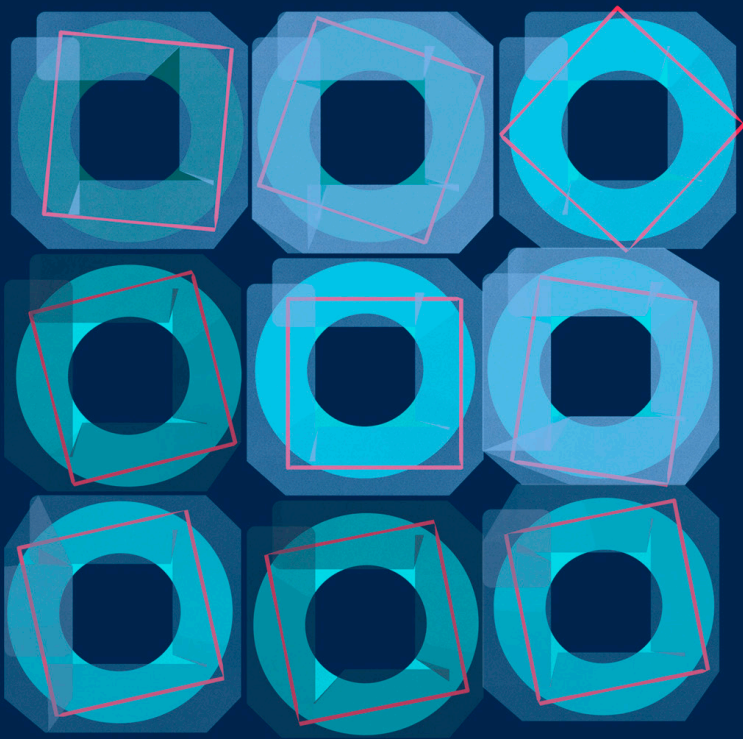




# 2ND CONFERENCE OF THE ASSOCIATION OF HUNGARIAN-AMERICAN ACADEMICIANS



Friday, April 7, 2017 1:00-8:00 PM  
Consulate General of Hungary (223 East 52nd Street, New York City)

# 2nd Conference of the Association of Hungarian-American Academicians

Friday, April 7, 2017 1:00-8:00 PM  
Consulate General of Hungary (223 East 52nd Street, New York City)



Ambassador **Ferenc Kumin**, Ph.D.

The Hungarian Consulate General in New York prides itself on being a vibrant center of the Hungary related scientific activities in the US. Our goal is to support and enable the Hungarian scientific diaspora in its cohesion creating efforts, and to foster its connections to the scientific community in Hungary for the betterment of Hungarian and global science. In cooperation with the New York Hungarian Scientific Society and with other academic communities our operation emerged from hosting regular lectures to fundraising for the one-of-a-kind Szent-Györgyi Young Investigator Award, and to come up with innovative new forms of networking opportunities for young and established scholars in the region. By co-organizing and hosting the 2nd Conference of the Association of Hungarian-American Academicians we have reached a new milestone in our journey. We would like to include this event into the series of our science related traditions along with the monthly lectures and the annual fundraisers. I wish good work for the participants of the conference with lots of new connections and friendship for the good of the American and the global Hungarian academic community.

*I suggest to dedicate this meeting to the Nobel Laureate*

**OLÁH GYÖRGY**

(1927-2017),

*who passed away a few weeks ago.*



*Association of Hungarian-  
American Academicians*

Amerikai Magyar Akadémikusok  
Társasága



## ECONOMICS

ACS ZOLTAN, George Mason University: *The Digital Entrepreneurial Ecosystem*

## MATHEMATICAL, PHYSICAL AND EARTH SCIENCES

TARDOS EVA, Cornell University: *Selfish Routing and the Price of Anarchy*

BARTOS IMRE, Columbia University\*: *Black Holes and Gravitational Waves*

MESZAROS PETER, Pennsylvania State University: *Black Holes, Cosmic Rays and Neutrinos: Messengers from the Deep Universe*

PORKOLAB MIKLÓS, MIT: *Demonstrating the Scientific Feasibility of Fusion Energy: a Grand Challenge in Science and Technology*

SZTIPANOVITS JANOS, Vanderbilt University: *Cyber-Physical Systems*

HUSZAR RUDOLF, Washington University: *Atmospheric Aerosols in the Earth System*

## MEDICAL SCIENCES

MEZEY EVA, NIH: *Therapeutic Use of Human Bone Marrow Cells to Modulate the Immune System*

SZABO SANDOR, UC Irvine: *New Molecular and Cellular Elements in Ulcer Pathogenesis and Healing*

TIGYI J. GABOR, University of Tennessee: *Prevention of Cancer Metastasis by Targeting the Stroma*

NAGY-SZAKAL DOROTTYA, Columbia University\*: *The Mind-Blowing Microbiome: the Role of Gut Microbes in Colonic Inflammation and Gut-Brain Axis*

## BIOLOGY, NEUROBIOLOGY AND NEUROLOGY

MALIGA PAL, Rutgers University\*: *The Promise of Synthetic Biology in Plants*

BODIS-WOLLNER IVAN, State University of NY\*: *Retinal Clues to the Pathophysiology of Parkinson's Disease*

MODY ISTVAN, UCLA: *The Other Side of Optogenetics: Fast and Reliable Detection of Neuronal Membrane Potential Changes with Light*

ZABORSZKY LASZLO, Rutgers University\*: *How and What Tells Anatomy about Brain Function?*

\*member, NYHSS (<http://nymtt.org>)

FREUND TAMAS, Vice President HAS: *Our inner world- enriched by arts-stimulates learning, memory, creativity*



**Zoltan J. Acs**

**Zoltan J. Acs, Ph.D.**  
University Professor, School of Policy,  
Government and International Relations,  
Director, Center for  
Entrepreneurship and Philanthropy,  
George Mason University, VA

The Godfather of Entrepreneurship—author, writer, scholar, teacher social entrepreneur—is the leading advocate for the importance of entrepreneurship and innovation in economic growth and social development. He is University Professor in the School of Policy, Government and International Relations (SPGIA) and Director of the Center for Entrepreneurship and Philanthropy (CEP) at George Mason University. He is also a visiting professor at Imperial College Business School in London, and affiliated with the College of Business and Economics at the University of Pecs in Hungary.

Previously he was Professor of Management at The London School of Economics and Political Science (LSE) and Research Scholar at the

‘Entrepreneurship Growth and Public Policy Group’ at the Max Planck Institute for Economics in Jena, Germany. He has served as, Chief Economist at the U.S. Small Business Administration (SBA) under two U.S. presidents, was a Research Fellow at the U. S. Bureau of the Census, Associate Director of the Center for International Business Education and Research (CIBER) at the University of Maryland, Professor at the University of Baltimore, Research Fellow at the Science Center Berlin, Research Associate at the Institute on Western Europe at Columbia University and Scholar-in-Residence at the Kauffman Foundation.

As a social entrepreneur he is the founder and President of The GED(I) nstitute, a global think tank, based in Washington D.C. and London, UK that creates both economic value and social value for corporations, banks and government organizations. With Dr. Laszlo Szerb he is the creator of the Global Entrepreneurship Index (GEI) that is a roadmap and compass to track the gearing up of the global entrepreneurial ecosystem. The GEI is jointly promoted with the Global Entrepreneurship Network (GEN) and the White House in 130 countries.



2017

Zoltán J. Ács László Szerb Erko Autio Ainsley Lloyd

Zoltan has published more than 200 articles, 45 books, scores of reports and raised over five million dollars in grants. He is coeditor and founder of *Small Business Economics* a leading academic journal. His most recent book *Why Philanthropy Matters: How the wealthy give, and what it means for our economic well-being* (2013) published by Princeton University Press was finalist for the Academy of Management George R. Baker Prize for the best book in management in 2014.

He was instrumental in the founding of the Oxford Centre for the Study of Philanthropy at Green Templeton College, Oxford and the Marshall In-

stitute for Philanthropy and Social Entrepreneurship at the LSE. He gave the inaugural lecture at the Oxford Centre for the Study of Philanthropy.

He received the 2001 International Award for Entrepreneurship and Small Business Research, on behalf of The Swedish National Board for Industrial and Technical Development, is a Wilfred White Fellow, holds an honorary doctorate from the University of Pecs and is a full member of the Hungarian Academy of Sciences.

His hobbies include cooking, skiing, collecting Contemporary Patrimonial Art, biking across America and driving fast cars.



Zoltan J. Acs

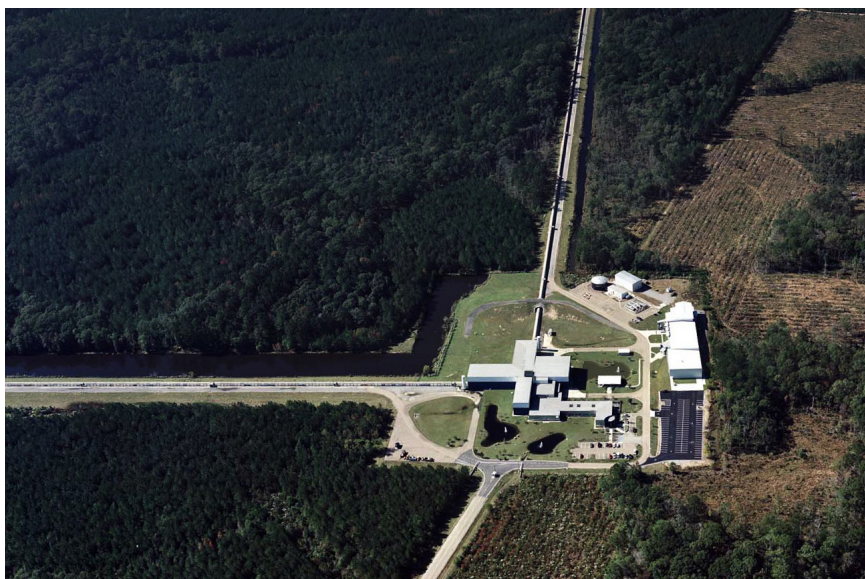


**Imre Bartos**

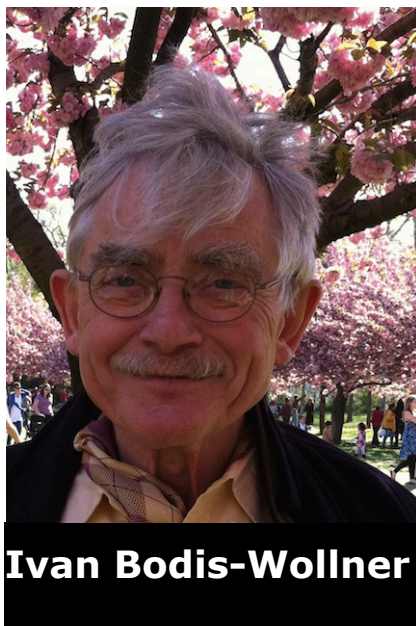
**Imre Bartos, Ph.D.**  
Associate Research Scientist,  
Department of Physics,  
Columbia University, New York, NY

Imre Bartos received his Ph.D. from Columbia University, where he is currently a Research Scientist. He studies extreme cosmic processes related to the formation and evolution of black holes. Dr. Bartos is a member of the LIGO Scientific Collaboration since 2008, and an associate member of the IceCube Collaboration since 2014, when he founded the Columbia IceCube Astrophysics group. He also works on the biological applications of optics to fight malaria in sub-Saharan Africa and to better understand neurological diseases.

Dr. Bartos was the recipient of the Allan M. Sachs Teaching Award, and was a finalist for Columbia's Presidential Teaching Award. He was part of a Grand Challenges Explorations Team supported by the Bill & Melinda Gates Foundation. He is currently serving as the President of the New York Hungarian Scientific Society, and is a member of the Board of Trustees for the Hope Funds for Cancer Research.





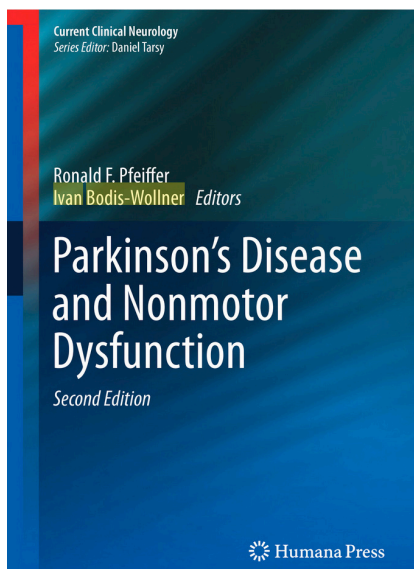


**Ivan Bodis-Wollner**

**Ivan Bodis-Wollner**, M.D., Ph.D, D.Sc. Professor, Departments of Neurology and Ophthalmology  
Director, Parkinson's Disease and Related Disorders Clinic, Center of Excellence  
State University of New York, Downstate Medical Center, New York, NY

My first academic research was in immunology (Wiener Med Wschrft). However, I had an interest in vision and neurology. My supervisor at the Physiological Laboratory of Cambridge in 1968 was John Robson and I learned about vision and contrast sensitivity. Later, in 1971 when I was a neurology resident at Mt. Sinai Hospital NY, I established that contrast sensitivity is a measure apart from visual acuity, which reflects neuronal damage (Science 1972, Nature 1976). Then I noticed in the Clinical Research Unit of Mt Sinai Hospital that some PD patients were affected in their vision as were those who received reserpine. This effect was not

due to pupillary changes. From then on I explored the vision in PD using psychophysical and electrophysiological techniques. I published the results in several articles in *Brain*, *Annals of Neurology* and the *EEG Journal*. I received a Fulbright Scholarship and spent two half periods in the Laboratory (CNR) of Lamberto Maffei in Pisa and worked on the dopaminergic retina of the turtle with Marco Piccolino. Those studies gave me the insight into the retinal circuitry with opposing D1 and D2 receptor actions to shape the receptive field of central ganglion cells in the parkinsonian and Parkinson model retina. Studying the pattern ERG established by Lamberto Maffei in Pisa gave me the opportunity to pin down, in my laboratory in the Mt. Sinai Hospital in New York with my postdocs MF Ghilardi, M. Marx, A. Glover and M. Onofrj, the visual spatial contrast deficits in the parkinsonian retina and in the parkinsonian monkey model. It was my former postdoc, Carmen Harnois, who did the seminal work, by then at Laval University, in the postmortem human







PD retina which showed dopamine deficiency.

