Previous Winners 2017

**Dr. Joshua Goldberg**
Department of Medical Neurobiology
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Physiological Understanding of Neuronal Degeneration and Neuronal Adaptations in Movement Disorders.

**Dr. Panayota Petrou**
Department of Neurology
Hebrew University-Hadassah Medical School

**Dr. Ira Layon Ben Moshe**
Department of Neurology
Hebrew University-Hadassah Medical School
Identification of Serological, Cytological and Genetic Factors Associated with the Development and Progression of ALS in Israel.

Previous Winners 2016

**Dr. Ari Prikl**
Institute for Drug Research
School of Pharmacy
Faculty of Medicine
Inflammation: Bridging the Cellular and Molecular Basis.

**Dr. Yivai Tabach**
Department of Developmental Biology and Cancer Research
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Combining Computational and Experimental Methods Suggest a Unified Theory to Explain 40 Neurodegenerative Disorders.

**Dr. Shahar Azzy**
Department of Neurology
Hebrew University-Hadassah Medical School
Tony Core: The Role of Space, Time, and Person: Physiology and Pathology.

**Dr. Netta Levin**
Department of Neurology
Hebrew University-Hadassah Medical School
Cortical and White Matter Mapping in Understanding Visual System Pathologies.

Previous Winners 2015

**Dr. Ehud Cohen**
Department of Biochemistry and Molecular Genetics
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Neuronal Circuits Underlying Social Behavior.

**Dr. Yoram Ben-Shaul**
Department of Medical Neurobiology
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Neuronal Circuits Underlying Social Behavior.

**Dr. David Aronov**
Department of Neurology
Hebrew University-Hadassah Medical School
DVTI: Distinct Links Controlling Sympathetic Plasticity and Learning Behavior in Humans.

**Dr. Marc Gouge**
Department of Neurology
Hebrew University-Hadassah Medical School
Identification of Serological, Cytological and Genetic Factors Associated with the Development and Progression of ALS in Israel.

Previous Winners 2014

**Prof. Albert Paradowski**
Department of Medical Neurobiology and Molecular Genetics
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Prion Neurotoxicity: From Protein Misfolding to Lipid Disease.

**Prof. Hagai Begeman**
Department of Medical Neurobiology
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Computational Physiology and Pathophysiology of the Basal Ganglia and Other Disorders: From Understanding to Clinical Loop Deep Brain Stimulation Treatments.

**Dr. Dana Estein**
Department of Neurology
Hebrew University-Hadassah Medical School
Development of Tools for Patient-Specific Individualized Diagnosis and Treatment of Epilepsy.

**Dr. Adi Vainin Dombinsk**
Department of Neurology
Hebrew University-Hadassah Medical School
Personalized Medicine in Multiple Sclerosis and Neuronal Optics: Predicting Disease Outcome and Treatment Responsiveness.

Previous Winners 2013

**Prof. Alexander Lossos**
Department of Neurology
Hebrew University-Hadassah Medical School
Diagnosis and Treatment of Adult Polyglucosan Body Disease.

**Dr. Hanna Rosenmann**
Department of Neurology
Hebrew University-Hadassah Medical School
Alzheimer’s, Dementia, and Tauopathies: Improved Animal Models, Pathogenesis, and Therapeutic Approaches.

**Dr. Sara Eyal**
Institute for Drug Research
School of Pharmacy
Imaging CNS Function in Health and Disease.

**Dr. Adi Imbar**
Department of Medical Neurobiology
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Molecular Mechanisms of Forebrain and Eye Development.

Previous Winners 2012

**Prof. Ronen Leckler**
Department of Neurology
Hebrew University-Hadassah Medical School
Development of Tools for Patient-Specific Individualized Diagnosis and Treatment of Epilepsy.

**Prof. Alexander Lossos**
Department of Neurology
Hebrew University-Hadassah Medical School
Computational Physiology and Pathophysiology of the Basal Ganglia and Other Disorders: From Understanding to Clinical Loop Deep Brain Stimulation Treatments.

**Prof. Haym Zaidi**
Department of Neurology
Hebrew University-Hadassah Medical School
Pathogenesis, and Therapeutic Approaches in Alzheimer’s Disease and Tauopathies - Improved Animal Models, Pathogenesis, and Therapeutic Approaches.

**Dr. Ronit Shamir**
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Diagnosis and Treatment of Adult Polyglucosan Body Disease.

