Prusiner-Abramsky Research Awards

Previous Winners 2015

Dr. EHUD COHEN
Department of Biochemistry and Molecular Biology
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School
Dissecting the Mechanistic Roles of Aging
in the Emergence of Neurodegenerative Disorders

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 ARKADIR
Department of Neurology
Hebrew University-Hadassah Medical School
DYT1 Dystonia Links Corticostriatal Synaptic Plasticity and Learning
Behavior in Humans

Dr. MARC GOTKINE
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 TARABOULOS
Department of Microbiology and Molecular Genetics
Institute for Medical Research – Israel-Canada
Hebrew University-Hadassah Medical School
Prion Neurotoxicity: From Protein Misfolding to Lipid Disease

Prof. HAGAI BERGMAN
Department of Medical Neurobiology
Institute for Medical Research – Israel-Canada
Hebrew University-Hadassah Medical School
Computational Physiology and Pathophysiology of the Basal Ganglia
and their Disorder – From Understanding to Closed Loop Deep
Brain Stimulation Treatments

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

Dr. ADI VAKNIN-DEMBINSK
Department of Neurology
Hebrew University-Hadassah Medical School
Personalized Medicine in Multiple Sclerosis and Neuromyelitis
Optica: 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 Disease 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 INBAL
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

Dr. RONIT SHARON
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School

Prof. RONEN LECKER
Department of Neurology
Hebrew University-Hadassah Medical School

Dr. ALEXANDER M. BINSHTOK
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School

Prof. HAIM OVADIA
Department of Neurology
Hebrew University-Hadassah Medical School

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The Authority for Research and Development
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June 2016

