



סמינר אדאמס | **ADAMS**
תשע"ב | **Seminar for 2012**

With the Participation of
Mr. Marcel Adams of Canada

Guest Lecturer

Professor Reshef Tenne

Academy Member and Professor of Nanotechnology
The Weizmann Institute of Science

on

Inorganic Nanotubes and Fullerene-like Nanoparticles



Introductory remarks by

Professor Ruth Arnon President of the Israel Academy

It is always a pleasure to greet our new Adams Fellows here at the Israel Academy of Sciences and Humanities. Since the inauguration of the Adams Fellowship Program in May of 2005, 69 Adams Fellows, PhD Students of the highest academic standing have been inducted. We are proud to introduce this year's 10 new Fellows briefly in this brochure.

The Adams Fellowship Program arose from the vision and generosity of Mr. Marcel Adams of Montreal, Canada. Mr. Adams views young Israeli scientists as the key to the State's future. His program has already begun creating a young Israeli cadre of scientists committed to remaining in Israel and advancing scientific knowledge and research, showing Mr.

Adams a return on his investment. Nathan Keller, an Adams Fellow of the first class of 2005-2006, completed his doctorate in Mathematics at the Hebrew University of Jerusalem, did his postdoctoral training at the Weizmann Institute of Science and took up a position at senior lecturer at Bar-Ilan University. Carmel Rotschild, an Adams Fellow from the class of 2006-2007, returned from postdoctoral training in Physics at MIT to an academic position at the Technion. Guy Ron, an Adams Fellow of the class of 2007-2008, completed his doctorate in Nuclear Physics at Tel-Aviv University, did postdoctoral training at Berkeley and returned to a senior lecturer position at the Hebrew University's Rach Institute of Physics.

In the framework of the Adams Fellowship Program, Adams Fellows enjoy sustained financial support for three to four uninterrupted years of Ph.D. study. As long as the Fellow maintains good standing in his/her training program, no further requirements are placed for continued support. They also enjoy two privileges, not normally available in graduate student support programs. First, each Adams Fellow is entitled to funding towards yearly travel abroad to actively participate in international, scientific conferences or workshops. Second, Adams Fellows are given the opportunity to interact with one another and to form a small science community of their own through initiatives such as invited lectures by renowned scientists and periodic seminars and conferences. Last year, all Adams Fellows, present and past, were offered to participate in a guided tour of the Archaeological excavations at Beit Shean.

The Adams Fellows are selected annually from a list of candidates nominated by the Rectors of Israel's institutions of higher learning. The selection is carried out by the Program's Steering Committee, under the chairmanship of Professor Howard (Chaim) Cedar. At a time when efforts are being made to reverse Israel's Brain Drain, we seek outstanding and highly motivated students determined to build their scientific careers in Israel. Candidates from the natural sciences, engineering, life sciences, computer science and mathematics are eligible. Candidates from fields which transcend traditional disciplinary boundaries and conventional frameworks are most welcome. We expect that after graduation and postdoctoral training in the best laboratories abroad, they will come back and join one of the universities and thus build the next generation of scientific excellence in Israel.

Once again, I would like to extend my heartfelt admiration and appreciation to Mr. Marcel Adams for playing such a meaningful role in the support of Israel's outstanding young scientists.

Prof. Reshef Tenne

Academy Member and Professor of
Nanotechnology
The Weizmann Institute of Science



Born on Kibbutz Usha near Haifa, Prof. Reshef Tenne undertook his academic studies at the Hebrew University of Jerusalem, where he received a BSc in chemistry and physics (1969), a MSc in Physical Chemistry (1971), and a PhD in Theoretical Chemistry (1976). His next three years were spent at the Battelle Institute (Geneva, Switzerland), first as a postdoctoral fellow and later as a member of the technical staff. In 1979, he joined the staff of the Weizmann Institute. Prof. Tenne headed the Department of Materials and Interfaces from 2000–2007 during which period he also served as the Director of the Gerhard M.J. Schmidt Minerva Center for Supramolecular Architecture. In 2003, he became the first Head of the Helen and Martin Kimmel Center for Nanoscale Science. In 2004, Prof. Tenne became the first incumbent of the Drake Family Professorial Chair in Nanotechnology.

Prof. Tenne's research focuses on the development of photovoltaic materials for solar energy conversion and on the synthesis of new, inorganic nanomaterials—materials based on precise positioning of atoms and molecules measuring only a few billionths of a meter. In the area of photovoltaics, Prof. Tenne has developed materials and techniques that improve the performance of solar cells, making the sun's energy a more practical source of power for home and industrial use. In nanomaterials research, he has created a new solid lubricant that promises to cut friction to less than half over conventional methods. This compound, formed from round, inert molecules of tungsten disulfide, works like molecular "ball bearings." It has aroused the interest of industrial concerns around the world, and may become the new standard for machine lubrication.

Prof. Tenne published some 270 original articles many of them in first tier journals and numerous review papers and book chapters. He is active in many national and international academic activities and is invited often to deliver talks at national and international meetings.

In 2005, he was awarded the Kolthoff Prize of the Technion for excellence in chemical research. That same year, he was also the recipient of the Materials Research Society (MRS) Medal, and was awarded the Rafael Scientific Research Excellence Prize of the Israel Vacuum Society. In 2008, he was elected as a Materials Research Society (MRS) Fellow, and was awarded the Israel Chemical Society Prize for Excellence. In 2011, he was elected as a fellow of the Royal Society of Chemistry in the UK, and as a member of the Israel Academy of Sciences and Humanities and the Academia Europaea (European Academy of Sciences). He was also selected to receive the ChianNano11 Plenary Speaker Award (2011) of the Chinese Academy of Sciences and the CNR Rao Award of the Indian Chemical Research Society (2012).