**Prof. Ronen Leckler**
Department of Neurology
Hebrew University-Hadassah Medical School
Development of Tools for Patient-Specific Individualized Diagnosis and Treatment of Epilepsy.

**Dr. Alexander M. Bintzky**
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Molecular Mechanisms of Forebrain and Eye Development.

**Prof. Haym Zaidi**
Department of Neurology
Hebrew University-Hadassah Medical School
Pathogenesis, and Therapeutic Approaches in Alzheimer’s Disease and Tauopathies - Improved Animal Models, Pathogenesis, and Therapeutic Approaches.

**Dr. Ronit Shamir**
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Diagnosis and Treatment of Adult Polyglucosan Body Disease.

**Prof. Ronen Leckler**
Department of Neurology
Hebrew University-Hadassah Medical School
Development of Tools for Patient-Specific Individualized Diagnosis and Treatment of Epilepsy.

**Prof. Alexander Lossos**
Department of Neurology
Hebrew University-Hadassah Medical School
Computational Physiology and Pathophysiology of the Basal Ganglia and Other Disorders: From Understanding to Clinical Loop Deep Brain Stimulation Treatments.

**Prof. Haym Zaidi**
Department of Neurology
Hebrew University-Hadassah Medical School
Pathogenesis, and Therapeutic Approaches in Alzheimer’s Disease and Tauopathies - Improved Animal Models, Pathogenesis, and Therapeutic Approaches.

**Dr. Ronit Shamir**
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Diagnosis and Treatment of Adult Polyglucosan Body Disease.

**Prof. Ronen Leckler**
Department of Neurology
Hebrew University-Hadassah Medical School
Development of Tools for Patient-Specific Individualized Diagnosis and Treatment of Epilepsy.

**Prof. Alexander Lossos**
Department of Neurology
Hebrew University-Hadassah Medical School
Computational Physiology and Pathophysiology of the Basal Ganglia and Other Disorders: From Understanding to Clinical Loop Deep Brain Stimulation Treatments.

**Prof. Haym Zaidi**
Department of Neurology
Hebrew University-Hadassah Medical School
Pathogenesis, and Therapeutic Approaches in Alzheimer’s Disease and Tauopathies - Improved Animal Models, Pathogenesis, and Therapeutic Approaches.

**Dr. Ronit Shamir**
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Diagnosis and Treatment of Adult Polyglucosan Body Disease.

**Prof. Ronen Leckler**
Department of Neurology
Hebrew University-Hadassah Medical School
Development of Tools for Patient-Specific Individualized Diagnosis and Treatment of Epilepsy.

**Prof. Alexander Lossos**
Department of Neurology
Hebrew University-Hadassah Medical School
Computational Physiology and Pathophysiology of the Basal Ganglia and Other Disorders: From Understanding to Clinical Loop Deep Brain Stimulation Treatments.

**Prof. Haym Zaidi**
Department of Neurology
Hebrew University-Hadassah Medical School
Pathogenesis, and Therapeutic Approaches in Alzheimer’s Disease and Tauopathies - Improved Animal Models, Pathogenesis, and Therapeutic Approaches.

**Dr. Ronit Shamir**
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Diagnosis and Treatment of Adult Polyglucosan Body Disease.

**Prof. Ronen Leckler**
Department of Neurology
Hebrew University-Hadassah Medical School
Development of Tools for Patient-Specific Individualized Diagnosis and Treatment of Epilepsy.

**Prof. Alexander Lossos**
Department of Neurology
Hebrew University-Hadassah Medical School
Computational Physiology and Pathophysiology of the Basal Ganglia and Other Disorders: From Understanding to Clinical Loop Deep Brain Stimulation Treatments.

**Prof. Haym Zaidi**
Department of Neurology
Hebrew University-Hadassah Medical School
Pathogenesis, and Therapeutic Approaches in Alzheimer’s Disease and Tauopathies - Improved Animal Models, Pathogenesis, and Therapeutic Approaches.

**Dr. Ronit Shamir**
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Diagnosis and Treatment of Adult Polyglucosan Body Disease.

**Prof. Ronen Leckler**
Department of Neurology
Hebrew University-Hadassah Medical School
Development of Tools for Patient-Specific Individualized Diagnosis and Treatment of Epilepsy.

**Prof. Alexander Lossos**
Department of Neurology
Hebrew University-Hadassah Medical School
Computational Physiology and Pathophysiology of the Basal Ganglia and Other Disorders: From Understanding to Clinical Loop Deep Brain Stimulation Treatments.