By the mid nineties we studied in vitro the human retina with an imaging technique, known as GDX, developed for quantifying nerve fiber layer losses in glaucoma eyes. Some nine years ago the new imaging technique, Optical Coherence Tomography was just beginning to be applied in various ocular disorders. R. Inzelberg from Israel described nerve fiber layer losses in PD. Our OCT studies were the first one, which showed that the central macular area, the fovea is affected in PD and that in particular the inner layers of the retina.

#### B. Positions and Honors.

1995-present Director, Parkinson Disease Clinic, Kings County Hospital Center

1993-present Attending Neurologist, State University of New York - Health Science Center at Brooklyn, Professor of Neurology, Professor of Ophthalmology, SUNY, Brooklyn, 1993 - current. Member, Graduate Faculty School of Graduate Studies, SUNY, Brooklyn 1998 -

Offices held:

Delegate Member, International Association PD and Related Disorders (IAPDRD) 2005-

Chairman of the Board, International Foundation for Optic Nerve Disease (IFOND) 1993-

#### Major Honors:

- Fellow, Hanse Institute for Advanced Studies, (HWK) Delmenhorst, Germany 2002-

- Member, the Hungarian Academy of Sciences, May 2002-

- Szent-Györgyi Albert Medical University, Szeged, Hungary, 1998 Doctor Honoris Causa

- Alexander v. Humboldt Science Prize, Bonn, Germany, 1993.

- Chairman of the Scientific Board International Foundation of Optic Nerve Disease (IFOND)

- Chairman of the Scientific Advisory Board , Dance for Parkinson Disease

Major Visiting Professorships  
University of Rome , Sherbrook, MRC Canada, Pfizer Professor of Neurology, University of Shanghai, Peking Union Medical College

Recent Editorships:

Editorial Board, Parkinsonism and Related Disorders 2007- , Neuro-Ophthalmology 2004-

Clinical Neuroscience and EEG

1999- , Journal of Parkinsons Disease 2012-

Recent relevant Publications (International patent application published under the patient cooperation treaty (PCT) (PCT US 2012 025229).

Title: Layer-By-Layer Quantification of the Remodeling of the Human Fovea in Neurodegenerative Disease.

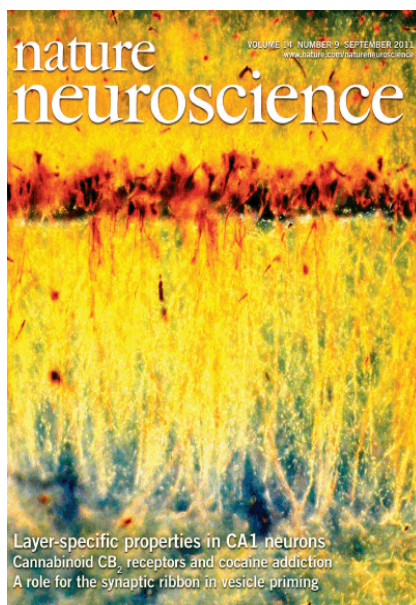


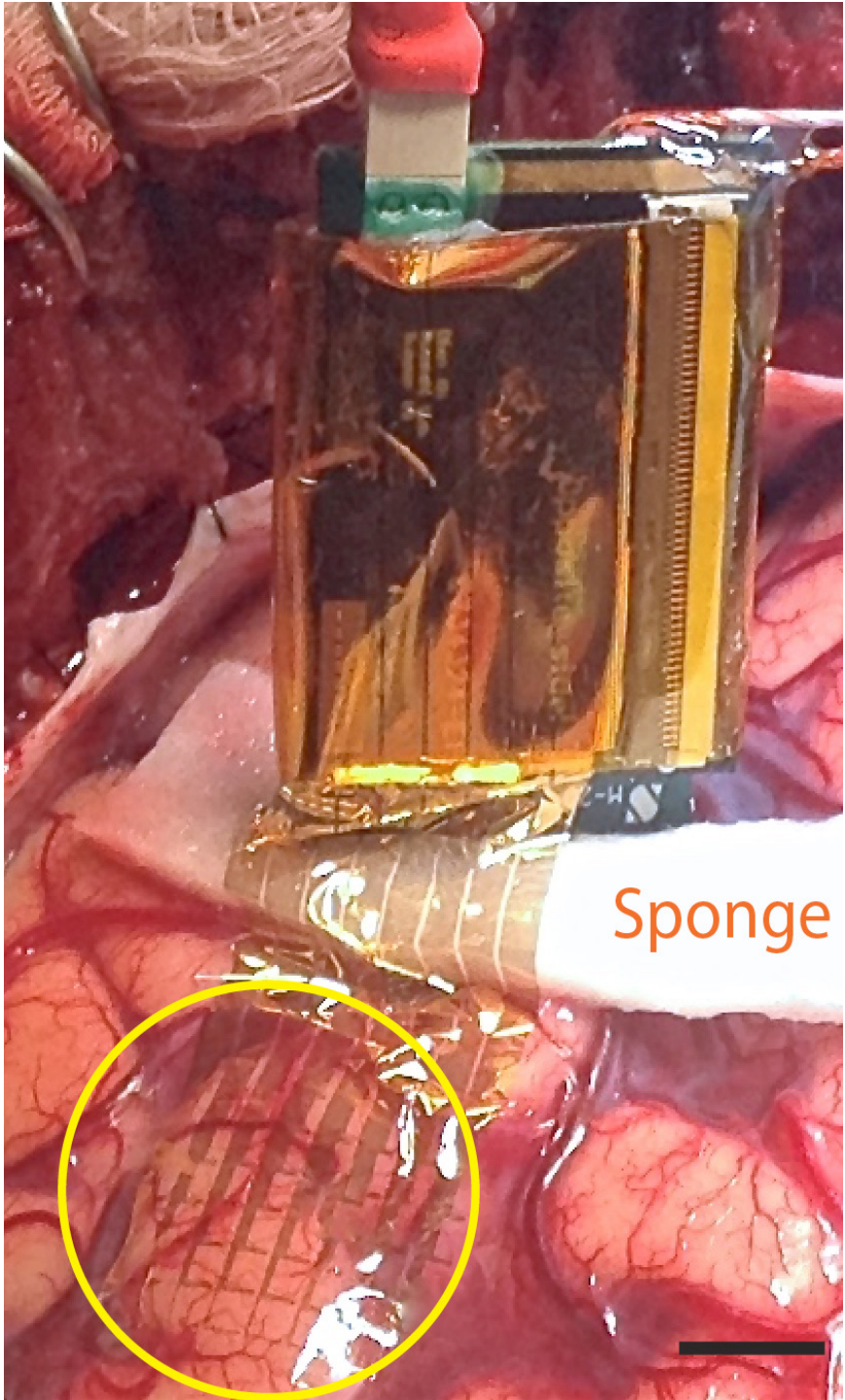
## György Buzsáki

**György Buzsáki, M.D., Ph.D.**  
Biggs Professor of Neuroscience  
New York University, New York, NY

He received his M.D. in 1974 from the University of Pécs in Hungary, then earned his Ph.D. in Neuroscience in 1984 from the Academy of Sciences in Budapest. Buzsáki's primary interests are mechanisms of memory, sleep and associated diseases. His main focus is "neural syntax", i.e., how segmentation of neural information is organized by the numerous brain rhythms to support cognitive functions. He pioneered the experimental exploration of how coordinated, rhythmic neuronal activity serves physiological functions in the cerebral cortex. His most influential work, the two-stage model of memory trace consolidation, demon-

strates how the neocortex-mediated information during learning transiently modifies hippocampal networks, followed by reactivation and consolidation of these memory traces during sharp wave-ripple patterns of sleep. To achieve these goals he has introduced numerous technical innovations from using silicon chips to record brain activity to NeuroGrid, an organic, conformable electrode system used in both animal and patients. Buzsáki is among the top 1% most-cited neuroscientists, a Fellow of the American Association for the Advancement of Science and the Academiae Europaeae and an external member of the Hungarian Academy of Sciences, and he sits on the editorial boards of several leading neuroscience journals, including *Science* and *Neuron*, honoris causa at Université Aix-Marseille, France and University of Kaposvar, Hungary. He is a co-recipient of the 2011 Brain Prize (with Peter Somogyi and Tamas Freund). (Book: G. Buzsáki, *Rhythms of the Brain*, Oxford University Press, 2006)





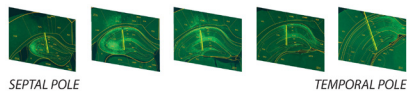


## Tamas F. Freund

**Tamas F. Freund, Ph.D.**  
Director, Institute for Experimental  
Medicine  
Hungarian Academy of Sciences,  
Budapest, Hungary

Freund's mentors in the early eighties were the eminent neuroanatomists, Peter Somogyi and János Szentágothai. With such mentors it is not surprising that he devoted his attention to the study of cortical and hippocampal interneurons, and started a series of studies on the qualitative and quantitative characterization of these cells. He made a significant discovery regarding the mechanism how pacemaker neurons in the septal region induce hippocampal theta oscillation (Freund and Antal, *Nature*, 1988), he demonstrated that these pacemaker cells are GABAergic, inhibitory, and selectively innervate GABAergic interneurons in the hippocampus, thereby synchronizing principal cell activity rhythmically at theta frequency. He developed a combined septal-hippocampal slice preparation in which they provided direct

electrophysiological evidence – in collaboration with Katalin Tóth and Richard Miles – that indeed, the mechanism of septal control of hippocampal theta oscillation is disinhibition. They went on to investigate the interplay between identified septal pacemaker units and hippocampal activity patterns under various levels of sleep and anaesthesia. Their data explained why and how the firing of different interneuron types are coupled to different phases of hippocampal theta oscillations. They also revealed how serotonergic neurons in the raphe nuclei influence hippocampal populations discharge patterns via the innervation of local GABAergic interneurons. These experiments resulted in a fundamental discovery published in *Science*. More recently, Dr. Freund set out to analyse the structure and function of novel synaptic and extrasynaptic communication channels between neurons at the molecular level, with particular attention to endocan-

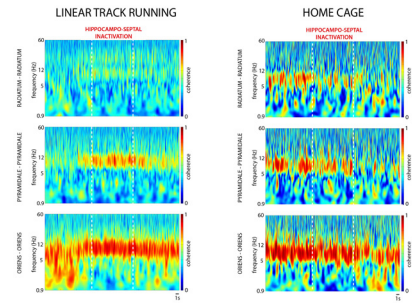


nabinoid signaling, which led to several seminal papers in the field. Together with Dr. Buzsáki, they published a review about interneurons (Freund and Buzsáki, *Hippocampus*, 1996), which has been considered the most influential monograph in the field, providing a comprehensive description and classification of inhibitory neurons by synthesizing knowledge from physiological, anatomical, pharmacological and neurochemical studies. This review received more than 2000 citations in the literature, and although 21 years old, it is still quoted over 100 times per year. Both his past achievements and his ongoing studies represent conceptually novel steps towards uncovering: i) new molecular pathways in the communi-

cation of nerve cells, ii) the identity and principles of connectivity of the nerve cells that build up the circuitry, and iii) the generation of network activity patterns by these circuitries that underlie various stages of information processing and storage in the brain. These findings shed new light not only on the normal operations of brain areas, namely the hippocampus, but also on several of its disorders at the molecular, or cellular or network levels, including epilepsy, anxiety, Parkinsons disease and ischemic cell death.

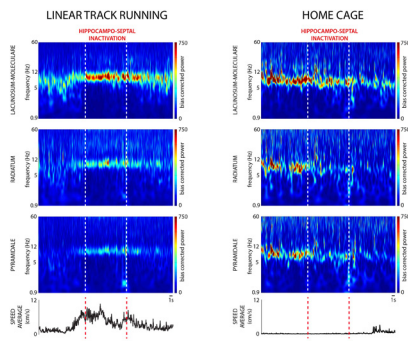
He invested considerable time and efforts to work for the entire neuroscience community in Europe and worldwide, first as a member of the Executive Committee of IBRO (International Brain Research Organization: the world federation of neuroscientists) from 1998, as well as the founding chairman of its Central and Eastern European Regional Committee, then from 2002 as member of the Executive Committee, and from 2004-2006 as President of FENS, the Federation of European Neuroscience Societies. He serves as member of President Barroso's Science and Technology Advisory Council in the EU (2013-2014). He is section editor of two major international journals (Science Advances and Hippocampus), as well as Editorial Board member of seven others.

