

ADAMS
מלגות אדאמס Fellowships

האקדמיה הלאומית הישראלית למדעים
The Israel Academy of Sciences and Humanities



ADAMS SEMINAR 2013

סמינר אדאמס תשע"ג



ADAMS SEMINAR for 2013

סמינר אדאמס תשע"ג

With the participation of
Mr. Marcel Adams of Canada

Guest Lecturer

Professor Aaron Ciechanover

Academy Member, Nobel Laureate in Chemistry,
The Technion



Aaron Ciechanover

Academy Member and Nobel Laureate in Chemistry
The Technion – Israel Institute of Technology

Aaron Ciechanover was born in Haifa, Israel in 1947. He is a Distinguished Research Professor in the Technion - Israel Institute of Technology in Haifa. He received his M.Sc. (1971) and M.D. (1973) from the Hebrew University in Jerusalem. He then completed his national service (1973-1976) as military physician, and continued his studies to obtain a doctorate in biological sciences in the Faculty of Medicine in the Technion (D.Sc.; 1982). There, as a graduate student with Dr. Avram Hershko and in collaboration with Dr. Irwin A. Rose from the Fox Chase Cancer Center in Philadelphia, USA, they discovered that covalent attachment of ubiquitin to a target protein signals it for degradation. They deciphered the mechanism of conjugation, described the general proteolytic functions of the system, and proposed a model according to which this modification serves as a recognition signal for a specific downstream protease.

As a post doctoral fellow with Dr. Harvey Lodish at the M.I.T., he continued his studies on the ubiquitin system and made additional important discoveries. Along the years it has become clear that ubiquitin-mediated proteolysis plays major roles in numerous cellular processes, and aberrations in the system underlie the pathogenetic mechanisms of many diseases, among them certain malignancies and neurodegenerative disorders. Consequently, the system has become an important platform for drug development.

Among the numerous prizes Ciechanover received are the 2000 Albert Lasker Award, the 2003 Israel Prize, and the 2004 Nobel Prize (Chemistry; shared with Drs. Hershko and Rose). Among many academies, Ciechanover is member of the Israeli National Academy of Sciences and Humanities, the American Academy of Arts and Sciences (Foreign Fellow), the American Philosophical Society, the National Academy of Sciences of the USA and the Institute of Medicine of the National Academies of the USA (Foreign Associate), and the Russian Academy of Sciences (Foreign Member).



Introductory remarks by

Professor Ruth Arnon

President of the Israel Academy

I am very pleased indeed to greet our new Adams Fellows for 2013-2014 here at the Israel Academy of Sciences and Humanities. Since the inauguration of the Adams Fellowship Program in May of 2005, 77 Adams Fellows, PhD Students of the highest academic standing have been inducted. Assaf Manor, student of Carmel Rotschild, an Adams Fellow from the class of 2006-2007 who is now Assistant Professor at the Technion, inaugurated the second generation of Adams Fellows!. We are proud to introduce this year's 10 new Fellows briefly in this brochure.

In the framework of the Adams Fellowship Program, Adams Fellows enjoy sustained financial support for three to four uninterrupted years of Ph.D. study. They also enjoy two privileges unique to this graduate student support program. Each Adams Fellow is entitled to funding towards yearly travel abroad to actively participate in international, scientific conferences or workshops. Adams Fellows are also 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 at periodic seminars and conferences and annual field trips.

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. I would also like to congratulate him on the occasion of his 93rd birthday and wish him many more years of health and productivity.

ADAMS Fellowship Steering & Selection Committee



Professor Itamar Willner,
Chairman



Professor Amiram Grinvald



Professor Moty Heiblum



Professor David Kahzdan



Professor Moshe Oren



Professor Moti Segev

Former Committee Members

Professor Chaim Cedar,
Immediate Past Chairman

Professor Yoram Groner,
Past Chairman

Professor Yakir Aharonov

Professor Noga Alon

Professor Moshe Moshe

Professor Yosef Shiloh

Professor Yigal Talmi

Professor Jacob Ziv



Prof. Itamar Willner

Chair of the Adams Fellowships Committee

Dear Friends,

As Chair of the Academic Committee of the Adams Fellowships Program I am pleased to welcome all of you to the traditional one-day meeting of the Scholars of the Adams Program.

