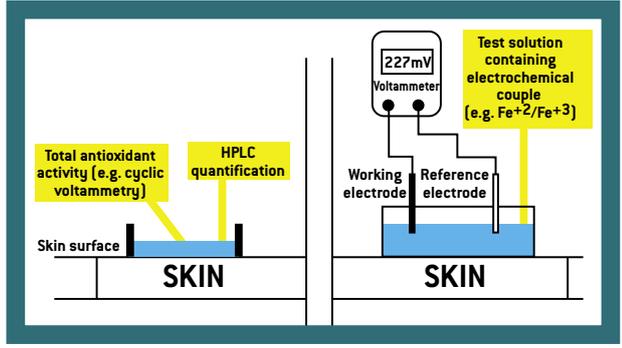
Stress Theory — seem to offer the most comprehensive explanation.

Free radicals are molecules or atoms that contain at least one unpaired electron, which makes them highly unstable. Since they are unpaired, they are constantly looking for a partner electron to steal from proteins, DNA, or lipids, thereby triggering the damage that causes loss of cell function and leads to the aging and death of cells.

“We want to make living cells more durable,” says Kohen. “Besides free radicals, there are other oxidant non-radicals that also cause aging and cell death. Thus, oxidation is synonymous with aging, and every human being has an ‘expiration date’: when oxidation reaches a certain limit, enzymes and macromolecules in the body cannot function and DNA cannot be replicated.”

The body has a number of defenses against oxidation, the most important being the antioxidant defense mechanism. During aging, however, this mechanism diminishes, causing an increased accumulation of oxidized products and making cells more vulnerable to aging-related diseases.

Most research in this field focuses on just two or three particular examples of the body’s antioxidants. Prof. Kohen, however, developed both a patented non-invasive method using a simple



Prof. Roni Kohen; indirect (left) and direct (right) methods for measuring antioxidant levels

tive inquiry into aging in Israeli society,” says Prof. Howard Litwin, head of the Center whose members include researchers from fields such as gerontology, economics, public health, and the medical sciences. And with the recent awarding of two prestigious research grants — from the US National Institute of Aging for the development of an Israeli survey of people age 50+, and from the German-Israeli Foundation to conduct a comparative analysis of familial exchange in later life — the Center is already realizing its aspirations.

IGDC website: <http://igdc.huji.ac.il>

Gail Lichtman



L. Clayton

“In general, the human body contains all the mechanisms necessary to deal with excess free radicals, but it cannot eliminate them completely,” she says. “As we age, our enzymes work slower and even mutate, so our bodies become less efficient in eliminating free radicals.”

In order to trap free radicals and thus prevent or slow down the neurodegenerative effects of aging and disease, Atlas developed AD4, a non-toxic compound that crosses the blood-brain barrier to eliminate and prevent free radicals. AD4, which has been successfully tested *in vitro*, traps ions of copper, iron and zinc, the metals that are formed during neurodegeneration and which catalyze the formation of free radicals.

patch for measuring total skin antioxidant levels and a prototype of a non-invasive device to measure skin oxidation status. Measurements rendered by both methods support and explain two principles of the Free Radical Theory of Aging — an accumulation of oxidized molecules as one ages and a decrease in low molecular weight antioxidants. These findings are the basis for further research into the causes of aging and, looking even further ahead, for the development of methods to control or eliminate its negative effects.

Parkinson’s, Alzheimer’s and multiple sclerosis,” says Prof. Atlas, who was awarded the Hebrew University’s Kaye Innovation Award in 1996 for developing Dopaethylester, a drug for the treatment of Parkinson’s disease.

## Subduing Radicals

Neurochemist Professor Daphne Atlas of the Department of Biological Chemistry in the Silberman Institute of Life Sciences also works with free radicals. “A rise in free radicals is common to all neurodegenerative diseases, including



Sharon Shiovitz

## Activity & Aging

At a recent meeting on aging, participants were surprised to see fresh-faced Sharon Shiovitz. The 29-year-old Shiovitz, a doctoral candidate in the Paul Baerwald School of Social Work and Social Welfare and manager of the University’s newly established Israel Gerontological Data Center [see sidebar on page 4], says she is often greeted by remarks such as: What is so young a researcher doing dealing with the elderly?

“The elderly have always been close to my heart,” explains Shiovitz, from Kiryat Yam near Haifa. “I remember sitting on the park bench near my home as a child and talking with my elderly neighbors; one in particular was like my grandmother. I have



Courtesy of JDC-ESHEI, the Association for the Planning and Development of Services for the Aged in Israel

Working with colleagues at the Rabin Medical Center and Tel Aviv University, Atlas has shown that AD4 could prevent the onset of MS (multiple sclerosis) symptoms and even arrest progression of the disease. Using another model for Parkinson's, she demonstrated that here, too, the compound can prevent the onset of symptoms. The drug is now being developed by Novia Pharmaceuticals, a private company that is partly owned by the Hebrew University's Yisum Technology Transfer Company.

Atlas has just completed FDA toxicology studies of AD4 and expects to begin clinical studies in 2005. "AD4 is very effective and I hope it will lead to the development of a drug that can be taken daily to trap free radicals and dramatically slow the progression of disease and aging," she says.

Prof. Daphne Atlas; schematic diagram showing chemical impact of excess free radicals



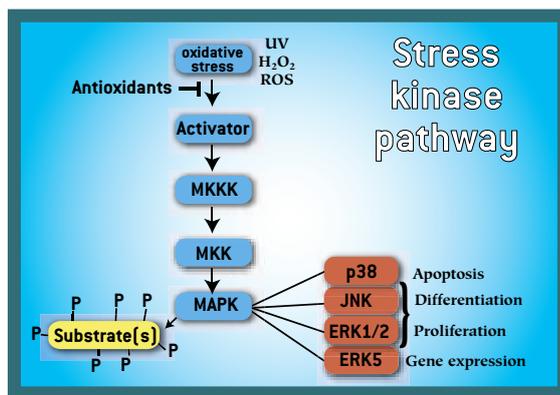
**'as we age, our enzymes work slower and even mutate'**

## Cellular Rebirth

One of the most controversial and promising fields of research to combat the more devastating phenomena associated with human aging is human embryonic stem cell research.

These cells can develop into different types of cells, and thus hold the potential for solutions to diabetes, heart failure, Parkinson's and other neurodegenerative diseases, as well as serving as an unlimited source for organ transplantation. Over the years, Professor Nissim Benvenisty of the Department of Genetics in the Silberman Institute has become an acknowledged leader in this field.

"We are working on 23 cell lines established over the past five years by labs in Wisconsin,



## Healthy & Affordable Living

The Pensioners' Sports Club at the Howard and Edith Cosell Center for Physical Education, Leisure and Health Promotion on the Edmond J. Safra campus at Givat Ram is popular among Jerusalem's retirees.

Club coordinator Debra Markus, a former athletics international and gold medal winner in the Asian Games of 1966 and seven-time Maccabiah gold-medalist, says that the NIS 250 (\$50) monthly fee makes the Club "one of the best deals in town – our objective is to make healthy



always found a common language with the elderly."

It was this rapport that led Shiovitz to choose aging as her field of specialization. "I wanted a field with practical implications for helping the elderly," she notes.

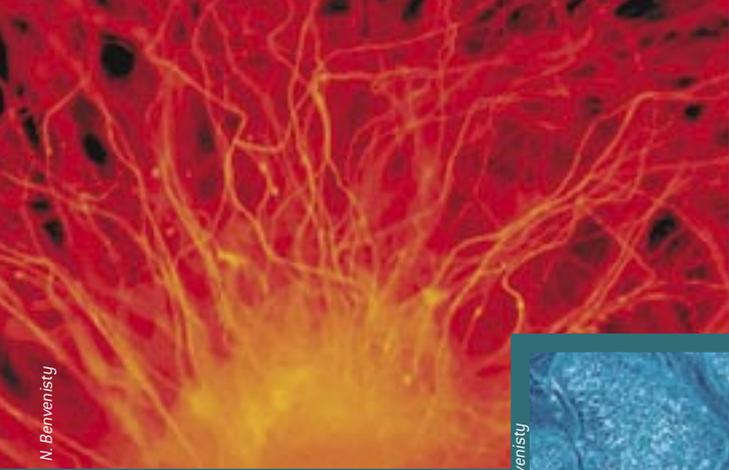
Her work with the Israel Gerontological Data Center as well as her research on the activity theory of aging certainly bear out this sentiment. Shiovitz, who earned both her bachelor's and master's degrees at the Hebrew University, has been fully involved in the establishment of the Center, including the recruitment of professional staff and setting up bibliographic and statistical databases.

Her research on activity theory, one of the major conceptual

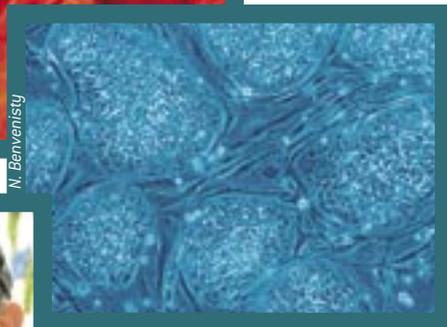
frameworks explaining the dynamics of successful aging, focuses on the connection between activity and life satisfaction. "Oddly enough, research has not consistently shown that those who are more active live better lives. I am examining the realm of activity — in terms of quantity and quality — in relation to the well-being factor by means of an advanced statistical method. I am now in the process of analyzing the results."

An outstanding student, Shiovitz has received several awards and scholarships, chief among them the Johanna Friedlaender Memorial Prize of the Canadian Friends of the Hebrew University.

Gail Lichtman



N. Benvenisty



N. Benvenisty

Prof. Nissim Benvenisty; neurons (red) grown from embryonic cell colonies (blue)



Hezi Hojesta

Boston, Atlanta, Melbourne and in our own laboratory,” says Benvenisty, who is the Herbert Cohn professor of Cancer Research. “Research on these cells is permitted in Israel, the US and Europe; our work is partly funded by the US National Institutes of Health.”

Human embryonic stem cells are one-tenth the size of normal cells, but can differentiate into many kinds of cells. “The amazing thing is that once the cell lines are established, they have the capacity for cell renewal and can proliferate in an unlimited fashion,” says Benvenisty.

“Moreover, when allowed to differentiate, a wide variety of cells can be achieved in culture — for example, heart muscle cells that pulsate *in vitro*.”

One of the questions facing researchers is whether the newly created cells will be recognized or rejected by the host. “We have shown that stem cells have only 1% of the molecules involved in rejection in normal cells,” says Benvenisty. “However, once they differentiate, they acquire more of the immune characteristics of adult cells.”