The major prizes and awards he received include: the Demuth Award



(Switzerland, 1991), the KRIEG Cortical Discoverer Award and the Cajal Medal of the Cajal Club (1998, U.S.A.), the Kemali Foundation Award (1998, FENS Forum, Berlin), the Bolyai Prize (2000, Hungary), the Honoris Causa Pro Scientia Gold Medal (2003), the Széchenyi Prize, (2005, Hungarian Republic), the Semmelweis Award (2007), the Scientist of the Year Award of the Science Writers Club of Hungary (2007), the Kavli Distinguished International Scientist Lecture, (2007, Soc. for Neurosci. USA), Pro Doctorandis Award (2009, Federation of Doctoral Students of Hungary). Prima Primissima Award (2013). Most recently, together with Professors Buzsaki and Somogyi, he received the Brain-Prize 2011, established by the Grete Lundbeck Foundation in Denmark, which is a 1 million Euro personal prize, considered by some as the Nobel Prize in the neurosciences.

Currently, Tamás Freund is the director of the Institute of Experimental Medicine, Hungarian Academy of Sciences, and Chairman of the Neurobiology Department of the Peter Pazmany Catholic University. He has been elected Member of the American Academy of Arts and Sciences, the Academia Europaea (London), the German Academy of Sciences Leopoldina, the Academia Scientiarum et Artium Europaea, and the Hungarian Academy of Sciences. In 2014 he has been elected vice-president of the Hungarian Academy of Sciences.



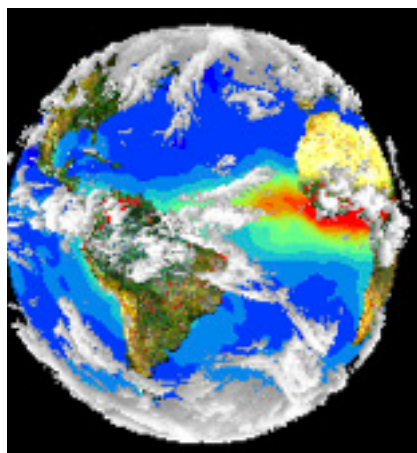


**Rudolf Huszár**

**Rudolf Huszár, Ph.D.**  
Emeritus Professor of Energy, Environment and Chemical Engineering  
Washington University, St. Louis, MO

Huszár is a native of Szabadka (Subotica) in Vajdaság (Vojvodina), in former Yugoslavia. College educated in Zagreb, Croatia, Technical University of Berlin West (Dipl. Ing.), U. Minnesota (PhD, 1971), and post-doctoral research and teaching fellow at Caltech in Pasadena (1971-3). Since 1976 he has been a full Professor of Engineering (now Emeritus) at Washington University in St. Louis, MO and the director of the Center for Air Pollution Impact and Trend Analysis (CAPITA). His research areas include atmospheric science, air pollution, atmospheric aerosols and environmental informatics. Since the 1970s he contributed to the understanding of the size distribution, regional and global distribution, temporal trends, transport and chemical transformations of atmospheric aerosols. In the 1980s he was executive editor of the international journal *Atmospheric Environment*, and on the editorial board of other journals. His

collaborative research with national and international colleagues helped the US Environmental Protection Agency to develop ambient air quality standards and control strategies for particulate matter (PM<sub>2.5</sub>). Since the 1970's he integrated and analyzed data from Earth observing satellites to advance atmospheric aerosol science. Key scientific results of multi-sensory data integration and analysis include the first global seasonal map of atmospheric aerosols (1997) and the quantification of intercontinental aerosol transport of windblown dust and biomass smoke (2001). Global maps of aerosols developed by his group vividly illustrate the Earth as an interactive system of air, land and water and appeared in *National Geographic*, *Scientific American* as well as numerous book and journal covers.

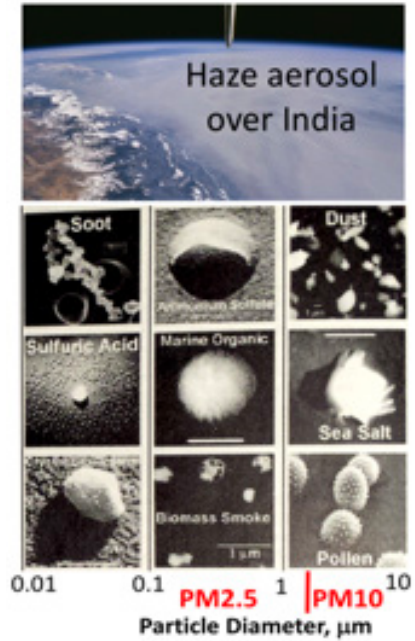


Earth image is synthesized from five satellite data layers. The red aerosol plume shows the smoke transport from biomass burning over Africa. Such data address the scientific challenge: how do the land, water, air, and life systems interact to produce the environment we live in?

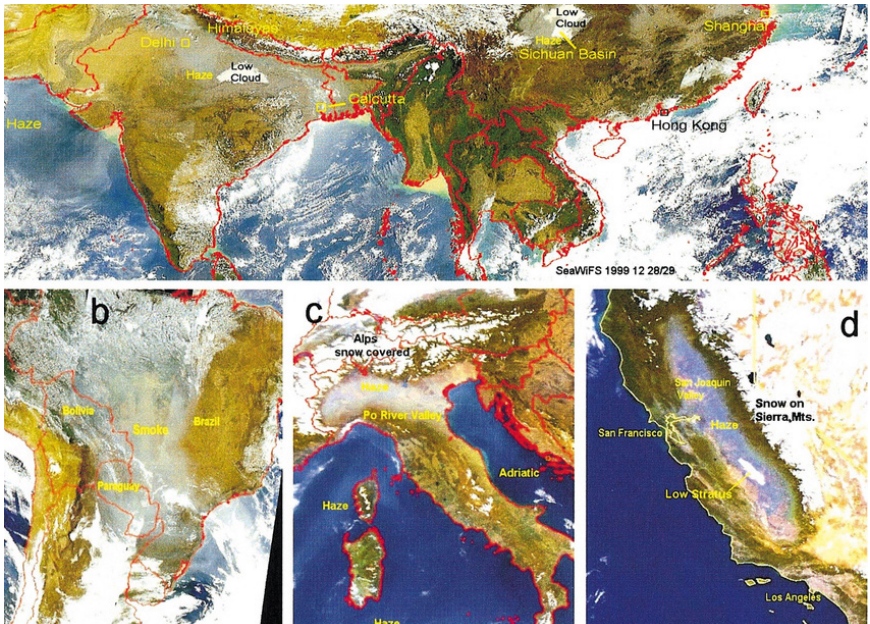
The CAPITA group also developed the federated data system, DataFed, at Washington University, which facilitates

easy, open access and distribution of regional and global scale air quality monitoring datasets to analysts worldwide. As a web-based data sharing infrastructure, DataFed has been a functioning demonstration of the Global Earth Observing System of Systems concept for over a decade. As adviser, he served on US EPA's Clean Air Scientific Advisory Committee (CASAC); and as member of UN Task Force on Hemispheric Transport of Air Pollution and the International Global Atmospheric Chemistry and other programs. He was the co-leader of the Earth Science Information Partners Air Quality Workgroup; and the lead air quality analyst for the Group on Earth Observations. He served on four committees of the US National Academy of Sciences. In 1998, Huszár was elected as an external member of the Earth Sciences Section Hungarian Academy of Sciences.

Atmospheric haze aerosols influence the climate by scattering and absorbing sunlight (top image), reduce visibility at ground level and



cause human health effect. Aerosols are mixture of liquid or solid particles of different size, shape and chemical composition (bottom).



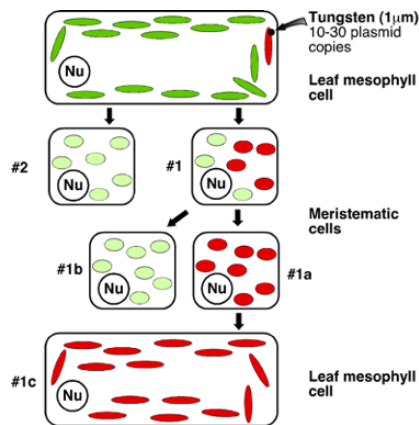


**Pal Maliga**

**Pal Maliga, Ph.D.**  
Distinguished Professor,  
Waksman Institute of Microbiology  
Rutgers University, New Brunswick, NJ

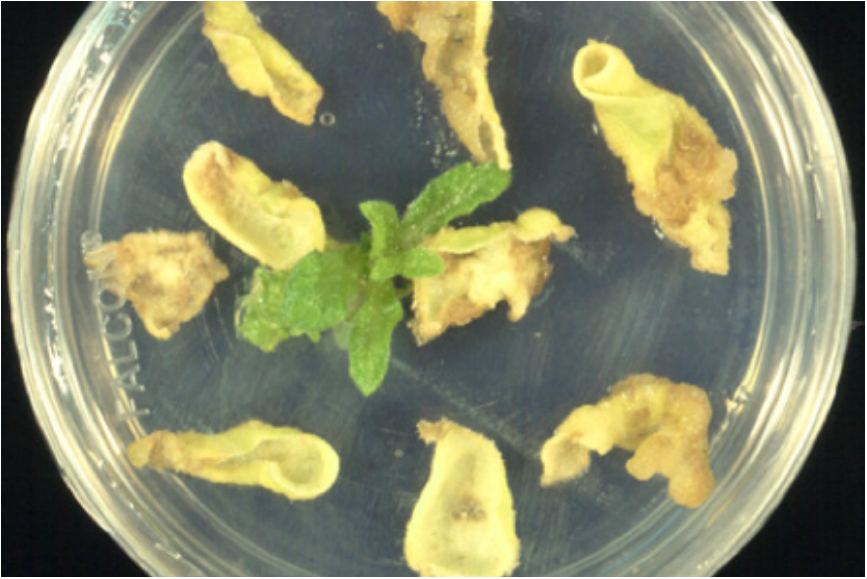
He received an M.S. degree in Genetics and Microbiology from Eotvos Lorand University, Budapest, in 1969 and a Ph.D. degree from Jozsef Attila University, Szeged, in 1972. From 1971 through 1982 Dr. Maliga held appointments at the Biological Research Center, Szeged, Hungary, where his research group pioneered mutant isolation, organelle transfer and genetic recombination of organellar genomes in cultured tobacco cells. Before joining Rutgers in 1989 Dr. Maliga spent the year of 1982 at Washington University, St Louis, MO, and served as Research Director for Advanced Genetics Sciences, a biotech start-up. Since joining Rutgers, Professor Maliga and his research group developed the technology of chloroplast transformation in the tobacco model system. Chloroplasts are

the power plants of the plant cell, converting sunlight into sugars (chemical energy). Chloroplasts have their own highly polyploid genome and prokaryotic type transcription and translation machinery. Chloroplast transformation uniformly alters thousands of plastid genome copies in a cell. The development of a method for stable transformation of land plant chloroplast genomes established the field of chloroplast genome engineering in higher plants and has led to an explosion of research concerning the chloroplast genome's role in photosynthesis, functional analysis of plastid genes by reverse genetics, and mechanisms of plastid gene regulation. Using the technology the Maliga laboratory has made many seminal contributions, including evidence for the existence of the nuclear-encoded plastid transcription system and identification of key elements involved in promoter recognition, translational



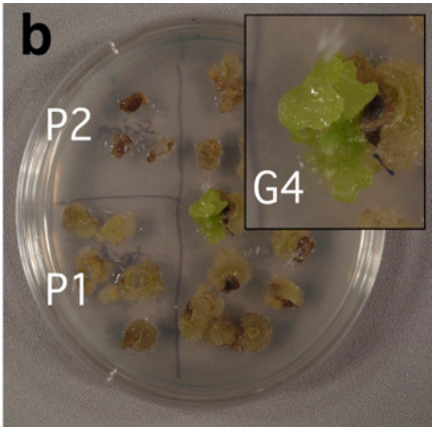
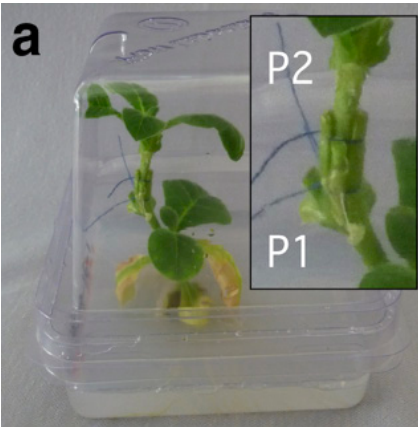
initiation, and RNA editing site specificity. Chloroplast biotechnology is making its impact through engineering the photosynthetic machinery, engineering novel metabolic pathways into chloroplasts, and expression of recombinant proteins for pharmaceu-

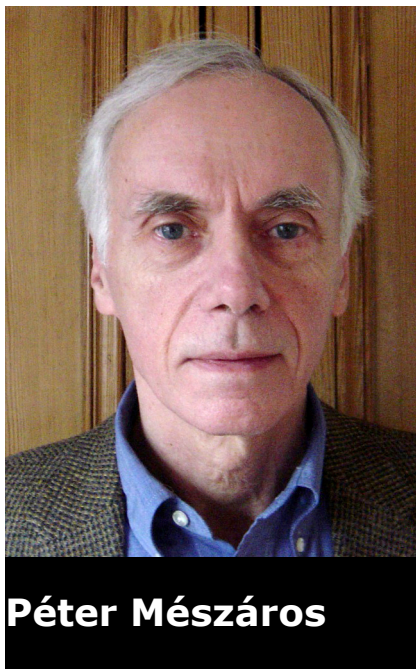




tical and industrial applications. The ultimate goal is replacement of native chloroplast DNA with engineered forms and the addition of new functions to enhance crop productivity. The applied significance of Dr. Maliga's work is evidenced by the Thomas Alva Edison Patent Award (1999) and induction in the New Jersey Inventors Hall of Fame (2011). He is External Member of the Hungarian Academy of Sciences (2001) and Member of the European Academy of Sciences

(2002). He won the Lawrence Bogorad Award of the American Society of Plant Biologists for making multiple groundbreaking discoveries in chloroplast biology (2016). He was elected Fellow of the American Association for the Advancement of Science (AAAS; 2017) for developing the technology of plastid genome engineering in flowering plants, and for pioneering applications to basic research on plastid function and to chloroplast biotechnology.