The Authority for Research and Development
The Hebrew University of Jerusalem

http://www.facebook.com/JanisDesign

Project editor: Shoshana Glatzer

Project coordinator: Ayelet Sagiv

THE HEBREW UNIVERSITY OF JERUSALEM

THE PRUSINER-ABRAMSKY RESEARCH AWARDS

IN CLINICAL AND BASIC NEUROSCIENCE

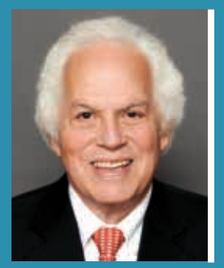
AT THE HEBREW UNIVERSITY OF JERUSALEM

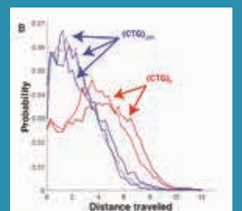
BY THE ORION FOUNDATION

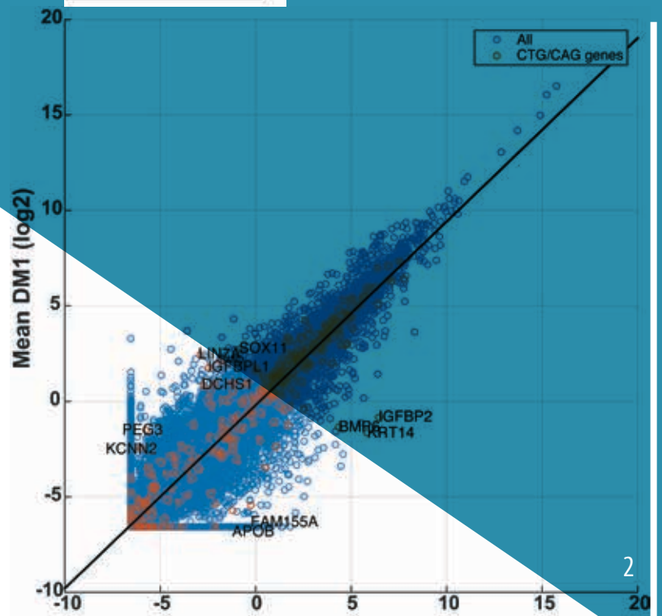
2016 תשע"ו

PRUSINER-ABRAMSKY

Research Awards - 2016







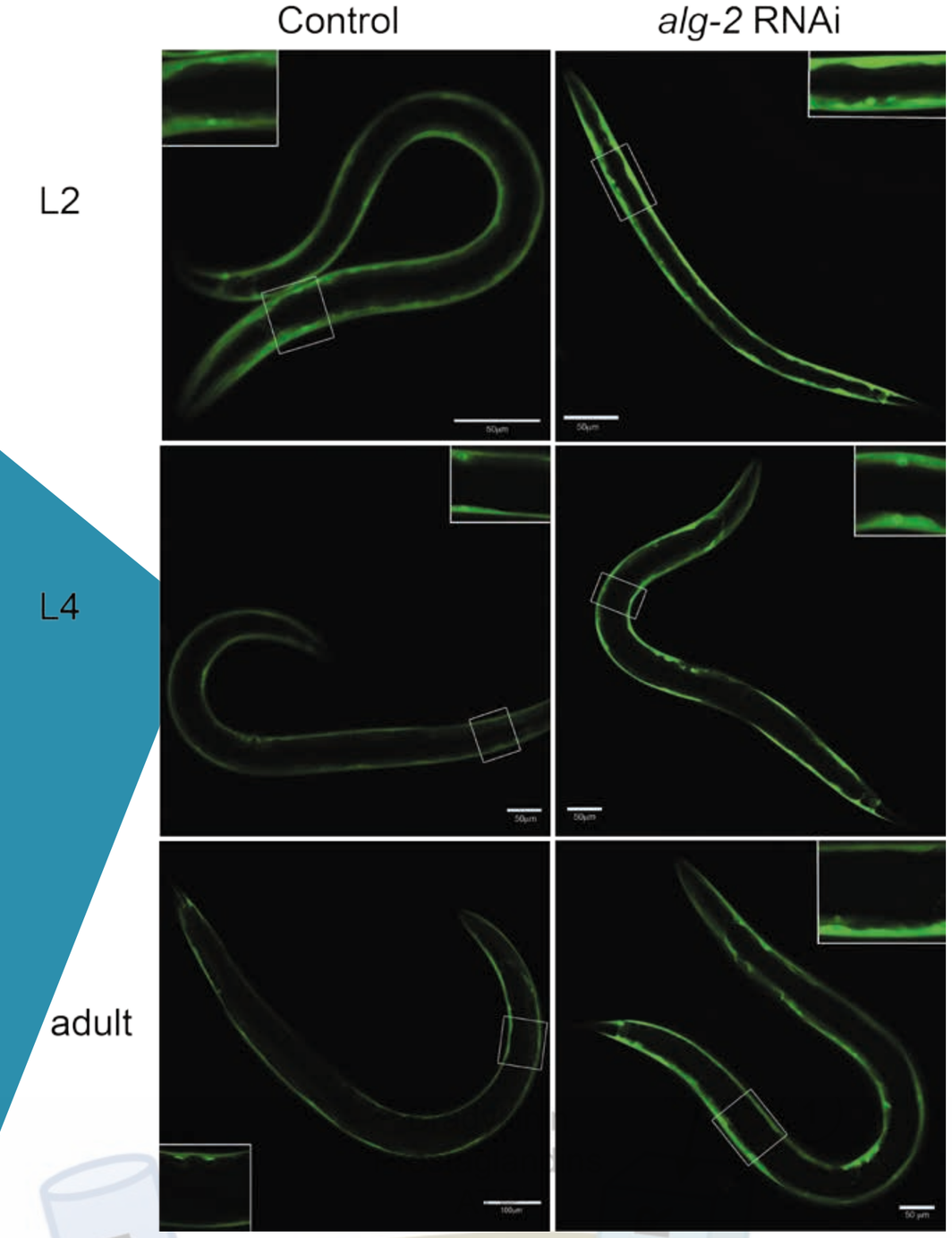
Prof. Stanley B. Prusiner, M.D.

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 (1993); the Albert Lasker Award for Basic Medical Research (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).

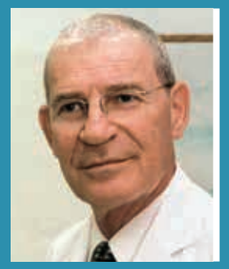
Prof. Prusiner's groundbreaking research on prion diseases, beginning in the late 1970s, led him to propose an explanation for the cause of bovine spongiform encephalopathy ("mad cow" disease) and its human equivalent, Creutzfeldt-Jakob disease, for which he was awarded the Nobel Prize. In this work, 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.