Benvenisty is now attempting to make a universal cell. “By genetically modifying the cell, we are trying to strip it of its immune characteristics so that it will not

be recognized as foreign,” he says.

So far, cells have been differentiated into various cell types but the ability to grow an entire organ is still far away. “But for many diseases, cells are enough; for instance, Parkinson’s requires dopaminergic cells and the same is true for pancreatic beta cells in Type 1 diabetes. Even for some kinds of heart disease, it is enough to obtain heart muscle cells and not an entire organ. I believe that the ability to grow cells in culture holds out very exciting possibilities for the foreseeable future.”

## Social Connections

“The social functions which determine quality of life must accompany the biomedical aspects of aging,” emphasizes

Professor Howard Litwin of the Paul Baerwald School of Social Work and Social

Welfare, who heads the Israel Gerontological Data Center or IGDC (see sidebar, page 4).

“Quality of life is as much determined by

these social functions as by physical health.

“I study how peoples’ social networks influence individual behaviors, perceptions and feelings. I believe that Israel, with its unique social fabric, can shed light on the importance of being connected,” says Litwin. He has found that long-term ties

**‘the ability to grow cells in culture holds out very exciting possibilities’**

## Value Added Research

Neurodegenerative diseases such as Parkinson’s and Alzheimer’s have become the scourge of aging. At the Eric Roland Center for Neurodegenerative Diseases, founded in 2003, researchers are conducting multidisciplinary studies of the nervous system at the cellular, physiological and molecular levels. Through such efforts, the Center promotes a comprehensive approach to understanding, and ultimately curing or controlling, these diseases.

“The Roland Center brings added value to research projects through its multidisciplinary approach of linking researchers from such diverse fields as physiology, psychology, anatomy and biological chemistry,” says molecular neuroscientist



Hezi Hojesta

Prof. Mona Soreq; right: depiction of aging cell



are paramount. “A person in need of support is more likely to find it within the traditional social frameworks — the family or long-term friends.”

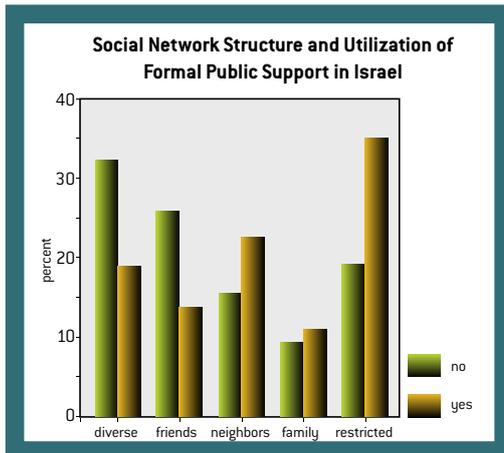
But in many Western societies people often live far away from their children or move to retirement residences, thereby severing their ties with old friends and community. “This makes it more difficult to get help with day-to-day needs and forces people to purchase this help,” says Litwin. “Thus, resources that were once transferred from generation to generation are being consumed, a trend that may ultimately affect the next generation’s ability to amass resources for their own senior years. This is when aging becomes a care issue.”

Litwin’s research also points up a major paradox for social policy planners. With

the waning of the welfare state, attempts are being made to recruit the family in its stead. “But social networks have changed and support seems to be more available when you don’t actually need it,” says Litwin. “Research shows that 60-somethings have vibrant, multifaceted and diverse social networks. The 80 and 90 year olds, however, often have restricted social networks with limited support, and their children may be too old to be caregivers.

“In those situations where there are choices,” he stresses, “it is essential to recognize the importance of being connected and to strive to be rich in interpersonal resources.”

Prof. Howard Litwin; graph indicating levels of utilization of public support by social network type



Hermona Soreq, director of the Center and the Charlotte Slesinger professor of Cancer Studies.

The Center’s researchers are exploring topics such as the role in Parkinson’s disease of the brain’s basal ganglia; alternative splicing with respect to aging and Alzheimer’s disease; molecular mechanisms underlying neurodegenerative diseases; gene expression essential for the survival of nerve cells; the interface between stress reactors and the immune system; and spinal chord well-being and health as related to the nerve-muscle interface.

Gail Lichtman



Douglas Guthrie



Douglas Guthrie

living affordable for everyone.”

With 300 members — mainly retired University faculty and staff, civil servants and hospital staff — the club has been running for over seven years. Sessions are held every morning, five days a week, with classes ranging from Chinese exercises and aerobics to water exercises, osteoporosis prevention and folk dancing; there is free access to the pool and aerobics studios during club hours.

Markus, who teaches fitness for seniors, encourages her students to follow the physical activity exercises described and modeled (see illustrations on these pages) in the Cosell Center’s osteoporosis-prevention manual (in Hebrew, entitled ‘Pe’ilut Guffanit le’Mniyat Osteoporosis’) available from the Magnes Press at <http://magnespress.huji.ac.il>



Douglas Guthrie



Douglas Guthrie

## Life After Work

When social security was established in late 19th-century Germany, 65 was the chosen retirement age since few people lived that long, and those who did, did not survive much longer. This helped ensure that there were many wage earners and few pensioners. Today, however, societal aging is forcing a reexamination of many social policies.

In 1948, only 4% of Israel's population was 65 or older. Today, that figure stands at 10%. In the US the percentage of elderly is 13% and in Sweden 18%. This means that the ratio of pensioners to workers has risen, and that social security is not giving pensioners the money they paid in — their money was used to support a previous generation, with the money for today's retirees coming from today's wage earners.

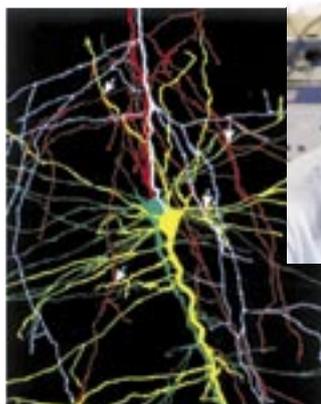
Even though Israel has a relatively lower percentage of elderly and a higher birthrate than other Western countries, these advantages are offset by low participation in the workforce — in 2000, only 85% of Israeli men aged 25-54 were in the workforce as opposed to 95% in OECD countries.

Professor Emeritus Ruth Klinov, at 75 an active member of the Department of Economics in the Faculty of Social Sciences as well as a founder of the IGDC, has conducted extensive research

## Anxiety & Aging

Ella Sklan, who recently completed her doctorate in the Department of Biological Chemistry at the Silberman Institute of Life Sciences, is one of the next generation of researchers at the Hebrew University.

The 32-year-old Rehovot native, who holds a bachelor's degree in biology, an MBA and a master's degree in medical science from Ben-Gurion University, jumped at the chance to do her PhD in neurobiology at the Hebrew University since it meant working with Prof. Hermona Soreq, a pioneering researcher of stress, anxiety and mood disorders from the aspect of molecular biology (see sidebar, page 8). "I wanted to study with Prof. Soreq

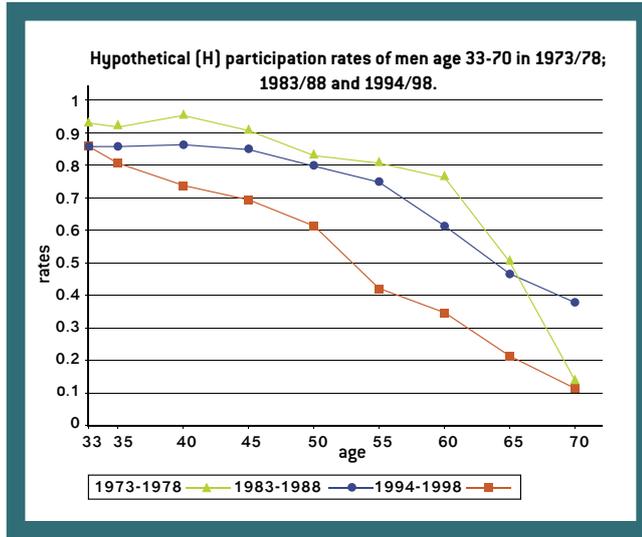


Ella Sklan

Sasson Tiram



Prof. Ruth Klinov



on wage policy and pension reform in Israel. “What is special here is the phenomenon of early retirement,” she says. “Over the past two decades, the less educated have often opted to retire early because welfare benefits were relatively attractive compared to wages. In addition, government policy encouraged early retirement in the public sector as a way of cutting expenditure on wages.”

This resulted in a large increase in pension payments. “It’s becoming increasingly difficult to finance an aging population that is not working,” says Klinov. “Existing pension structures lack sufficient resources to support the pension population. Under such conditions there are only three possible solutions:

a decrease in pension benefits, an increase in pension contributions by those working, and a rise in the retirement age. While the Knesset recently raised the retirement age from 65 to 67, a recent article by Prof. Klinov and her colleague Dr. Shmuel Amir recommends further raising it by means of an additional official increase, by ending the en masse practice of early retirement, and by increasing wages for unskilled labor by reducing the influx of foreign workers.

## Rethinking Policy

Each of the solutions to easing the pension burden raises additional questions: How

do you build a tax structure to finance pensions? And what are the social consequences of decreasing pension benefits?

Abraham Doron, the 2004 Israel Prize laureate for social work research and the Gordon Brown professor emeritus of Social Work at the Baerwald School, is one of Israel’s leading researchers in the area of social policy and the welfare state. Over the years, his research — which, at age 75, he continues to conduct today — has provided a comprehensive picture of the evolution of social security and healthcare in Israel.



Prof. Abraham Doron

“The compulsory old-age national insurance scheme is the largest social security insurance program in Israel,” Prof. Doron says. “All residents over the age of 18 contribute and are covered by it. The program is thus universal in its coverage, its benefits are not means-tested, and it guarantees every insured person a basic floor of income upon retirement.”

Israeli social security was planned as a two-tier system with national insurance payments on one level and

**‘social security is no longer linked to average wages’**

because I wanted to get involved in applied, as well as basic, research. Much of the research at the Hebrew University goes from the lab to the field — it has impact.”

For her doctorate, Sklan looked at anxiety — not only from the psychological perspective — but with respect to physical changes in the body. “Inheritance, experience and environment are the basic determinants of anxiety,” she says. “I was looking for the connection between enzyme activity and polymorphisms in genes of the cholinergic system [a major neurotransmitter system in the brain] and surveys of anxiety conducted by questionnaire. Working with Prof. Yaakov Ritov of the Department

of Statistics, I compared the two and found that ‘trait anxiety’ — a measure of the susceptibility to becoming anxious — decreases with age. As they grow older, people mellow and learn to cope.”