**Prof. Haym Zaidi**
Department of Neurology
Hebrew University-Hadassah Medical School
Pathogenesis, and Therapeutic Approaches in Alzheimer’s Disease and Tauopathies - Improved Animal Models, Pathogenesis, and Therapeutic Approaches.

**Dr. Ronit Shamir**
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Diagnosis and Treatment of Adult Polyglucosan Body Disease.

**Prof. Ronen Leckler**
Department of Neurology
Hebrew University-Hadassah Medical School
Development of Tools for Patient-Specific Individualized Diagnosis and Treatment of Epilepsy.

**Prof. Alexander Lossos**
Department of Neurology
Hebrew University-Hadassah Medical School
Computational Physiology and Pathophysiology of the Basal Ganglia and Other Disorders: From Understanding to Clinical Loop Deep Brain Stimulation Treatments.

**Prof. Haym Zaidi**
Department of Neurology
Hebrew University-Hadassah Medical School
Pathogenesis, and Therapeutic Approaches in Alzheimer’s Disease and Tauopathies - Improved Animal Models, Pathogenesis, and Therapeutic Approaches.

**Dr. Ronit Shamir**
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Diagnosis and Treatment of Adult Polyglucosan Body Disease.

**Prof. Ronen Leckler**
Department of Neurology
Hebrew University-Hadassah Medical School
Development of Tools for Patient-Specific Individualized Diagnosis and Treatment of Epilepsy.

**Prof. Alexander Lossos**
Department of Neurology
Hebrew University-Hadassah Medical School
Computational Physiology and Pathophysiology of the Basal Ganglia and Other Disorders: From Understanding to Clinical Loop Deep Brain Stimulation Treatments.

**Prof. Haym Zaidi**
Department of Neurology
Hebrew University-Hadassah Medical School
Pathogenesis, and Therapeutic Approaches in Alzheimer’s Disease and Tauopathies - Improved Animal Models, Pathogenesis, and Therapeutic Approaches.
Prof. Stanley B. Prusiner, M.D.

Stanley B. Prusiner, M.D., is Director of the Institute for Neurodegenerative Diseases and Professor of Neurology at the University of California, San Francisco (UCSF), where he has worked since 1972. Born in Des Moines, Iowa, in 1942, he spent his childhood there and in Cincinnati, Ohio. He received his undergraduate degree and medical training at the University of Pennsylvania and his postgraduate clinical training at UCSF. From 1969-72, he served in the U.S. Public Health Service at the National Institutes of Health. He is the author of over 500 research articles and the book Madness and Memory.

Prof. Prusiner is a member of the U.S. National Academy of Sciences, the Institute of Medicine, the American Academy of Arts and Sciences, the American Philosophical Society, and a foreign member of the Royal Society of London. He is the recipient of numerous prizes, including the Potamkin Prize for Alzheimer’s Disease Research of the American Academy of Neurology (1991); the Richard Lounsbery Award for Extraordinary Scientific Research in Biology and Medicine from the National Academy of Sciences (1993), the Gairdner Foundation International Award (1994), the Paul Ehrlich Prize from the Federal Republic of Germany (1995), the Wolf Prize in Medicine from the State of Israel (1996), the Keio International Award for Medical Science (1996), the Louisa Gross Horwitz Prize from Columbia University (1997), the Nobel Prize in Physiology or Medicine (1997), and the U.S. National Medal of Science (2009).

Prof. Prusiner’s groundbreaking research on prion diseases, beginning in the late 1970s, led him to propose an explanation for the cause of bovine spongiform encephalopathy (“mad cow” disease) and its human equivalent, Creutzfeldt-Jakob disease, for which he was awarded the Nobel Prize. In this work, he coined the term prion (derived from “proteinaceous” and “infectious”) to refer to a previously undescribed form of infection caused by the self-propagation of alternatively folded proteins.

His research has elucidated a fundamental understanding of the proteins underlying such illnesses as Alzheimer’s disease, Parkinson’s disease, amyotrophic lateral sclerosis (ALS) and PrP prion diseases. These advances in understanding the molecular, genetic and cellular basis of neurodegenerative diseases have fueled progress toward the development of targeted drug therapies.
Prof. Oded Abramsky, M.D., Ph.D.