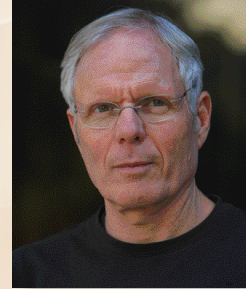
Adams Fellowship Steering and Selection Committee



Professor Chaim Cedar
Chairman



Professor Amiram Grinvald



Professor Moty Heiblum



Professor David Kahzdan



Professor Moshe Moshe



Professor Itamar Willner

Former Committee Members

Professor Yoram Groner, Immediate Past Chairman

Professor Yakir Aharonov

Professor Noga Alon

Professor Yosef Shiloh

Professor Yigal Talmi

Professor Jacob Ziv

Professor Chaim Cedar

Chair of the Adams Fellowship Committee

Dear Friends,

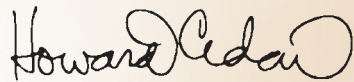
It is with great pleasure that I welcome you to this year's Adams Fellowship Seminar and hope that you enjoy the program as well as the opportunity to get together and discuss science.

I am happy to report that the Adams Family Tree of studies is growing nicely and constantly producing new fruit. This year we again had excellent applicants for new fellowships, with the competition being quite stiff. The wide variety of different topics and disciplines is a testimony to the health of Israeli science, its strong foundations and wonderful flexibility. Every year the committee is reminded how Israel is blessed with some of the brightest, motivated and creative graduate students in the world, and it is indeed an honor to be a part of this endeavor.

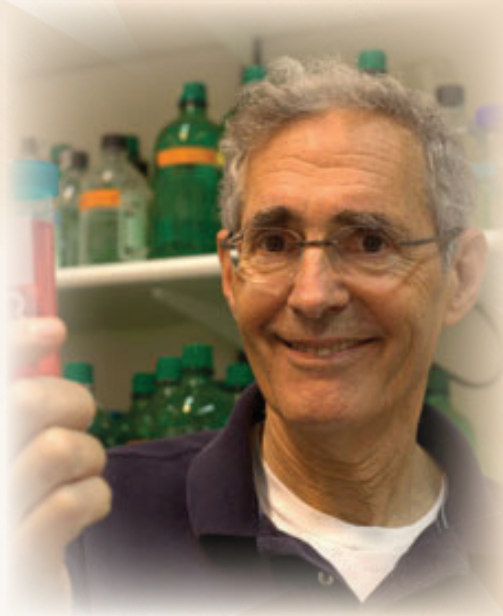
This past year, Israel took a giant step forward by creating funded Centers of Excellence in a range of different areas important to the country. In a sense, this complements the Adams Fellowship program by providing new faculty positions for our brightest and best graduate students. This type of support from the beginning of the young researcher's career until his absorption into the work force represents an important advance for Israeli science.

Finally, I would like to thank the Adams family for making all this possible and for their unending concern for the future of science in Israel.

Best wishes,



Chaim Cedar

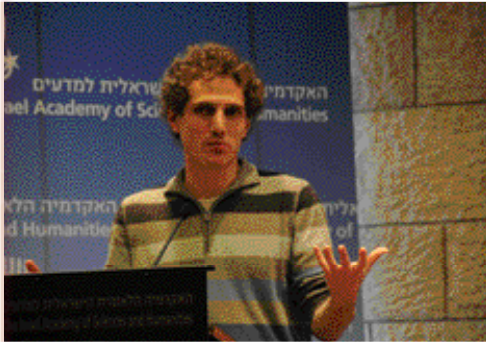


Fourth Adams Conference, January 2012

2012-2013



Prof. David Shulman on "The Grammar of Love in Ancient Tamil Poetry"



Ronen Gabizon explaining drug design



Prof. Ehud Behar on "Observing the Violent Universe with X-Ray Vision"



Prof. Arnon presenting Prof. Shulman with a token of appreciation



Itai Roffman showing what chimps can do

ADAMS

Marcel Adams

Hebrew-speaking philanthropist Marcel Adams, who escaped from a forced-labor camp in Romania in 1944, fought in Israel's War of Independence and made his fortune in Montreal, has endowed the Adams Fellowship Program to support Israel's brightest doctoral students in the natural and exact sciences each year.

Marcel Adams (Abramovich) was born in Piatra-Neamt, Romania, in 1920. The anti-Semitic regime in Romania during the Holocaust interrupted his studies, triggering a lifelong quest for learning and a zest for the life of the mind. An active member of Hanoar Hazoni in Bucharest, Adams survived forced labor, food shortages and arbitrary harassment by the authorities.

After coming to Israel with the Jewish Agency's help in 1944, Adams settled in Pardes Hanna and participated in the War of Independence. He moved to Canada in 1951 and worked as a tanner before going into real estate. He eventually developed dozens of properties, mostly in eastern Canada, including Galeries de la Capitale, the largest shopping mall in the province of Quebec. With his late wife Annie, he established Tel Aviv University's Adams Institute for Business Management Information Systems and endowed the university's Adams Super Center for Brain Research. A Montreal resident, the proud father of four and grandfather of eleven, he remains full of energy, works a full week and looks at least a decade younger than his 91 years.