While Israel is a small country, with few academic institutions, it gained highest international recognition reflected by the pioneering and creative research conducted in Israel. There is no other country in the world that has accomplished comparable achievements per capita. The secret for this success is the young generation of wonderful, highly talented and motivated students. A fraction of these blessed students joined today the Adams Fellowships Program, and they are sitting with us in the room. These students, together with other gifted colleagues, provide the excellent foundations for the future research in Israel.

The Adams Family Tree is developing extremely well. This year, similarly to the previous years, the Fellowships Committee faced difficult decisions. We had outstanding candidates, and the competition was harsh. Nevertheless, we hope that the best selection was made, although mistakes cannot be omitted. Successful academic appointments of Adams Scholars from the first rounds of the program evidence the success of the Adams Fellowships Program. I certainly expect to see these young scientists leading the research in Israel.

The Adams Scholars are a real family. Besides the financial backing of the fellows, the program turned to be a social and scientific forum for exchange of ideas and cooperation.

This year we celebrate the 93rd birthday of Mr. Marcel Adams. This is a wonderful occasion to express our thanks to the man who had the willingness and vision to develop science in Israel.

All of us wish Mr. Adams many more healthy years!

Best wishes,



Itamar Willner

ADAMS Seminar 2012



(clockwise)

Among the numerous prizes Ciechanover received are the 2000 Albert
roteolysis plays major roles in numerous cellular processes

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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 Hazioni 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 93 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.

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 year's newly appointed Adams Fellows represent the Ninth Cycle of the Adams Fellowship Program.



Ariel Afek

PhD student of Dr. David Lukatsky, Department of Chemistry, Ben-Gurion University

Dissertation topic: Design Principles and Consequences of Nonconsensus Protein-DNA Binding

Ariel was born and raised in Jerusalem, and was fascinated by Science since early childhood. Following his army service as a medic, he attended courses at the Open University in such various subjects as anthropology, astronomy, physics and chemistry, before deciding to pursue his chemistry studies full-time at Ben-Gurion University. He graduated both his BSc and MSc *summa cum laude*.

During his undergraduate studies, while working on a project as part of Dr. David Lukatsky's group, Ariel became familiar with the fascinating multidiscipline area of biophysics and bioinformatics. This field currently offers a unique opportunity to explore and explain basic unknown biological processes and analyze numerous experimental data available in a click of a button. Together with Dr. Lukatsky and the rest of the group, Ariel developed a new biophysical model, which promises to shed light on the process of protein-DNA binding; he then examined this model in various systems through extensive bioinformatics analysis. So far, Ariel's work was published in 5 papers in leading biophysical journals, and he received several prizes and scholarships for his achievement in research.

Ariel considers scientific education to be of great national importance. He therefore dedicates much of his time to his was twice awarded the Rector's and Dean's prize of outstanding lecturer.

This year Ariel will participate in the upcoming new "Marie Curie" initiative, in which gifted high school students from the Negev area will get the chance and the support to attend first year university courses in chemistry.



Yoav Bauman

PhD student of Prof. Ofer Mandelboim, Lautenberg Center for General and Tumor Immunology, The Hebrew University of Jerusalem

Dissertation topic: Pathogen Recognition by Natural Killer Cells

Yoav Bauman was born and raised in Jerusalem. During high school, Yoav became increasingly interested in the life sciences field and subsequently decided to major in biology. Following his military service as a combat soldier he started his studies in the life sciences undergraduate program at the Hebrew University where he graduated *magna cum laude*. During his studies, Yoav became acquainted with the field of immunology and was amazed by the complexity of the immune system and how little is known about the interaction of immune cells with pathogens.