An outstanding student, Sklan recently began postgraduate work in virology at Stanford University in California. “I decided to return to virology because I believe that the prevalence of viruses such as AIDS and SARS makes it a major problem-area facing mankind,” says Sklan. “I hope to be able to integrate and build upon what I have learned in neurobiology by researching viruses that affect the nervous system.”

Gail Lichtman

private occupational pensions on the other. Together, the two would ensure a comfortable lifestyle in retirement. “Unfortunately, the system didn’t exactly work out as envisioned,” says Doron. “National insurance was supposed to be 24% of the average wage, but over the years it was eroded by legislation. In 2003, all elderly benefits were frozen and a 4% across-the-board reduction was imposed. More significantly, social security is no longer linked to average wages but to the Consumer Price Index.”

According to Doron, this means that the elderly won’t benefit from any growth in the national economy and, at best, their purchasing power will hold constant.

With respect to healthcare, Doron anticipates that Israel will need to increase healthcare services considerably in order to meet the needs of its growing senior population. “Many medicines and treatments are not covered by health insurance, nor is there a national insurance plan to ensure a place in a nursing facility except for the destitute. Many lack the resources to take care of themselves or — as a nation of immigrants — do not have relatives in the country.”

Prof. Doron says that policy planning must include adjustment of social security payments and extension of occupational pensions to all workplaces. In addition, he says, further erosion of healthcare

services must be prevented so they can be universally accessible.

## Mind the Gaps

Israeli society has significant socio-demographic gaps in its health and mortality, according to Professor Orly Manor, a researcher in the Department

of Health Care Management, Health Economics and Medical Ecology at the Braun Hebrew University-Hadassah School of Public Health and Community Medicine and a founder of the IGDC.

Manor studies education, income, apartment size, car ownership, ethnic origin, marital status and gender differences in order to discover where the



Douglas Guthrie

## Jewish Tradition & Aging



Prof. Avigdor Shinan

What does Jewish tradition have to teach us about old age? Can a person prolong his life through his actions? Is a person of advanced age entitled to special respect or treatment? Is old age even a blessing? Who exactly, moreover, is considered “old”?

The rabbis differ on all of these questions, says Avigdor Shinan, professor of Hebrew Literature at the Mandel Institute of Jewish Studies. On “tips” to reach old age, opinions range from adherence to particular religious

observances to rather mundane physical acts. As for honoring the elderly, here too the sages fail to reach a consensus.

The Bible [Leviticus 19:32] teaches us: “You shall rise up before the hoary head and honor the face of the elder”, a seemingly straightforward statement. Based on this commandment, some rabbis argue that all elderly are to be honored, while others say that it pertains to only the wise and virtuous among the elderly.

A further complication arises in Jewish tradition’s definition of an “elder”. It doesn’t necessarily refer to chronological age, but rather to one distinguished by his knowledge, piety,



Debra Markus teaches fitness for seniors at the Cosell Center

to health and mortality, but — unique to Israel — married men and women experience a similar advantage regarding longevity,” she says.

Manor is disturbed by what she sees as an erosion of health equality. “While health has improved over the years, the rate of health improvement of upper socioeconomic groups keeps increasing, fueling a growing gap between rich and poor.” Part of the gap stems from the material deprivation of poverty and riskier health behavior, which is linked to less education. But access to and utilization of healthcare are also significant factors. “Most European countries are dealing with the problem of health equality,” says Manor, “but in Israel, it is a low priority — and that is something we must change.”

## Looking Ahead

Innovative research in the life sciences may allow us to anticipate longer lives and better health than previous generations. Of equal importance, though, is our ability to harness the knowledge that is provided by researchers in social policy, social welfare and health services in order to enjoy the financial and healthcare support that can make our later years enjoyable and rewarding. ■



Prof. Orly Manor

gaps are. “I’ve found that people in the lower strata are more likely to die younger than those in the higher strata. As in other countries, married people fare best with respect

wisdom, good deeds and relations with others.

In Jewish tradition, “elder” denotes a respected station in life that one should strive for, perhaps even reaching it at an early stage. An even greater blessing, though, is to retain that status into old age.

Jerry Barach

מפני שיבה תקום והדרת פני זקן

ויקרא יט, לב

## Lifestyle & Aging



Prof. Elliot Berry

There is no “magic formula” to guaranteeing good health into old age, says Professor Elliot M.

Berry, director of the Braun Hebrew University-Hadassah School of Public Health and Community Medicine.

Good health and longevity derive from a combination of good genes and a health-promoting lifestyle, he says. The latter should include a balanced Mediterranean diet, which includes plenty of fruits and vegetables, wine (in moderation at meals) and olive oil — plus “eating a little less!”

But it is exercise that Berry puts at the top of his list of “dos” for promoting and prolonging quality of life. Walking on a regular basis (30 minutes most days or alternatively, 10,000 steps a day) is highly recommended, even if one is unable to go at too fast a pace. Stimulating the mind is also important to retain quality of life, he adds.

Irrespective of age or physical and mental condition, “the key is to make the best of what we have,” emphasizes Berry. In this context, he quotes an aphorism from his late father, David G. Berry: “Never

do nothing when you can do only a little.”

Jerry Barach



Douglas Guthrie



Douglas Guthrie

# Student Priority CAMPAIGN Gathers Steam

**WITH** construction of the 1,500-bed Scopus Student Village well under way, the Hebrew University recently launched the second phase of its Student Priority Campaign to raise support for scholarships.

“Our fundraising efforts now focus on two main aspects of student life,” says University President Professor Menachem Magidor. “The Scopus Student Village will be an outstanding asset for the University in continuing to attract excellent students to study in Jerusalem. With 70 percent of our students coming from homes outside of Jerusalem, accommodations can be a decisive

factor when selecting and applying to university. The Scopus Student Village will increase dormitory capacity on the Mount Scopus campus by 50 percent and ensure accommodations and amenities in a convenient location.”

The second focus of the Student Priority Campaign seeks funds for two categories of scholarship that will enable all young people showing promise to fulfill their academic potential, whatever their backgrounds. The

Scopus Scholarships, available from the pre-academic through postdoctoral levels, will provide full scholarships for students from low socioeconomic backgrounds. The Albert Einstein Scholarships will be awarded to outstanding students, with proven academic excellence, from the undergraduate to postdoctoral levels.

While these aspects constitute the focus of the Campaign, Prof. Magidor stresses that funds are also needed for essential resources – such as endowed chairs, library acquisitions, laboratory and classroom equipment, and the recruitment and support of outstanding young faculty – that ensure academic growth and the ongoing welfare of the student body.

“The Student Priority Campaign offers wonderful giving opportunities for our friends,” says University Vice-President for External Relations Avinoam Armoni. “From installing a *mezuzah*

on the doorpost of a room in the Student Village or naming the wing of a dormitory building, to sponsoring a Scopus Scholar for the first year of undergraduate studies or an Einstein Scholar for four years of doctoral studies, we invite our friends and supporters to share our vision for a future where the best and brightest of Israeli youngsters can be guaranteed a home at the Hebrew University of Jerusalem.”

Reporting on the achievements of the Student Priority Campaign to the Executive Committee of the University Board of Governors in November 2004, Vice-President Armoni said that \$113 million had been pledged during its first year, with pledges during the first quarter of the second year showing a relative increase of almost 12 percent and monies received for that same period increasing by

18 percent. “The new Campaign has spurred an atmosphere of excitement and enthusiasm that has found tangible expression in the events held by our Friends associations around the world, among them the President’s Dinner in London, the European Friends’ Conference in Cannes, Scopus Award ceremonies in Paris and Geneva, the ALEF conference in Palm Springs, and the Harvey Kruger dinner in Tel Aviv.” ■

*‘we invite our  
friends and  
supporters to  
share our vision’*

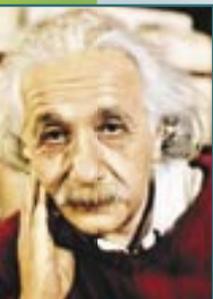


Photo by Hermann Landshoff/courtesy of Albert Einstein Archives, JNU



# Hold the Date Hold the Date Hold the Date Hold the Date

## Friends of the Hebrew University scheduled events during 2005/2006 include

<b>March 24</b>	<b>Boca Raton</b> American Friends' Torch of Learning Award dinner honoring Joan and Donald Vinik
<b>April 4</b>	<b>New York</b> American Friends' Lautenberg Research Center dinner honoring Howard Lutnick
<b>April 10</b>	<b>New York</b> American Friends' Annual Meeting of the Board of Directors and Council of Trustees
<b>April 10</b>	<b>Munich</b> German Friends' Scopus Award ceremony honoring Prof. Horst Teltschik
<b>April 25</b>	<b>Ottawa &amp; Winnipeg</b> Canadian Friends' Passover luncheons
<b>May 18</b>	<b>Toronto</b> Canadian Friends' Person of Distinction-Lafer Center dinner honoring Dr. Rachael Turkienicz
<b>May 18</b>	<b>Winnipeg</b> Canadian Friends' gala dinner honoring Murray Palay and Harold Buchwald
<b>May 19</b>	<b>London</b> British Friends' annual President's Award Dinner
<b>May 19</b>	<b>Montreal</b> Canadian Friends' Gala dinner honoring Roslyn and Harvey Wolfe
<b>May 26</b>	<b>London</b> Einstein Year 'Constant Speed' ballet at Sadlers Wells
<b>May 30-June 9</b>	<b>Israel</b> Canadian Friends' Mission of Friendship
<b>June 3-8</b>	<b>Jerusalem</b> Board of Governors Annual Meeting
<b>June 3-10</b>	<b>Jerusalem</b> British Friends' Legacy Tour
<b>June 9-14</b>	<b>Israel &amp; Jordan</b> American Friends' 'Israel and its Neighbors' mission
<b>July</b>	<b>Jerusalem</b> Russian Friends' program at Truman Institute for future diplomats and international relations specialists
<b>July</b>	<b>Sao Paulo</b> Brazilian Friends' Jewish law lecture series
<b>September 17-18, 24-25</b>	<b>Vancouver &amp; Toronto</b> Canadian Friends' 'Best of HU' lecture series
<b>September</b>	<b>Argentina</b> Argentinean Friends' Jewish studies lecture tour
<b>September-December</b>	<b>London</b> British Friends' 'Einstein the Man' exhibit at the Jewish Museum
<b>September 8</b>	<b>Buenos Aires</b> Hebrew University 80th Anniversary Gala Dinner
<b>September 11</b>	<b>Toronto</b> Canadian Friends & Alumni's Third Annual Family Fun Day
<b>September 15</b>	<b>Livingston NJ</b> American Friends' Lautenberg Research Center dinner honoring Jerry Lipkin and Andrew Abramson
<b>October</b>	<b>London</b> British Friends' Inaugural Einstein Science lecture, with Sir Martin Rees at the Royal Institution
<b>October 30-November 9</b>	<b>Israel</b> Canadian Friends' 'Live & Learn in Jerusalem'
<b>November 5</b>	<b>Tel Aviv</b> Israel Friends' Gala dinner honoring Chairman of the Board of Governors Yigal Arnon
<b>November 6-7</b>	<b>Jerusalem</b> Board of Governors Executive Committee Meeting
<b>November 28</b>	<b>London</b> British Friends' Einstein & Picasso lecture by Prof. Arthur Miller
<b>January 2006</b>	<b>Uruguay</b> Punta del Este summer symposium
<b>January 2006</b>	<b>Palm Beach</b> American Friends' Annual Leadership Educational Forum (ALEF)
<b>February 2006</b>	<b>Mexico</b> Mexican Friends' 'Three Women, Three Expressions' annual symposium



# A World of

Worldwide activities of the  
University's Friends associations

# FRIENDS



## Brazil

Brazilian Minister of Culture Gilberto Gil was presented with the Scopus Award in Rio de Janeiro. From left: President of the Brazilian Friends of the Hebrew University Morris Dayan, Minister Gil, University Rector Prof. Haim D. Rabinowitch, and Joseph Benarroch, Director of the Latin American and Spanish Desk of the University's Division for Development and Public Relations.