Adams officially signed an agreement to establish the Adams Fellowships with the Israel Academy of Sciences and Humanities in Jerusalem in May 2005. The fund is large enough to provide \$1 million annually to outstanding Ph.D. students, covering their full tuition and living expenses throughout four years of study and including funds for attending scientific conferences abroad. Most recipients are aged 26 to 34.

The easy way would have been to hand over a check, but Adams wishes to pay back his 1944 debt to the Jewish people, which gave him a new identity and hope for rebuilding from the ashes of Europe. The fellowship helps young men and women thrive technologically, scientifically and intellectually. In turn, Adams believes they will carry the flag for the next generation and for future generations.

Immediate Past President of the Academy, Professor Menahem Yaari, describes the agreement as one of the most important documents ever for the future of higher education in Israel. A professional committee at the Academy reviews applications from doctoral students and chooses the awardees, for study in such fields as organic chemistry, molecular biology, chemistry, mathematics, engineering, physics, genetics, computer science and brain research.

Marcel Adams wishes to help the best and brightest academics, those with tremendous potential for growth, who have demonstrated excellence in both quality of mind and personal character.

(This article includes extensive quotes from an article by Judy-Siegel-Itzkovich in the Jerusalem Post, May 29, 2005)



Adams Seminar, May 2011



Mr. Marcel Adams



Prof. Michael Rabin, Academy Member and Guest Lecturer, on "Miracles of Cryptography and Applications to Financial Processes"



Mr. Adams with Professors Rabin and Cedar



The proud father and grandfather with daughter Linda, son-in-law Gil and the kids



Mr. Adams and Batsheva Shor, Adams Fellowship Program Administrator

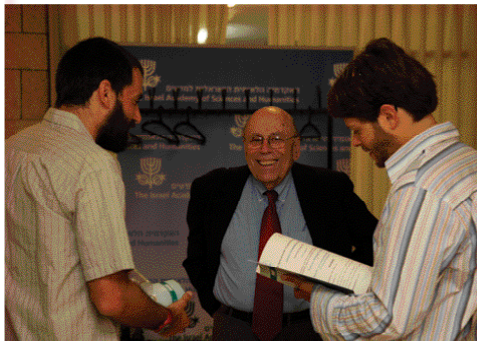


Prof. Ruth Arnon proposing a toast at dinner with Mr. Adams and former Academy President Prof. Menahem Yaari

Adams Seminar, May 2011



Greetings by Prof. Arnon



Prof. Rabin and Adams Fellows

Prof. Cedar introducing the guest speaker



Amir Erez receiving his certificate



Prof. Arnon with Mr. Adams



First Adams couple!
Daphna Nachmani, new Adams Fellow, studying the brochure with husband and Adams Fellow Yoav Livneh of Class of 2010-2011



Tslil Ast

PhD student of Dr. Maya Schuldiner, Department of Molecular Genetics, Weizmann Institute of Science

Dissertation topic: Uncovering the Translocation and Quality Control Mechanisms of Glycosylphosphatidylinositol (GPI) Anchored Proteins

After obtaining her BSc from Tel Aviv University summa cum laude, Tslil started her MSc at Dr. Maya Schuldiner's lab where she is currently carrying out her direct track PhD.

In order to sense and respond to their environment, cells must present a plethora of proteins on their surface. These proteins transmit extracellular cues into the intracellular environment, often by spanning the membrane itself. However, there is a unique subset of proteins termed GPI anchored proteins, which are bound to the membrane by a sugar and lipid modification, giving them great flexibility and lateral motility in comparison to transmembrane proteins. These proteins comprise a spectrum of essential and functionally variable proteins, and are found in all eukaryotes- from yeast to man. There is also considerable medical interest in this protein family, as they are essential for the viability of the parasite *Trypanosoma brucei*, which causes African trypanosomiasis, a disease that plagues over 66 million men, women and children in the 36 countries of sub-Saharan Africa

Tslil's work harnessed the genetic pliability of the baker's yeast with high-throughput microscopy developed in Dr. Schuldiner's lab to carry out visual genome wide screens. By systematically scanning for genes in whose absence the processing or quality control of GPI anchored proteins is impaired, Tslil hopes to shed more light on the lifecycle of the GPI protein family.

Tslil volunteers in several enrichment initiatives for high school students, as she believes that scientists should also take part in scientific teaching. Recently, a pair of high school students she mentored was selected to represent Israel in the International SpaceLab Competition.



Assaf Ben Moshe

PhD student of Prof. Gil Markovich, Department of Chemical Physics, School of Chemistry, Raymond and Beverly Sackler Faculty of Exact Sciences, Tel Aviv University

Dissertation topic: Chiroptical Effects Induced in Metal and Semiconductor Nanoparticles

Assaf was born in Kibbutz Gezer, but moved at a young age to "Hakfar Hayarok" youth village where he also studied during high school. Following a four years army service and an extensive trip to New-Zealand he started his bachelor's degree in chemistry and biology at Tel-Aviv University. During that time he completed an undergraduate research project in the group of Prof. Gil Markovich at the Department of Chemical Physics of the School of

Chemistry. He is currently pursuing his PhD in a direct program in the same group.

Assaf's field of research is concerned with the studies of chemical and physical properties of inorganic nanoparticles. In one project he developed and studied the mechanisms of fast "reaction-diffusion" processes utilized for the synthesis of silver-based hollow nano morphologies that were previously inaccessible. This work was summarized in a paper in the ACS magazine *Chemistry of Materials*.

