CURRICULUM VITAE

Name: Anita Lakatos

EDUCATION

2003 Ph.D. in Molecular Biology/Neuroscience, Pécs University/Emory University

PREVIOUS AND CURRENT POSITIONS

1998-1999 Ph.D. Student, Department of Medical Biology, School Medicine, Pécs University, Pécs, Hungary
2000-2001 Exchange student, Yerkes National Primate Research Center, Neuroscience Division, Atlanta
2002-2003 Department of Biology, University Medical School of Pécs, Pécs, Hungary Ph.D. diploma
2003-2005 Research Associate Yerkes National Primate Research Center, Neuroscience Division
2006-2006 Research Associate Department of Pharmacology, University of California, Irvine
2007-2012 Assistant Project Scientist, Department of Psychiatry and Human Behavior, UCI
2012-2013 Associate Project Scientist Department of Psychiatry and Human Behavior, UCI
2014-2017 Associate Project Scientist, MIND, UCI
2017-2018 Associate Project Scientist, Department of Pediatrics, UCI
2018-2020 Associate Project Scientist, Stem Cell Research Center, University of California, Irvine
2017-present Adjunct Professor, Division of Graduate Studies – MS Biotechnology Program Azusa Pacific University, Azusa, CA
2020-present Assistant Research Professor, Stem Cell Research Center, University of California, Irvine

HONORS and AWARDS

1998 Graduate Fellowship – Pecs University, Pecs, Hungary
1998 Travel Award for European Neuroscience Conference, Berlin Germany
2005 Best Paper Postdoctoral Scientist Award, American Soc. Pharmacology and Experimental Therapeutics
2006 Young Scientist Travel Award American Soc. Pharmacology and Experimental Therapeutics
2013 MNA Scholarship to Allen Brain Institute, Okinawa, Japan
2013 MNA Travel Award to Alan Brain Institute, Okinawa, Japan
2013 Travel Fellowship to AAICAD conference, Boston, MA
2018 Travel Grant to LINCS Connectivity Map Workshop, Broad Institute of MIT & Harvard

PROFESSIONAL EXPERIENCE

Research Projects

G-protein coupled receptor signaling dependent neurite outgrowth in PC12 cells

Advisor: *Jozsef Szeberenyi MD/Ph.D.*, Pecs University
Demonstrated PKC dependent neurite outgrowth

CART dysregulation and signaling in the CNS

Advisor: *Michael Kuhar Ph.D.*, *Yerkes/Emory University;*
Revealed CART regulation via G protein-coupled receptor and cAMP signaling

Identification of novel biomarkers and drug targets for AD and other dementias

Advisor: *Steven Potkin MD.,* UCI, Dept. of Psychiatry
Discovered novel genetic variants and identified novel therapeutic targets
(*In silico* approach, Bioinformatics)

Effects of stem cell therapy on cognition and neuroinflammation

Advisor: *Matt Burton-Jones, Ph.D. MIND* UCI

Identified biological mechanism related to neurotransmission and mitochondria function and attenuated microglial function (*In silico* approach, Bioinformatics)

A proof-of-concept study for developing gene therapy for VCP/p97 FTD

Advisor: *Virginia Kimonis MD. Dept. of Pediatrics UCI;*
Laid the foundation for an ASO-based gene therapy

Identifying molecular programs specifically employed by NSCs to initiate successful clinical trials

Advisor: *Aileen Anderson, Ph.D. UCI Stem Cell Research Center*
Developed molecular classifiers, applied machine learning (*In silico* approach, Bioinformatics)

Developing 3D cell culture systems to study neurodegeneration and repair

Advisor: *Brian Cummings, Ph.D. UCI Stem Cell Research Center*
Establishing organoid culture protocols and methods to advance neuronal developmental stages

CRISPR core: gRNA design and genome-wide CRISPR screening

Advisor: *Aileen Anderson, Ph.D. UCI Stem Cell Research Center*

ACCREDITED COURSES

2013 Human and Mouse Brain Atlas Training Workshop, Allen Brain Institute, Okinawa, Japan
2013 UCI Stem Cell Techniques Course, UC Irvine
2014 Next Generation Data Analysis Workshop, University of California, Riverside
2015 Network Analysis Workshop, Systems Biology Analysis Methods for Genomic Data, University of California, Los Angeles
2018 LINCS Connectivity Map Workshop, Broad Institute of MIT & Harvard
2020 EMBL Organoids: Modelling Organ Development and Disease in 3D Culture, Heidelberg, Germany