## Britain

Awardees at the British Friends' annual President's Award Dinner in London were (left) British-born Hebrew University doctoral student David Emanuel for his outstanding academic achievements and Director of the Royal Institution of Great Britain Baroness Greenfield for her continued support of the University; also attending the dinner was Sir Martin Gilbert who was conferred an honorary doctorate by the University in 2004.



## Canada

Former premier of Ontario The Hon. Bob Rae (center), seen here with Canadian Friends Board of Governors Honorary Chairman Ralph Halbert (right) and National President Ronnie Appleby, was presented with the Scopus Award at a gala tribute dinner held in his honor in Toronto. Proceeds from the event went towards the establishment of the Rae Endowment at the Faculty of Law.



## France

Maurice Levy, Chairman and CEO of Publicis Groupe SA, was presented with the Scopus Award in Paris. From left: Philippe Labro, Eve Rugierri, Maurice Levy, Scopus Award laureate Lily Safra and University President Prof. Menachem Magidor.



Singer Enrico Macias entertains participants at the gala dinner of the European Friends' four-day conference 'Europe, the West and Islam' in Cannes.

## Israel

An Israel Friends' festive evening honoring Harvey M. Krueger, Vice-Chairman of Lehman Brothers, Inc., and an Honorary Chairman of the University's Board of Governors, attracted some 800 participants, with the proceeds going towards the establishment of the Harvey M. Krueger Family Center for Nanoscience and Nanotechnology. From left: Teva Pharmaceuticals Chairman Eli Horovitz, Vice Premier and Labor Party leader Shimon Peres and Harvey Krueger.



## Russia

Guests at a gala evening held by the University's Russian Friends included (from left) Israel Ambassador to Russia Arkady Mil-Man, Alef-Bank Board member Oleg Evdokimenko, Chairman of the Board of the Russian Friends Gregory Shtulberg and Russian Friends' President Mark Shabad.



## Switzerland

Former State Councilor of the Republic and Canton of Geneva Olivier Vodoz was presented with the Scopus Award at a ceremony held in Geneva. From left: Swiss Friends' President Dr. Eric Hauf, Olivier Vodoz and Scopus laureate Ruth Fayon.



## United States

American Friends' National Board member and Executive Committee Co-chair Todd Lundy and Morissa Lundy were presented with the Scopus Award in recognition of their outstanding contributions and communal leadership at a luncheon in Chicago. From left: Ellen Lundy, Erica Peresman, Morissa B. Lundy, David Jaffe, Todd S. Lundy, Jennifer Jobrack and David Lundy.



Longtime Hebrew University supporter and Assistant Treasurer of the American Friends Daniel J. Schultz was honored at the National Scopus Award Dinner in New York. From left: Committee Chairs Harvey M. Krueger and Kobi Alexander, Israel Ambassador to the U.S. Daniel Ayalon, Mrs. Ayalon and Danny Schultz.



'A Chocolate Affaire' chocolate-tasting and cocktail evening at the Bugsy Siegel Mansion in Beverly Hills attracted over 200 people, including (from left) Western Region Board Member Sidney Moray, Western Region Chairman Richard Ziman, former Mayor of Beverly Hills Hon. Maxwell Salter, and Western Region President Dr. Gerald Niznick. Proceeds from the event went towards student scholarships.

# When FIRE was Tamed

In an internationally heralded discovery, a University scholar uncovers the earliest scientific evidence of our forebears' ability to control fire

By Jeff Abel



A. Boltinester

**GREEK** mythology teaches us that the Titan Prometheus formed man of earth and water. Prometheus was, in fact, so fond of his creation that he bestowed upon him a godly gift of fire. Thus, in ancient Greece, over three millennia ago, man was already curious regarding the origins of his relationship with fire. But where, when and how fire became a well-worn tool has been hotly disputed.

Evidence that controlled fire existed in what are now Kenya and South Africa 1.6 million years ago is regarded as ambiguous. But now, at the southeastern end of the Hula Valley in northern Israel, head of the Institute of Archaeology Professor Naama Goren-Inbar and her multidisciplinary scientific team have uncovered the earliest known evidence in Eurasia of demonstrable control of fire by prehistoric man. Their findings from the Gesher Benot Ya'aqov (GBY) site go back some 790,000 years and provide clear pointers to hominid control over fire at an inhabited site.

As described in the team's report in *Science* magazine (volumes 289 and 304), distinct clusters of fire-damaged flint chips were unearthed, with burned material making up less than 2 percent of the flint and wood at each site. Other remains, including large quantities of driftwood, were left untouched. Had the fire been uncontrolled,



Aerial view (left) of the Gesher Benot Ya'aqov study area on the banks of the Jordan River; among the flint microartifacts (above) from the site, a small group show evidence of burning

G. Laron, Institute of Archaeology



G. Laron

Prof. Naama Goren-Inbar

says Goren-Inbar, the driftwood would have encouraged its spread and there would be a much higher frequency of burned items. Moreover, the fact that such distinct clusters were found at more than one excavated occupation level strongly suggests that Acheulian (hominid) hearths or campfires existed at the site over an extended period.

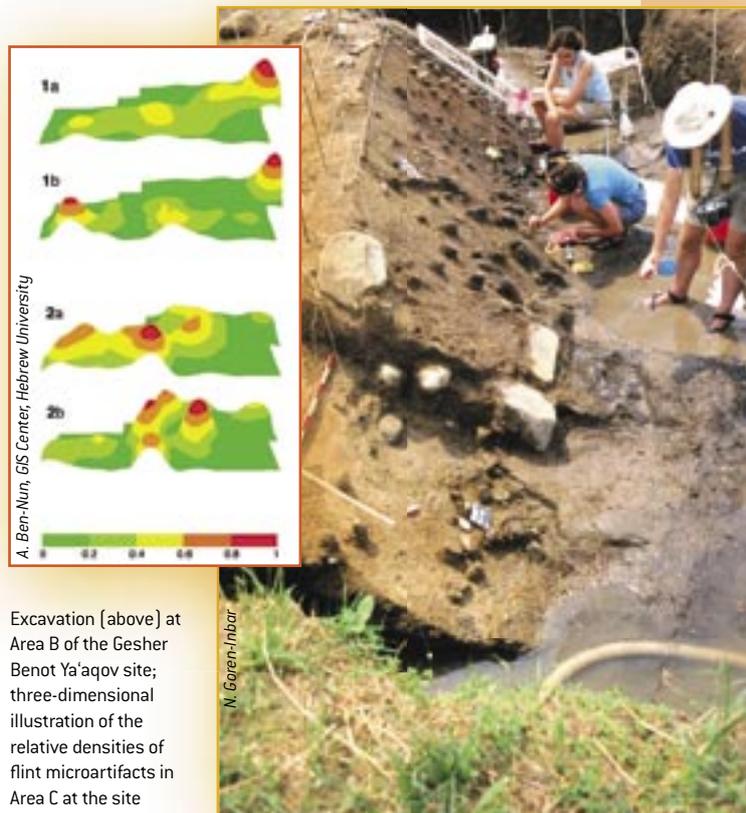
The archaeologists' work focused on the east bank of the Jordan River, south of Lake Hula, where they dug seven trenches, reaching a total thickness of 34 meters. They found thousands of artifacts, including animal bones, seeds, fruit, flint tools and chips, and wood and bark from various species: edible wild grape, water chestnut, prickly water lily, cattail, oak, wild pistachio, wild olive, plum and jujube. So far, the dig has uncovered traces of a hominid presence in 13 distinct layers, indicating repetitive occupation over an extended period. In the interludes, the lake had flooded the area, obliging the inhabitants to leave.

Who were these lakeside dwellers and how did they live? "The evidence," says Prof. Goren-Inbar, "indicates that they were hunters and gatherers who processed meat and extracted marrow, brought in flint, basalt and limestone, and produced stone tools. They knew how to use fire and indeed used it — continuously or intermittently — for more than 100,000 years on the shores of an ancient lake." The domestication of fire, she says, must have introduced a change in diet, defense and social interaction.

As no hominid fossils have been uncovered at the site, Goren-Inbar notes that it is impossible to definitively determine which early humans used the fires. Given the date (some 790,000 years ago), the location (on the land route out of Africa), and the innovative techniques used to make the Acheulian stone tools (the first appearance of such techniques outside of Africa), the most likely candidates would be *Homo erectus* or *Homo heidelbergensis*. Another possibility is an archaic form of *Homo sapiens*, a possible ancestor of *Galilee man*, whose skull was

**'they knew how to use fire and used it for more than 100,000 years'**

Excavation (above) at Area B of the Gesher Benot Ya'akov site; three-dimensional illustration of the relative densities of flint microartifacts in Area C at the site



found several miles west-southwest of GBY in 1925.

Hominid settlement in the colder parts of Europe or Asia most likely required the possession of fire. Did fire control develop there locally or was it imported? "While we have uncovered the earliest evidence in Eurasia, it remains most likely that controlled fire originated in Africa," stresses Goren-Inbar. "However, the cumulative evidence from GBY of different populations controlling fire strongly suggests that as well as having the ability to control fire, they may even have learned to produce fire themselves." Here — maybe — our forbears learned how to create Prometheus's gift. ■

## Prehistoric Interest

Although our knowledge of human control of fire remains patchy, we owe the little we have to the scientists who explore the prehistoric past, digging through the earth and mud, painstakingly sifting through the records.