On a different project, Assaf is studying several aspects relating to the intriguing property of chirality. Chirality, which is a key aspect in living systems, can be induced in inorganic systems interacting with chiral biomolecules such as DNA or peptides. Assaf's study on effects associated with induced chirality in semiconductor quantum dots was recently published in *ACS Nano*. He also contributed in a few other papers in this field, working jointly with several other groups in Israel and abroad. Assaf's field of research is expected to contribute beyond fundamental science, to many different applications, such as new optoelectronic devices, sensors, enantioselective catalysis and metamaterials fabrication.



Amit Daniely

PhD student of Prof. Nathan Linial, School of Engineering and Computer Science, The Hebrew University of Jerusalem

Dissertation topic: Stable Instances for NP-Hard Problems

Amit Daniely was born, raised and lives in Jerusalem. After his military service, it was just natural for him to embark upon his academic studies at the Faculty of Mathematics and Sciences. Following a BSc in Mathematics and Computer Science, and an MSc in Mathematics, Amit has started his doctoral studies in Mathematics.

Amit studies theoretical aspects of Machine Learning, focusing on the two following questions: The first is about clustering, the task of partitioning a given data set (e.g. a collection of documents) in a meaningful way (e.g. by topic). According to traditional analysis, this task is unfeasible. However, this analysis refers to the worst case, and not to realistic cases. Amit's research develops an alternative theoretical framework that takes into account what real-life data look like, with the (by now, partially fulfilled) hope to show that practically realistic instances are not as hard as the current theory posits.

The second question is related to the problem of classification. Again, we are given a data set, but now data items are labeled (e.g. a collection of photos, each of which is labeled by a few words that indicate what each photo shows). Our challenge now is to be able to predict the correct label of previously unobserved data items (e.g. photos that are encountered for the first time). There is a reach theory about this fundamental question when there are just two possible labels (e.g. Mr. X is/is not present in the photo). Amit develops the theory for the (less understood) case, when there are arbitrarily many labels involved.



Miri Krupkin

PhD student of Prof. Ada Yonath, Department of Structural Biology, Weizmann Institute of Science

Dissertation topic: Towards the Determination of the Structure of Mycobacterium Smegmatis Ribosome and Studies on the Properties of the Prebiotic Ribosome

In high school, Miri became fascinated with biopolymers, because of their life-like characteristics. She joined the "Hetz" program for young researchers at WIS, where she was introduced to various research disciplines. Miri continued on an optional track of the program, with an inorganic crystallography research project.

Miri finished her BSc in chemistry at Bar Ilan University. In her spare time she worked at a chemical synthesis lab. As Miri started her MSc studies at WIS, she conducted research in the fields of material engineering, cell biology, molecular computing and structural biology.

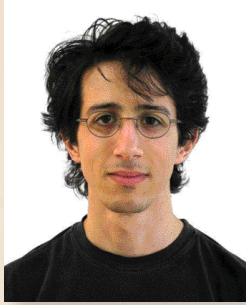
In her current PhD research, Miri studies the structure and function of the ribosome, in particular the pathogenic Mycobacterium Tuberculosis ribosome. Miri is using crystallography, which enables studying the structure and function of the ribosome at the molecular level. This should provide information that can be useful for to the improvement of existing antibiotics and the design of new and effective drugs.

In parallel Miri is studying the evolution of the ribosome. She believes that there is a prebiotic fossil trapped in the contemporary ribosome. This proto-ribosome is the link between the RNA world and the contemporary protein catalysis dominated world. Miri is involved in the design, In-vitro transcription and characterization of the RNA proto-ribosome. She expects that constructing and characterizing the proto-ribosome will lead to novel insights regarding the origin of life as we know it.

During her MSc and PhD studies Miri regularly presents lectures to high school pupils. She believes that programs like that reach out to young students and ignite their passion for science and excellence.

2012-2013

2012-2013



Nir Lazarovich

PhD student of Prof. Michah Sageev, Department of Mathematics, the Technion

Dissertation topic: Non-positively Curved Homogeneous Polygonal Complexes

Nir was born in Brussels, Belgium in 1988, and moved to Pardes-Hanna, Israel in 1994. During his high school years Nir found interest in many different fields including computer science, physics, robotics and mathematics, and won several prizes in robotics competitions for his final group project. He began his undergraduate studies as a physics student at the Technion in 2006. Only then did he discover his true passion for mathematics, and eventually changed his major to mathematics. Throughout his undergraduate studies Nir was awarded several excellence scholarships and awards, including the PEF Israel Endowment Funds scholarship named after Alfred and Anna Grey. He graduated his B.Sc. in mathematics in 2009, with the highest GPA among Technion graduates of that year.

During his undergraduate studies, Nir was particularly interested in combinatorial and geometric group theory – the field which studies the link between the geometric and algebraic properties of groups, and the spaces on which they act. It was therefore natural for him to begin his M.Sc. under the supervision of Prof. Michah Sageev. Nir studies a certain type of polygonal complexes which naturally appeared in recent research in this field, and answered questions concerning the uniqueness of these objects. This research resulted in the discovery of new interesting polygonal complexes with rich symmetry groups. These results were presented in the Geometric Group Theory conference at the Technion, and were recently submitted for publication. During his graduate studies thus far, Nir was awarded the Irwin and Joan Jacobs Fellowship. In 2011 he joined the direct track program for PhD to continue investigating the unique properties of these complexes.