In order to pursue these topics, Yoav joined Ofer Mandelboim's laboratory in the third year of his BSc studies and continued to his PhD in the direct track. Mandelboim's lab investigates the biology of Natural Killer (NK) cells which are part of the innate immune system. NK cells provide the first line of defense against virally infected or cancerous cells by rapidly killing these hazardous cells. NK cell recognition of the virally infected cells is the first and pivotal process in the execution of NK cell killing. Yoav's research focused on viral mechanisms hampering the ability of NK cell recognition of infected cells, thus enabling the virus to evade the immune system. Yoav's latest findings demonstrate how two viruses of the human polyomaviruses family, found in the majority of the human population, use an miRNA mediated mechanism to evade NK cell attack and remain undetected by our immune system. Yoav's findings were recently published in the *Cell Host & Microbe* journal. Yoav is currently broadening the scope of his research by investigating the novel field of NK cell recognition of bacteria.



Ronen Dar

PhD student of Prof. Meir Feder and Prof. Mark Shtaf, School of Electrical Engineering, Tel-Aviv University

Dissertation topic: Information Theory in Optical-Fiber Communications

Ronen received the BSc and MSc degrees from Tel-Aviv University, both in electrical engineering, in 2008 and 2011, respectively. In his master's thesis Ronen, under the supervision of Prof. Meir Feder, studied problems in Information Theory, in particular the problem of universal prediction using finite-memory.

In his PhD research, using mathematical tools from Information Theory, Ronen studies the capacity of the optical-fiber channel. The ever-growing demand for data network traffic and the fact that commercial optical communication systems experience a dramatic slow-down in growth rate, raised the need for determining an ultimate limit to the data rate at which optical communication systems can work reliably. Estimation of the fiber-optic channel capacity has therefore come to be one of the most challenging and important problems in the field of optical communications. The difficulty in estimating the capacity of the fiber-optic channel is mostly due to the effect of fiber nonlinearity which generates complicated distortions of the transmitted optical waveforms.

Concurrently, Ronen studies information-theoretic aspects of multi-input multi-output (MIMO) communication over the optical-fiber channel. The expected capacity crunch in long haul optical fibers led to proposals for space-division multiplexing (SDM) technologies in optical communication systems, that is, to have several links at the same fiber, by either multiple modes within a multi-mode waveguide or multiple cores within a multi-core fiber. One of Ronen's goals in his PhD research is to develop practical new MIMO schemes that will allow the deployment of SDM technology in optical transport systems. Theoretically analyzing the problem and acquiring deep and thorough understanding of the designing tradeoffs are key steps towards achieving this goal.



Anna Frishman

Ph.D. student of Prof. Gregory Falkovich, Department of Physics of Complex Systems, Weizmann Institute of Science

Dissertation topic: A Search for Statistical Laws in Turbulent Systems

Anna was born in Moscow, Russia in 1985 and since 1991 grew up in Ramat-Gan.

Fascinated by physics and mathematics, she did her BSc in both at Tel-Aviv University.

She chose to proceed in physics at the WIS under the supervision of Prof. Micha Berkooz in the String Theory Group. She theoretically studied a system of black holes in five dimensions and its possible connection to an electronic system in condensed matter physics. This work yielded two papers, the first, providing some evidence for the link to the proposed electronic system, was published in the *Journal of High Energy Physics*. The second paper, dealing with the stability of the family of black holes, was recently accepted for publication to *Classical and Quantum Gravity*.

Finishing her MSc studies, Anna gravitated towards more earthly and tangible physics, continuing to PhD studies in Prof. Gregory Falkovich's theoretical group on turbulence theory and cloud physics. Turbulence, a physical system with many degrees of freedom which is strongly out of equilibrium, is a crucial ingredient in many of the phenomenon in the atmosphere and ocean as well as in industrial processes. However, it is also a very difficult theoretical problem, which has not yet been solved.

So far, Anna, under Prof. Falkovich's guidance, focused on the investigation of statistical conservation laws for general turbulent situations. A paper describing their results has been recently accepted for publication to *Physical Review Letters*.

Anna plans to continue the study of conservation laws in the inertial range. She also intends to start an unrelated project concerning the interactions between turbulent fluctuations and coherent structures formed in the system, in optical turbulence as well as in hydrodynamic set-ups.



