CURRICULUM VITAE

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NAME: Balázs Hangya

DATE OF BIRTH: 10/28/1980

PLACE OF BIRTH: Budapest, Hungary

NATIONALITY: Hungarian

MAILING (OFFICE) ADDRESS:

Institute of Experimental Medicine
Szigony utca 43.
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POSITIONS:

2015 -	Principal Investigator, Senior Research Fellow, Institute of Experimental Medicine, Hung. Acad. Sci., Budapest, Hungary
2010 - 2015	Postdoctoral Fellow, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, USA
2006 - 2010	PhD Student, Institute of Experimental Medicine, Hung. Acad. Sci., Budapest, Hungary (János Szentágothai School of Ph.D. Studies, Semmelweis University, Budapest, Hungary)

FELLOWSHIPS:

2013 - 2015	Marie Curie International Outgoing Fellowship
2011 - 2012	Swartz Fellowship for Theoretical Neuroscience

EDUCATION:

2006 - 2010	János Szentágothai School of PhD Studies, Semmelweis University, Budapest, Hungary; degree: PhD (summa cum laude)
2001 - 2007	Eotvos Lorand University, Budapest, Hungary; Mathematics Programme, specialization in Probability Theory and Statistics; degree: MS (excellent)
1999 - 2006	Semmelweis University, Budapest, Hungary; Medical School; degree: MD (summa cum laude)

OTHER TRAINING:

2010	PENS School and Workshop titled: Looking Back at Mount Ararat: Diversity and Cross-Fertilization among Approaches to Memory, Yerevan, Armenia
2009	Cold Spring Harbor Laboratory course on Biology of Memory, Cold Spring Harbor, NY, USA

2008	PENS Hertie Winter School, titled: The Design of Neuronal Networks: Contribution from Invertebrates, University Center of Obergurgl, Obergurgl, Austria

AWARDS AND HONORS:

2015	'Momentum' Award of the Hungarian Academy of Sciences
2011	'Junior Prima' Award for young Hungarian scientists (7000 Euros)
2010	EBBS-FENS Student Award granted by the European Brain and Behaviour Society
2007	Inclusion in the Rector's List of Excellence and participation in the Ödön Kerpel-Fronius Talent Support Program of Semmelweis University
2007	'Pro Scientia' Gold Medal granted by the National Undergraduate Students Association Council
2006	Excellent Undergraduate Student Award of the Semmelweis University
2005	Hungarian State Scholarship

TRAVEL GRANTS:

2010	IBRO Travel Grant
2010	Travel grant of the European Brain and Behaviour Society
2009	Travel grant of the Hungarian Neuroscience Society
2009	Travel grant of the Semmelweis University School of Ph.D. Studies
2008	Travel grant of the Gedeon Richter Pharmaceutical Company
2008	Travel grant of the Swiss Society for Neuroscience
2004	Travel grant of the Semmelweis University Undergraduate Students Association Council

TEACHING ACTIVITY:

2014	Training a rotation student at the Watson School of Biological Sciences, Cold Spring Harbor Laboratory (Sanchari Ghosh)
2013 - 2015	Teacher assistant at the Transylvanian Neuroscience Summer School, teaching electrophysiology theory and practice
2013	Judging at Long Island Science and Engineering Fair
2013	Mentoring at Long Island Afro-Academic, Cultural, Technological and Scientific Olympics
2012	Judging at Long Island Afro-Academic, Cultural, Technological and Scientific Olympics
2009	Supervision of a summer student from the Faculty of Information Technology and Bionics, Peter Pazmany Catholic University (Balazs Szeky)
2009 - 2010	Supervisor of an undergraduate student from Semmelweis University Medical School (Benedek Tihanyi)

2003 - 2005	Demonstrator on physiology practice in the Institute of Human Physiology and Experimental Research, Semmelweis University

INVITED PRESENTATIONS:

2016	The role of the basal forebrain in learning. Plenary lecture at the 1st Hungarian Neuroscience Doctoral Conference, Budapest, Hungary
2015	The role of the basal forebrain in learning. Wigner Research Centre for Physics, Hungarian Academy of Sciences, Budapest, Hungary; host: Gergo Orban
2015	The role of the basal forebrain in learning. Research Centre for Natural Sciences, Hungarian Academy of Sciences, Budapest, Hungary; host: Gergo Szakacs
2015	Central cholinergic neurons are rapidly recruited by reinforcement feedback. City College New York, New York, US; host: Hysell Oviedo
2015	A mathematical framework for statistical decision confidence. Central European University, Budapest, Hungary; host: Mate Lengyel
2015	Central cholinergic neurons are rapidly recruited by reinforcement feedback. Department of Pharmacology, University of Oxford, Oxford, UK; host: Peter Somogyi
2015	Central cholinergic neurons are rapidly recruited by reinforcement feedback. Biozentrum, Universitat Basel, Basel, Switzerland, host: Petr Znamenskiy, Tom Mrsic-Flogel
2015	Central cholinergic neurons are rapidly recruited by reinforcement feedback. École polytechnique fédérale de Lausanne, Lausanne, Switzerland; host: Carl Petersen
2015	Central cholinergic neurons are rapidly recruited by reinforcement feedback. Unil Lausanne, Lausanne, Switzerland; host: Zita Rovo, Anita Luthi
2014	Central cholinergic neurons are rapidly recruited by reinforcement feedback. Harvard University, Cambridge, Massachusetts, United States; host: Ashesh Dhawale, Bence Olveczky
2014	Central cholinergic neurons are rapidly recruited by reinforcement feedback. National Institute of Aging, National Institute of Health, Baltimore, Maryland, United States; host: Shih-Chieh Lin
2013	Cholinergic neurons of the nucleus basalis signal reinforcement. New York University, New York, United States; host: Rob Froemke
2013	Behavioral correlates of identified nucleus basalis neurons in a sustained attention task. Institute of Experimental Medicine, Hung. Acad. Sci., Budapest, Hungary; host: Viktor Varga
2011	Complex propagation patterns characterize human cortical activity during slow wave sleep. Long Island Jewish Medical Center, New Hyde Park, NY, USA; host: Ashesh Mehta

2010	Why do we sleep? Fazekas Mihály Secondary Grammer School, Budapest, Hungary; host: Erzsébet Müllner
2009	Memory processes during sleep: learning overnight or book under the pillow? Society for Future Medical Scientists, Frigyes Korányi College for Advanced Studies; host: Péter Mukli
2009	Burst detection in thalamocortical neurons by means of hierarchical cluster analysis. Gedeon Richter Pharmaceutical Company, Budapest, Hungary
2009	GABAergic neurons of the medial septum lead the hippocampal network during theta activity. Institute for Psychology, Hung. Acad. Sci., Budapest, Hungary; host: Gábor Stefanics
2009	Identified, putative pacemaker neurons of the medial septum lead the hippocampal network during theta activity. Center for Molecular and Behavior Neuroscience, Rutgers University, Newark, NJ, USA; host: Eva Pastalkova, György Buzsáki
2006	Septo-hippocampal communication. Research Institute for Particle and Nuclear Physics, Hung. Acad. Sci., Budapest, Hungary; host: Balázs Ujfalussy, Péter Érdi

OTHER PRESENTATIONS:

2015	The role of the basal forebrain in learning. IEM Days Institutional Conference, Balatonfured, Hungary
2014	Central cholinergic neurons are rapidly recruited by reinforcement feedback. Neuroscience In-house Seminar, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, USA
2014	Central cholinergic neurons broadcast rapid reinforcement signals. Neuroscience In-house Seminar, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, USA
2014	Central cholinergic neurons broadcast rapid reinforcement signals. Computational and Systems Neuroscience (Cosyne) 2014, Salt Lake City, Utah, USA
2012	Behavioral correlates of identified nucleus basalis neurons in a sustained attention task. Neuroscience In-house Seminar, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, USA
2012	Nucleus basalis and sustained attention. Neuroscience In-house Seminar, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, USA
2012	Behavioral correlates of identified nucleus basalis neurons in a sustained attention task. Sloan-Swartz Centers for Theoretical Neurobiology: 2012 Annual Meeting, University of California, San Diego, California, USA
2009	Analysis of the propagation of human cortical slow waves by an information theory method. Budapest Computational Neuroscience Forum, Collegium Budapest Institute for Advanced Study, Budapest, Hungary; host: Anna Fedor