**Péter Mészáros, Ph.D.**

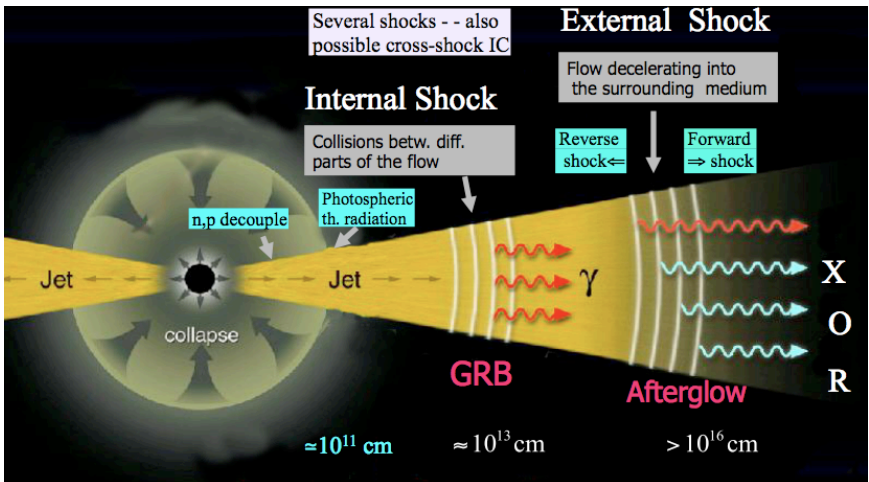
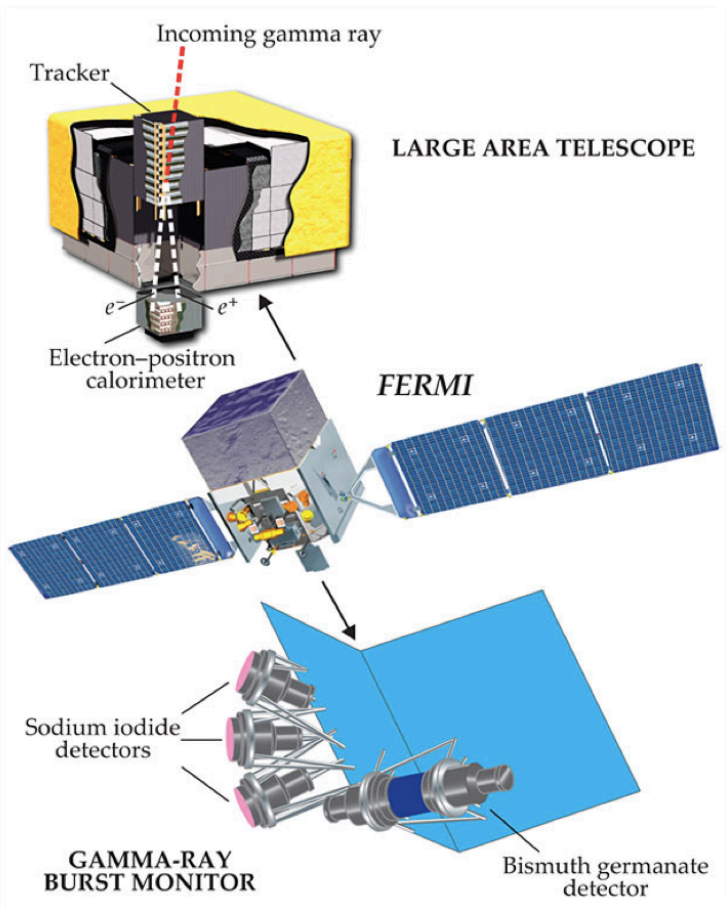
Eberly Chair of Astronomy & Astrophysics, Professor of Physics, Director, Center for Particle & Gravitational Astrophysics  
Penn State University,  
University Park, PA

He served as head of the Department of Astronomy and Astrophysics in 1993-2003, as the theory lead of the Swift satellite consortium and as member of the IceCube experiment team, and is an affiliated member of the Fermi satellite consortium and the AMON Astrophysical Multimessenger Observatory Network consortium.

Born in Hungary and raised in Belgium and Argentina, he received his M.S. in Physics from the National University of Buenos Aires, followed by a Ph.D. at the University of California, Berkeley, in 1972. He was a postdoctoral fellow at Princeton and

Cambridge Universities before joining the permanent staff of the Max Planck Institute for Astrophysics in Garching, Germany. He has held long term visiting appointments at the NASA Goddard Space Flight Center; the Harvard-Smithsonian Center for Astrophysics; Cambridge University; the Institute for Advanced Study, Princeton; CalTech; and the Kavli Institute of Theoretical Physics, UCSB. He is a Fellow of the American Academy of Arts and Sciences, External Member of the Hungarian Academy of Sciences, and Fellow of the American Physical Society; he has been a co-recipient of the Rossi Prize of the High Energy Astrophysics Division of the American Astronomical Society, and the First Prize of the Gravity Research Foundation, as well as a recipient of Guggenheim, Royal Society, Smithsonian and NAS/NRC fellowships. He was awarded an Einstein Professorship of the Chinese Academy of Science in 2013.

His main research interests are high energy astrophysics, cosmology and particle astrophysics. He has made significant contributions in the theory of structure formation in the early Universe; the high energy properties of magnetized neutron stars; the physics of gamma-ray bursts; ultra-high energy neutrinos and cosmic rays, and gravitational astrophysics. He is known for the “Mészáros effect” in cosmology, and for his role in the development of the fireball shock model of gamma-ray bursts and the theory of afterglows. Thomson- Reuters ranks his work on gamma-ray bursts as number one by citations and number of papers over the 1999-2009 period. He has written 375+ refereed research articles, three books, 160+ invited review or conference papers, with 31,000+ citations and an H-index of 94.





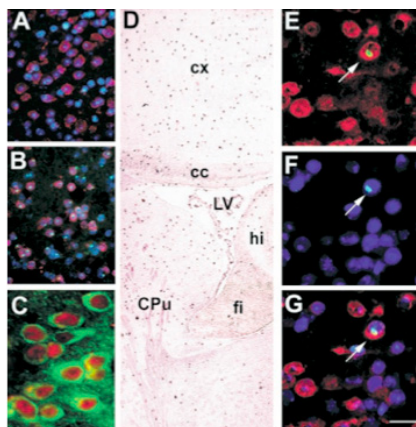
**Eva Mezey**

**Eva Mezey, M.D., Ph.D., D.Sc.**  
 Head, Adult Stem Cell Section,  
 NIH, NIDCR, CSDB  
 Bethesda, MD

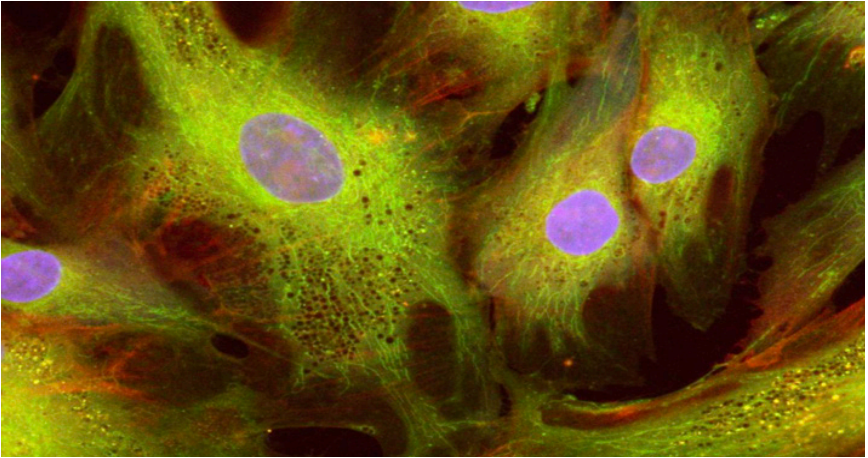
Dr. Mezey earned her M.D. from the Semmelweis University Medical School in Budapest, Hungary. She taught neuroanatomy and began doing research under the guidance of Drs. Janos Szentagothai and Miklos Palkovits. She then worked with Dr. David DeWied at the Rudolph Magnus Institute of Pharmacology in Utrecht. Based on her work there, she received her Ph.D. in neuroendocrinology from the Hungarian Academy of Sciences in Budapest. Dr. Mezey subsequently came to the NIH as a postdoctoral fellow in the Laboratory of Cell Biology, NIMH. She later returned to the NIH as a visiting scientist and then became head of the In Situ Hybridization Facility, NINDS. In 2004 she transferred to the NIDCR and later established the Adult Stem

Cell Section to study the biology of bone marrow derived stem cells.

**Research Interests/Scientific Focus:** In the first half of her scientific career, Dr. Mezey was interested in the hypothalamic regulation of the pituitary and endocrine organs. Later she turned her focus to neuronal regeneration, and examined the ability of circulating blood cells to enter the brain and participate in its regeneration in health and disease. She demonstrated the presence of bone marrow derived neural cells in the CNS of mice as well as in humans. To do the latter, she used postmortem brain samples of female patients who previously received bone marrow transplants from male donors, and used

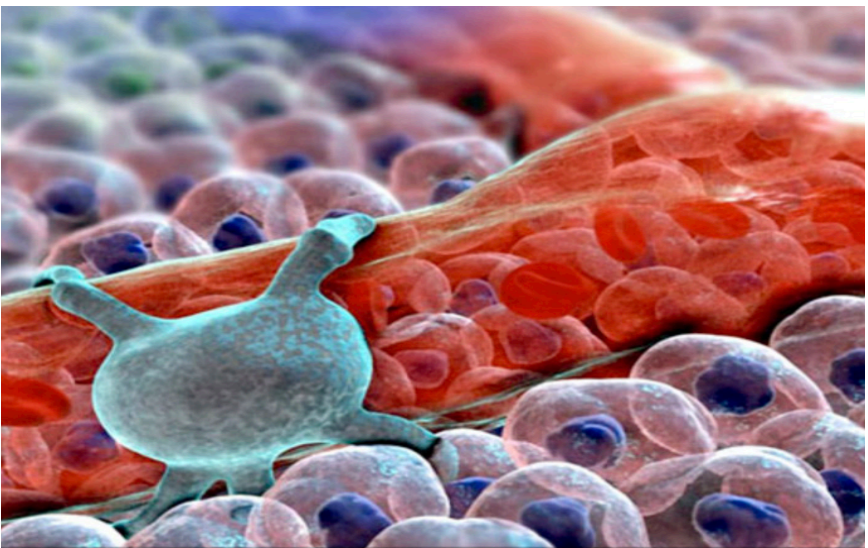


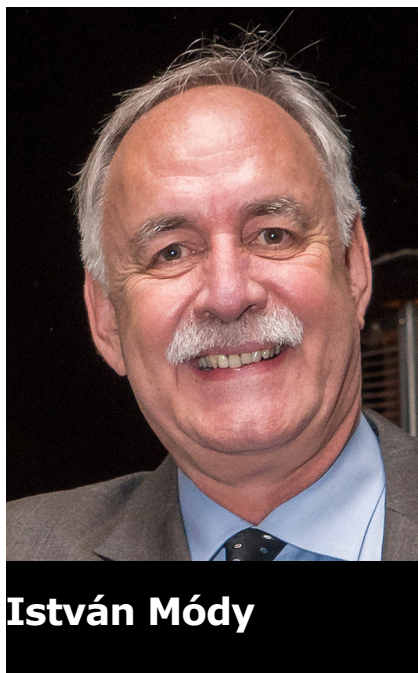
the Y chromosome as donor-specific marker. She also studied cells in the oral mucosa (a tissue with an extremely high turnover rate) of female patients who had gotten male bone marrow cells, in collaboration with Dr. Simon Tran. She found that a surprisingly high percentage of oral epithelial cells seem to be derived from circulating cells in such patients. In this study she used microsatellite markers to show that the Y chromosome positive cells had to have come from the bone marrow donors.