ADDITIONAL SKILLS

Programming language: advanced R, Linux, basic Python
Statistical and analytical tools: Bioconductor, Cytoscape, IPA, STATA, SSPS, JMPGenomics, GraphPad

RESEARCH SUPPORT/GRANTS

R13 MH083464-02 International Imaging Genetics Conference 2010-2013 PI Completed
Research Objective: To organize a very specialized conference where investigators can present their latest findings and discuss methodological issues relevant to the field (the integration of imaging and genetics)

CIRM DISC2-10753 Generation and *in vitro* profiling of neural stem cell lines to predict *in vivo* efficacy for chronic cervical spinal cord injury. 4/2018 -2020 Co-Investigator Completed
Research Objective: This project generates new cGMP compliant tissue educated human neural stem cell lines, paired with in vivo pre-clinical proof of concept testing, and development of a predictive in vitro profile.

UCI SCRC Seed Grant 2020 In situ incorporation of microglia during 3D brain organoid development to enhance brain development/maturation 7/21/2020 PI Ongoing
Research Objective: Improve 3D brain cell culturing technologies to gain insight into brain development and deco brain complexity

PEER-REVIEWED PUBLICATIONS

Dominguez G, **Lakatos A**, Kuhar MJ. Characterization of the cocaine- and amphetamine-regulated transcript (CART) peptide gene promoter and its activation by a cyclic AMP-dependent signaling pathway in GH3 cells. J Neurochem. (2002) Mar;80(5):885-93. PubMed PMID: 11948252.

Lakatos A, Dominguez G, Kuhar MJ. CART promoter CRE site binds phosphorylated CREB. Brain Res Mol

Brain Res. (2002) Jul 15;104(1):81-5. PubMed PMID: 12117553.

Vicentic A, **Lakatos** A, Hunter R, Philpot K, Dominguez G, Kuhar MJ. CART peptide diurnal rhythm in brain and effect of fasting. Brain Res. (2005) Jan 25;1032(1-2):111-5. PubMed PMID: 15680948.

Lakatos A, Prinster S, Vicentic A, Hall RA, Kuhar MJ. Cocaine- and amphetamine-regulated transcript (CART) peptide activates the extracellular signal-regulated kinase (ERK) pathway in AtT20 cells via putative G-protein coupled receptors. Neurosci Lett. (2005) Aug 12-19;384(1-2):198-202. PubMed PMID:15908120.

Vicentic A, **Lakatos A**, Kuhar MJ. CART (cocaine- and amphetamine-regulated transcript) peptide receptors: specific binding in AtT20 cells. Eur J Pharmacol. 2005 Dec 28;528(1-3):188-9. Epub (2005) Dec 5. PubMed PMID: 16330022.

Vicentic A, Francis D, Moffett M, **Lakatos A**, Rogge G, Hubert GW, Harley J, Kuhar MJ. Maternal separation alters serotonergic transporter densities and serotonergic 1A receptors in rat brain. Neuroscience. (2006) Jun 19;140(1):355-65. Epub 2006 Mar 13. PubMed PMID: 16530973.

Vicentic A, **Lakatos A**, Jones D. The CART receptors: background and recent advances. Peptides. (2006) Aug;27(8):1934-7. Epub 2006 May 19. Review. PubMed PMID:16713658.

Anita Lakatos, Douglas C. Jones Cocaine-amphetamine-regulated transcript (CART) gene expression is regulated by intracellular calcium Pharmacology (American Society for Pharmacology and Experimental Therapeutics) FASEB (2006) Vol. 20, No. 4

Potkin SG, Turner JA, Guffanti G, **Lakatos A**, Fallon JH, Nguyen DD, Mathalon D, Ford J, Lauriello J, Macciardi F; FBIRN. A genome-wide association study of schizophrenia using brain activation as a quantitative phenotype. Schizophr Bull. (2009) Jan;35(1):96-108. doi: 10.1093/schbul/sbn155. Epub 2008 Nov 20. PubMed PMID:19023125

Boronkai A, Brubel R, Racz B, Tamas A, Kiss P, Horvath G, Lubics A, Szigeti A, Bellyei S, Toth G**, Lakatos A**, Reglodi D. Effects of pituitary adenylate cyclase activating polypeptide on the survival and signal transduction pathways in human choriocarcinoma cells. Ann N Y Acad Sci. (2009) Apr; 1163:353-7. doi: 10.1111/j.1749-6632.2008 PubMed PMID: 19456358.