Livnat Jerby Arnon

PhD student of Prof. Eytan Ruppin, School of Computer Science
Tel-Aviv University

Dissertation topic: Genome-scale Modelling of Cancer Genetics and Metabolism
Towards the Identification of Selective Anticancer Treatments

Intrigued by the mysteries of the human body, Livnat started her academic studies at the Faculty of Life Sciences. During the second year of her studies she became increasingly more aware of the technological advancements that revolutionized the conservative biological research, and hence turned to study also computer science.

Since Livnat finished her BSc in Life and Computer Science at Tel-Aviv University, she has been working under the supervision of Prof. Eytan Ruppin, in collaboration with experimental groups, worldwide, to systematically study the unique genetic and metabolic characteristics of cancer.

Her research agenda is primarily focused on basic scientific questions, but her main goal is to help provide a basis for rational drug discovery. In her current PhD research, Livnat performed the first genome-scale study of breast cancer metabolic progression by profiling the traits of individual patients' tumors. These profiles enabled her to explore underlying mechanisms of the disease, classify patients according to their prognosis and identify potential metabolic biomarkers. The latter are non-invasive, cost-effective means for early diagnosis and monitoring treatment efficacy.

More recently, Livnat has been working on a new approach to identify the unique vulnerabilities of cancer cells based on their genetic profiles. The basic idea is to exploit the genetic instability of the cancer to selectively target it without harming healthy cells. To this end Livnat has been developing a framework to map the interplay between different genes in cancer on a genome-scale. The latter enables to translate between genomic data and therapeutic outcomes in cancer and could help developing more effective treatment strategies with fewer side-effects.



Assaf Manor

PhD student of Dr. Carmel Rotschild, Faculty of mechanical Engineering, The Technion
Dissertation topic: Thermodynamic Light Management for 3rd Generation Photovoltaics

Assaf was born and raised in Hadera. From an early age he showed attraction to science studies and experiments held at the local "Techno-da" chapter. After graduation and army service, Assaf completed a double B.Sc. degree in both physics and electrical-engineering at the Technion, where

he found the field of quantum light-matter interaction a source of fascination.

He continued to Master's degree in the Sde-Boker Institute for Desert Research under the supervision of Prof. Eugene Katz, studying the physics of concentrated sunlight effect on photovoltaic (PV) cells. This period yielded several publications for which Assaf was given the institute's Director's Award for Outstanding Achievements.

After graduation, Assaf returned to the Technion to work under the supervision of **Dr. Carmel Rotschild, an Adam's Fellow himself**, in the field of light management for PV. Assaf focuses on thermodynamic design and analysis of solar energy conversion systems, where the possibility of light management before the actual conversion stage could yield a dramatic increase in PV efficiency.

In addition to research, Assaf is involved in the "Future's Scientists" initiative, teaching ten-graders the fundamental physics of solar energy conversion, through active experimental work.



Sivan Refaely-Abramson

PhD student of Prof. Leeor Kronik, Department of Materials and Interfaces, Weizmann Institute of Science

Dissertation topic: A Generalization of the Optimally-tuned Range-separated Hybrid Scheme to the Solid-state

Sivan was raised in Moshav Ma'ale Gamla in the Golan Heights. After her military service she started her BSc in physics and chemistry at the Hebrew University of Jerusalem. During that time she completed an undergraduate research project in Prof. Raphael D. Levine's group at the Department of Physical Chemistry. Following her graduation, she started her MSc in Prof. Leeor Kronik's group at the Weizmann Institute of Science, where she is currently carrying out a direct track PhD.

Her field of research is theoretical predictions of energetic properties for photovoltaic applications, and particularly for organic semiconductors. For this the density functional theory (DFT) method is used to approximate solutions of the many-body Schrödinger equation. Within this method she has used and developed optimally-tuned range-separated hybrid functionals, to predict very accurate electronic structures of challenging gas-phase molecules. This work was summarized in two papers in the *APS* magazines, *Physical Review B* and *Physical Review Letters*, in collaboration with Prof. Roi Baer from the Hebrew University of Jerusalem and other research groups from Europe and the United States.