Or Ordentlich

PhD student of Dr. Uri Erez, School of Electrical Engineering, Tel-Aviv University

Dissertation topic: Robust Lattice Schemes for Multi-User Communication Networks

Or's main research interests are in the fields of Information Theory, Communication Theory and Signal Processing. In particular, he is interested in the problem of communication in the presence of interference, which is related to all three fields.

The last decade has seen the emergence of wireless communication as a leading technology. While having many clear advantages from the perspective of the end-user, this form of communication introduces numerous new challenges for the communication engineer. A key issue which arises in the context of wireless communication is the presence of interference from other wireless users. In contrast to the wireline scenario, where the channel between a transmitter and a receiver is isolated from its surroundings and is therefore essentially free of interferences, in wireless communication the channel is the open air. Since this "channel" is shared by all wireless users, interference between adjacent users is unavoidable.

Although the problem of communication in the presence of interference is highly important from a practical, as well as theoretical, point of view, not much is known about its fundamental limits. Or's research is aimed towards making progress in this direction and developing new protocols for communicating over interference-limited networks.



Liel Sapir

PhD student of Dr. Daniel Harries, Institute of Chemistry and The Fritz Haber Research Center, The Hebrew University of Jerusalem

Dissertation: Modeling Osmolyte-Induced Conformational Changes in Biomacromolecules

Liel Sapir was born and raised in Jerusalem. After completing his military service as an intelligence officer, he started his studies in the chemistry and biology undergraduate program at the Hebrew University. Liel went on to perform his MSc studies under the supervision of Dr. Daniel Harries, later continuing in the direct track PhD.

In Dr. Harries' lab, a chief interest is the properties of different solvating environments and their effects on biomacromolecules. Liel's research concerns the molecular effect of small solutes, termed osmolytes, on the folding stability of proteins and aims to elucidate how solution properties are altered once osmolytes are added to aqueous solutions. During his MSc Liel published an article in J. Phys. Chem. B discussing the thermodynamic properties of aqueous solutions of a prominent osmolyte, trehalose. In his current research, Liel uses molecular dynamics and Monte Carlo simulations to follow the molecular mechanism responsible for the osmolyte stabilizing effect on proteins. Another interest Liel is pursuing is the unique solvating environments introduced by Ionic liquids – salts that are liquid at room temperature. Collaborating with experimentalists in the US, the research will use small-angle neutron scattering and molecular dynamics simulations to study the solvation properties of biomacromolecules in different ionic liquids.

In addition to his research Liel works as a teacher assistant at the Hebrew university – teaching courses in general chemistry and physical chemistry.



David Tsivion

PhD student of Prof. Ernesto Joselevich, Department of Material and Interfaces, Weizmann Institute of Science.

Dissertation topic: Guided Growth of Horizontal Nanowires

From a young age, David Tsivion had a passion for science. Since it was always clear for him that he would pursue an academic career, he did not let an eight-year military service get in the way, and studied Chemistry at the Open University, on weekends and at nights, finally graduating with honors.

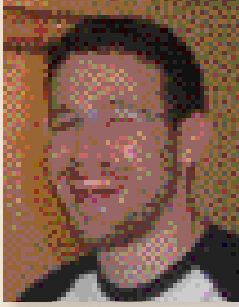
Early on in his Ms. Sc. at the Weizmann Institute of Science, he became fascinated with nanotechnology. Soon enough, he learned that the great promise of nanotechnology is held back by the problem controlling and ordering structures at the nanoscale.

In the Joselevich lab, David developed the guided growth of horizontal nanowires as a solution to their organization and integration into nanocircuits. In this unique approach, nanowires can grow along specific lattice directions, nanosteps or nanogrooves of a crystal surface, producing perfectly aligned arrays of horizontal nanowires with unprecedented alignment and length. This new approach of "guided growth" paved the way to highly controlled semiconductor structures with many potential applications not available by other means. This approach was recognized as a breakthrough in the field of nanowires, and recently published in the prestigious Science magazine. David Tsivion also won the Material Research Society silver award for outstanding PhD students.

Currently, David Tsivion continues to explore the guided growth of nanowires, showing that it is a general phenomenon that can be applied to different materials for many applications in nanotechnology. He will continue to develop new devices based on guided nanowires, pushing Israel to the front of nanotechnology worldwide.

2012-2013

2012-2013



Erez Zohar

Ph.D. student of Prof. Benni Reznik, School of Physics and Astronomy, Tel Aviv University

Dissertation topic: Quantum Simulations of Quantum Field Theories

Erez, born in Ramat Gan and raised in Givataim, has been fascinated by Science from an early age. During his B.Sc. studies in Physics and Mathematics in Tel Aviv University he fell in love with Quantum Mechanics and therefore continued for graduate studies in theoretical physics, in the quantum foundations and information group, under the guidance of Prof. Benni Reznik. After one year of M.Sc. studies he started his Ph.D. studies in the direct track.

Erez's research focuses on quantum simulations of quantum field theories. Quantum simulations, a current, rapidly growing research area, are a powerful method, suggested originally by Richard Feynman, in which inaccessible quantum systems are studied and simulated using other, accessible and controllable quantum systems which serve as their "analog quantum simulators". So far, Erez's research yielded two papers, one on the discretization and the simulation of an apparent causality violation in Quantum Electrodynamics (QED), called the "Fermi two-atom problem", and the second, published recently in Physical Review Letters, suggests a simulation of the effect of Confinement in a $U(1)$ lattice gauge theory using ultracold atoms.

