



ADAMS CONFERENCE 2017

כנס אדמס 2017

ינואר 2017 January



ADAMS CONFERENCE

Tuesday, January 31, 2017

כנס אדמס

יום שלישי, ד' בשבט, תשע"ז

Morning Session		מושב בוקר
9:30-10:00	Refreshments in Lobby	כיבוד קל
10:00-10:10	Prof. Nili Cohen, President of the Academy – Opening Remarks	פרופ' נילי כהן, נשיאת האקדמיה, דברי פתיחה
10:10-10:20	Prof. Moti Segev, Academy Member, Chair of the Adams Committee – Introduction	פרופ' מוטי שגב, חבר אקדמיה, יו"ר ועדת מלגות אדמס – הקדמה
10:20-11:05	Prof. Robert John Aumann, Academy Member, Nobel Laureate in Economics, The Hebrew University of Jerusalem on "Why Consciousness?"	פרופ' ישראל אומן, חבר אקדמיה, חתן פרס נובל לכלכלה, האוניברסיטה העברית, על "מדוע מודעות?"
11:05-11:15	Questions and Answers	שאלות ותשובות
11:15-12:00	Prof. Ron Milo, Member of the Israel Young Academy, Professor of Plant and Environmental Sciences, the Weizmann Institute of Science, on "Using Evolution to Teach Bacteria to Turn CO2 into Sugars"	פרופ' רון מילוא, חבר האקדמיה הצעירה הישראלית, פרופסור למדעי הצמח והסביבה, מכון ויצמן למדע, על " אבולוציה במעבדה לייצור סוכר מאוויר"
12:00-12:10	Questions and Answers	שאלות ותשובות
12:10-13:30	Lunch	ארוחת צהריים
Afternoon Session		מושב אחר הצהריים
13:30-15:00	Poster Competition	תחרות פוסטרים
15:00-15:45	Prof. Uri Sivan, Professor of Physics and Nanotechnology, The Technion, on " Water and the Hydrophobic Interaction in 10,000,000 X Magnification"	פרופ' אורי סיון פרופסור לפיזיקה וננוטכנולוגיה, הטכניון, על "מים והאינטראקציה ההידרופובית בהגדלה פי 10,000,000"
15:45-16:00	Questions and Answers	שאלות ותשובות
16:00-16:45	Prof. Gil Troy, Professor of History, McGill University, Visiting Professor at the University of Haifa and the Interdisciplinary Center Herzliya, on " A Zionist Playbook for Israeli Post-Docs and Young Academics Studying Abroad "	פרופ' גיל טרוי, פרופסור להיסטוריה, אוניברסיטת מק-גיל, פרופסור אורח באוניברסיטת חיפה ובמרכז הבינתחומי הרצליה, על "ייעוץ ציוני לישראלים הלומדים ומלמדים בחו"ל"
16:45-17:00	Questions and Answers	שאלות ותשובות
17:00	Prizes	פרסים



Greetings from

Professor Mordechai (Moti) Segev

Academy Member, Chair of the Steering and Granting Committee

Warm greetings to all the current Adams Fellows, Adams Alumni, Adams Committee, Members of the Israel Academy of Sciences and Humanities, to its President Prof. Nili Cohen, and most of all to the generous Adams Family.

The Adams Fellowship Program attempts to select our very best PhD students, with the clear goal of nurturing the next generation of leading researchers in Israel. Israel is blessed with excellent young researchers, who tend to be more mature and knowledgeable than PhD students in other countries, partly due to the army service, and partly because the respect for knowledge and encouraging curiosity are part of our culture. Very often, our PhD students are also highly motivated, and they tend to have the drive to go after original problems. Creativity – that's the name of the game. I will therefore dedicate this year's welcome greetings to creative thinking.

Let me first describe the need. Israel is a small country, far from the world's center, and our resources generally do not allow us to tackle challenges requiring huge funding. How can an Israeli scientist compete at the cutting edge of the world's research, and quite often win? How can an Israeli researcher lead the world in his or her field?

The answer is simple: think beyond the horizon. Do not compromise for doing secondary work. Do not do follow-up research. Go where no one has gone before.

To a large extent – this kind of thinking is in our culture. It relates to the fact that we tend to be argumentative people. This is reflected in the story about Abraham arguing with God about the destruction of Sdom, with many other Biblical examples, and of course the famous Talmudic arguments and counter-arguments whose traditions lasted to this day. For at least two millennia, these arguments have enriched our thinking and led us think beyond the horizon.