Sivan's current project is generalizing the range-separated hybrid scheme to the solid state. She has already developed a new form that captures the electronic nature of organic molecular crystals in the bulk, in a work that is being submitted to *APS* magazines. Following this work she and her colleagues are aiming to explore other systems of increasing complexity, and to predict the electronic structure both in the ground state and in excited states. In parallel, she investigates further interesting applications for the methods already developed in the gas-phase.

In addition to her research, Sivan works as a teacher's assistant at the Weizmann Institute, teaching an MSc course in quantum mechanics.



Liran Rotem

PhD student of Prof. Vitali Milman, School of Mathematical Sciences, Tel-Aviv University.

Dissertation topic: Asymptotic Geometric Analysis: Log-concavity, \square -Concavity, Quasi-Concavity

Liran was Born in Holon, and moved to Rishon LeZion at a young age. While in high school, he studied toward a bachelor degree in mathematics at Bar-Ilan University, and graduated *summa cum laude*.

During Liran's military service, he started his MSc studies at Tel-Aviv University. After his discharge he graduated *summa cum laude*, writing his thesis under the supervision of Prof. Vitali Milman. Today he continues his work with Prof. Milman toward a PhD.

Liran's mathematical work is related to the relatively new field of Asymptotic Geometric Analysis, which lies in the intersection of geometry, analysis and probability. Asymptotic Geometric Analysis is concerned with geometric properties of finite dimensional objects, and especially with the asymptotics of their various quantitative parameters as the dimension tends to infinity. The results and methods developed in this study became of great importance outside the realm of pure mathematics, to any field that try to analyze very "high dimensional" systems, i.e. systems with a large number of parameters.

Specifically, Liran is mostly interested in obtaining functional extensions of various notions and theorems from convexity and geometric analysis. Such extensions may bring intuition and results from geometry into the realm of analysis and probability, and vice versa, thus creating new bridges between these fields. Liran has already published several research papers, and talked about his work in several international conferences.

In addition to his research, Liran is also passionate about his work as a teaching assistant, and has won several awards for his excellence in this field.



Eitan Schechtman

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

Dissertation topic: The Neural Correlates of Basal Ganglia Abnormalities in the Chronic Phencyclidine (PCP) Primate Model of Schizophrenia

Eitan was born and raised in Rehovot and currently resides in Ora, near Jerusalem. Following his military service, he realized his passion for research and knowledge. Three years later, he completed his BA in psychology *summa cum laude*, had published a paper in a high impact journal - and two others were underway. He was fascinated with the interaction between neural activity, cognition and behavior. Eitan joined the direct PhD program at the ICNC. He is currently conducting his doctoral studies under Prof. Hagai Bergman at the Hebrew University's Faculty of Medicine.

Eitan's primary focus in his study is *Schizophrenia*, a devastating disorder affecting approximately one percent of the population. Eitan's study focuses on the electrophysiological properties of single neurons in the Basal Ganglia, a brain region which is involved in emotional and goal related processing and planning. This region has long been implicated in *Schizophrenia*, but its direct involvement remains an unresolved issue. Using methods to record and analyze the activity of the smallest computational unit in the brain, the neuron, Eitan expects to uncover key aspects of the brain insult that results in *Schizophrenia*.

Eitan's dream is to use his results to advance the treatment of *Schizophrenia*. Specifically, Eitan wishes to consider the effects of Deep Brain Stimulation (DBS), a highly successful treatment used mostly for Parkinson's Disease, on the symptoms of *Schizophrenia*. DBS has previously proven efficient for psychiatric conditions such as major depression but has not been thoroughly considered for the treatment of *Schizophrenia*. Eitan's results are expected to pave the way for the evaluation of such treatment in human patients.

In addition to his research, Eitan is highly committed to his volunteer work in two nonprofit organizations, aiming to improve the social acceptance of the LGBT (lesbian, gay, bisexual and transgender) community.