After the discovery of immunomodulatory properties of bone marrow derived stromal cells (BMSCs) were reported, Dr. Mezey grew interested in learning how BMSCs might affect the host immune system. She and her coworkers were among the first to suggest that the beneficial effect of intravenously injected BMSCs in infectious/inflammatory environment might be due to a reprogramming of pro-inflammatory macrophages. Following exposure to

BMSCs, the macrophages adopt an anti-inflammatory phenotype and this is why when these cells are given intravenously there is a significant improvement in the survival of septic mice. Presently three clinical trials are ongoing to test this effect in patients. Her group is engaged in trying to find ways to prime human bone marrow stromal cells to make them more efficient in clinical use in a variety of diseases, including autoimmune diseases, and inflammatory processes.





**István Módy**

**István Módy, Ph.D.**  
Tony Coelho Professor of Neurology and  
Professor of Physiology  
Department of Neurology,  
David Geffen School of Medicine,  
UCLA, Los Angeles, CA

He is a foreign member of the Hungarian Academy of Sciences and the recipient of numerous international awards, including the Michael Prize for Epilepsy, the American Epilepsy Society's Basic Scientist Award, the Hauptmann Prize, among others. As a graduate student at the University of British Columbia, Vancouver, Canada, he developed the kinetic measurement of  $^{45}\text{Ca}$  uptake in brain slices when there were no other means of measuring the compartmentalization of intracellular  $\text{Ca}^{2+}$ . While a postdoctoral fellow with the late Uwe Heinemann, at the Max Planck Institute, in Munich, Germany, he devised digital subtraction methods to measure the NMDA com-

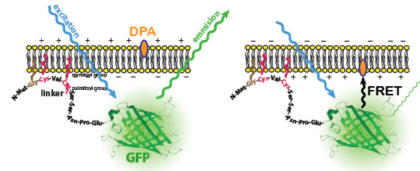
ponent of synaptic transmission when no specific AMPA receptor antagonists were available. During a second postdoctoral tenure with the late John F. Macdonald in Toronto, Canada, he pioneered an ingenious method of double filling patch pipettes to demonstrate the reversibility of intracellular phosphorylation of NMDA receptors. His first faculty appointment was in the Department of Neurology at Stanford University, where in spite of the pressures of securing research funding as a starting assistant professor, he took several risks and persisted in the face of many months of failure until successfully adapting the blind patch-clamping method to adult brain slices, at a time when others were unable to record from mature brain tissue. In the first publication showing this method was possible, he also demonstrated the presence of a continually active conductance mediated by GABAA receptors, which he later showed to be mediated exclusively by extrasynaptically located receptors of a certain subunit composition. This conductance, now universally recognized as "tonic inhibition", and its various roles in health and disease constituted the topics of several of his high-impact publications. Prof. Módy's laboratory was also the first to record from live human neurons acutely dissociated from surgical specimens removed from temporal lobe epilepsy patients and uncovered the role of the  $\text{Ca}^{2+}$ -binding protein calbindin in these neurons. Recognizing the important roles of various cellular  $\text{Ca}^{2+}$ -binding proteins has led the Módy group to develop a method for the measurement of the  $\text{Ca}^{2+}$  binding kinetics to these proteins with an unprecedented temporal resolution. For the first time since the pioneering work of Monod and Changeux on cooperativity in systems at equilibrium published over 40 years

ago, Prof. Mody and his collaborators introduced cooperativity into a kinetic model to provide novel insights into intracellular  $\text{Ca}^{2+}$  handling.

Over the years, GABAergic inhibition in the brain has become the principal research focus of the Mody lab. They covered all aspects of GABAergic function through single channels, synapses, interneurons, circuits, and behavior. He made some seminal discoveries in the field of epilepsy research including the demonstration that, quite counter intuitively, there are more synaptic GABA receptors on epileptic neurons, but that the molecular composition of these receptors is different from those found in the non-epileptic brain. The receptors with the new molecular composition become sensitive to  $\text{Zn}^{2+}$  that can be effectively delivered by the sprouted mossy fiber system, thus at a critical time facilitating the collapse of GABAergic inhibition in temporal lobe epilepsy. More than 10 years after the discovery of the first epileptic channelopathy (a point mutation in the  $\alpha 4$  nACh receptor subunit), and after the proposal of several incorrect mechanisms for the disease solely based on studies in expression systems, Prof. Mody's lab has conclusively shown how seizures are generated in a mouse knock-in model of the disease. Again, counter to common wisdom, seizures arose from the mutant nACh receptors facilitating a massive release of GABA to inhibit the pyramidal cells. Following this massive inhibition, cells emerge through a synchronous discharge that provokes seizures. More recently, in a landmark publication about the role tonic inhibition following stroke, he demonstrated that an elevated level of this type of GABAergic tone hinders functional recovery after stroke in a mouse model of the disease. For the first time,

this research identified a class of compounds that can be given even as late as three days after stroke to facilitate functional recovery.

During the past few years, Prof. Mody's lab has ventured into uncharted fields of research by addressing the hormonal control of neuronal excitability in females, an area of research very few investigators dealt with, precisely for its proneness to hormonal changes. With innovation, perseverance, and a great deal of energy, he broke the barriers of dogma and years of inactivity in this field of research. He has shown cyclical alterations in receptors and neuronal excitability during the ovarian cycle and developed a novel mouse model of postpartum depression. His lab presently is working on alterations of GABAergic inhibition in mouse models of Alzheimer Disease, and reproductive depression models, hoping to uncover novel insights critical for the translation into the mechanisms of human neurological and psychiatric disorders.



In 2014 Prof. Mody obtained the prestigious Advanced Grant from the European Research Council. His laboratory in Bonn started work on optical methods for the measurement of fast changes in membrane potential. They developed a novel hybrid genetically encodable fluorescent voltage indicator with very high temporal resolution that is capable of detecting fast action potentials and slow subthreshold voltage changes alike. His lecture today will cover the exciting developments in this field.



**Dorottya Nagy-Szakal**

**Dorottya Nagy-Szakal, M.D.**  
Center for Infection and Immunity,  
Mailman School of Public Health  
Columbia University Medical Center,  
New York, NY

Dorottya Nagy-Szakal earned her medical degree in 2009 at Semmelweis University (Budapest, Hungary). She immediately involved herself in student research focusing on pediatric gastroenterological disorders, which she continued throughout her medical school training. After graduation, Dorottya had the opportunity to move forward in her career and work in one of the best research centers in the world. She joined the research program of Baylor College of Medicine, Texas Children's Hospital and Children Nutrition Research Center (Houston, TX, USA). Her study is engaged in the early developmental period when dietary factors, epigenetic and microbial changes may affect the pathogenesis of different gastrointestinal disorders. She was fortunate to lead a clinical study, which developed from a bench-side research to a bed-side clinical trial;

providing fecal bacterial transplantation for pediatric patients with recurrent *Clostridium difficile* infection and ulcerative colitis. Her work was awarded with Distinction and First Place Award on annual scientific conferences.

Currently, she is holding a research scientific position at Columbia University (NY, USA), working at the Center for Infection and Immunity since 2015. Her major role at the center is microbial and viral pathogen discovery and identification, bioinformatics and phylogenetic analysis, and to understand the nature of mammalian gut microbiome in different disorders. Dorottya has over 20 co-author peer-reviewed publications and 2 book chapters in supporting her strength in the field of pediatric inflammatory bowel diseases, colonic mucosal immunity, microbiome and viral research. "The mind-blowing microbiome: the role of gut microbes in colonic inflammation and gut-brain axis. "Relationship between eating habits, microbiome alteration, gastrointestinal, and psychiatric disorders". (Center for Infection and Immunity, Columbia University, NY).

The human gut microbiome is the group of microorganism living in our digestive tract. The microbiome has a crucial role in human metabolism, physiology and immune function. The nutritionally responsive microbiome may be modulated by different dietary factors leading to colonic inflammation and the progress of gastrointestinal (GI) disorders later in life. Furthermore, the brain-gut axis is a bidirectional communication between the GI tract and the central nervous system affecting host mood and behavior.

There is a crucial pediatric window period when the modulation of microbiome by nutrition or directly,

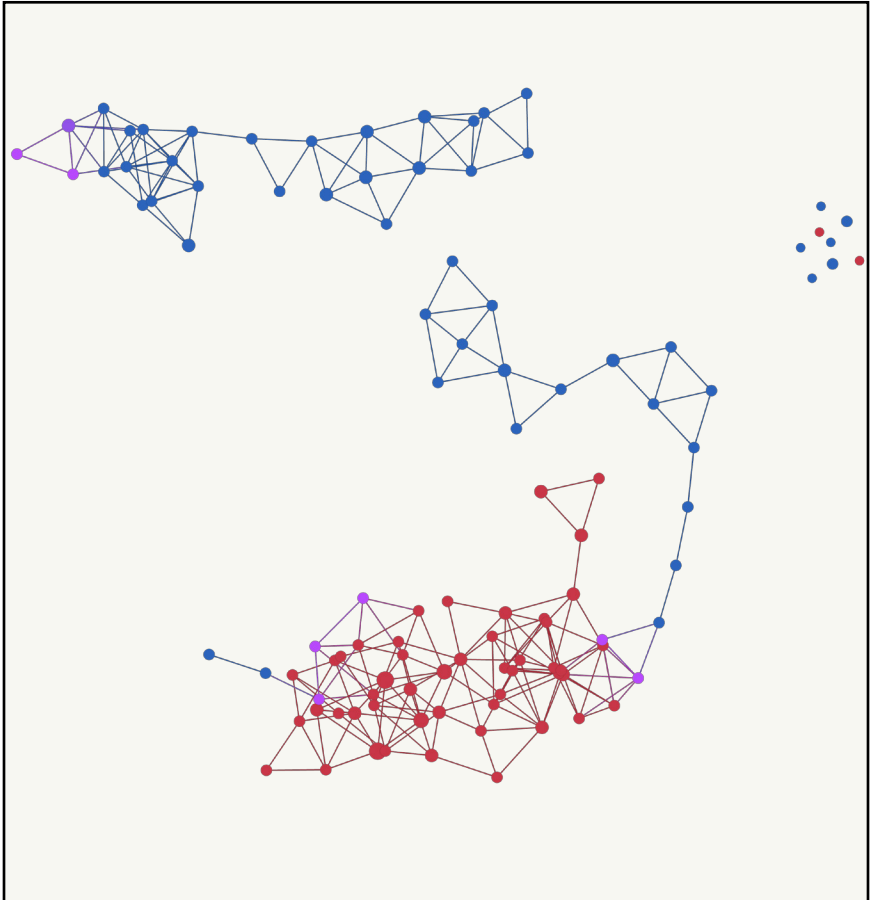


may prone or protect against colonic inflammation. The complexity of microbial responses altered by nutrition (such as fiber or fat) in mouse models was examined to better understand the fascinating association of nutrition, intestinal microbiome and host response. Also, our benchside research developed into a bedside clinical trial, by providing fecal microbiota transplantation (FMT) for pediatric patients with recurrent *Clostridium difficile* infection and ulcerative colitis.

Furthermore, to extend the possibility of high-throughput sequencing and topological data analysis, our ad-

ditional studies revealed complex association between different chronic neuropsychiatric disorders, clinical manifestation and metagenomic data.

Topological data analysis (TDA) reveals altered metagenomic and metabolome profile in myalgic encephalomyelitis/chronic fatigue syndrome. Metagenomic data including bacterial composition, predicted bacterial metabolic pathways, plasma metabolites and immune profile with symptom severity scores were analyzed by using TDA to define multidimensional subgroups. She is serving as Vice-President of the NY Hungarian Scientific Society.



