



The Hebrew University of Jerusalem
85th BOARD OF GOVERNORS 2022

LEADERSHIP FOR TOMORROW

JUNE 2022

THE KLACHKY PRIZE

**FOR THE ADVANCEMENT
OF THE FRONTIERS OF SCIENCE**





THE KLACHKY PRIZE

The Klachky Prize for the Advancement of the Frontiers of Science is an annual prize founded by the late Ms. Rachel Klachky.

The prize is awarded to Hebrew University faculty members or academic units for their achievements in:

The Advancement of Science

The Advancement of Scientific Research

The Advancement of Scientific Knowledge

The Advancement of the Frontiers of Science

New Academic Developments

Academic Ventures



THE DONOR

Rachel Klachky (1925-2001) was born in Mexico. Married to the late Engineer Manuel Klachky, she was a central figure in the Jewish community of Mexico, and was one of the founding members of the Mexican Friends of The Hebrew University.

In 1997, she received an Honorary Fellowship from The Hebrew University for her outstanding contributions to the State of Israel and The Hebrew University of Jerusalem. She wholeheartedly supported worthy causes, including the absorption of new immigrants, scholarships for students, and support of various scientific research projects, and studies on superconductivity at The Hebrew University.

After she passed away, her sons, Roberto and Leopoldo, continue her legacy of support to The Hebrew University of Jerusalem. The Klachky Prize has been awarded since 2003.

PROF. ORNA KUPFERMAN

School of Computer Science and Engineering



Prof. Orna Kupferman is a faculty member at the School of Computer Science and Engineering. She received her Ph.D. in 1995 from the Technion–Israel Institute of Technology, and has been affiliated also with UC Berkeley, Lucent Technologies, Microsoft Research, and Rice University. Her research areas cover the theoretical foundations of the formal verification and synthesis of computer systems. Prof. Kupferman is renowned for fundamental contributions to automata- and game-theoretic techniques aiming at the formal verification and reactive synthesis of computing systems. She has won many awards and grants, including two European Research Council (ERC) grants, prizes for long-standing excellence in teaching, and The Michael Bruno Memorial Award. She is a Fellow of the European Association for Theoretical Computer Science, and a member of Academia Europa. Prof. Kupferman has four children, and she plays basketball on The Hebrew University's team.

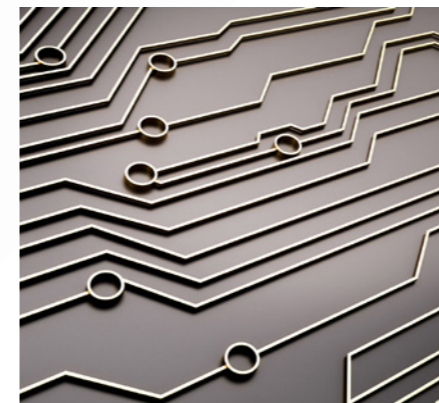
RESEARCH DESCRIPTION

Formal verification of reactive systems

The rapid development of complex and safety-critical systems requires reliable verification methods. Currently, the world already relies on systems generated with technology that is not worthy of our trust.

Prof. Kupferman's research focuses on automatic synthesis: algorithmic methods for automatically generating correct-by-construction systems from their specifications. Synthesis enables designers to focus on what the system should do—rather than on how it should do it. The correct way to approach synthesis of systems that interact with their environment is to consider the situation as a game between the environment and the system. During each round of the game, the environment provides an assignment to the input signals, the system responds with an assignment to the output signals, and the system wins the game if the computation that the system and the environment generate together satisfies the specification. Thus, correct systems can be viewed as winning strategies in games.

The overarching objective of Prof. Kupferman's research is to develop the theoretical foundations of advanced synthesis, namely to take into account the complex settings in which synthesis is applied and the many considerations that are abstracted in current definitions of the problem. One primary such consideration is the quality and complexity of the synthesized system: we do not want to construct "simply" any system that satisfies the specification—but one that does so at the highest possible quality. We also seek systems with optimal performance in parameters like the energy they consume or the privacy they maintain. Moreover, we want synthesis algorithms to take into account considerations from game theory, in particular the fact that the system and the environment may be composed of several components, each with its own objectives. Finally, especially in the context of autonomous systems – environments are evolving and unpredictable, posing additional challenges to the synthesis problem.



Previous Winners

2021

PROF. MAYA TAMIR

The Department of Psychology
The Faculty of Social Sciences

Social-Personality psychology, Emotion & Self-regulation

2019

PROF. SIGAL BEN-YEHUDA & PROF. ILAN ROSENSHINE

The Microbiology and Molecular Genetics Department,
The Institute for Medical Research Israel-Canada, the Faculty of Medicine

Widespread Bacterial CORE Complex, Executes Intra- and Inter-Kingdom, Cytoplasmic Molecular Trade

2018

PROF. OREN FROY

The Institute of Biochemistry Food Science and Nutrition
The Robert H Smith Faculty of Agriculture, Food and Environment

Interplay between the Circadian Clock and Metabolism

2017

DR. KARIM ADIPRASITO

Einstein Institute of Mathematics, Faculty of Science

Interplay between Combinatorial and Continuous Structures in Mathematics

2016

PROF. NATHALIE Q. BALABAN

Racah Institute of Physics, Faculty of Science

Biological Physics of Self-Replication

2015

PROF. RE'EM SARI

Racah Institute of Physics, Faculty of Science

Understanding Our Universe

2014

PROF. MICHAL BIRAN

Departments of Asian Studies, and Islamic and Middle Eastern Studies, Institute of Asian and African Studies, Faculty of Humanities

Inner Asian History: Mobility Empire and Cross-Cultural Contacts in Mongol Eurasia

2013

PROF. ROI BAER

Institute of Chemistry and Fritz Haber Minerva Research Center for Molecular Dynamics, Faculty of Science

Developing New Theoretical and Computational Techniques that Enable Determination of the Energy Levels of Charge Carriers in Large Molecular Systems and Nanocrystals

2012

DR. ERAN MESHORER

Department of Genetics, Silberman Institute of Life Sciences, Faculty of Science

Using Genome-Wide Approaches and Sophisticated Imaging Techniques to Understand Genome Plasticity in Stem Cells

2011

PROF. DAVID WEISBURD

Institute of Criminology, Faculty of Law

Pioneering Research on White Collar Crime, Policing, and Crime Prevention

2010

PROF. MERAV AHISSAR

Department of Psychology and Program in Cognitive Sciences, Faculty of Social Sciences

The Neuro-Cognitive Basis of Reading Disability - The "Anchoring-Deficit" Hypothesis

2009

PROF. ISAIAH TUVIA (SHY) ARKIN

Department of Biological Chemistry, Silberman Institute of Life Sciences, Faculty of Science

Structural Biology of Membrane Proteins, Focusing on Pathogen's Ion Channels and Ion Pumps

2008

PROF. URI BANIN

Institute of Chemistry and the Center for Nanoscience & Nanotechnology, Faculty of Science

Major Advancements in the Science and Technology of Nanocrystals and the Development of Hybrid Multifunctional Nanoparticles

2007

PROF. HOWARD (CHAIM) CEDAR

Department of Developmental Biology and Cancer Research, Institute for Medical Research Israel-Canada, Faculty of Medicine

Establishing the Cornerstone of Epigenetics and Its Role in Human Development



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At The Hebrew University of Jerusalem

June 2022

The Hebrew University of Jerusalem

The Authority for Research and Development

Tel.: +972-2-658-6625/6 • **Fax:** +972-2-561-8196

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