2009	Phase entrainment of human delta oscillations can mediate the effects of expectation on reaction speed. Budapest Computational Neuroscience Forum, Collegium Budapest Institute for Advanced Study, Budapest, Hungay; host: Anna Fedor
2009	The propagation of human cortical slow oscillations uncovered by an information theory approach. 13th Institutional Conference of the Inst. Exp. Med., Hung. Acad. Sci., Siófok, Hungary
2008	Complementary spatial firing in hippocampal interneurons and place cells. Budapest Computational Neuroscience Forum, Collegium Budapest Institute for Advanced Study, Budapest, Hungary; host: Péter Ittzés
2007	Direction of information flow in the septo-hippocampal system. Budapest Computational Neuroscience Forum, Collegium Budapest Institute for Advanced Study, Budapest, Hungary; host: Máté Lengyel
2007	Burst detection, pattern recognition. Budapest Computational Neuroscience Forum, Collegium Budapest Institute for Advanced Study, Budapest, Hungary; host: Máté Lengyel

PROFESSIONAL SOCIETIES:

2010 -	European Brain and Behaviour Society
2008 -	Hungarian Neuroscience Society
2008 -	Federation of European Neuroscience Societies
2008 -	International Brain Research Organization
2007 -	Society for Neuroscience

REVIEWING:

eLife, Journal of Neuroscience, Journal of Neurophysiology, European Journal of Neuroscience, Neuroscience, Frontiers in Neuroscience, Neural Networks

EDITORIAL BOARD:

2015 -	Frontiers Decision Neuroscience Review Editor

PUBLICATIONS:

Journal articles:

20. **Hangya B**, Ranade SP, Lorenc M, Kepecs A (2015) Central cholinergic neurons are rapidly recruited by reinforcement feedback. *Cell*, 162:1155–1168.
19. **Hangya B**, Kepecs A (2015) Vision: How to Train Visual Cortex to Predict Reward Time. *Curr Biol* 25:R490-492.
18. Giber K, Diana MA, Plattner V, Dugué GP, Bokor H, Rousseau CV, Maglóczky M, Havas L, **Hangya B**, Wildner H, Zeilhofer HU, Dieudonné S, Acsády L (2015) A subcortical inhibitory signal for behavioral arrest in the thalamus. *Nature Neuroscience* 18:562-568.

17. Rovó Z, Mátyás F, Barthó P, Slézia A, Lecci S, Pellegrini C, Astori S, Dávid C, **Hangya B**, Lüthi A, Acsády L (2014) Phasic, Nonsynaptic GABA-A Receptor-Mediated Inhibition Entrains Thalamocortical Oscillations. *J Neurosci* 34:7137-7147.
16. **Hangya B**, Pi HJ, Kvitsiani D, Ranade SP, Kepecs A (2014) From circuit motifs to computations: mapping the behavioral repertoire of cortical interneurons. *Curr Opin Neurobiol* 26C:117-124.
15. Groh A*, Bokor H*, Mease RA, Plattner VM, **Hangya B**, Stroh A, Deschenes M, Acsády L (2014) Convergence of cortical and sensory driver inputs on single thalamocortical cells. *Cerebral Cortex* 24:3167-3179.
14. Poucet B, Sargolini F, Song EY, **Hangya B**, Fox SE, Muller RU (2013) Independence of landmark and self-motion guided navigation: a different role for grid cells. *Philosophical Transactions of the Royal Society B* 369:20130370
13. Pi HJ, **Hangya B**, Kvitsiani D, Sanders JI, Huang ZJ, Kepecs A (2013) Cortical interneurons that specialize in disinhibitory control. *Nature* 503:521-524.
12. Kvitsiani D*, Ranade S*, **Hangya B**, Taniguchi H, Huang JZ, Kepecs A (2013) Distinct behavioural and network correlates of two interneuron types in prefrontal cortex. *Nature* 498:363-366.
11. Ranade S*, **Hangya B***, Kepecs A (2013) Multiple modes of phase locking between sniffing and whisking during active exploration. *J Neurosci* 33:8250-8256.
*, equal contribution
10. Lin H, **Hangya B**, Fox SE, Muller RU (2012) Repetitive convulsant-induced seizures reduce the number but not precision of hippocampal place cells. *J Neurosci* 32:4163-4178.
9. **Hangya B**, Tihanyi BT, Entz L, Fabó D, Erőss L, Wittner L, Jakus R, Varga V, Freund TF, Ulbert I (2011) Complex Propagation Patterns Characterize Human Cortical Activity during Slow-Wave Sleep. *J Neurosci* 31:8770-8779.
8. Czurkó A, Huxter J, Li Y, **Hangya B**, Muller RU (2011) Classification of interneurons in the hippocampal formation of freely moving rats. *J Neurosci* 31:2938-2947.
7. Slézia A*, **Hangya B***, Ulbert I, Acsády L (2011) Phase advancement and nucleus-specific timing of thalamocortical activity during slow cortical oscillation. *J Neurosci* 31:607-617.
*, equal contribution
6. **Hangya B**, Li Y, Muller RU, Czurkó A (2010) Complementary spatial firing in place cell-interneuron pairs. *J Physiol* 588:4165-4175.
5. Stefanics G*, **Hangya B***, Hernádi I, Winkler I, Lakatos P, Ulbert I (2010) Phase entrainment of human delta oscillations can mediate the effects of expectation on reaction speed. *J Neurosci* 30:13578-13585.
*, equal contribution
4. Varga V*, Losonczy A*, Zemelman BV, Borhegyi Z, Nyiri G, Domonkos A, **Hangya B**, Holderith N, Magee JC, Freund TF (2009) Fast Synaptic Subcortical Control of Hippocampal Circuits. *Science* 326:449-453.
3. **Hangya B**, Borhegyi Z, Szilágyi N, Freund TF, Varga V (2009) GABAergic neurons of the medial septum lead the hippocampal network during theta activity. *J Neurosci* 29:8094-8102