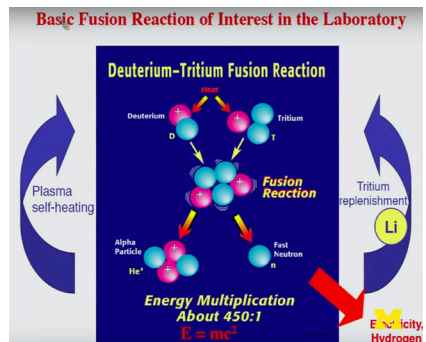


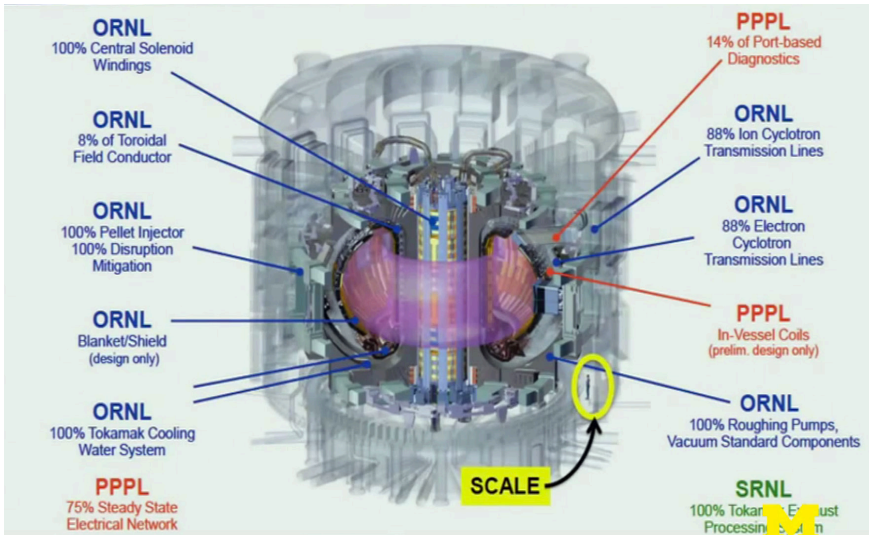
**Miklos Porkolab**

**Miklos Porkolab, Ph.D.**  
Professor, Department of Physics  
Plasma Science and Fusion Center  
MIT, Cambridge, MA

Born in Budapest, Hungary, in 1939, Miklos Porkolab and family left Hungary in 1956 and emigrated to Canada in 1957 where he completed his studies at the University of British Columbia in Vancouver. Miklos received a BAsC degree in Engineering Physics from the University of British Columbia in 1963 with first class honors and continued his graduate studies at Stanford University as a Woodrow Wilson Fellow, where he received his Ph.D. in Applied Physics in 1967. Thereafter he joined the Princeton Plasma Physics Laboratory where he rose to the position of Senior Research Physicist and Lecturer with the rank of Professor in the Astrophysical Sciences Department in 1975. While at Princeton University, Professor Porkolab

conducted pioneering experiments in plasma physics in the area of nonlinear wave-wave and wave-particle interactions, parametric instabilities and high power RF wave-plasma interactions in tokamak fusion plasmas. Professor Porkolab spent 1976 at the Max Planck Institute in Garching, Germany, under the auspices of the Humboldt Foundation as a winner of the “US Senior Scientist Award” where he published the definitive theoretical paper on the nonlinear interaction of plasma waves in the “lower hybrid” frequency regime. In 1977, Porkolab was recruited by Herman Feshbach to join MIT as a full tenured professor in the Physics Department where in addition to teaching, he led pioneering experiments in radio frequency heating and non-inductive current drive on the Versator II, the Alcator C and Alcator C-Mod tokamaks. For this work, Professor Porkolab shared the 1984 American Physical Society Excellence in Plasma Research Award (now the John Dawson Award) for the experimental demonstration of steady state current drive in the lower hybrid frequency regime. From 1991–2001 he served as Editor of Physics Letters A, Plasma Physics and Fluid Dynamics subsection. He also represented the U. S. Plasma Physics community for six years on the International Union of Pure and Applied Physics (IUPAP) Commission–16 (Plasma Physics)

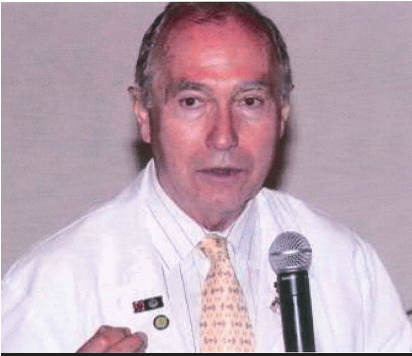




(1991-1997). From 1992–95, and again in 2012-2016, he served as a member of the National Research Council Subpanel on Plasma Science. In 1999, he served as Chair, Plasma Physics Division, American Physical Society. From 1990 to 1995 he served as Associate Director of the Plasma Fusion Center at MIT, and from 1995 to 2015 he was the Director of the Plasma Science and Fusion Center at MIT. He is past Chair, International Program Committee, IAEA FEC 2010. In 2010-2014, he served as Chair of the Washington non-profit organization “Fusion Power Associates”. After Jan 1, 2015, he resumed his full time activities in education and research as Professor of Physics at MIT. He is dedicated to teaching and training the next generation of plasma physicists, and he has supervised or co-supervised the PhD theses of more than 60 graduate students. He is the author or coauthor of more than 300 refereed publications, has given more than 70 invited talks and colloquia around the world. He has been a consultant to numerous laboratories and has served on the advisory committees of most

of the world’s major fusion laboratories, including the US, Europe, China and Korea. Current research interests include exploring advanced tokamak reactor physics concepts through current and pressure profile control with RF waves, experimental and theoretical studies of plasma turbulence and transport, and measuring turbulent fluctuations and RF waves with phase contrast imaging techniques in magnetically confined plasmas in both the US and Europe.

Professor Porkolab is a Fellow of the American Physical Society and Fellow of the American Association for the Advancement of Science. In 2007 he was awarded the Karoly Simonyi Memorial Plaque and Prize of the Hungarian Nuclear Society. In 2009 Prof. Porkolab was awarded the James Clerk Maxwell Prize of the American Physical Society, in 2010 he was awarded the Fusion Power Associates Distinguished Career Award, and in 2013 he was awarded the Hannes Alfvén Prize of the European Physical Society. In 2016 he was elected an External Member of the Hungarian Academy of Sciences.

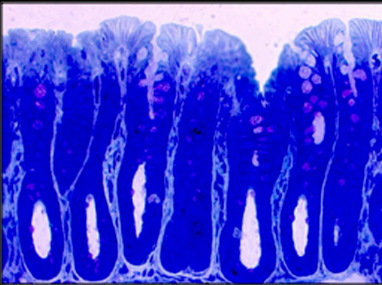


## Sandor Szabo

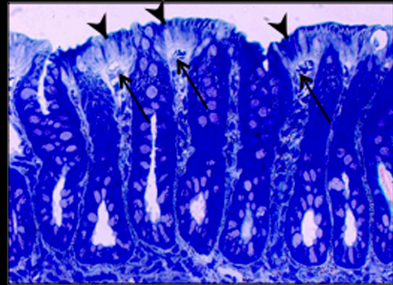
**Sandor Szabo, M.D., Ph.D.**  
Professor of Pathology and Pharmacology,  
School of Medicine, University of  
California, Irvine, CA

Sandor Szabo, MD (Belgrade), PhD  
(Montreal), MPH (Harvard), was  
born in Ada, Vojvodina (currently in

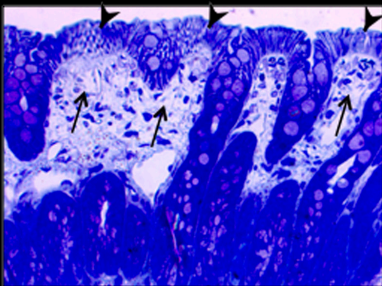
Serbia/Formal Yugoslavia) & edu-  
cated in former Yugoslavia, followed  
by graduate studies at the University  
of Montreal & residency in pathology  
at Harvard Medical School, where he  
became assistant & associate professor  
of pathology. Since 1994 he is profes-  
sor of pathology & pharmacology at  
the School of Medicine, University of  
California, Irvine (UCI) & has been  
involved in education of graduate &  
postgraduate students in teaching pa-  
thology (e.g., general, gastrointestinal  
& endocrine systems, angiogenesis),  
pharmacology, public health, history of  
medicine & introduction to biomed-  
ical research. In addition to this teach-  
ing track record he has been chief of Pa-  
thology & Laboratory Medicine Ser-  
vice for 20 years, during which he also  
served as chief of staff (for 12 years) at  
the Long Beach VA Medical Center, a  
major teaching affiliate of UCI. Before  
& during these leadership positions  
he has been involved in research on



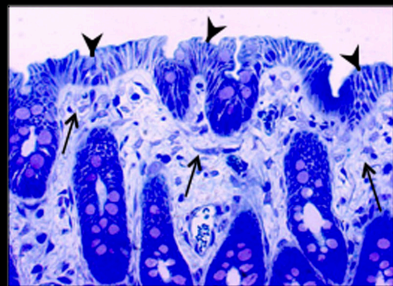
A: Control (200 X)



B: IA-15 min (200 X)

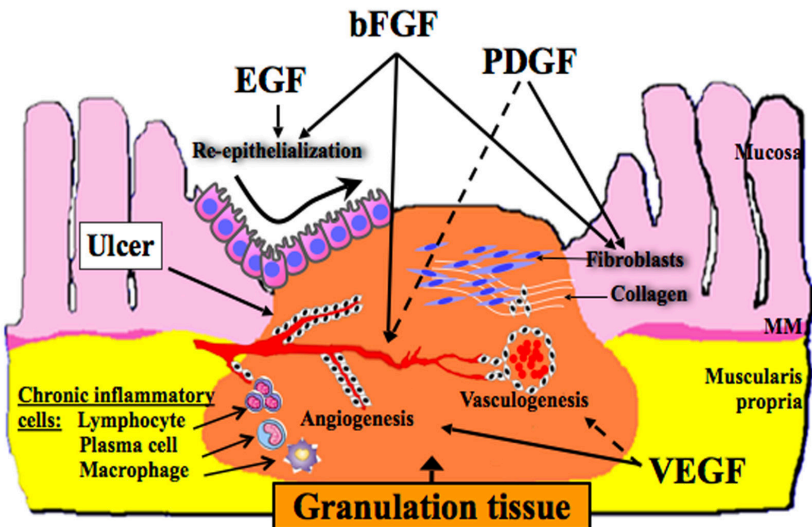
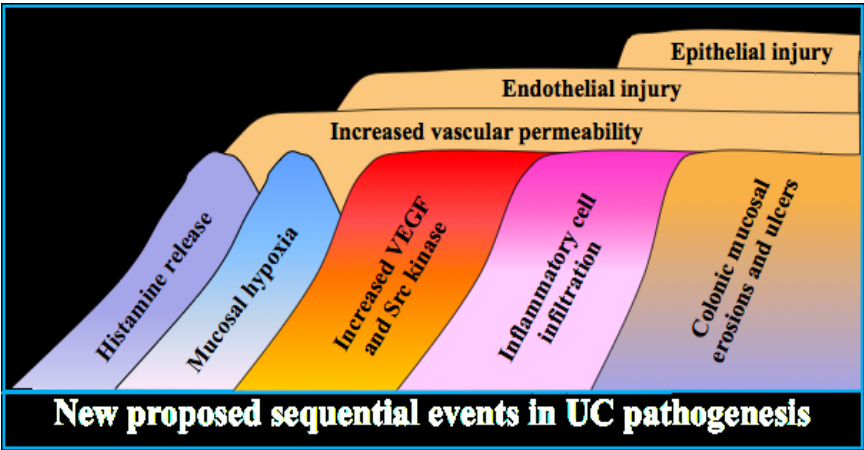
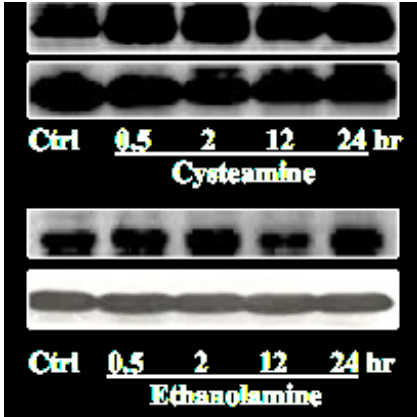


C: IA-30 min (200 X)



D: IA-1 hr (200 X)

the molecular & cellular mechanisms of gastrointestinal ulceration that was funded by federal (NIH & VA) as well as industry grants over 30 years. His research accomplishments include 235 original publications, more than 100 review articles & book chapters as well as 10 patents. He is also a founder of the International Symposia on Cell/Tissue Injury & Cytoprotection/Organoprotection (10th to be held next year in Kyoto, Japan) & of the Summer Schools on Stress (the 5th is scheduled for June, 2017 in Komarno, Slovakia).





**Janos Sztipanovits**

**Janos Sztipanovits, Ph.D.**  
E. Bronson Ingram Distinguished  
Professor of Engineering,  
Director, Institute for Software Inte-  
grated Systems, Vanderbilt University,  
Nashville, TE

Between 1999 and 2002, he worked as program manager and deputy director of DARPA Information Technology Office. He developed at DARPA the embedded software and networked embedded systems program portfolio. He was founding chair of the ACM Special Interest Group on Embedded Software (SIGBED). He was member of the US Air Force Scientific Advisory Board between 2006 and 2010, and the NASA Advisory Council's Subcommittee on Avionics, Software and Cybersecurity. He made significant contributions to the foundations, methods and tools for model-integrated computing. He was

key contributor to the establishment of the Cyber-Physical Systems (CPS) research area. He leads the CPS Virtual Organization, and he was elected member of the Steering Committee of the Industrial Internet Consortium in 2014/2015. His current research interest includes the applications of model and component-based design for Cyber Physical Systems, design automation tool suites and systems-security co-design technology. Dr. Sztipanovits was elected Fellow of the IEEE in 2000 and external member of the Hungarian Academy of Sciences in 2010. He won the National Prize in Hungary in 1985 and the Golden Ring of the Republic in 1982. He graduated from the Technical University of Budapest in 1970 and received his doctorate from the Hungarian Academy of Sciences in 1980.



“When engineers build safety-critical cyber-physical systems, such as medical devices, cars, or airplanes, they start with extensive computer modeling to ensure critical system components, such as software in pacemakers, traction controllers, or autopilots, operate properly in the full-scale design.”