Prof. Goren-Inbar caught the archaeology bug as a child from her father. In 1968, she enrolled in the Hebrew University's Department of Archaeology to study Herodian remains, only to find that there was no such course. She attended a

prehistory class instead — and has been captivated by the subject ever since. She has led the dig at GBY since 1989, with much of her work documented in the recently published *Human Paleocology in the Levantine Corridor* (Oxbow Books), which she co-authored with John D. Speth.

Goren-Inbar hopes that future explorations will further demonstrate the [relative] sophistication of our forebears in their exploitation of animal and plant life. Israel,

she says, has a high profile in prehistoric exploration, especially as regards the transition between Africa and Eurasia. Apart from the earliest evidence of controlled fire and of the use outside of Africa of African techniques, it is the source of the remains of concurrent modern and Neanderthal men. In Africa, early humans have been exclusively modern for about 250,000 years; in Europe, they were still exclusively Neanderthal until about 30,000 years ago.

# Reach Out

# and Educate

by Gilah Kahn-Hoffmann

A unique program offers young people from Israel's outlying areas the opportunity to pursue a degree, develop skills for a profession and ensure a secure future

of Ethiopian background or from Israel's periphery who have just graduated from high school but require a year of further preparation for university admission. If successful, they go on to study engineering, exact sciences, medical sciences, law or economics, and then specialize in the area of their studies during their army service.

"Working with Atidim, we have tailored the programs for students from the periphery so that we can help strengthen Israeli society," says director of Student Administration Billy Shapira. "Once they complete their studies, the participants either return home to apply what they have learned, or bring the benefits of their education to civic agencies."

ETHIOPIAN-born Ristu Tsagaje, a student in the preparatory course at the Saltiel Center, may be just 19 but he doesn't make decisions lightly. Before applying to Atidim, he consulted with graduates of the program.

Tsagaje appreciates the high caliber of the teachers who work with the small groups of students, and is grateful for being singled out. The sense of "being chosen" fuels his ambition to succeed. "Thanks to the support I am getting, I will be able to achieve my potential and contribute to society."

Psychology major Avi Bar, 26, is in the pilot group of the public service track. "I have been involved in many social action

**EDIT** is from Ofakim, Sara from Safed, Avi from Beersheba, Ristu from Rehovot, and Maxim and Miri from Ashdod. They all hail from Israel's peripheral areas — and they all exemplify passion, purpose and patriotism.

The six Hebrew University students are participants in 'Atidim' (Hebrew for 'futures'), a project of the Friends of Atidim non-profit organization, which joins forces with partners such as the Israel Defense Forces (IDF) and Israel's institutes of higher education to reach out to youth in Israel's development towns and outlying areas. The underlying philosophy of Atidim's multi-track program is to optimize

excellence, raise awareness of higher education, provide local role models of success, train young professionals for the public and education sectors, and close the yawning gaps in Israeli society.

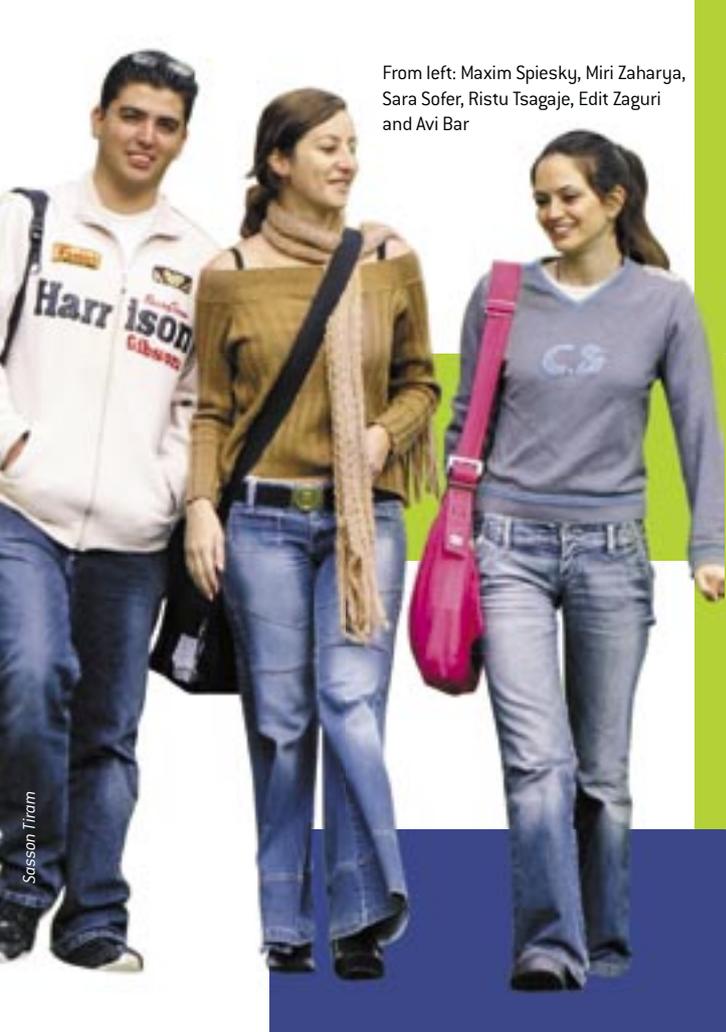
While Atidim programs exist at other Israeli universities and colleges, the Hebrew University is the venue for two unique pilot tracks. The first is a science-education program in conjunction with Atidim and the IDF which produces graduates equipped with a science degree and teaching certificate who then serve for six years as soldier-science teachers in their hometowns. The second is a program in conjunction with Atidim at the School of Public Policy for youngsters who, on completing a bachelor's degree in one of several disciplines where they major in public policy and can continue onto a direct-track master's degree, are committed to working in the public sector in their hometowns for at least five years.

In addition, the University offers Atidim at its Joseph Saltiel Center for Pre-Academic Studies to promising youngsters

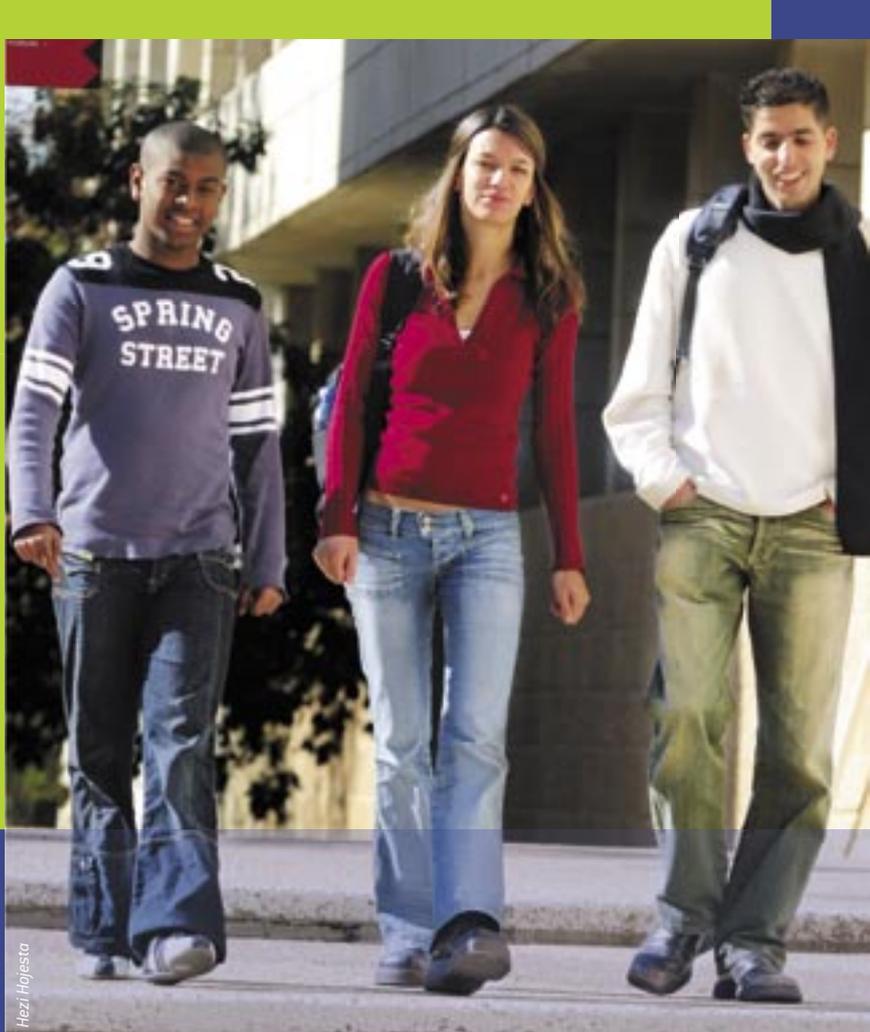
***'this program gives me the support to strive to do my best'***

Sosson Itram





From left: Maxim Spiesky, Miri Zaharya, Sara Sofer, Ristu Tsagaje, Edit Zaguri and Avi Bar



Hezi Hagesta

projects, but in Atidim I am exposed to a different way of thinking,” he says. “If you take a group of people like us, who were not born with silver spoons in our mouths but who have the passion and desire to create change, and you give us the right academic and practical tools, the results will exceed expectations, and can lead to a better Israel.” Bar regards the group cohesion fostered by the program as key to its success. “When we’re all out there in the public service, we will form a sort of coalition — we will be able to make a difference on an even wider scale. And while we come from diverse backgrounds and have studied different subjects, we share common goals: to fight corruption, improve efficiency and create a vibrant, creative society.”

Miri Zaharya, from Ashdod, and whose parents immigrated to Israel from Egypt, was inspired by her high-school chemistry teacher. Aged 19, she is in the second

year of her chemistry studies in the Atidim science-education track and hopes to instill both a love of learning and the sense that academic achievement is attainable in the students she will teach during her army service. “Without Atidim I wouldn’t have been able to afford to study,” she says. “The program gives me the support to strive to do my best.”

For 23-year-old Edit Zaguri, Bar’s public service track classmate, Atidim offers “the opportunity to study something that really interests me rather than worry about how to survive.” Diverse perspectives can only benefit Israel’s government, she says. “For a long time, government has been dominated by the country’s centralist mainstream. Now, thanks to Atidim, Edit from outlying Ofakim will have the chance to contribute her perspective — and put into use her training and the insights she has gained from University experts on everything from economics to philosophy.”