Steven G. Potkin, Jessica A. Turner, James A. Fallon, Anita Lakatos, David B. Keator, Guia Guffanti, Fabio Macciardi Gene Discovery Through Imaging Genetics: Identification of Two Novel Genes Associated with Schizophrenia Molecular Psychiatry (2009), doi: 10.1038/mp.2008.127 PMID: 19065146

Jones DC, **Lakatos A**, Rogge GA, Kuhar MJ. Regulation of cocaine- and amphetamine-regulated transcript mRNA expression by calcium-mediated signaling in GH3 cells. Neuroscience. 2009 May 5;160(2):339-47. doi:10.1016/j.neuroscience.2009.02.051. Epub (2009) Mar 1. PubMed PMID: 19258027.

Potkin SG, Turner JA, Guffanti G, **Lakatos A**, Torri F, Keator DB, Macciardi F. Genome-wide strategies for discovering genetic influences on cognition and cognitive disorders: methodological considerations. Cogn Neuropsychiatry. (2009);14(4-5):391-418. doi: 10.1080/13546800903059829. PubMed PMID: 19634037;

Potkin SG, Guffanti G, **Lakatos A**, Turner JA, Kruggel F, Fallon JH, Saykin AJ, Orro A, Lupoli S, Salvi E, Weiner M, Macciardi F; Alzheimer's Disease Neuroimaging Initiative. Hippocampal atrophy as a quantitative trait in a genome-wide association study identifying novel susceptibility genes for Alzheimer's disease. PLoS One. (2009) Aug 7;4(8):e6501. doi: 10.1371/journal.pone.0006501.,PMID: 19668339;

Lakatos A, Derbeneva O, Younes D, Keator D, Bakken T, Lvova M, Brandon M, Guffanti G, Reglodi D, Saykin A, Weiner M, Macciardi F, Schork N, Wallace DC, Potkin SG; Alzheimer's Disease Neuroimaging Initiative. Association between mitochondrial DNA variations and Alzheimer's disease in the ADNI cohort. Neurobiol Aging. 2010 Aug;31(8):1355-63. doi:10.1016/j.neurobiolaging.2010.04.031, PMID:20538375

Potkin SG, Macciardi F, Guffanti G, Fallon JH, Wang Q, Turner JA, **Lakatos A**, Miles MF, Lander A, Vawter MP, Xie X. Identifying gene regulatory networks in schizophrenia. Neuroimage. 2010 Nov 15;53(3):839-47. doi:10.1016/j.neuroimage.2010.06.036. Epub (2010) Jun 22. Review. PubMed PMID:20600988;

Fabio Macciardi, Guia Guffanti, Federica Torri, Jerod Rasmussen, **Anita Lakatos**, Jessica Turner, Frithjof Kruggel, James Fallon, Andrew Saykin, Michael Weiner, Steven Potkin CNV Regions Profiling and Risk Of Cognitive Impairment in the ADNI Alzheimer's & Dementia: The Journal of the Alzheimer's Association Volume 6, Issue 4,Page 72, July (2010), 10.1016/j.jalz.2010.08.223

Keator DB, Fallon JH, **Lakatos A**, Fowlkes CC, Potkin SG, Ihler A; Alzheimer's Disease Neuroimaging Initiative. Feed-forward hierarchical model of the ventral visual stream applied to functional brain image classification. Hum Brain Mapp. (2014) Jan;35(1):38-52. doi: 10.1002/hbm.22149. Epub 2012 Jul 30. PubMed PMID:22847891;

Rasmussen JM, **Lakatos A**, van Erp TG, Kruggel F, Keator DB, Fallon JT, Macciardi F, Potkin SG; Alzheimer's Disease Neuroimaging Initiative. Empirical derivation of the reference region for computing diagnostic sensitive ^{18}fluorodeoxyglucose ratios in Alzheimer's disease based on the ADNI sample. Biochim Biophys Acta. (2012) Mar;1822(3):457-66. doi: 10.1016/j.bbadis.2011.09.008. Epub 2011 Sep 19. PubMed PMID: 21958592;

Reglodi D, Kiss P, Szabadfi K, Atlasz T, Gabriel R, Horvath G, Szakaly P, Sandor B, Lubics A, Laszlo E, Farkas J, Matkovits A, Brubel R, Hashimoto H, Ferencz A, Vincze A, Helyes Z, Welke L, **Lakatos A**, Tamas A. PACAP is an endogenous protective factor-insights from PACAP-deficient mice. J Mol Neurosci. 2012 Nov;48(3):482-92. Epub (2012) Apr 14. PubMed PMID: 22528455.