Besides his research work, Erez teaches recitation lessons in several B.Sc. courses. He enjoys teaching and sees it as an important part of scientific work.



Mosaic floor in the Synagogue of Beit Alfa

First Adams Field Trip - to Beit Shean and Beit Alfa, November 2011

Prof. Cedar and Dr. Carmel Rotschild, Adams Alumnus, on the train to the excavations



Starting out after breakfast in the Khan



Ancient public latrines in the Western Bath House



On the steps of the monumental ancient Roman amphitheatre



Prof. Tsafir leading the way in the chariot grooves of the streets of Roman Scythopolis



Prof. Yoram Tsafir, our most special guide, Academy Member and Head of the Hebrew University's Archaeological Excavations of Beit Shean

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Amir Nevet

PhD student of Prof. Meir Orenstein, Department of Electrical Engineering, The Technion
Dissertation topic: Two-Photon Processes in Micro and Nano Semiconductor Structures

Dmitry Batenkov

PhD student of Prof. Yosef Yomdin, Department of Mathematics, Weizmann Institute of Science
Dissertation topic: Algebraic Reconstruction of Geometric Models from Integral Measurements

Hadas Soifer

PhD student of Dr. Nirit Dudovich, Department of Physics of Complex Systems, Weizmann Institute of Science
Dissertation topic: Probing Electronic Wavefunctions via High Harmonic Generation

Eran Small

PhD student of Prof. Yaron Silberberg, Department of Physics of Complex Systems, Weizmann Institute of Science
Dissertation topic: Statistical Properties of Light Propagating in Non-Linear Systems

Amir Wand

PhD student of Prof. Sanford Ruhman, Department of Chemistry, The Hebrew University of Jerusalem
Dissertation topic: Investigation of the Photochemistry of Retinal Proteins and Model systems Using Novel Techniques of Ultrafast Spectroscopy: Resolving the Dynamics as well as Structural Information of the Excited States

Daphna Nachmani

PhD student of Prof. Ofer Mandelboim, Lautenberg Center for General and Tumor Immunology, The Hebrew University of Jerusalem
Dissertation topic: MicroRNAs in Immune-Regulation: Viral Mimicry of Host Mechanisms

Doron Puder

PhD student of Prof. Nati Linial, Einstein Institute of Mathematics, The Hebrew University of Jerusalem
Dissertation topic: The Combinatorial, Algebraic and Topological Aspects of Word Maps

Sophia Buhbut

PhD student of Prof. Arie Zaban, Institute of Chemistry, Bar-Ilan University

Dissertation topic: FRET Mechanism Based on Nanomaterials in Dye-Sensitized Solar Cells: Synthesis, Characterization and Applications

Avraham Braun

PhD student of Prof. Jeffery Gordon, Department of Solar Energy and Environmental Physics, Ben-Gurion University

Dissertation topic: The Physics of High Carrier Injection Rates in Concentrator Photovoltaics

Amir Erez

PhD student of Prof. Yigal Meir, Department of Physics, Ben-Gurion University

Dissertation topic: Superconductor to Insulator Transition in Thin Films



The entire expedition



Avital Adler

PhD student of Prof. Hagai Bergman, Interdisciplinary Center for Neural Computation (ICNC), The Hebrew University of Jerusalem

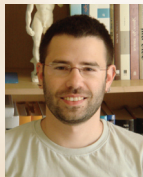
Dissertation topic: Value Encoding in the Striatum in View of Serotonin Neurotransmission



Leonid Barenboim

PhD student of Dr. Michael Elkin, Department of Computer Science, Ben-Gurion University

Dissertation topic: Efficient Network Utilization in Locality-Sensitive Distributed Algorithms



Arren Bar-Even

PhD student of Dr. Ron Milo, Department of Plant Sciences, Weizmann Institute of Science

Dissertation topic: The Design, Analysis and Testing of Synthetic Carbon Fixation Cycles



Omer Bobrowski

PhD student of Prof. Robert J. Adler, Department of Electrical Engineering, The Technion

Dissertation topic: Some Topics in the Algebraic Topology of Random Fields



Ronit Bustin

PhD student of Prof. Shlomo Shamai, Department of Electrical Engineering, The Technion

Dissertation topic: The I-MMSE approach for Multi-Terminal Problems in the Gaussian Regime



Klim Efremenko

PhD student of Prof. Amnon Ta-shma and Prof. Oded Regev, Department of Computer Science, Tel-Aviv University

Dissertation topic: Algebraic Constructions in Computational Complexity



Yoav Livneh

PhD student of Dr. Adi Mizrahi, Department of Neurobiology, The Hebrew University of Jerusalem

Dissertation topic: Adult Neurogenesis: From Synapse Formation, Through Sensory Coding to Animal Behavior



Itai Roffman

PhD student of Prof. Eviatar Nevo and Prof. Avraham Ronin, The International Graduate Center of Evolution, Haifa University

Dissertation topic: Studying Suite of Homo Traits in Pan: Supporting Cultural and Genetic Evidence for their Inclusion in Homo Genus



Yoav Oved Rosenberg

PhD student of Prof. Jiwchar Ganor, Department of Geological and Environmental Sciences, Ben-Gurion University of the Negev

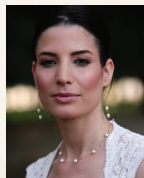
Dissertation topic: The Fate of Radium in Evaporitic Systems



Osip Schwartz

PhD student of Dr. Dan Oron, Department of Physics of Complex Systems, Weizmann Institute of Science