PRUSINER-ABRAMSKY

Research Awards - 2016

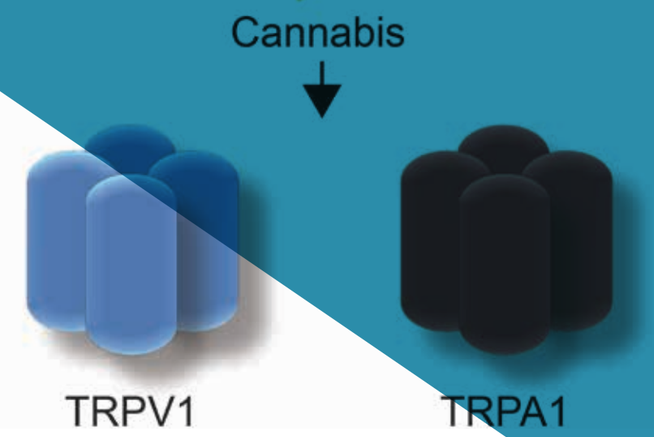


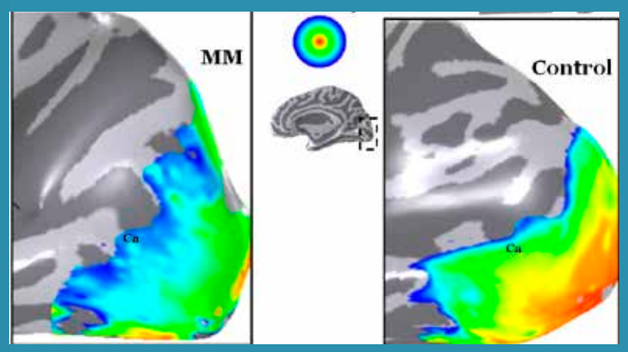
Prof. Oded Abramsky, M.D., Ph.D.

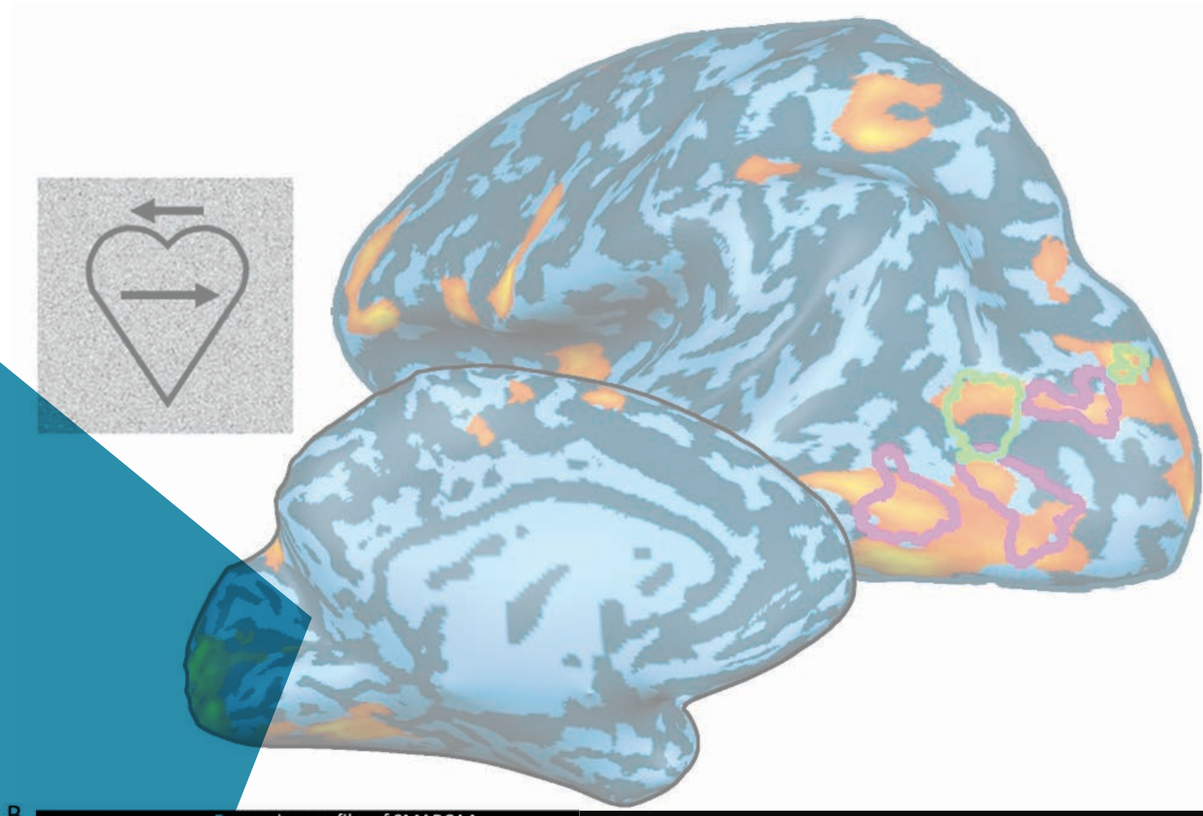
Oded Abramsky was born in Jerusalem and received his M.D. and Ph.D. degrees from The Hebrew University of Jerusalem. He completed his residency in neurology at Hadassah University Hospital, where he was later appointed Head of the Neuroimmunology Unit (1982) and Chairman of the Neurology Department (1988-2005). He was appointed Professor of Neurology at the 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.