Avishay Tal

PhD student of Prof. Ran Raz, Department Computer Science and Applied Mathematics, the Weizmann Institute of Science

Dissertation topic: Analysis of Boolean Functions in Theoretical Computer Science

Avishay was born and raised in Kibbutz Shefayim. After high school, he joined the ATUDA program and finished a BSc in software engineering and a BA in mathematics at the Technion. He served in the army for 6 years as an algorithmic researcher and a team leader. This was his first encounter with mathematical and algorithmic research, which he found fascinating and enjoyable.

In parallel to his army service he completed his MSc *summa cum laude* at the Technion in the field of theoretical computer science, under the guidance of Prof. Amir Shpilka. In his MSc thesis, he analyzed properties of Boolean functions and applied them to the problem of learning from examples in the presence of irrelevant data. His paper solves a 15 year-old mathematical, very basic, open problem. The paper was presented at the conference Innovations in Theoretical Computer Science.

Following his army service and MSc studies, Avishay joined the WIS Department of Computer Science and Applied Mathematics under the guidance of Prof. Ran Raz, continuing to excel in his PhD research. He is interested in various questions on the edge between combinatorics and computational complexity. Avishay published a paper as a solo author titled "Properties and Applications of Boolean Function Composition" and presented it at the Innovations in Theoretical Computer Science Conference, winning the Best Student Paper Award.

FIFTH ADAMS CONFERENCE

January 2013



(clockwise)

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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 (GPL) Anchored Proteins



Assaf Ben Moshe

PhD student of Prof. Gil Markovich, Department of Chemical Physics, Tel-Aviv University

Dissertation topic: Chiroptical Effects Induced in Metal and Semiconductor Nanoparticles



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



Nir Lazarovich

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

Dissertation topic: Non-positively Curved Homogeneous Polygonal 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



Liel Sapir

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

Dissertation topic: Modling Osmolyte-Induced Conformational Changes in Biomacromolecules



David Tsivion

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

Dissertation topic: Guided Growth of Horizontal Nanowires



Erez Zohar

PhD student of Prof. Benni Reznik, School of Physics and Astronomy, Tel-Aviv University

Dissertation topic: Quantum Simulations of Quantum Field Theories

Field Trip 2013



(clockwise)

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roteolysis plays major roles in numerous cellular processes



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



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



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



Amir Erez

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

Dissertation topic: Superconductor to Insulator Transition in Thin Films



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



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



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



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



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



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



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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



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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



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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 Professor Shlomo Havlin, Physics, Bar-Ilan University

Dissertation topic: Complex Systems



Chen Davidovich

PhD student of Professor Ada Yonath, Structural Biology, Weizmann Institute of Science

Dissertation topic: Ribosome Structure and Function



Shahar Dobzinski

PhD student of Professor Noam Nisan, Computer Science, Hebrew University of Jerusalem

Dissertation topic: The Power of Approximations in Mechanism Design



Moshe Goldstein

PhD student of Professor Richard Berkovits, Physics, Bar-Ilan University

Dissertation topic: Interference Effects in Interacting Mesoscopic Systems



Amir Goren

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



Yoav Lahini

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



Guy Ron

PhD student of Professor Eliezer Piasetzky, Experimental Physics, Tel-Aviv University
Dissertation topic: Measurement of the Proton Elastic Form Factors at Low Q²



Avraham Saig

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



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Haim Beidenkopf

PhD student of Professor Eli Zeldov, Physics, Weizmann Institute of Science
Dissertation topic: Vortex Thermodynamics in High-Temperature Superconductors



Liat Benmoyal Segal

PhD student of Professor Hermona Soreq, Biological Chemistry,
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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 of Science
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 Professor Jeffrey S. Rosenschein, Computer Science, Hebrew
University of Jerusalem
Dissertation topic: The Theoretical Foundation of Multi-agent Systems (MAS)



Carmel Rotschild

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Dissertation topic: Soliton Interactions in Nonlocal Nonlinear Media



Ofer Shayevitz

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Dissertation topic: Universal Communications with Feedback



Amir Shlomai

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



Noam Stern

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Dissertation topic: Natural Killer (NK) Cells



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Yael Eshed-Eisenbach

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



Nathan Keller

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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 Shwartz

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



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