Dissertation topic: Nonlinear Microscopy with Nanoparticles



Adi Sheinfeld

PhD student of Prof. Avishay Eyal, Electrical Engineering, Tel-Aviv University

Dissertation topic: Optical Detection of Alzheimer's Disease Via Ocular Spectroscopy



Avital Swisa

PhD student of Dr. Yuval Dor, Department of Developmental Biology and Cancer Research, The Faculty of Medicine, The Hebrew University of Jerusalem

Dissertation topic: Role of LKB1 in Pancreatic Beta Cell Dynamics





Monther Abu-Remaileh

PhD student of Prof. Yehudit Bergman, Human Genetics, The Hebrew University of Jerusalem
 Dissertation topic: Understanding the Molecular Mechanism of Oct-3/4 Oncogenicity



Danny Ben-Zvi

PhD student of Prof. Naama Barkai and Prof. Ben-Zion Shilo, Molecular Genetics, Weizmann Institute of Science
 Dissertation topic: Scaling and Robustness in Embryonic Development



Oded Berger-Tal

PhD student of Prof. David Saltz, Desert Ecology, Ben-Gurion University
 Dissertation topic: Movement Ecology of Persian Fallow Deer



Ronen Gabizon

PhD student of Dr. Assaf Friedler, Institute of Chemistry, The Hebrew University of Jerusalem
 Dissertation topic: Activating Proteins by Shifting their Oligomerization Equilibrium: A New Approach to Drug Design



Alex Hayat

PhD student of Prof. Meir Orenstein, Electrical Engineering, The Technion
 Dissertation topic: Applications of Multi-Photon Processes for Semiconductor for Quantum Photonics.



Efrat Mashiach

PhD student of Prof. Haim Wolfson and Prof. Ruth Nussinov in Computer Science, Tel-Aviv University
 Dissertation topic: Structural Bioinformatics: Flexible Molecular Docking



Or Meir

Phd student of Prof. Oded Goldreich, Theoretical Computer Science, Weizmann Institute of Science
 Dissertation topic: Combinatorial Construction of Probabilistic Proof Systems



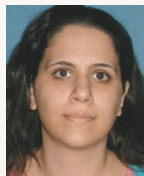
Moshe Mishali

PhD student of Prof. Yonina Eldar, Electrical Engineering, Technion
Dissertation topic: Compressive Processing of Analog Signals



Uri Roll

PhD student of Lewi Stone in Zoology at Tel-Aviv University
Dissertation topic: Spatial Perspectives of Epidemiological and Ecological Problems



Sivan Sabato

PhD student of Prof. Naftali Tishby, School of Computer Science and Engineering, The Hebrew University of Jerusalem.
Dissertation topic: Supervised Learning with Partial Information



Efrat Shema

PhD student of Prof. Moshe Oren, Molecular Cell Biology, Weizmann Institute of Science
Dissertation topic: RNF20 as a Novel Tumor Suppressor: Exploring its Roles in Transcriptional Regulation, Formation and Progression of Cancer, Senescence and Development



Prof. Ehud Behar, Head of the Technion's Asher Space Research Institute, on "Observing the Violent Universe with X-Ray Vision" at the Fourth Adams Conference



Keren Censor

PhD student of Prof. Hagit Attiya, Computer Science,
The Technion
Dissertation topic: Probabilistic Methods in Distributed
Computing



Emanuele Dalla Torre

PhD Student of Dr. Ehud Altman, Condensed Matter Physics,
Weizmann Institute of Science
Dissertation topic: Strongly Correlated States in Ultra-cold
Atoms



Noam Gross

PhD Student of Dr. Lev Khaykovich, Physics,
Bar-Ilan University.
Dissertation topic: Nonlinear Dynamics and Interactions of
Bright Matter-wave Solitons in a Bose-Einstein Condensate.



Ishay Haviv

PhD Student of Prof. Oded Regev, Computer Science,
Tel-Aviv University
Dissertation topic: Combinatorics and Theoretical Aspects of
Computer Sciences; Complexity of Lattice Problems



Amir Ingber

PhD Student of Prof. Meir Feder, Electrical Engineering,
Tel-Aviv University
Dissertation topic: Coding Methods and Bounds for the
Bandwidth Limited Regime



Mor Mordechai Peretz

PhD Student of Prof. Shmuel Ben-Yaakov, Electrical
Engineering & Computer Science, Ben-Gurion University
Dissertation topic: Time Domain Design of Digital Controllers
for PWM Converters



Michael Orlov

PhD Student of Prof. Moshe Sipper, Computer Science,
Ben-Gurion University
Dissertation topic: Evolutionary Computation



Eran Segev

PhD Student of Dr. Eyal Buks, Electrical Engineering,
The Technion
Dissertation topic: Back-Reaction Cooling and Quantum
Phenomena in Nanomechanical Resonators



Gil Segev

PhD Student of Prof. Moni Naor, Computer Science,
Weizmann Institute of Science
Dissertation topic: The Complexity of Resilient Sketches



Reut Shema

PhD Student of Prof. Yadin Dudai, Neurobiology,
Weizmann Institute of Science
Dissertation topic: The Role of PKMzeta in Long Term
Memory Storage in the Rat Brain



Professors Cedar and Shulman, in the foyer, before the Fourth Adams Conference, January 2012

**Avraham Ben-Aroya**

PhD student of Dr. Oded Regev and Dr. Amnon Ta-Shma,
Computer Science, Tel-Aviv University
Dissertation topic: Quantum Computation and Quantum
Information