Oded Abramsky was born in Jerusalem and received his M.D. and Ph.D. degrees from The Hebrew University of Jerusalem. He completed his residency in neurology at Hadassah University Hospital, where he was later appointed Head of the Neuroimmunology Unit (1982) and Chairman of the Neurology Department (1988-2005). He was appointed Professor of Neurology at Hebrew University-Hadassah Medical School in 1982, holding the Israel S. Wechsler Chair in Neurology. He served as Dean of the Faculty of Medicine of The Hebrew University (1992-96) and subsequently was appointed Chairman of the Agnes Ginges Center for Human Neurogenetics at Hadassah University Medical Center.

Prof. Abramsky has been actively involved in many aspects of medical research and holds prominent positions in numerous professional organizations concerned with both clinical practice and medical research. He was Chief Scientist of the Israel Ministry of Health (1987-1992), Chairman of the National Medical Research Organization, and served as Chairman of the Israel National Council for Research and Development. He is an Honorary President of the Israel Society of Neuroimmunology, Honorary Member of the American Neurological Association, Member of the Institute of Medicine, National Academy of Sciences (USA), Fellow by Distinction of the Royal College of Physicians (FRCP), and Member of the Israel Academy of Sciences and Humanities, among many other affiliations. In 2008, the Oded Abramsky Chair in Neuroimmunology was established in his honor by Biogen USA at the Hadassah University Medical Center.

Prof. Abramsky's clinical and scientific research focuses on autoimmune neurological diseases. He was a pioneer in the field of neuroimmunology and demonstrated immune pathogenesis in various neurological diseases of the central and peripheral nervous systems and muscle. Indeed, he proved that myasthenia gravis (MG) is an autoimmune disease, and showed the beneficial effect of corticosteroids and chemotherapy on induced experimental MG. His research served as a guideline to successful immunotherapy of MG and many other autoimmune diseases.
PRUSINER-ABRAMSKY

Research Awards - 2018

The prestigious Prusiner-Abramsky Research Awards in Clinical and Basic Neuroscience by The Orion Foundation honor Professors Stanley Prusiner and Oded Abramsky. Prof. Prusiner of the University of California at San Francisco is a Nobel Prize Laureate in Medicine (1997) and an Honorary Doctor of The Hebrew University of Jerusalem.

Prof. Abramsky is the former Chairman of the Neurology Department and a former Dean of the Faculty of Medicine at The Hebrew University.

The awards are intended for outstanding researchers from all fields of basic clinical neurosciences at The Hebrew University and the Hadassah University Medical Center.

1) RIC3 interacts with α7 nAChR in the ER to promote its plasma membrane expression
2) ACh binds and activates α7 nAChR
3) Activated α7 nAChR promotes phosphorylation and activation of JAK2
4) Phosphorylated JAK2 promotes phosphorylation and nuclear entry of STAT3
5) Activated α7 nAChR inhibits IkBα degradation and NF-κB nuclear translocation
6) STAT3 inhibits and NF-κB promotes expression of proinflammatory cytokines

DR. EINAV GROSS
Department of Biochemistry and Molecular Biology
Faculty of Medicine
Mechanisms of Recovery from Hypoxia/Reoxygenation Stress in the Nematode C. elegans

DR. ODED BEHAR
Department of Developmental Biology and Cancer Research Institute
The Institute for Medical Research Israel-Canada
Faculty of Medicine
Neuronal Cell Death in Health and Diseases

PROF. MILLET TREININ
Department of Medical Neurobiology
Hebrew University-Hadassah Medical School
Understanding the Role of RIC-3, a Chaperone of Nicotinic Acetylcholine Receptors, in Multiple Sclerosis (MS)

DR. SHAI ROSENBERG
Center for Neuro-Oncology
Hebrew University-Hadassah Medical School
Brain Tumor Genomics and Personalized Medicine
Mechanisms of Recovery from Hypoxia/Reoxygenation Stress in the Nematode Caenorhabditis Elegans

H/R stress plays a major role in the pathophysiology of several neuronal conditions including traumatic brain injury (TBI) and stroke. These brain injuries compromise millions of human lives worldwide and impose a significant economic burden on society. Thus, understanding the underlying damage mechanisms, which are activated upon exposure to H/R stress, is critical for the development of future interventions that could save lives. To explore this, Dr. Gross and his research team have used the genetically tractable model organism Caenorhabditis elegans (C. elegans).