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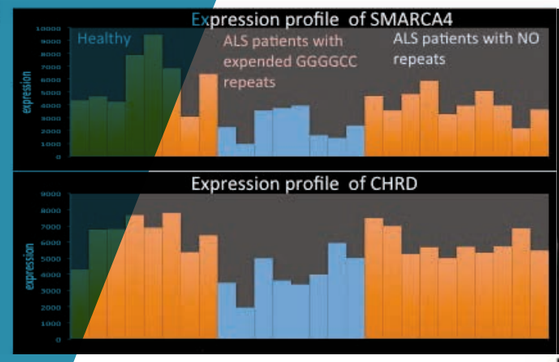
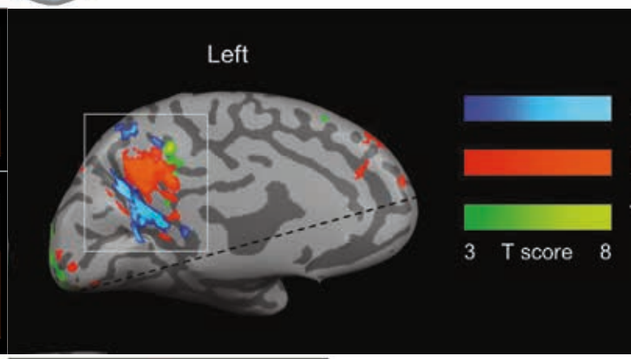




A

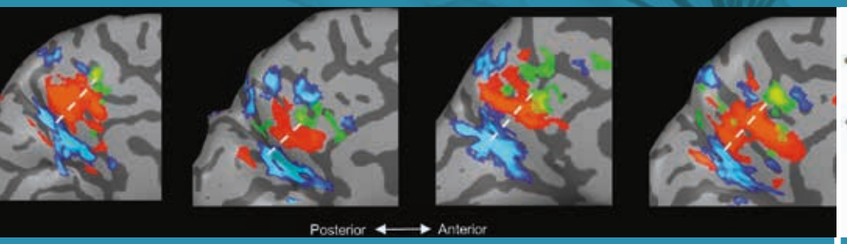
PRUSINER-ABRAMSKY

Research Awards - 2016

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 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.



Dr. AVI PRIEL

Institute for Drug Research
School of Pharmacy
Faculty of Medicine

Inflammatory Pain: Elucidating the Cellular and Molecular Basis

Dr. YUVAL TABACH

Department of Developmental Biology and Cancer Research
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School

Combined Computational and Experimental Methods Suggest a Unified Theory to Explain 40 Neurodegenerative Disorders

Dr. SHAHAR ARZY

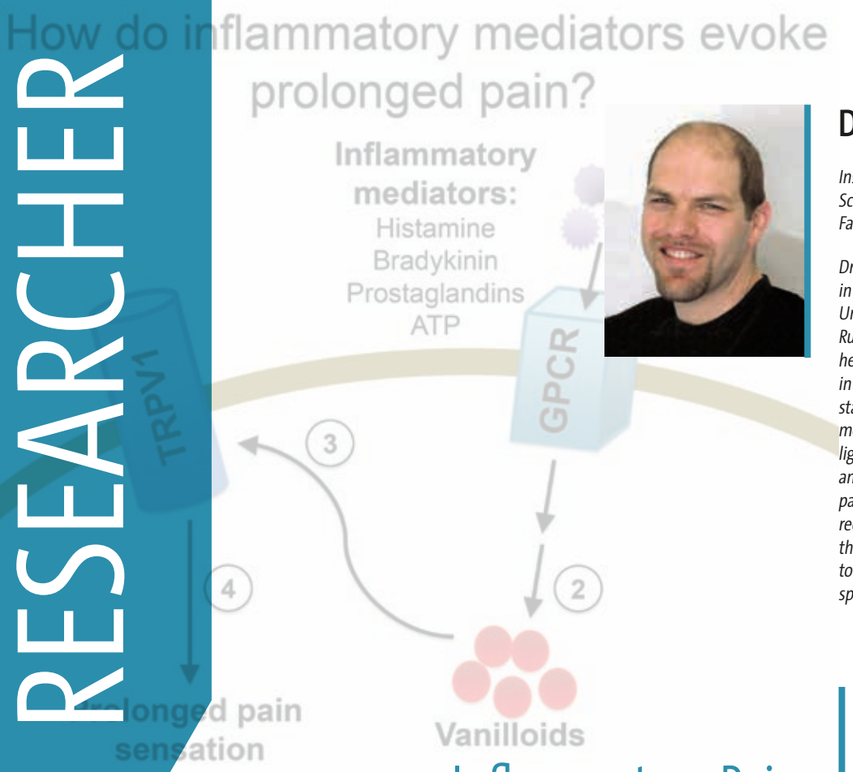
Department of Neurology
Hebrew University-Hadassah Medical School