**Shai Carmi**

PhD student of Prof. Shlomo Havlin, Physics,
Bar-Ilan University
Dissertation topic: Complex Systems

**Chen Davidovich**

PhD student of Prof. Ada Yonath, Structural Biology,
Weizmann Institute of Science
Dissertation topic: Ribosome Structure and Function

**Shahar Dobzinski**

PhD student of Prof. Noam Nisan, Computer Science,
Hebrew University of Jerusalem
Dissertation topic: The Power of Approximations in
Mechanism Design

**Moshe Goldstein**

PhD student of Prof. Richard Berkovits, Physics,
Bar-Ilan University
Dissertation topic: Interference Effects in Interacting
Mesoscopic Systems

**Amir Goren**

PhD student of Prof. Gil Ast, Human Genetics and Molecular
Medicine, Tel-Aviv University
Dissertation topic: Inferring Regulatory Elements of Splicing
Using Comparative Genomics

**Dan Hermelin**

PhD student of Prof. Gad M. Landau, Computer Science,
Haifa University
Dissertation topic: Algorithmic Challenges in RNA Comparative
Analysis



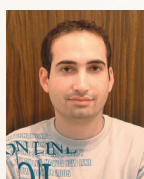
Yoav Lahini

PhD student of Prof. Yaron Silberberg, Physics, Weizmann
Institute of Science
Dissertation topic: Disordered Nonlinear Systems



Guy Ron

PhD student of Prof. Eliezer Piasetzky, Experimental Physics,
Tel-Aviv University
Dissertation topic: Measurement of the Proton Elastic Form
Factors at Low Q^2



Avraham Saig

PhD student of Prof. Ehud Ahissar and Dr. Amos Arieli,
Neurobiology, Weizmann Institute of Science
Dissertation topic: Guiding Principles for Sensory
Substitution: From Vision to Touch



Alexander Sodin

PhD student of Prof. Vitali Milman, Mathematics,
Tel-Aviv University
Dissertation topic: Probabilistic Methods in Asymptotic
Geometric Analysis



Guest Lecturer Professor Michael O. Rabin, Academy Member and Professor of Mathematics and Computer Science
The Hebrew University of Jerusalem and Harvard University on "Miracles of Cryptography and Applications to Financial Processes"



Haim Beidenkopf

PhD student of Prof. Eli Zeldov, Physics, Weizmann Institute of Science

Dissertation topic: Vortex Thermodynamics in High-Temperature Superconductors



Liat Benmoyal Segal

PhD student of Prof. Hermona Soreq, Biological Chemistry, and Prof. Hagai Bergman, Physiology, The Hebrew University of Jerusalem

Dissertation topic: The Role of the Cholinergic System in the Pathogenesis of Parkinson's Disease



Yael Elbaz

PhD student of Prof. Shimon Schuldiner, Biological Chemistry, Hebrew University of Jerusalem

Dissertation topic: Structure-Function Study of Multidrug Transporters



Olga Khersonsky

PhD student of Dr. Dan Tawfik, Chemistry, Weizmann Institute

Dissertation topic: Mechanistic Enzymology: From Classical Tools to Directed Evolution



Dana Moshkovitz

PhD student of Prof. Ran Raz, Mathematics, Weizmann Institute

Dissertation topic: Probabilistically Checkable Proofs



Ariel Procaccia

PhD student of Prof. Jeffrey S. Rosenschein, Computer Science, Hebrew University of Jerusalem

Dissertation topic: The Theoretical Foundation of Multi-agent Systems (MAS)



Carmel Rotschild

PhD student of Prof. Moti Segev, Physics, The Technion

Dissertation topic: Soliton Interactions in Nonlocal Nonlinear Media



Ofer Shayevitz

PhD student of Prof. Meir Feder, Electrical Engineering,
Tel-Aviv University
Dissertation topic: Universal Communications with Feedback



Amir Shlomai

PhD student of Prof. Yosef Shaul, Biochemistry,
Weizmann Institute
Dissertation topic: Metabolic Alterations in the Liver and
Hepatitis B Virus Gene Expression



Noam Stern

PhD student of Prof. Ofer Mandelboim, Immunology,
Hebrew University of Jerusalem
Dissertation topic: Natural Killer (NK) Cells



Itai Roffman, Adams Fellow, explaining his research on Bonobo Chimpanzees



Yael Eshed-Eisenbach

PhD student of Prof. Elior Peles, Molecular Cell Biology,
Weizmann Institute of Science
Dissertation topic: Neuro-Glial Interactions



Nathan Keller

PhD student of Prof. Gil Kalai, Mathematics, The Hebrew
University of Jerusalem
Dissertation topic: Probabilistic Combinatorics and its
Relations with Harmonic Analysis



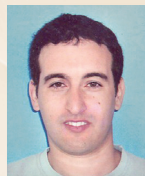
Tal Lev-Ami

PhD student of Prof. Shmuel Sagiv, Computer Science,
Tel-Aviv University
Dissertation topic: Efficient Transformers for the Verification
of Heap Manipulating Programs



Raz Palty

PhD student of Dr. Israel Sekler, Physiology,
Ben-Gurion University
Dissertation topic: Characterization of the Novel Exchanger
NCLX – a FLJ2233 Gene Product



Sharon Schwartz

PhD student of Prof. Moti Segev, Physics, The Technion
Dissertation topic: Nonlinear Optics in CZT:V



The beginnings of a Young Academy of Science