A key discovery that they made is that the neuroglobin GLB-5 accelerates the recovery of worms from H/R stress. Moreover, using genetics, they show that GLB-5 mediates its activity by controlling the function of an oxygen (O2) sensor complex composed of soluble guanylate cyclases, namely GCCY-35 and GCCY-36. Soluble guanylate cyclases (sGCs) are gas-binding proteins that control diverse and important physiological processes such as platelet aggregation, vasodilation, and synaptic plasticity. The Gross laboratory identified conserved structural motifs in the regulatory gas-binding domain of GCCY-35 and GCCY-36, which are important for the interaction with GLB-5. Intriguingly, these motifs are conserved from human to bacteria and may play an important role in regulating the activities of both nitric oxide and O2 sensors. The journal of Neuroscience published results of these studies that provide the basis for future studies to determine the mechanism by which GLB-5 regulates the function of the GCCY-35/GCCY-36 O2-sensing complex. Since many biological mechanisms are evolutionarily conserved between mammals and C. elegans, we expect that our findings will be relevant to understanding the process of neuronal recovery from H/R stress in mammalian model systems and so lead to the development of better therapies against disease such as traumatic brain injury and stroke.

Neuronal Cell Death in Health and Diseases

Neurons are the key component in brain function. Dysfunction and death of patients in all neurodegenerative diseases, brain injuries and stroke are all primarily the result of neuronal cell death. Thus, a major challenge in the field of neuroscience is to decipher the underlying factors that influence the loss of neurons under these very different conditions. In contrast to the adult nervous system, during development, neuronal cell death is an intrinsic part of normal development in which about 50% of neurons are neutrally lost. Over the years, Dr. Gross’s team has studied the mechanisms involved in neuronal cell death, both under normal conditions during development and during adult life under pathological conditions. Although neurons are critical components of brain functions, it is increasingly clear that glial cells play critical roles in health and diseases. In recent years, his team extended their scope of research by looking into the contribution of glial cells to brain pathology. His laboratory’s significant contributions include:

1) Neuronal cell death during development was long thought to be the result of a competition over a limited amount of survival factors. Dr. Behar showed, however, that cell death is not merely just the result of a limited neurotrophic supply, but rather a balance between pro-death and pro-survival signaling. His team also demonstrated that some of these pro-death signaling also serve in parallel as a repellent signal for the growing axons, assisting in guiding them toward their targets.

2) Furthermore, he showed that the mechanism of interaction between pro-death and pro-survival is in part based on direct interactions between the different receptors for these survival and death signals.

3) Dr. Behar’s team demonstrated a linkage between axonal guidance during development and neuronal cell death as a mechanism to eliminate abnormal and misguided neurons.

4) His lab showed that death signaling used normally during development may also be upregulated. ALS might contribute to this pathology.

5) Dr. Behar uncovered a molecule expressed by astrocytes that influences their activation following brain injury. His team further showed that this modification of astrocytes activity results in improved survival of neurons as a result of injury.
Understanding the role of RIC-3, a chaperone of nicotinic acetylcholine receptors, in Multiple Sclerosis (MS)

Multiple Sclerosis (MS) is an autoimmune disease in which immune cells trigger inflammation in the spinal cord, brain, and optic nerves. This immune response leads to demyelination and axonal damage, leading to a range of neurological symptoms that can affect movement, sensation, and vision.

**RIC-3 and MS**

RIC-3 is a protein that regulates the function of nicotinic acetylcholine receptors (nAChRs). Understanding the role of RIC-3 in the context of MS is crucial because these receptors play a key role in the immune response. The TREININ lab first cloned the ric-3 gene in nematodes and demonstrated its function as a chaperone of nicotinic acetylcholine receptors (nAChRs). Their current research is on ric-3 and nicotinic receptors, and their relevance to neuroinflammatory and neurodegenerative diseases.

**Nicotinic Acetylcholine Receptors**

Nicotinic acetylcholine receptors (nAChRs) are pentameric ion channels that mediate the function of nicotinic acetylcholine, an important neurotransmitter involved in muscle contraction, autonomic functions, and synaptic transmission.

**Cholinergic Anti-Inflammatory Pathway**

The cholinergic anti-inflammatory pathway is a mechanism by which the nervous system inhibits the immune response. This pathway involves the activation of nicotinic acetylcholine receptors (nAChRs), which can downregulate pro-inflammatory markers and promote anti-inflammatory responses.

**RIC-3 Variants and MS**

RIC-3 variants and altered responsiveness of the cholinergic anti-inflammatory pathway contribute to MS progression and to neuro-inflammation in general. Researchers are now examining how these variants may affect the risk of developing MS and the disease course.