—JANOS SZTIPANOVITS



## V Metaprogrammable Design Tools: “Freedom of Abstractions”

*Domain Specific Design Automation Environments:*

- Automotive
- Avionics
- Sensors...

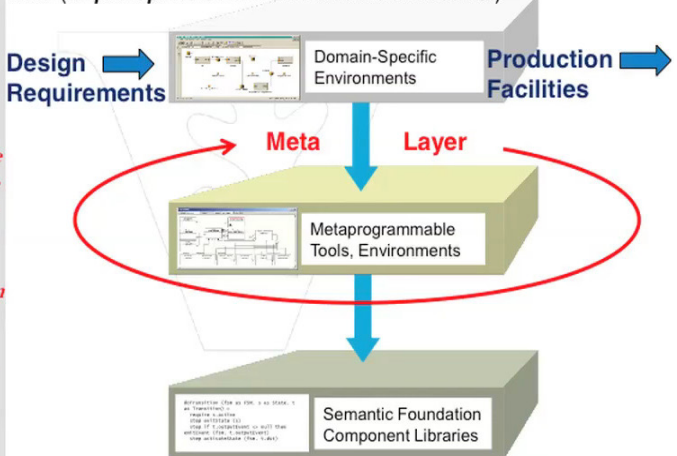
*Metaprogrammable Tool Infrastructure*

- Model Building
- Model Transf.
- Model Mgmt.
- Tool Integration

*Explicit Semantic Foundation*

- Structural
- Behavioral

**Key Idea:** Ensure reuse of high-value tools in domain-specific design flows by introducing a metaprogrammable tool infrastructure.  
**VU-ISIS implementation:** Model Integrated Computing (MIC) tool suite (<http://repo.isis.vanderbilt.edu/downloads/>)





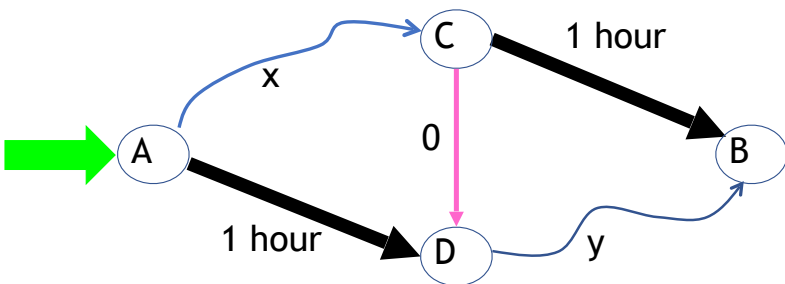
**Eva Tardos**

**Eva Tardos, Ph.D.**  
 Jacob Gould Schurman Professor of  
 Computer Science  
 Cornell University, Ithaca, NY

Dr Tardos was Computer Science  
 department chair 2006-2010. She  
 received her BA and PhD from Eotvos  
 University in Budapest with PhD  
 advisor Andras Frank. She held post-  
 doctoral positions in Bonn, Germa-

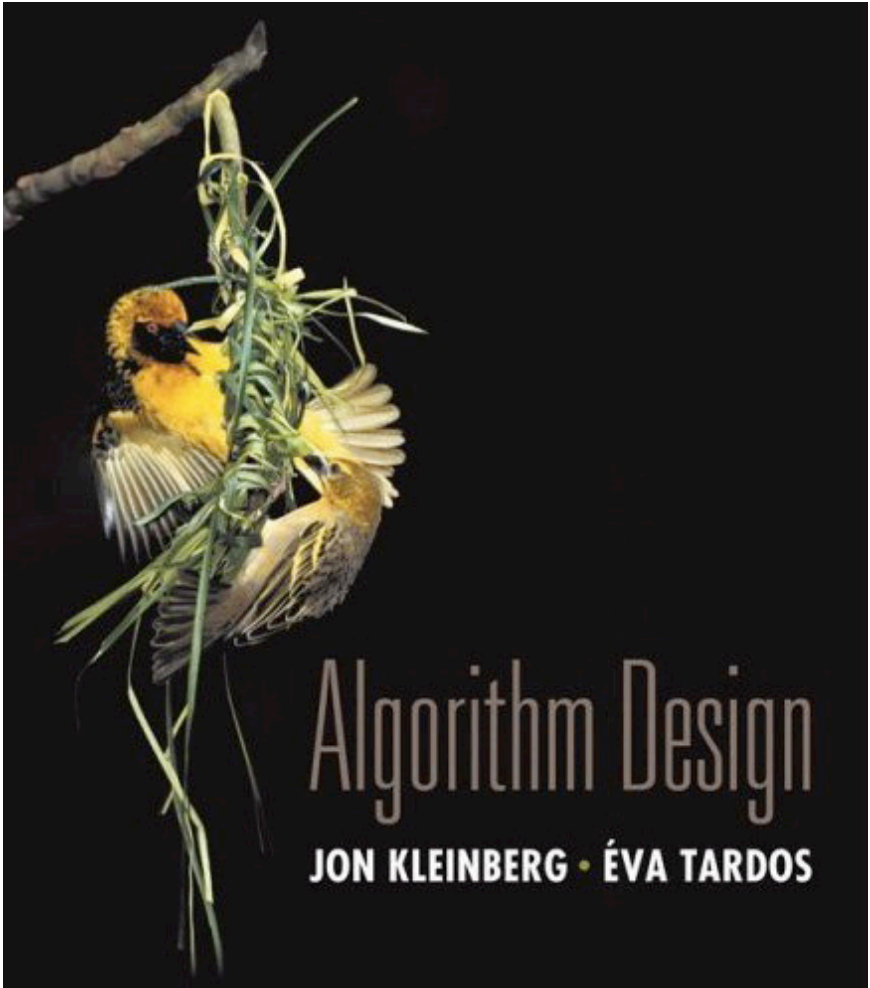
ny; Mathematical Sciences Research  
 Institute, Berkeley, California; Eotvos  
 University, Budapest; Department of  
 Mathematics at MIT. She joined the  
 faculty at Cornell in 1989. She has  
 been elected to the National Academy  
 of Engineering, the National Academy  
 of Sciences, the American Academy of  
 Arts and Sciences, is an external mem-  
 ber of the Hungarian Academy of Sci-  
 ences, and is the recipient of a number  
 of fellowships and awards including  
 the Packard Fellowship, the Goedel  
 Prize, Dantzig Prize, Fulkerson Prize,  
 and the IEEE Technical Achieve-  
 ment Award. She is editor-in-chief of  
 the Journal of the ACM, is editor of  
 Combinatorica, and has been editor  
 of several other journals including be-  
 ing editor-in-Chief of SIAM Journal  
 of Computing 2004-2009. She was  
 program committee chair for several  
 computer science conferences ACM-  
 SIAM SODA'96, IEEE FOCS'05, and  
 ACM EC'13.

Tardos's research interest is algo-  
 rithms and algorithmic game theory,  
 the subarea of theoretical computer  
 science theory of designing systems  
 and algorithms for selfish users. Her  
 research focuses on algorithms and  
 games on networks. She is most  
 known for her work on network-flow  
 algorithms, approximation algo-  
 rithms, and quantifying the efficiency  
 of selfish routing.



Selfish routing and the Price of Anarchy





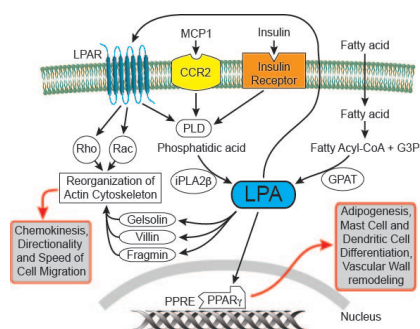


**Gabor Tigyi**

**Gabor Tigyi, M.D., Ph.D.**  
 Harriet Van Vleet Endowment Professor, Associate Vice Chancellor for Research - Industry Affairs  
 Department of Physiology,  
 University of Tennessee  
 Health Science Center  
 Memphis, TN

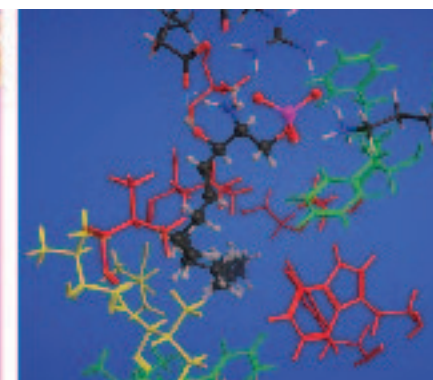
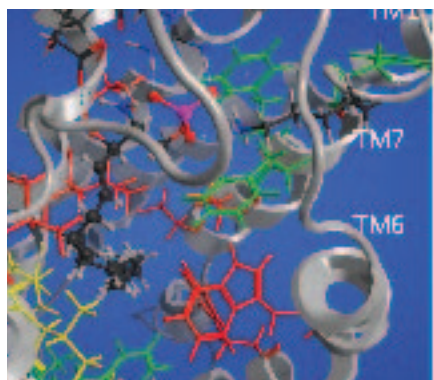
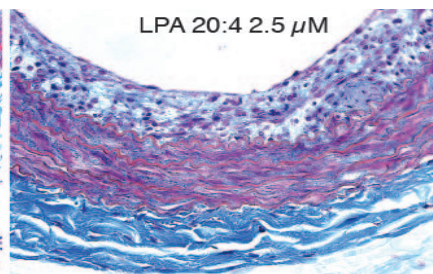
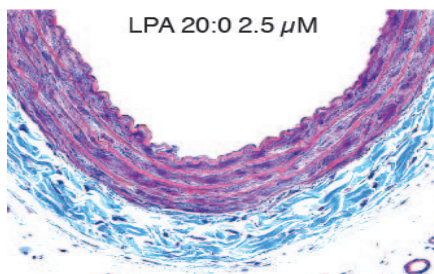
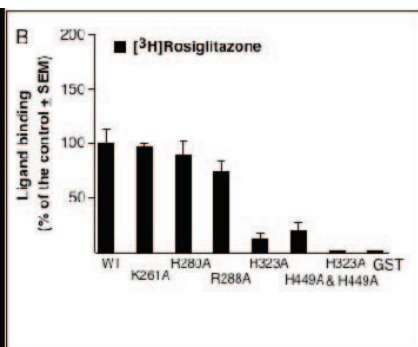
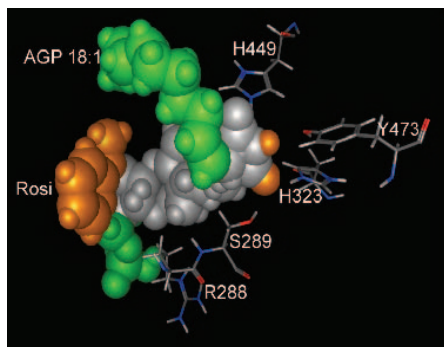
Visiting Professor of Graduate Studies, Hokkaido University, Japan  
 Distinguished Chair Professor, National Taiwan University, Taiwan  
 External Member, Hungarian Academy of Sciences, Budapest  
 Secretary/Treasurer, Association of American Hungarian Academicians  
 Member, European Academy of Arts, Letters and Sciences, Paris,  
 Honorary Doctor of Semmelweis Medical School, Budapest, Hungary, Fulbright Specialist in Biomedical Sciences,  
 Chief Scientific Officer, RxBio Inc.,  
 Member Eicosanoid Research Foundation Board of Directors

Dr. Tigyi graduated from the University Medical School of Pecs and obtained his PhD from the Hungarian Academy of Sciences Budapest. He received postdoctoral training at the Max Planck Institute, University of Uppsala, MIT, and the University of California Irvine. He holds the Harriet Van Vleet Endowment Professorship and serves as Associate Vice Chancellor for Research, University of Tennessee Health Science Center in Memphis TN, USA. He is also founder and Chief Scientific Officer of RxBio Inc. a biotech company based in Tennessee. He is world renowned for his seminal research on growth factor-like phospholipids and related drug discovery/development. His research provided humankind with the first radiation-mitigator compounds that spare life even when administered after exposure to deadly levels of radiation, experienced only after nuclear disasters like in Chernobyl or Fukushima. His research utilizes in silico drug design for the development of drugs that control cancer metastasis and therapeutic resistance. Dr. Tigyi has published over 200 scientific papers, several book chapters and holds twenty-six patents. His publications have been cited over 9,000 times. He has been promoting Hungarian scientific research for over 20 years by training four Hungarian PhD scientists and



nine Hungarian postdoctoral fellows. He has taught several graduate courses at Semmelweis University and the University of Pecs. In 2015, he promoted Hungary by bringing the prestigious International Conference on Bioactive Lipid Mediators in Cancer Inflammation and Related Diseases with 300 attendees to Budapest in July 2015. He has been working

with the leadership of the Hungarian Academy of Sciences to better engage external members and give them the same privileges that corresponding and regular members enjoy. His efforts have been recognized in Hungary by the Doctor Honoris Causa title from Semmelweis University in 2016 and the Arany Janos prize from the HAS in 2017.