Sara Sofer, 19 and of Israeli-Tunisian origin, recently completed the Atidim preparatory program and is now studying chemistry, but hopes to transfer to dental medicine. She is grateful for the benefits of the program, which include dormitory accommodation, tuition, a laptop computer, social and academic support — and, she stresses, “the opportunity to study, and the sense of security I now have about my present and future.”

Maxim Spiesky, also 19, immigrated to Israel from Uzbekistan at age six. A physics major in the science-education track, he is continuing a family tradition — both his grandmother and mother are teachers. “As an army officer/teacher in Atidim,” he says, “I will encourage high-school students — who don’t even entertain the possibility of higher education — to excel. I love the idea of Atidim and completely identify with it; it is one of the truly wonderful things that this country has to offer.” ■



Noam Barshai



Oz Golan

# Good

computer-controlled, mechanical feeders with liquid-tipped devices that can be programmed to discharge a nectar-like sugar solution and can detect a bee whenever it lands on them. The computerized “flowers”

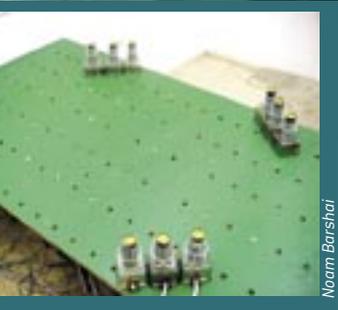
can be arrayed in varying patterns and colors, and programmed to provide the

“nectar” in pre-selected probabilities and sequences. Thus, the bees are tested in various situations that force them to learn the rules according to which rewards are provided, while engaging in ongoing decisions as to which “flower” to visit next.

The computer program that controls this system can be tailored for each experiment, with the sequence of rewards altered so that there is a direct correlation between the decisions the bee makes — having learned the rules of the particular experiment — and the rewards it receives.

For ecologists from a botanical background such as Professor Avi Shmida, who heads the BeeHave laboratory, and his doctoral student, Noam Barshai, the bumblebee experiments elucidate the bee-flower relationship. Bumblebees do not exclusively choose

the highest-rewarding option, but are influenced by factors such as color, form and smell. “Our observations of the bees’ foraging



The bee-flower relationship in nature and in the laboratory

Noam Barshai

**WHICH** supermarket do you shop at? Which route do you take home? Where do you fill up with gas? While the reasons for choices are numerous — wider aisles, fewer stop lights, or a free newspaper at the gas station — we rarely think about the decision-making process and its many intricacies. We just decide.

The process, however, is of profound interest to Hebrew University researchers from a broad range of disciplines who, rather than observing people at supermarkets, are studying bumblebees. Their studies are conducted at the BeeHave laboratory, a part of the Center for the Study of Rationality at the University’s Edmond J. Safra Campus at Givat Ram.

As they fly from flower to flower, avoiding some and landing on others in their industrious search for nectar, bees seem to be making decisions. At the BeeHave lab such scenarios are recreated, with the flowers replaced by



Sasson Tiram

Prof. Avi Shmida

## Hives of Activity

Professor Avi Shmida, who heads the BeeHave laboratory, is one of the few Israeli scholars who continues to make frequent research trips to Jordan. Engaged in intensive joint research with colleagues from the Jordanian Ministry of Agriculture and students from Israel and Jordan, he is investigating how bees can aid in improving yields for Jordanian farmers.

In two joint projects that are supported by USAID’s Cooperative Development

Research Program, the teams are experimenting with honeybees that live in specially developed mini-hives that reduce their propensity to sting, thus making it much easier to work with, transfer and monitor them — and, moreover, obviating the need for beekeepers.

By varying the number of hives and types of bees used, the scientists are collecting data in the field in order to determine the optimal variables for crops

in the cucurbitaceous family, which includes cucumbers, squash, pumpkin and watermelon.

In the second USAID project, which involves wildflowers and honeybees, the Jordanian-Israeli group is investigating the amount of nectar and pollen produced by keystone — species that have a key role in the ecosystem — wildflowers. This requires assiduous fieldwork in rugged but spectacular terrain by the team, which

# BeeHavior

by Jerry Barach

habits under varying conditions can influence the types of flowers or crops that we decide to grow,” says Prof. Shmida. For example, introducing bees to greenhouses where peppers are grown improves pollination and results in up to 30 percent higher yields of a higher-quality product.

WHILE bee behavior studies are of obvious interest to botanists, their relevance to human behavior might appear far-fetched.

However, studying how bees cope with changing circumstances provides insights into how people choose between alternatives. “We’re looking for basic learning mechanisms,” says BeeHave member Professor Yaakov Kareev of the School of Education, who is interested in understanding how people make choices between alternatives under different circumstances. “We can observe how the changing conditions influence the bee’s decision-making behavior. Put simply, we want to see how the bees detect

***‘bees are like humans who never have enough money’***

correlations between variables, how they go about putting ‘two and two together’, a process of looking for beneficial outcomes that applies to human beings as well.”

Bees are ideal research objects, says Kareev. “Never satiated, they are in a perpetual state of nectar-seeking. They’re like humans who never have enough money; bees are always busy, unlike other animals which tend to take a ‘siesta’ upon receiving their rewards.”

And while human behavior is studied extensively, it is difficult to attain “pure” results, says doctoral student Tal Seifan, who works with Prof. Kareev and Professor Uzi Motro of the Department of Evolution, Systematics and Ecology. “People are wonderful, but they’re complex and unreliable. A participant in an experiment may be troubled on a particular day

From left: Prof. Yaakov Kareev, Tal Seifan, Noam Barshai; below: Prof. Shmida with colleagues and students in Jordan



because of personal problems, and this can distort his reactions. Bees, on the other hand, may be primitive but they appear to have a nice, straightforward, built-in, decision-making system and this allows us to learn from the bottom up. Of course,” he adds, “bees — like people — are not all alike. Some observe what others don’t and some learn quicker than others.” ■

spends numerous days and nights studying each such species. The resulting information is used to estimate the carrying capacity to hives of different vegetation types, as well as the number of beehives a beekeeper should place in each eco-region.





# Regional Talent

**The Hebrew University is a unique resource of research and teaching for scholars of Islam and the Middle East**

**By Heidi J. Gleit**

From left: Dr. Anat Lapidot-Firilla, Prof. Meir Bar-Asher, Prof. Reuven Amitai, Laila Abed Rabho, Yosef Witztum

**JERUSALEM** may seem an unlikely meeting point for scholars of Persian studies wanting to learn more about Shi'ism, British academics seeking to further their research on the influx of Turkish and Mongol nomads into the Muslim world and their conversion to Islam, and a Muslim woman studying the status of women in Muslim religious courts. The geographic and academic scope at the Hebrew University's Institute of Asian and African Studies, however, makes it a popular choice among scholars and students from Israel and abroad, be it for degree programs or short study visits.

The Institute dates back to 1926 when, as the Institute of Oriental Studies, it sought to increase knowledge and understanding of the Middle East. In the

years that followed, it expanded its focus to Islam in neighboring regions, and then to those regions themselves — in the process becoming one of the world's leading centers for the study of Asia and Africa.

Members of today's Institute — five of whom are Israel Prize laureates — are internationally recognized experts whose work on the Middle East, Japan, China, India, and Africa is frequently published in leading academic journals. Recognition also has come from the Islamic world. For example, Iranian intellectuals put aside anti-Israel sentiments to translate into Persian the authoritative *Belief and Law in Imami Shi'ism* (2003) by Professor Etan Kohlberg of the Department of Arabic Language and Literature.

Institute director Professor Meir Bar-Asher stresses that the Institute's success

**recognition has also come from the Islamic world**



personally challenging. Coming from a background in the study of Jewish texts, he wanted to study a similar culture with the aim of comparing the two religions. He notes that there are many parallels in both the style and content of Jewish and Muslim law: “Both go into detail, instead of simply stating principles, and in many cases the details are similar,” he says. “The points where the details diverge are especially instructive as they highlight the unique aspect of each religion.”

Laila Abed Rabho, of the Department of Islamic and Middle Eastern Studies, is writing

her doctoral dissertation on how these principles and details affect the lives of Muslim women today. She is researching the reasons women turn to Islamic religious courts — which handle marriage, divorce, child support and related issues — and their experiences there. One trend she identified is a steady increase in the number of abused women — some who have long suffered in silence — turning

President Moshe Katsav at the inauguration of the Levtzion Center for Islamic Studies



Israel Nojstein

is largely due to its emphasis on philology, which requires a close and exact reading of texts in the original language. The German-speaking founders of the Institute came from an academic tradition that focused on knowledge of language and text analysis, he says. Indeed, their conviction that texts are the springboard to understanding a culture still guides the Institute and its five departments today. Bar-Asher notes that this does not mean “getting stuck” in texts, but rather using them as a base upon which to build ideas and theories.

For Yosef Witztum, a 28-year-old master’s student in the Department of Arabic Language and Literature, the study of texts is both intellectually satisfying and

to the courts for relief. As women become more aware of their rights, they let go of their embarrassment and fear of divorce and turn to the courts, suggests the 47-year-old Abed Rabho, who is blind. Her research also has led her to a new career that allows her to harness the knowledge gained from her research: she is one of the first Arab women from a non-legal background to have passed the exam to become a pleader in the religious court and she is now completing her clerkship.

EVEN research projects that seem esoteric and purely intellectual, such as the Institute’s unique *Concordance of Early Arabic Poetry* have relevance to the modern world. A “deep sense of history” pervades the cultural dialogue of the contemporary Arab and Islamic world, says former Institute director Professor Reuven Amitai — Saddam Hussein frequently used images from Islam’s classic period, while the late Hamas leader Sheikh Ahmad Yassin laced

## To Further Understanding

Israel’s first Islamic studies center — the Nehemia Levtzion Center for Islamic Studies — was established at the Hebrew University in December 2004. Dedicated to the memory of one of the University’s leading scholars in the field in the last generation, the Center’s activities will be conducted in the spirit of Prof. Levtzion’s wide-ranging scholarly interest and will further strengthen the study of Islamic religion and cultures at the University.

“We plan to expand the focus of study beyond the areas of traditional excellence in Islamic studies at the Hebrew University, for instance beyond the Middle East and more

firmly in the contemporary period,” says founding director of the Levtzion Center Prof. Reuven Amitai. “Moreover, we hope to act as a meeting place for Muslim and non-Muslim scholars, as well as hosting investigators of Islam from outside academia. In general, we hope to facilitate understanding and dialogue, together with scholarly activity.” The Center was officially inaugurated by President of Israel Moshe Katsav in December 2004 at a ceremony hosted at his residence.