Nowadays this is reflected in the fact that a very large fraction of the Nobel Laureates in Physics, Chemistry and Economics were Jewish. It is also manifested in the large number of start-up companies in Israel, and in the fact that our economy is blooming in spite of the large expenses on defense and security, which have no comparable case in the Western culture. So the "Jewish secret" on how to think about new creative ideas is to ... argue: argue with your fellow students, and most importantly - argue with your mentors.

Do not accept anything for granted. Most often, scientific arguments lead to new discoveries.

Now, let's say you were able to come with a new idea. How would you know if it's worth going after? How would you recognize its significance?

Here, let me quote my own "scientific father", Amnon Yariv of CALTECH, who used to tell me (when I was a young postdoc): when you evaluate a new idea, think whether it's worth putting it on your chest or on your shoulders. On your chest – where you'll wear it like a medal, if it's a fundamental discovery. On your shoulders – where it will help you carry the weight – if it has truly important applications. If it is neither – don't do it. Think about a better idea.

Finally, many times it is not easy to go against the odds, to go after the uncertain, where you may very well fail. It takes courage to take such a risk. This is how science makes progress: by the handful that do take the risk, standing out in front of the masses.

Here, I'd like to add and say that science values creativity more than high grades, originality more than knowledge. Albert Einstein used to say: "Imagination is more important than knowledge, for knowledge is limited to all we know and understand, while imagination embraces the entire world, and all there ever will be to know and understand."

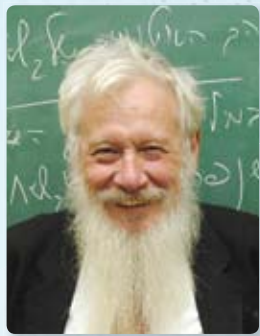
With this, I'd like to wish you all success in your research, imagination to think creatively, good judgement to distinguish between a discovery and secondary work, courage to follow your heart, and persistence to make it happen.

We, the members of the committee that selected you, are hopeful that at least some of you will make huge discoveries, and become the leaders of the next generation of researchers. And - last but far from being least - we sincerely hope that you will do it in Israel!

Best of luck to all of you.

M. Segev

 Moti Segev



Prof. Robert J. Aumann

Academy Member, Nobel Laureate in Economics, The Hebrew University of Jerusalem

Robert Aumann was born in Frankfurt am Main, Germany, in 1930, to a well-to-do orthodox Jewish family. Fleeing Nazi persecution, he emigrated to the United States with his family in 1938, settling in New York. In the process, his parents lost everything, but nevertheless gave their two children an excellent Jewish and general education. Aumann attended Yeshiva elementary and high schools, got a bachelor's degree from the City College of New York in 1950, and a Ph.D. in mathematics from MIT in 1955.

He joined the mathematics department at the Hebrew University of Jerusalem in 1956, and has been there ever since. In 1990, he was among the founders of the Center for Rationality at the Hebrew University, an interdisciplinary research center, centered on Game Theory, with members from over a dozen different departments, including Business, Economics, Psychology, Computer Science, Law, Mathematics, Ecology, Philosophy, and others.

Aumann is the author of over ninety scientific papers and six books, and has held visiting positions at Princeton, Yale, Berkeley, Louvain, Stanford, Stony Brook, and NYU. He is a member of the American Academy of Arts and Sciences, the National Academy of Sciences (USA), the British Academy, and the Israel Academy of Sciences; holds honorary doctorates from the Universities of Chicago, Bonn, Louvain, City University of New York, and Bar Ilan University; and has received numerous prizes, including the Nobel Memorial Prize in Economic Sciences for 2005.

Aumann is married and had five children (the oldest was killed in Lebanon in 1982). Also, he has twenty-one grandchildren, and twenty great-grandchildren. When not working, he likes to hike, ski, cook, and study the Talmud.



Prof. Ron Milo

Member of the Israel Young Academy, Professor of Plant and Environmental Sciences, the Weizmann Institute of Science

Prof. Ron Milo earned a BSc in Physics and Mathematics at the Hebrew University of Jerusalem and a PhD in Biological Physics at the Weizmann Institute of Science. He was the first fellow in Systems Biology at Harvard Medical School before joining the Department of Plant & Environmental Sciences at the Weizmann Institute.

Ron and his lab members bring the tools of systems biology to bear on the challenges of sustainability. His research aims to understand the cellular highways of energy and carbon transformations known as central carbon metabolism in quantitative terms. His research team employs a combination of computational and experimental synthetic biology tools with a focus on carbon fixation, the biological process which incorporates carbon dioxide into organic compounds. He hopes to understand the fundamentals of its design principles with the goal of improving the ability of humanity to produce food and fuel more efficiently. He is also developing *BioNumbers*, a collaborative community resource of biological numbers for both researchers and the public.