The Human Self in 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

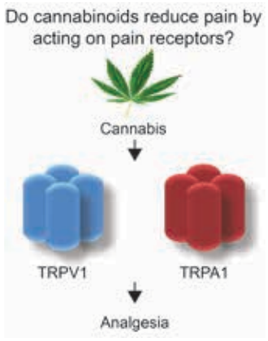


Dr. Avi Priel

Institute for Drug Research
School of Pharmacy
Faculty of Medicine

Dr. Avi Priel earned his PhD at the Hebrew University in 2007. After his postdoctoral training at the University of California at San Francisco, and a Damon Runyon Cancer Research Foundation Fellowship, he joined the faculty of the School of Pharmacy in 2011 as a Senior Lecturer. He has had a long-standing interest in the molecular and biophysical mechanisms of fast neuronal communication, i.e., ligand-gated ion channels. He studies the cellular and molecular mechanism of somatosensation and pain, investigating the determinants underlying pain receptors function. His ultimate goal is to delineate the initiating steps of the pain response, in order to facilitate the development of novel and highly specific analgesics.

Inflammatory Pain: Elucidating the Cellular and Molecular Basis



What are the detectors of natural toxins?

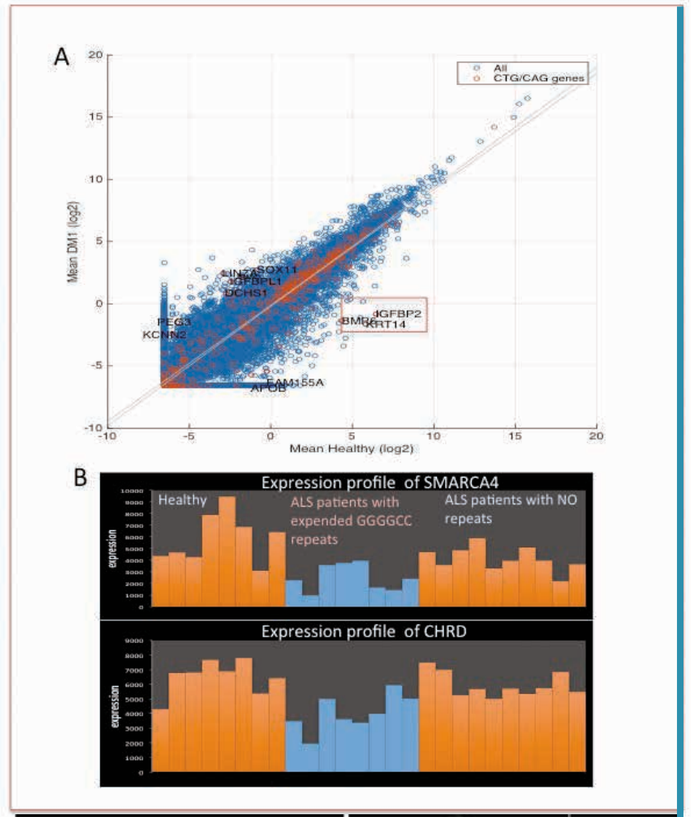
While the activation of nociceptors, a subclass of sensory neurons, triggers acute protective processes that lead to withdrawal from danger, removal of irritants, or resolution of infection, its dysregulation can lead to chronic pain, pruritus and cough. The lack of efficient treatments, partly due to our poor understanding of nociception regulation, makes these conditions a major cause of suffering. Our laboratory is focusing on a family of receptors that specifically expressed on nociceptors, and are pivotal in detection of noxious stimuli. These pain receptors are members of the transient receptor potential (TRP) ion channels with the unique ability to respond to a large array of chemical and physical noxious stimuli. We are focusing on their activation mechanism by exogenous activators such as natural animal and plants toxins that specifically evolve to evoke painful sensation. We also investigate how inflammation evokes prolonged pain sensation through activation of these pain receptors. We hypothesize that weak activation of these pain receptors by intracellular ligands synthesized downstream of G protein-coupled receptors (GPCRs) is responsible for the prolonged neuronal activation during inflammation. Lastly, we are analyzing the hypothesis that the pain system TRP channels are ionotropic receptors of cannabinoids. We hypothesize that cannabinoids evoke a unique pattern of pain receptors activation that results in neuronal silencing. We use a variety of multidisciplinary techniques, including molecular biology, electrophysiology, live-cell calcium imaging, and biochemical and pharmacological analysis. Our long-term goal is to understand the molecular and cellular mechanisms underlying pain sensation and facilitate the development of rationally designed analgesics, a vital medical need.