From the collections of the Jewish National & University Library, Jerusalem

the Rothberg International School's graduate program in Middle East studies, which is taught in English.

Dr. Anat Lapidot-Firilla taught Ottoman and Turkish history at the Institute of Asian and African Studies

topic for researchers. It is an important component of the complex 'Mosaic society' and affects its social, political and cultural life," says Lapidot-Firilla. "The atmosphere here in Jerusalem is intellectually stimulating and fosters a free exchange of ideas among researchers of different disciplines."

Indeed, in recent years members of the Institute of Asian and African Studies have initiated and led several research groups on topics related to the Islamic world at the prestigious Institute of Advanced Studies, which is a joint venture of the Hebrew University and Yad Hanadiv (the Rothschild Foundation).

The latest such group constituted the first-ever international group on Shi'a Islam, with researchers from Germany, France and Britain joining Hebrew University faculty for six months during 2003 — and, in so doing, reaffirming the centrality of the Institute of Asian and African Studies among students and scholars far and wide. ■

his speeches with examples from the life of Muhammad. "Thus, studying the past through prisms such as ancient poetry gives the present a fuller context and sheds light on many of the concepts of today's cultural and political discourse," says Amitai.

***'Islam in Turkey today is an interesting and challenging topic for researchers'***

Similarly, the Institute of Asian and African Studies is often the touchstone of University research and teaching programs that focus on contemporary issues in the region and beyond. The establishment in 1966 of the Harry S. Truman Research Institute for the Advancement of Peace was a natural outgrowth of the activities of the Institute, as are the graduate program in the contemporary Middle East and

for several years before being named the Barbara and Morton Mandel Young Truman Scholar at the Truman Institute in October 2003. She is spending her three-year fellowship working on a textbook on Turkey from 1945

to today and a book about American women volunteers in post-WWI Turkey, part of the "greatest ever humanitarian operation.

"Islam in Turkey today is an interesting and challenging

Australian diplomats meet with Palestinian pollster and political scientist Prof. Khalil Shikaki at the Truman Institute



Offering a comprehensive picture of contemporary life in Israel within a regional and historical context, the program comprises meetings with Israeli and Palestinian academics, diplomats and politicians, plus tours to Jewish, Muslim and Christian sites. "We gained firsthand information about Israel and Palestine, the ongoing conflict and different attitudes, and also got to see the Holy Land and its very heart, Jerusalem," says recent participant Anna Selezneva. "We could really feel its ancient history and culture."

**Diplomatic Training**

A recent initiative by the Harry S. Truman Research Institute for the Advancement of Peace offers diplomats a close-up look at life and society in the Middle East. An intensive learning program, lasting up to three weeks, outlines the many issues pertaining to Israel and the Middle East, including terrorism, conflicting religious trends and rising fundamentalism, and visions for peace. To date, a group of young Australian diplomats and two groups of Russian students have participated, the latter sponsored by the Russian Friends of the Hebrew University. The Truman Institute is now tailoring the program to different interest groups.

# Medical Progress

**ONE** of Dr. Keren Agam's favorite venues is the operating theater; that's one reason, she says half-jokingly, that she is pursuing a career in plastic surgery. Agam also likes a challenge — and the field of plastic surgery, which is both grueling in its demands and sparse in women practitioners, not only gives her frequent access to the operating theater but also provides her with her latest challenge.

Agam, 30, is a recent graduate of the prestigious MD/PhD program at the Faculty of Medicine of the Hebrew University. She completed the nine-year marathon of intensive studies, which combines a medical-practice degree with a research degree, with great distinction. Indeed, she earned the 2004 Faculty Prize for Excellence in a Doctoral Thesis. She also has published her findings in the prestigious *Journal of Neuroscience* and *Cell Calcium*.

Haifa-born Agam, who was raised in Zichron Ya'acov and the US, did her doctoral research under the supervision of Professor Baruch Minke of the Medical Faculty's Department of Physiology and who heads the Kühne Minerva Center for Studies of Visual Transduction. Her subject was the physiological gating — when the structural state of a protein changes from open to closed — of a channel protein called transient receptor potential (TRP) in the *Drosophila*, or fruit fly. “The breakthrough came when I was researching mutant fruit flies and discovered that when metabolic stress was induced,

***‘I discovered in the fifth year that I like operating theaters’***

a rare property of channel proteins was revealed. This new insight in basic science challenges currently known models of the TRP activation mechanism.”

Now a resident in plastic surgery at the Hadassah-Hebrew University Hospital, Agam describes her nine years of medical studies and research as cumulatively demanding and intense.

Trying to excel in both was a difficult balancing act. “I started working in research during my last year of pre-clinical studies, which was a period of highly concentrated and intensive study. It was during the following year, which I had devoted solely to research for my master's degree, that I made the remarkable breakthrough that I would later develop into my doctoral thesis.” The next three years saw Agam back to balancing her clinical medical studies with research — but this time having to fit in with the frequent changes in schedules and hospital rotations that are part and parcel of clinical studies. She devoted a further year to her doctoral research before completing her one-year internship.

Agam looks forward to developing a career that will allow her to combine clinical practice and research. “I discovered in the fifth year that I like operating theaters, so that's one reason I chose plastic surgery — it's also very varied and allows creativity,” she says. “My goal now is to find a research direction that ties in with plastic surgery.” ■

Dr. Keren Agam in the department and in the operating theater

Hezi Hofesta



A series of algorithms on a single chip is at the heart of a technology that promises to become the leader in road safety

By Hanan Sher

# Road Sense

**AMNON** Shashua sees himself as a scientist, not a manager. And that, says the 44-year-old head of the Hebrew University's Selim and Rachel Benin School of Computer Science and Engineering, explains why he's become a serial entrepreneur.

Over the course of 10 years, Professor Shashua — an authority on getting computers to comprehend 3-D images — developed technologies that he then turned over to friends to set up as businesses, raise investment money, develop infrastructures and find customers. The results of these efforts are CogniTens, which creates optical measurement devices for auto-making and aerospace assembly, and Mobileye, positioned to become the road safety leader and which recently made the *Red Herring* list of 100 Top Innovators, along with companies such as Hewlett Packard, IBM and Google.

“My role is chief scientist: I come in once a week, offer advice, and see that everything runs according to plan,” says Shashua with a smile. “That way I can focus on my theoretical research

in the laboratory — and enjoy seeing my brainchildren become something useful.”

When it comes to Mobileye, Shashua's being “useful” may be an understatement: The company's technology, soon to be available as original equipment on some new cars and as an accessory for older vehicles, is aimed at averting road accidents or minimizing the damage when they do happen. To make it all work, Shashua joined forces with businessman Ziv Aviram to found Mobileye, whose team created a series of mathematical algorithms for recognizing potential dangers on the road and

developed an application-specific integrated circuit (ASIC) — a low cost chip or mini-computer — that constitutes the heart of the system.

Some of the safety systems make warning noises, others work independently of the driver. “A driver in an accident usually doesn't brake with sufficient force,” says Shashua. “But if there's a Collision Mitigation system, the car ‘knows’ that braking is part of an accident about to happen and although there's no way to



prevent it, the system can activate an automatic brake booster. The accident will still happen, but the energy of the collision will be significantly lower.”

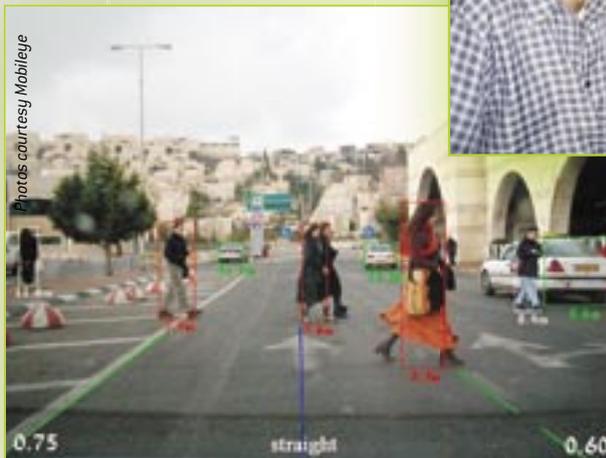
Collision Mitigation systems can also include automatic seatbelt tightening and a split-second release of the hood, to protect pedestrians. “In collisions, pedestrians usually hit the strong metal pillars of the car, or go through the windshield.” The extent of injury can be mitigated, Shashua says, if the softer hood pops up slightly before the crash, absorbing the impact. “You need a sensor to pre-empt the impact if you want to avoid the high cost of a small controlled explosive charge for popping up the hood.”

Other Mobileye safety mechanisms include Adaptive Cruise Control, to manage distance from other cars in highway situations and keep the vehicle in its lane; Lane Change Assistance, to cover the driver's blind spots and identify fast-closing vehicles; Stop-and-Go Cruise control, for urban traffic settings; Traffic Sign Recognition; and a Headway Indicator, which warns against tailgating. “Research has shown that if drivers are aware of how close they are to having a collision, then they subconsciously begin maintaining a safer distance without any warning,” says Shashua.

All this, surprisingly, is done with visual input from a single camera. “Technically, a person can drive with one eye,” explains Shashua, adding that the effectiveness of his monocular system, based on pattern recognition of various kinds of vehicles, people and roadside objects, has been proved in tests with major automakers. “The single camera keeps the cost down, which makes the system commercially viable.”

The aim, in fact, is to create a system that costs automakers around \$100 to install as original equipment — about the same amount as airbags, anti-lock brakes or cruise control, for instance. “The challenge,” says Shashua, who received a Kaye Innovation Award for his invention from the Hebrew University in 2004, “is to make it work for a tremendous variety of situations — no one only drives in optimal conditions, on a test track in full light when specific objects are easy to interpret — and ensure that it is easy to maintain.”

Considerable processing power, the equivalent of two personal computers, is required to run Mobileye's pattern-recognition software. “You can't have a system that runs on two PCs,” says Shashua, “but by putting all the algorithms on a single chip, something that had never been done before, Mobileye created the pioneering EyeQ, which carries the entire system on a single chip.”



From top: Prof. Amnon Shashua in a car equipped with prototype equipment; Pedestrian Protection system detects pedestrians (outlined in red) crossing a road; Lane Departure Warning demonstrates vehicle detection in daytime  
Opposite : Display unit of the Mobileye AWS™ Advance Warning System



*‘Technically, a person can drive with one eye’*

IN developing its system, Mobileye has worked closely with many of the world's major automakers in the hope of establishing itself as the industry's standard-setter. It also decided to develop a full system early on. “One way to get into the business is to start with the simplest application, like lane detection warning, but we opted to develop the capabilities for pedestrian and vehicle detection in anticipation of the marketplace,” he says.