2. Varga V, **Hangya B**, Kránitz K, Ludányi A, Zemankovics R, Katona I, Shigemoto R, Freund TF, Borhegyi Z (2008) The presence of pacemaker HCN channels identifies theta rhythmic GABAergic neurons in the medial septum. *J Physiol* 586:3893-915.
1. Jelinek I, László V, Buzás E, Pállinger É, **Hangya B**, Horváth Z, Falus A (2007) Increased Antigen Presentation and Th1-polarization in Genetically Histamine-free Mice. *International Immunology* 19:51-58.

Selected abstracts:

11. **Hangya B**, Ranade SP, Kepecs A (2014) Nucleus basalis cholinergic neurons broadcast rapid reinforcement signals. 44th annual meeting of Society for Neuroscience in Washington D.C., USA
10. **Hangya B**, Ranade SP, Kepecs A (2014) Central cholinergic neurons broadcast rapid reinforcement signals. 79th CSHL Symposium: Cognition
9. **Hangya B**, Ranade SP, Kepecs A (2014) Nucleus basalis cholinergic neurons broadcast precisely timed reinforcement signals. Computational and Systems Neuroscience (Cosyne) 2014, Salt Lake City, Utah, USA
8. **Hangya B***, Sanders J*, Kepecs A (2013) From metacognition to statistics: relating confidence across species. Computational and Systems Neuroscience (Cosyne) 2013, Salt Lake City, Utah, USA
   *, equal contribution
7. **Hangya B**, Kvitsiani D, Ranade S, Taniguchi H, Huang J, Kepecs A (2012) Network Interaction Between Neocortical Pyramidal Cells And Optogenetically Identified Interneuron Subtypes In Behaving Mice. FENS 8th Forum of European Neuroscience, Barcelona, Spain
6. **Hangya B**, Borhegyi Zs, Freund TF, Varga V (2010) Detailed analysis of the bidirectional communication between the medial septum and the hippocampus. FENS 7th Forum of European Neuroscience, Amsterdam, Netherlands
5. **Hangya B**, Entz L, Fabó D, Erőss L, Tihanyi B, Varga V, Freund TF, Ulbert I (2009) Complex dynamics of human cortical slow wave propagation revealed by an information theory method. 39th annual meeting of Society for Neuroscience in Chicago, USA
4. **Hangya B**, Slézia A, Bokor H, Ulbert I, Varga V, Acsády L (2008) Burst identification in thalamocortical neurons by the means of hierarchical cluster analysis. FENS 6th Forum of European Neuroscience, Geneva, Switzerland
3. **Hangya B**, Borhegyi Z, Freund TF, Varga V (2008) An information theoretical approach to analyze interaction between two neuronal networks. PENS Hertie Winter School, Obergurgl, Austria
2. **Hangya B**, Varga V, Freund TF, Borhegyi Z (2007) Analysis of interaction between medial septum and hippocampus. 37th annual meeting of Society for Neuroscience in San Diego, USA
1. **Hangya B**, Borhegyi Z, Freund TF, Varga V (2006) Directionality of interaction in the septo-hippocampal system. FENS 5th Forum of Europian Neuroscience, Vienna, Austria