Dr. Yuval Tabach

Department of Developmental Biology and Cancer Research
Institute for Medical Research Israel-Canada
Hebrew University-Hadassah Medical School

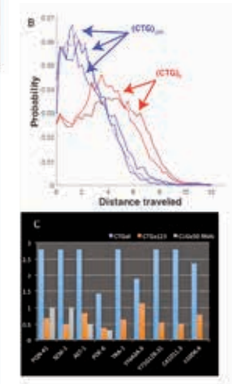
Dr. Yuval Tabach joined the Hebrew University Faculty of Medicine, as senior lecturer in 2014, after five years at the Harvard Medical school and Massachusetts General Hospital. Dr. Tabach uses data analysis, systems biology and comparative genomics to understand RNA toxicity in neurodegenerative disorders. He seeks to generate diagnostic tools in cancer, reveal cancer protecting mechanisms and identify novel disease genes. Dr. Tabach has published 15 papers in high impact journals including Nature, Cell, Cancer Cell, Molecular Cell, Molecular Systems Biology, Nature Structural and Molecular Biology, and has been awarded numerous international and national prizes.

Combined Computational and Experimental Methods Suggest a Unified Theory to Explain 40 Neurodegenerative Disorders

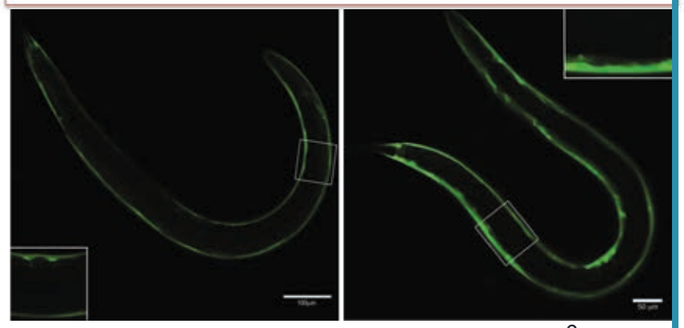


There are more than 40 neurodegenerative disorders that are result from abnormal expansion of tandem repeats across multiple generations (e.g. myotonic dystrophy, spinocerebellar ataxia, FXTAS and GGGGCC expansion in some ALS patients). Recent results demonstrate that transcribed expanded repeats accumulate in the nuclei as RNA foci and over time become toxic to the cell. Why and by what mechanism RNA toxicity occurs and how it is associated with each of the repeat diseases are fundamental questions whose answers could revolutionize our understanding of dozens of neurodegenerative repeat disorders.

During our interdisciplinary work we studies multiple neurodegenerative repeat diseases and found a single mechanism that might resolve the enigma behind many of these diseases. Studying multiple fundamental biological pathways we found that the RNAi machinery might explain RNA toxicity and many of the phenotypes in neurodegenerative repeat diseases. This is supported with large number of unpublished results from C. elegans studies but most importantly, similar results were obtained by analyzing patient data from DM1, Fragile – X and ALS patients. This model, which we are continually validating and exploring, might revolutionize our understanding of repeat diseases, offers a novel way to classify these diseases and establish treatment strategy of multiple neurodegenerative disorders.



