

BIOGRAPHICAL SKETCH

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NAME: BUZSAKI, GYORGY

eRA COMMONS USER NAME (credential, e.g., agency login): buzsa

POSITION TITLE: Biggs Professor of Neuroscience

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	END DATE MM/YYYY	FIELD OF STUDY
University of Pecs, Hungary, Pecs	MD	08/1974	medicine
Hungarian Academy of Sciences, Budapest	PHD	04/1984	

A. Personal Statement

I am a systems neuroscientist interested in how coordinated, rhythmic neuronal activity serves physiological function in the cerebral cortex, and in particular, how information is exchanged between the hippocampus and neocortex. My lab identified the cellular-synaptic basis of theta, gamma oscillations and sharp waves with associated 'ripple' oscillations, their relationship to each other and to behavior and sleep. We were the first to demonstrate the role of GABAergic interneurons in theta and gamma oscillations. Using large-scale extracellular recordings in behaving animals we were able to recognize the importance hierarchical organization of simultaneous oscillations of different frequencies and cross-frequency coupling, which has opened up opportunities for the dissection of cognitive mechanisms in health and disease. My most influential contribution is the two-stage model of memory trace consolidation; the neocortex during learning transiently modifies hippocampal networks, followed by reactivation of memory traces during hippocampal sharp wave bursts. Recently, we have demonstrated how in the absence of changing environmental signals, cortical circuits continuously generate self-organized cell assembly sequences, specific to recall or the animal's route planning. I am dedicated to mentoring and many of my former trainees have moved on to head their own labs at top institutions throughout the world.

- Berényi A, Belluscio M, Mao D, Buzsáki G. Closed-loop control of epilepsy by transcranial electrical stimulation. *Science*. 2012 Aug 10;337(6095):735-7. PubMed PMID: [22879515](#); PubMed Central PMCID: [PMC4908579](#).
- Buzsáki G, Wang XJ. Mechanisms of gamma oscillations. *Annu Rev Neurosci*. 2012;35:203-25. PubMed PMID: [22443509](#); PubMed Central PMCID: [PMC4049541](#).
- Buzsáki G. Neural syntax: cell assemblies, synapsembles, and readers. *Neuron*. 2010 Nov 4;68(3):362-85. PubMed PMID: [21040841](#); PubMed Central PMCID: [PMC3005627](#).
- Itskov V, Pastalkova E, Mizuseki K, Buzsaki G, Harris KD. Theta-mediated dynamics of spatial information in hippocampus. *J Neurosci*. 2008 Jun 4;28(23):5959-64. PubMed PMID: [18524900](#); PubMed Central PMCID: [PMC2561186](#).

B. Positions and Honors**Positions and Employment**

1975 - 1986 Assistant, Associate Professor, Institute of Physiology, School of Medicine, Pecs
 1986 - 1988 Associate Professor in-Residence, Department of Neurosciences, UCSD, San Diego, CA
 1990 - 2012 Board of Governors Professor, Center for Molecular and Behavioral Neuroscience, Rutgers Univ, Newark, NJ
 2012 - Biggs Professor of Neuroscience, New York University, New York, NY