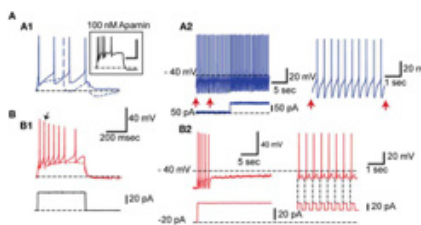
## Laszlo Zaborszky

**Laszlo Zaborszky**, M.D., Ph.D., D.Sc.  
Distinguished Professor,  
Center for Molecular and Behavioral  
Neuroscience,  
Rutgers University, Newark, NJ

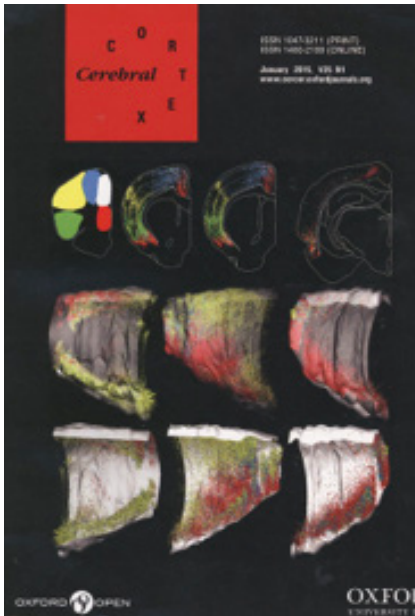
He received his medical degree at Semmelweis University with Sub Auspiciis Rei Publicae Popularis (1970), and earned his PhD (1981) and Doctor of Science from the Hungarian Academy of Sciences (2000). He joined the faculty of the Department of Anatomy, Semmelweis University headed by J. Szentagothai in 1969 where he worked until 1981. He was also Assistant Professor in the Department of Anatomy at the University of Wurzburg, Germany (1973-1974). In 1981 he was invited to join the laboratory of Professor Heimer at the University of Virginia, Charlottesville, where he was appointed Associate Professor of Neurology, with a joint appointment in the Department of Neurosurgery in 1986. Later, he served there as Director of the Laboratory of Cellular and Molecular Neuroanatomy (1992). He moved to the Center for Molecular

and Behavioral Neuroscience at Rutgers University in 1993, where he was promoted to Professor with tenure in 2004 and as Distinguished Professor in 2014. He spent short sabbaticals in the Max Planck Institute for Biophysical Chemistry in Göttingen, Germany (1976), in the Montreal General Hospital, Canada (1986), at the National Institute for Physiological Sciences, Okazaki, Japan (2000), in the Vogt Institute for Brain Research in Dusseldorf (2000) and in the Institute of Neuroscience and Biophysics, Research Center Juelich, Germany (2005).

Zaborszky has made important contribution through his pioneering efforts to understand the functional organization of one of the most complex brain areas, the basal forebrain, which contains the cholinergic, cortically-projecting neurons (“nucleus basalis”) that deteriorate in Alzheimer’s disease. Using a combination of electron microscopy and double immunolabeling techniques, he was the first to identify synaptic inputs to these cholinergic neurons, including



catecholaminergic and GABAergic terminals, as well as projections from the cerebral cortex, nucleus accumbens, amygdala and hypothalamus. He developed –in collaboration with Zilles’ group in Germany- a postmortem 3D mask of the cholinergic space that allows extracting the volume of the nucleus basalis from MRI scans of living persons to predict progression of Alzheimer’s disease. With Dr. Can-

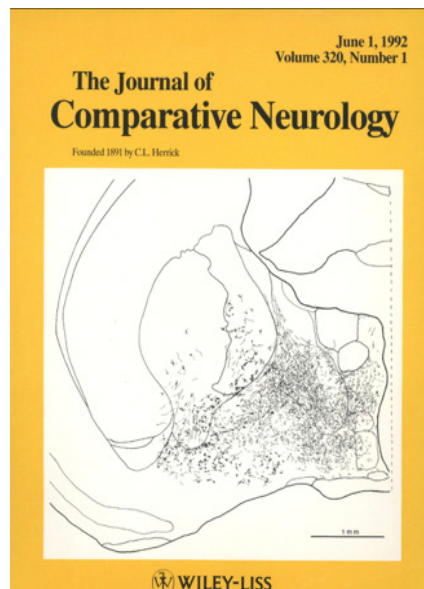


tero in Spain he provided evidence that neurodegeneration in the nucleus basalis can occur in patients with mild cognitive impairment. In collaboration with several imaging groups he is interested to identify the various functional networks that are linked to basal forebrain subcompartments. Using 3D reconstructions and high density electrophysiology recording his team at Rutgers University (P. Gombkoto) is working on understanding the fundamental functional organization of the basalo-cortical network. Zaborszky also coined the term 'core and shell' to describe the subdivisions of the nucleus accumbens, a forebrain area important in drug addiction and reward mechanism. His work has profound implications in the field of the neural basis of attention as well as for such disorders as Alzheimer's disease, Parkinson's disease and schizophrenia.

He is co-editor of the text books *Neuroanatomical Tract-Tracing Methods 2* (Plenum, 1989 with L. Heimer) and *Neuroanatomical Tract-Tracing*

3: *Molecules, Neurons, Systems* (Springer, 2006 with F. Wouterlood and J. Lanciego). He is Founding Editor-in-Chief, *Brain Structure and Function* ([www.springer.com/429](http://www.springer.com/429)). He advised more than 50 Undergraduate, Graduate Students and Postdoctoral Fellows.

His research is supported by the National Institute of Neurological Disorders and Stroke (NIH) since 1986. He was awarded Dr. Habil from Semmelweis University (2004) and was elected foreign member of the Hungarian Academy of Sciences (2007). He received the "Arany Janos" award from the Hungarian Academy of Sciences and the "Knight's Cross, Order of Merit of the Republic of Hungary" (2013) and the "Board of Trustees Award for Research Excellence" (Rutgers University, 2016). He has been Vice-President (2010-2012) and President (2012-2016) of the New York Hungarian Scientific Society (<http://nymtt.org>). He is Chair of the Faculty Council at Rutgers-Newark in the academic year 2016/2017.





**Takács-Carvalho  
Gábor**

Gabor has been the science and technology attaché of Hungary in the US for the 4th year. Before joining the Consulate General he worked as an international sustainable energy expert. He worked on large scale renewable and energy efficiency projects, international energy regulatory regime projects (for the European Parliament, OECD, USAID and the Hungarian government). Gabor holds Bachelor and Master degrees in biology, geography, economics and environmental policy and regulation from ELTE, BGF, Corvinus universities in Hungary and the London School of Economics, UK.

Working with the Hungarian scientific diaspora as the science and technology attaché is one of the most rewarding and enjoyable part of my mandate. One of my main role is to promote Hungary in the US, to increase our visibility and to bring Hungary closer to the American people, be they ordinary citizens, business people, scientists or decision makers.

It is increasingly hard to cut through the noise and get messages through to our audience. The most effective way to raise interest and open eyes , ears and sometimes hearts for Hungary is to show excellence and unquestionably achievements, to show incredible stories that are rooted in Hungary. Success and achievements in science cannot be created by political will. Scientific achievements are constantly tested and contested by the objective nature of science and fellow scientists. Hungarian scientists in the US, around the world and in Hungary provide innumerable examples of battle tested successes. By drawing our American partners' attention to Hungarian scientists and their contributions to science is probably the most credible way to make the connection to the US and promote Hungary.

It is a huge pleasure to work with the Hungarian scientific community that has many energizing connections, motivations and initiatives that range from regular get-togethers to keep the connection live, through the urge turned into actions to help young Hungarian scientists in their pursue of excellence, to keeping the spirit of our great scientists alive. The generosity , genuine openness and inspiring works of individuals I got to know throughout this time as ST attaché made my job a joyful journey for which I am grateful for the people I met.



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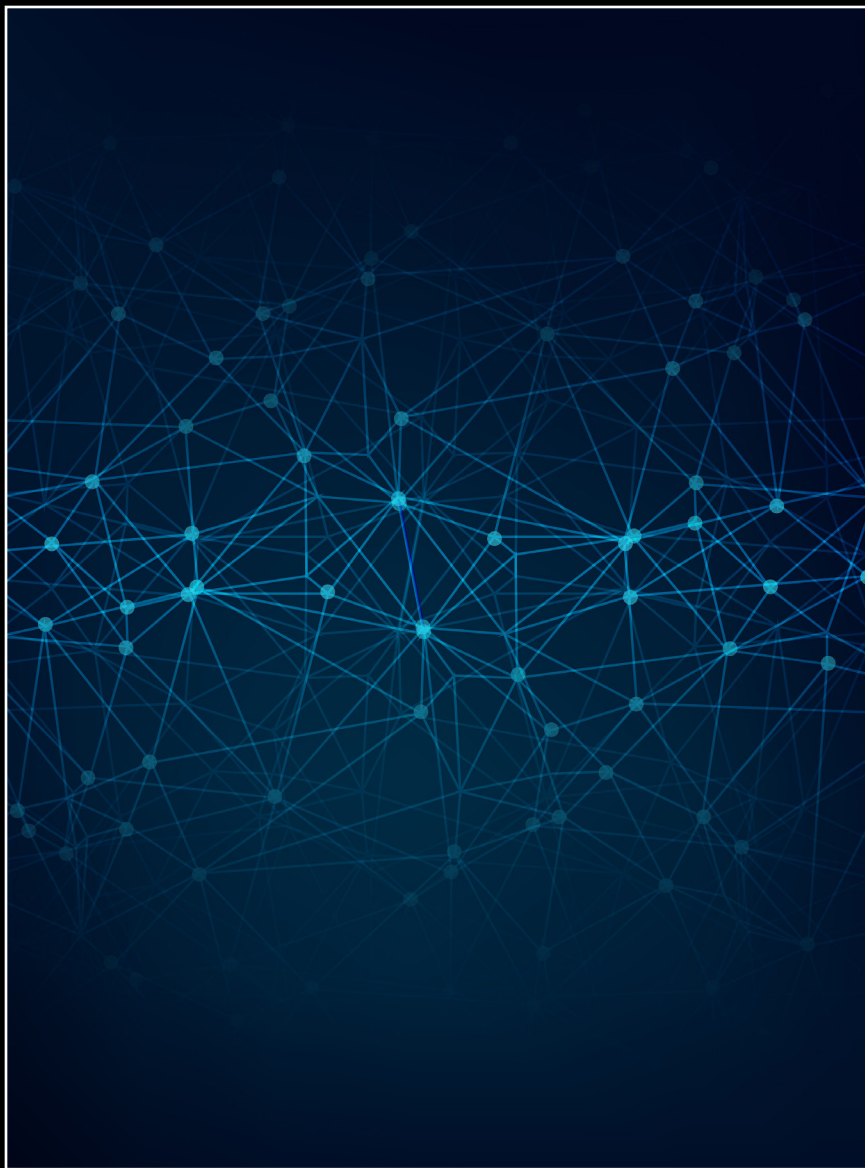
The **Association of Hungarian American Academicians** is a not-for-profit corporation, organized for charitable, scientific, and educational purposes. Its goal to promote interactions among Hungarian scientists working in or visiting the US through various Hungarian scientific organizations, including the New York Hungarian Scientific Society, the US West Coast Club of Hungarian Scientists, the Hungarian Medical Associations of America, The DC Hungarian Club. The Association will organize annual meetings, including popular scientific lectures to inform its members and the public about scientific fields represented by its members who are external members of the Hungarian Academy of Sciences (HAS). It is planning to establish a scholarship fund for young Hungarian students and researchers pursuing education in science as well as travel grants to attend the annual meetings of the Association or meetings of the HAS. Current leadership: Sandor Szabo, President; Istvan Mody and Laszlo Zaborszky Vice-Presidents; Gabor Tigyi, Secretary/Treasurer.

The **New York Hungarian Scientific Society** (NYHSS, <http://nymtt.org>), as an informal social club, held its first meeting on November 3rd, 2010 at the Consulate General in New York. The Society provides a venue for Hungarian scholars, scientists and students to gather for the promotion of science, culture and the dialog between the Hungarian and New York economic, scientific and public life. As a closing act to the first general meeting, Professor András Prékopa, member of the HAS, held the Society's inaugural public lecture on János Bolyai, one of the greatest figures of both the Hungarian and world science. The lecture was auspiciously timed as János Bolyai wrote in a letter to his father, Farkas Bolyai, on the very same day, November 3rd, in 1823, that, "I created a new, different world out of nothing." These words announced his discovery of the non-Euclidean geometry, which crucially influenced the progress of natural science in the twentieth century. November 3rd is a landmark date in the history of Hungarian science. On November 3, 1823, the Hungarian Orders made a resolution at the Pozsony Diet establishing the HAS. Count István Széchenyi offered to donate one-year's value of the income generated from his estate to the foundation of the Academy. The members elected János Bergou, Professor of Physics and Doctor of the HAS, as President; László Záborszky, as Vice-President, external member of HAS and Ms. Zsófia Trombitás, as Secretary (Currently: COUNSUL, Counsellor, Embassy of Hungary, in Tel Aviv)

The Society established the Albert Szent-Györgyi Young Investigator Award to support young Hungarian scientists living in Hungary or in Central-Eastern Europe. The award was twice announced (2015, 2016) and the 7 awardees, selected from more than 80 applicants, received \$13,500.

Laszlo Zaborszky (President, 2012-2016)

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Front cover: Katalin Vilim



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