adult

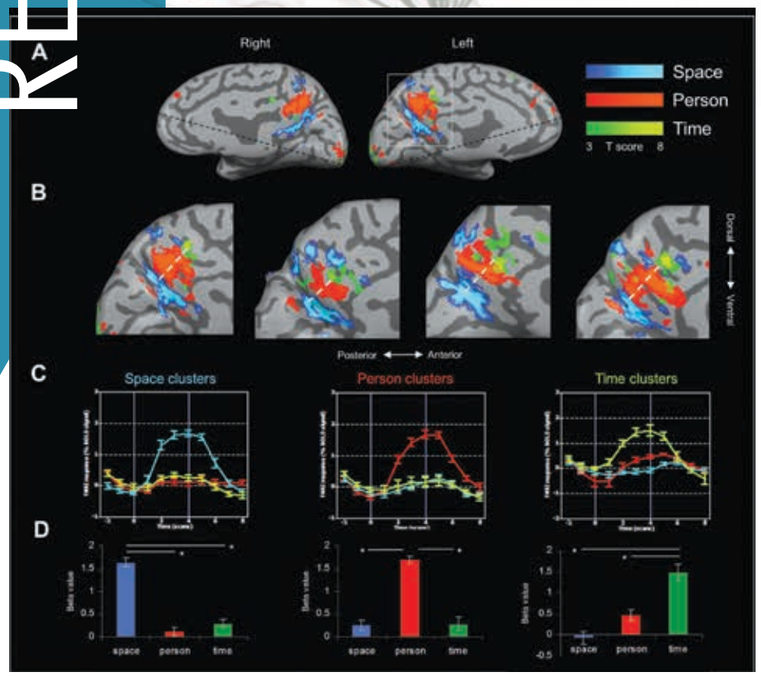


RESEARCHER

Dr. Shahar Arzy

Department of Neurology
Hebrew University-Hadassah Medical School

Dr. Shahar Arzy studied medicine and cognitive neuroscience at the Hebrew University, and completed his Ph.D. in neuroscience at the Swiss Institute of Technology and the University of Geneva. Specializing in the intersection between neurology, psychiatry and technology, he is a senior neurologist in the Neuropsychiatry Clinic and Epilepsy Center at the Department of Neurology at Hadassah, heading the Computational Neuropsychiatry Lab. His main interest is the human self and the way in which the self manages its life story (time, emotions) and surroundings (people, space) in physiological and pathological states. He is involved in developing new tools for evaluation and management of neuropsychiatric patients, and strives to translate clinical neuropsychiatric concepts into a neuroscientific model of a "neurology of self". His recent book (with Moshe Idel) Kabbalah A Neurocognitive Approach to Mystical Experiences, was published last year by Yale University Press.



The Human Self in Space, Time, and Person: Physiology and Pathology

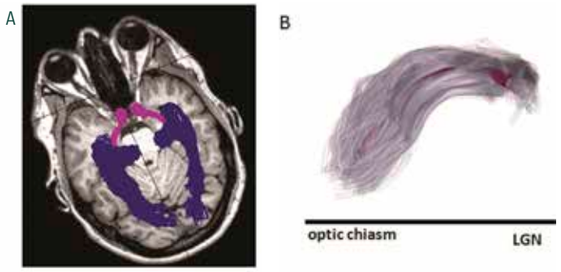
Dr. Arzy and his team at the Computational Neuropsychiatry Lab aim to bridge the gap between clinical practice and research, neurology, psychiatry, physics and psychology in order to re-formulate our understanding of the human self and its pathologies. We work with neurological and psychiatric patients in the Department of Neurology, Neuropsychiatry Clinic, Invasive Neurophysiological Unit and in the operating room. We use state of the art computational methods applied directly on clinical data, particularly tailored to improve clinical management and scientific understanding of neuropsychiatric disorders. In a recent paper (Peer et al., PNAS, 2015) we identified a new brain system of mental orientation which manages the relation between the behaving self and its surrounding. We now demonstrate how this system is impaired in Alzheimer's disease. In another recent work (Saadon-Grosman et al., PNAS, 2015) we discovered a new principle of cortical organization, called brain gradients, that we now investigate in autobiographical memory and its disturbances.

We develop algorithms for enabling ongoing diagnosis of neuropsychiatric disorders as reflected in brain networks' dynamic activity. Computational tools help us expose hidden information – patients teach us about brain functions and brain studies help us to better understand patients and develop useful tools that are already applied in clinical practice. Research in the lab also extends to other disciplines including computation, network research machine-learning and even philosophy, as expressed in a large range of publications.