Other Experience and Professional Memberships

- 1986 - member, Society for Neuroscience
- 1986 - member, AAAS

Honors

- 1992 Traveling Grass Lecturer, Grass Foundation
- 1996 "The Moruzzi Lecture" - Invited Plenary Speaker. , European Neuroscience Association. Strasbourg, France
- 1997 The first "Pierre Gloor" Award, ". American Clinical Neurophysiology Society
- 1998 Distinguished Lecturer, Collège de France, Paris, France
- 2001 Most Cited 250 in Neuroscience, ISI
- 2001 Krieg Cortical Discoverer Award , The Cajal Club, American Association of Anatomists
- 2001 elected member, Hungarian Academy Sciences
- 2004 Elected Fellow, AAAS
- 2006 Opening Plenary Lecture, Federation of European Neuroscience Societies, Vienna, Austria
- 2006 Provost's Research Award for Distinguished Scholarship, Rutgers University
- 2006 Editorial Board Member, Neuron
- 2008 - 2014 Fellow Associate, Neurosciences Institute, La Jolla, CA
- 2009 The Hans-Lucas Teuber Lecture, MIT, Boston
- 2009 The David Smith Lecture, Oxford University, Oxford
- 2009 Fellow, The Israel Institute for Advanced Studies (IAS) The Hebrew University of Jerusalem
- 2010 The Talairach Lecture, Organization of Human Brain Mapping
- 2011 Brain Prize, Lundbeck Foundation, Denmark
- 2011 Annual Lord Adrian Lecture, Cambridge University
- 2012 Highly Cited Researcher, ISI
- 2012 Elected Member, Academia Europaea
- 2014 The Ariëns Kappers Medal, Royal Netherlands Academy of Arts and Sciences
- 2014 Translational Research Mentor of the Year Award , NYU Clinical and Translational Science Institute, NYU
- 2014 Board of Editors, Science AAAS
- 2015 Honoris Causa, University of Aix-Marseille, France
- 2016 Honoris Causa, University of Kaposvar, Hungary
- 2017 Master Scientist, New York University School of Medicine
- 2017 Elected Member, National Academy of Sciences, USA
- 2017 Keynote Speaker. Gairdner Foundation Symposium, Toronto, Canada
- 2018 The 2018 Distinguished Lecture, Integrative Center for Learning and Memory, UCLA
- 2018 Margaret Bidwell Memorial Lecturer, MIT, Boston
- 2018 Honoris Causa, University of Pecs, Hungary
- 2019 Special Lecture, Society for Neuroscience
- 2019 Annual Lecture, UCL Center for Imaging, London
- 2019 Distinguished Lecturer, Collège de France, Paris, France

C. Contribution to Science

1. Brain Prize 2011

Complete List of Published Work in My Bibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/gyorgy.buzsaki.1/bibliography/public/>

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

R01 MH107396-01, National Institute of Mental Health (NIMH)
BUZSAKI, GYORGY (PI)
09/02/15-07/31/20
Brain rhythms-assisted memory enhancement
Role: PI

Completed Research Support

R01 MH054671-15, National Institute of Mental Health (NIMH)
BUZSAKI, GYORGY (PI)
09/30/97-05/31/18
HIPPOCAMPAL INTERNEURONAL NETWORK
Role: PI

R01 MH054671-14, National Institute of Mental Health (NIMH)
BUZSAKI, GYORGY (PI)
09/30/97-05/31/18
HIPPOCAMPAL INTERNEURONAL NETWORK
Role: PI

R01 MH054671-16, National Institute of Mental Health (NIMH)
BUZSAKI, GYORGY (PI)
09/30/97-04/30/18
HIPPOCAMPAL INTERNEURONAL NETWORK
Role: PI

U01 NS090526-02, National Institute of Neurological Disorders and Stroke (NINDS)
BUZSAKI, GYORGY (PI)
09/30/14-07/31/17
Modular High-Density Optoelectrodes for Local Circuit Analysis
Role: PI

U01 NS090526-01, National Institute of Neurological Disorders and Stroke (NINDS)
BUZSAKI, GYORGY (PI)
09/30/14-07/31/17
Modular High-Density Optoelectrodes for Local Circuit Analysis
Role: PI

R01 NS034994-17, National Institute of Neurological Disorders and Stroke (NINDS)
BUZSAKI, GYORGY (PI)
06/01/95-02/28/15
Network cooperation in the hippocampus in vivo
Role: PI

R01 NS034994-16, National Institute of Neurological Disorders and Stroke (NINDS)
BUZSAKI, GYORGY (PI)

06/01/95-02/28/14

Network cooperation in the hippocampus in vivo

Role: PI

R01 MH054671-13, National Institute of Mental Health (NIMH)

BUZSAKI, GYORGY (PI)

09/30/97-04/30/13

Hippocampal interneuronal network (MH 54671)

Role: PI

R01 NS034994-15, National Institute of Neurological Disorders and Stroke (NINDS)

BUZSAKI, GYORGY (PI)

06/01/95-03/02/12

Network cooperation in the hippocampus in vivo

Role: PI

R01 NS043157-05, National Institute of Neurological Disorders and Stroke (NINDS)

BUZSAKI, GYORGY (PI)

05/01/02-04/30/08

Imaging Local Network Activity in Vivo

Role: PI