With that hope and a potential annual market of several billion dollars, it's no wonder that Mobileye — in which Yissum, the Hebrew University's Technology Transfer Company, has an interest — has raised \$50 million over the last five years from a group of prestigious investors in the United States and Israel.

With a workforce of over 80 in offices in Jerusalem, Tokyo and Detroit, Mobileye now has contracts with a major European-American auto-making group, a Japanese company and another American firm for some of its systems as original equipment. It also has a contract with a Canadian trucking firm, and plans to sell an easily installable package of danger-warning devices for the used car after-market.

The first cars with Mobileye safety devices installed as original equipment are due to roll off the assembly lines in 2007 and after-market units became available at the end of 2004. Look for them — at an auto dealer near you. ■

# Russian Revival

Two University centers are reviving Judaic studies in Russia and restoring the world of East European Jewry to the collective memory

by Shelley Kleiman

**A QUIET** renaissance is taking place at the Hebrew University. Thanks to two unique centers — the Chais Center for Jewish Studies in Russian and the Leonid Nevzlin Research Center for Russian and East European Jewry, both at the Mandel Institute of Jewish Studies — Judaic studies in the Russian language are being revived after years of stagnation, while the vanishing world of East European and Russian Jewry is being painstakingly uncovered and restored to our collective memory.

“Russia is fast becoming one of the main centers for Jewish Studies in the world,” says Professor Yom Tov Assis, head of the Chais Center which was established in 1998. Indeed, since the collapse of the Iron Curtain, not only has there been a growing demand for Jewish education, research and publications in the former Soviet Union (FSU) — Assis calls it “a cultural revolution” — but following the massive Russian immigration to Israel, a new generation of Jewish studies scholars is being nurtured at the Hebrew University.

“No other university in the world has such a high concentration of Russian-speaking doctoral students in Jewish studies,” says Ze’ev Elkin, a Chais Center founder who immigrated to Israel from Ukraine in 1990 and is himself a doctoral candidate in Jewish history. “We see them as the bridge-builders between Jewish studies researchers and teachers in Jerusalem and their counterparts in the FSU.”

Aimed at encouraging Jewish studies at the highest academic levels, the Chais Center runs two joint ventures with prominent universities in Moscow and St. Petersburg, while another is due to open shortly in Ukraine. Working closely with the faculty of the FSU universities, visiting Hebrew University lecturers who act as academic ambassadors teach at all levels and conduct advanced seminars.

The Center for Jewish Studies and Civilization (CJSC), the first and largest of these institutions, was established in 1998 in conjunction with the prestigious Moscow State University and the Jewish University of Moscow. A similar program was

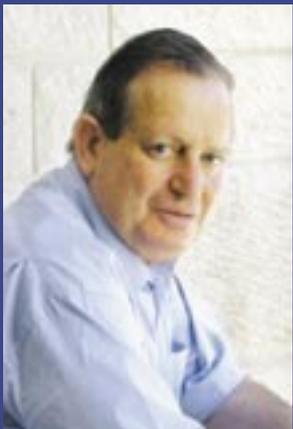
Chais Center activities in Russia include Jewish studies programs for university and high-school students

Chais Center



Chais Center





Ben-David



Hezi Hojesta



Douglas Guthrie



Sasson Tiram

From left: Prof. Israel Bartal, Ze'ev Elkin, Nevzlin Center awards ceremony in June 2004, Prof. Yom-Tov Assis with Alexandra Polian (right) and Alina Lisitsina during the Eshnav program

established in 2000 at the Center for Bible and Hebrew Studies in St. Petersburg. In addition, the Chais Center issues scholarly and popular publications in Russian, and runs week-long seminars and summer schools in cooperation with the Sefer Center and the Jewish Agency. "This past summer we ran seven programs, attracting over 500 students throughout the FSU," says Elkin. "As the number of local scholars increases," says Assis, "we hope to develop mutual research projects that will form the core of a new world of Jewish scholarship."

Alongside its work in the FSU, the Chais Center is active in Israel through Eshnav, a one-month Jewish studies program which brings advanced students and faculty from the FSU to the Hebrew University. Interspersed with Hebrew courses and tours, the handpicked students and scholars work on their research or prepare courses they are scheduled to teach back home. With research subjects ranging from ancient Jewish history and Hebrew and Semitic linguistics to modern

Israeli politics, they greatly benefit from the guidance of senior University faculty serving as mentors.

Undergraduate Alexandra Polian was the only student of Yiddish taking part in last summer's Eshnav program. "With the exception of Sholom Aleichem and a few Soviet poets, Russians are not really familiar with Yiddish literature,"

says Polian who — describing her interest in *mame-loshn* as purely academic — hopes to change that, at least at the academic level. She spent this, her second trip to Israel, preparing a course in 19th-century Yiddish literature that she plans to teach at the Chais Center's Spring Seminar in Jewish Studies for Secondary School Students in Moscow in March 2005.

For doctoral candidate Alina Lisitsina, this past summer marked her fifth visit to Israel — she spent a year at the Rothberg International School studying medieval Jewish history and literature — and her

third Eshnav experience. A specialist in Jewish life under Muslim rule during the Middle Ages, she is planning to teach at CJSC, coordinates Israel's Open University program in the FSU, and teaches Jewish-related subjects in Moscow secondary schools. Lisitsina, 26, whose grandmother spoke Hebrew, sees a burgeoning interest in things Jewish. By offering Jews — some from remote towns and villages — a chance to learn about their heritage, "Chais is doing important work in the FSU," she says.

Indeed, as part of its commitment to strengthening Jewish identity, the Chais Center supplements its academic outreach by running teacher-training programs in Russia, developing Jewish studies programs for high schools, and offering courses and lectures on Jewish culture for the Russian-speaking immigrant population in Israel.

WHILE the Chais Center focuses on the future, the Leonid Nevzlin Research

**'Russians are not really familiar with the Yiddish language'**



Hezi Hojesta

Nevzlin Center scholars Dr. Zoya Kopelman and Vladimir Levin

Center for Russian and East European Jewry seeks to ensure that the world of Russian and East European Jewry is not lost or forgotten. “Our goal is conservation, and we are competing against time,” says Professor Israel Bartal, head of the Center. “There are numerous libraries and archives to be examined, and people to be interviewed — before it is too late.”

Since its inauguration in 2003, the Nevzlin Center has reenergized — at the Hebrew University and elsewhere — academic interest in the history, culture and traditions of Russian and East European Jewry. Much more than an academic exercise, “it’s an all-out effort to shed light on a surprisingly unknown chapter in the history of millions of Jews, to explore a terrain that has played a major role in defining who we are today,” says Bartal.

“East European Jewish history was the scapegoat of sectarianism,” he says, with some scholars focusing on Yiddish culture while others studied the role of the Bund, the impact of the Enlightenment or the world of Hasidism. “It is a world that should be looked at impartially and holistically.” And the Hebrew University, he says, is the natural venue in terms of its resident scholars and access to the Jewish National and University Library at the Edmond J. Safra campus. “You simply cannot study East European Jewry without sitting in Jerusalem,” says Bartal who also heads the CJSC’s Israel team.

Russian, Hapsburg and German Lands’, and whose 13 participants included St. Petersburg-born doctoral candidate Vladimir Levin, 33, who formerly served as coordinator of the Architectural Section of the University’s Center for Jewish Art. With ‘Politics and the Politics of Culture of Russian Jewry, 1907-1914’ as his thesis subject, Levin explains that the synthesis of art and politics goes back to his years in St. Petersburg, when his interest in the architecture of the city shifted — “after reading an illegally published book” — to the Great Synagogue of St. Petersburg and Jewish life there.

The Nevzlin Center, whose activities encompass international conferences, lectures and seminars, research and publication projects, and archival collections, mirrors the Chais Center in its extensive efforts to cultivate a new generation of scholars and teachers. Thus, a crowning achievement was the creation of the International

Youngsters participating in a Chais Center program visit a Jewish cemetery in Lesko, Poland

One of the first academic endeavors was a major research project entitled ‘Between Nations and Empires: Comparative Perspectives on East European Jewry in the

Forum of Young Scholars on East European Jewry, in cooperation with the International Center for Russian and East European Jewish Studies in Moscow and the Simon Dubnow Institute for Jewish History and Culture at Leipzig University. The Forum’s inaugural annual session in July 2004 brought together 21 young scholars from the world’s leading universities at the Dubnow Institute.

Another highlight in 2004 was the awarding of 26 research grants and prizes to bachelor’s, master’s and doctoral candidates, and postdoctoral researchers. Although she considers her research pursuits “just a small chip off a large iceberg,” awardee Dr. Zoya Kopelman, a postgraduate researcher and teacher,

### **'you cannot study Eastern European Jewry without sitting in Jerusalem'**

embodies the essence of the Nevzlin Center. A former refusenik who taught Hebrew underground in the USSR, Kopelman moved to Israel in 1987 and almost immediately

began studying Hebrew literature at the Hebrew University, leading to her interest in the interaction between Hebrew literature and Russian culture at the end of the 19th century.

“There were many writers who played an important role in the development of Hebrew culture in Russia,” says Kopelman. “Through my research and teaching, I hope to revive the spirit of people long forgotten.” ■



Chais Center

# A Legacy

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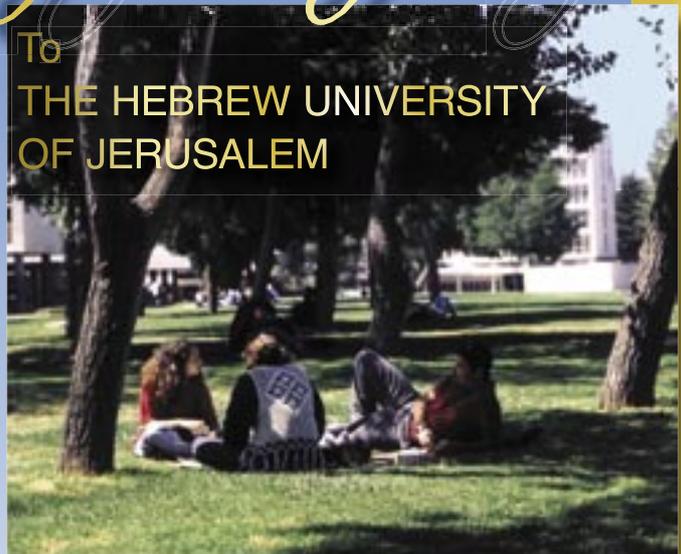
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