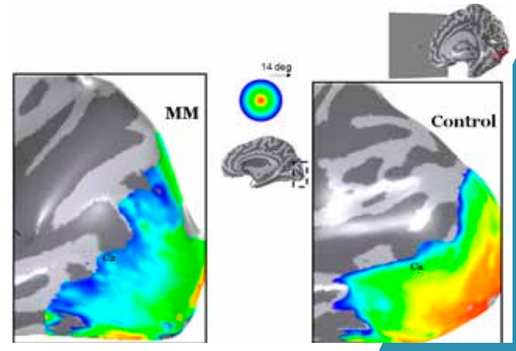
Dr. Netta Levin

Department of Neurology
Hebrew University-Hadassah Medical School

Dr. Levin is a senior physician in the Department of Neurology, heading the clinical service and the research lab of the fMRI Unit. Dr. Levin received her M.D. in 1996, and Ph.D. (in Neuroscience) in 2007, from the Hebrew University. Her doctorate dealt with brain reorganization following damage to the visual system. During her post-doctorate fellowship at Stanford University, she specialized in novel functional imaging methods. Dr. Levin is a member of numerous national and international medical associations, has published many articles, and won prestigious awards and research grants. She was recognized for excellence in research at Hadassah in 2012.

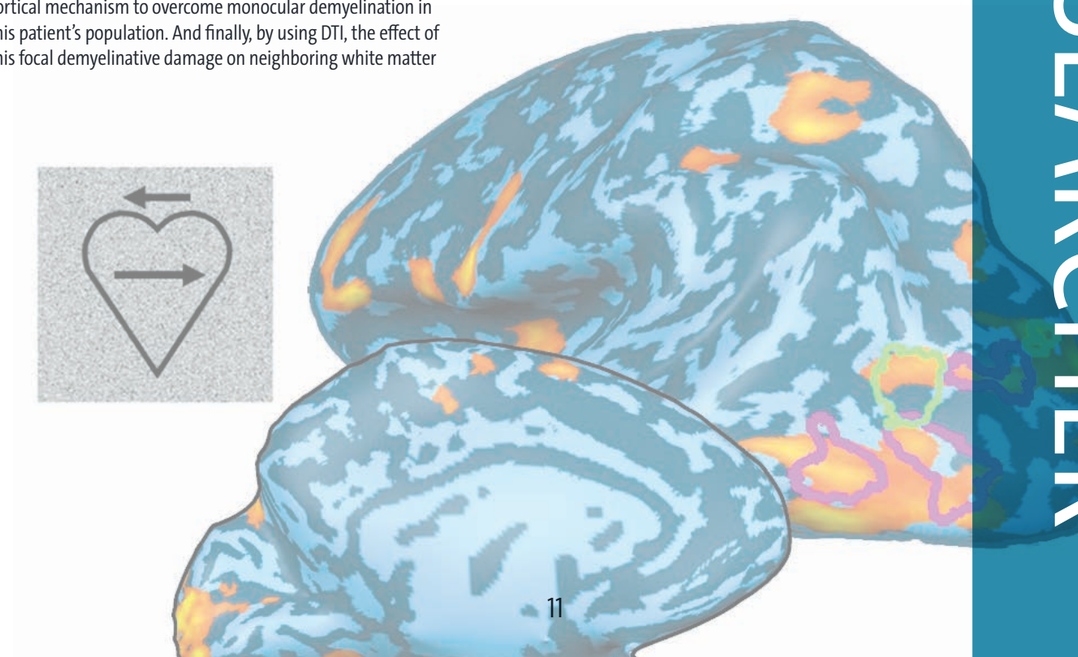


Cortical and White Matter Mapping in Understanding Visual System Pathologies



Dr. Levin studies changes in the functional organization of the human cortex following peripheral or central damage, especially to the visual system. This has been made possible with the maturation of noninvasive imaging techniques such as functional MRI and diffusion tensor imaging (DTI). A longitudinal study was conducted of patients following an optic neuritis attack. Dr. Levin demonstrated a persistent motion perception deficit in these patients. Electrophysiological results suggested that demyelination was probably the cause for these temporal deficits in perception. In addition, she and her group suggested a novel cortical mechanism to overcome monocular demyelination in this patient's population. And finally, by using DTI, the effect of this focal demyelinative damage on neighboring white matter integrity was assessed. We hope that these findings will help design rehabilitation strategies to aid the recovery of function following damage to the visual system.

Dr. Levin's research in the field resulted in a computer-based assessment for dynamic visual functions which was purchased by Biogen for their new therapeutic trial, and her winning the National MS Society Research Grant Award. She is honored to be part of the H2020 Consortium "Training the Next Generation of European Visual Neuroscientists ".



RESEARCHER