Ron's scientific awards include the GE & Science Prize for Young Life Scientists, the John F. Kennedy Prize and the D.N. Chorafas International PhD award. He wrote the book *Cell Biology by the Numbers* and published over 40 papers, with more than a dozen in the leading Journals *Science*, *Nature*, *Cell* & *PNAS*. Since 2015 he is the chairperson of the Israel Young Academy. Ron enjoys playing the harmonica and hiking with his wife and three daughters.



Prof. Uri Sivan

Professor of Physics and Nanotechnology,
The Technion

Prof. Uri Sivan holds the Bertoldo Badler Chair in the department of Physics - Technion, and is a member of the Technion Integrated Cancer Center (TICC) and the Technion Russell Berrie Nanotechnology Institute (RBNI), for which he acted as one of its founders and its first director.

Prof. Sivan earned his BSc in Physics and Mathematics (*cum laude*), MSc in Physics (*cum laude*) and PhD in Physics (*summa cum laude*), all from Tel Aviv University. He then spent several years at IBM T. J. Watson Research Center in Yorktown Heights NY before joining the Technion.

His early scientific career focused on the physics of mesoscopic-scale electronic systems at low temperatures where quantum mechanics dominates many of the observed phenomena. With time, his interest shifted to fundamental aspects of the interface between nanotechnology, physics, and biology. In a series of papers, he and his collaborators pioneered what is now known as bio-assembly of non-biological functional constructs. In these papers, they demonstrated that DNA recognition and recombinant proteins could be harnessed to the assembly of functional electronic devices made of inorganic materials and later offered the first functional interface between electronics and biology based on the recognition of electronic signals by specific antibodies and T-cell receptors. In recent years, his research evolved to the study of molecular interactions in biologically relevant environments. Those include fundamental aspects of the interaction between biomolecules and inorganic surfaces studied by ultra-high resolution atomic force microscopes built in his lab.

Prof. Sivan's studies resulted in several technology transfers to industry, the last of which dealing with a massively parallel analysis of individual cells collected from a tumor. He is also deeply interested in science education and was involved in the past three years in the development of the "Science for All" program in Israeli high schools.



Prof. Gil Troy

Professor of History, McGill University, Visiting
Professor at the University of Haifa and the
Interdisciplinary Center Herzliya

Gil Troy is Professor of History at McGill University and a co-founder of the Shalom Hartman's Engaging Israel program in Jerusalem. Last fall, he was a Visiting Scholar at the Brookings Institution. This fall, he is a Visiting Professor at the Ruderman Program for American Jewish Studies at Haifa University and at the Interdisciplinary Center Herzliya. An American presidential historian and a Zionist activist, he is the author of twelve books, including the recently-released *The Age of Clinton: America in the 1990s*. His previous book *Moynihan's Moment: America's Fight against Zionism as Racism* -- was designated by *Jewish Ideas Daily* as one of the "best Jewish books" of 2012. He also wrote the bestselling *Why I Am a Zionist: Israel, Jewish Identity and the Challenges of Today* and the recent e-book *The Jewish Vote: Political Power and Identity in US Elections*.

Troy writes a weekly column for *The Daily Beast* on "Secret Lives," forgotten individuals who made an impact on today's world. He writes regularly for the *Jerusalem Post*, *the Jewish Week*, and the *Canadian Jewish News*. He has been an occasional contributor to the "Campaign Stops" section of the *New York Times* and has been widely published and quoted in the American and Canadian media. He won a 2015 Simon Rockower award for Excellence in Single Commentary from the American Jewish Press Association, for his essay defending Israel during the Gaza conflict, "Democracy, Judaism and War."

Troy has been extensively involved in the Jewish community, and the worldwide fight against the delegitimization of Israel and for a new Zionist vision. Long involved in informal Jewish education, he chairs the Birthright Israel International Education Committee, and sits *ex-officio* on the Steering Committee of this \$100 million project.

A former chairman of the McGill History Department, he has repeatedly been designated by *Maclean's Magazine* as one of McGill's most "popular professors" and was singled out by the History News Network as one of its first, twelve, "top young historians."

Troy lives in Jerusalem with his wife Linda, an artist, and his four children. He lectures widely on Zionism, modern Jewish identity, American history, US-Israel relations, Diaspora-Israel relations and the fight against delegitimization.

Pictures of Adams Seminar,
July 2016



Pictures of Field-Trip to the City of David,
June 2016