Guffanti G, Torri F, Rasmussen J, Clark AP, **Lakatos A**, Turner JA, Fallon JH, Saykin AJ, Weiner M; ADNI the Alzheimer's Disease Neuroimaging Initiative, Vawter MP, Knowles JA, Potkin SG, Macciardi F. Increased CNV-region deletions in mild cognitive impairment (MCI) and Alzheimer's disease (AD) subjects in the ADNI sample. Genomics. (2013) Aug;102(2):112-22. doi: 10.1016/j.ygeno.2013.04.004. Epub (2013) Apr 11.,PMID: 23583670;

Marsh SE, Abud EM, **Lakatos A**, Karimzadeh A, Yeung ST, Davtyan H, Fote GM, Lau L, Weinger JG, Lane TE, Inlay MA, Poon WW, Blurton-Jones M. The adaptive immune system restrains Alzheimer's disease pathogenesis by modulating microglial function. Proc Natl Acad Sci U S A. (2016) Mar 1;113(9):E1316-25. doi:10.1073/pnas.1525466113. Epub (2016) Feb 16. PubMed PMID: 26884167;

Chen W, Abud EA, Yeung ST, **Lakatos A**, Nassi T, Wang J, Blum D, Buée L, Poon WW, Blurton-Jones M. Increased tauopathy drives microglia-mediated clearance of beta-amyloid. Acta Neuropathol Commun. (2016) Jun 23;4(1):63. doi:10.1186/s40478-016-0336-1. PubMed PMID: 27339073;

Ngo M, Han A, **Lakatos A**, Sahoo D, Hachey SJ, Weiskopf K, Beck AH, Weissman IL, Boiko AD. Antibody Therapy Targeting CD47 and CD271 Effectively Suppresses Melanoma Metastasis in Patient-Derived Xenografts. Cell Rep. (2016) Aug 9;16(6):1701-1716. doi: 10.1016/j.celrep.2016.07.004. Epub (2016) Jul 28. PubMed PMID: 27477289.

Lakatos A, Goldberg NR, Blurton-Jones M. Integrated analysis of genetic, behavioral, and biochemical data implicates neural stem cell-induced changes in immunity, neurotransmission and mitochondrial function in Dementia with Lewy Body mice. Acta Neuropathol Commun. (2017) Mar 10;5(1):21. doi: 10.1186/s40478-017-0421-0. PubMed PMID: 28283027;

Nguyen HX, Hooshmand MJ, Saiwai H, Maddox J, Salehi A, **Lakatos A**, Nishi RA, Salazar D, Uchida N, Anderson AJ. Systemic Neutrophil Depletion Modulates the Migration and Fate of Transplanted Human Neural Stem Cells to Rescue Functional Repair. J Neurosci. 2017 Sep 20;37(38):9269-9287. doi: 10.1523/JNEUROSCI.2785-16.2017. Epub (2017) Aug 28. PubMed PMID: 28847814;

Dimitra Chalkia, Jeremy Leipzig, Maria Lvova, Olga Derbeneva, **Anita Lakatos**, Dexter Hadley, Hakon Hakonarson, Douglas Wallace Mitochondrial DNA Haplogroup Variation is Associated with Autism Spectrum Disorders JAMA Psychiatry (2017), doi:10.1001/jamapsychiatry.2017.2604. PMID:2883288

Al-Tahan S, Al-Obeidi E, Yoshioka H, **Lakatos A**, Weiss L, Grafe M, Palmio J, Wicklund M, Harati Y, Omizo M, Udd B, Kimonis V. Novel valosin-containing protein (VCP/p97) mutations associated with multisystem proteinopathy. Neuromuscul Disord. (2018) Jun;28(6):491-501. doi: 10.1016/j.nmd.2018.04.007. Epub 2018 Apr 17. PMID:29754758.

Ranim Mahmoud, Preeti Singh, Lan Weiss, **Anita Lakatos**, Melanie Oakes, Waheeda Hossain, Merlin G. Butler and Virginia Kimonis Newborn screening for Prader-Willi Syndrome is feasible: Early diagnosis for better outcomes. American Journal of Medical Genetics (2019) doi: 10.1002/ajmg.a.60681. PMID:30556641

Alandy-Dy J, Wencel M, Hall K, Simon J, Chen Y, Valenti E, Yang J, Bali D, **Lakatos A**, Goyal N, Mozaffar T, Kimonis V. Variable clinical features and genotype-phenotype correlations in 18 patients with late-onset Pompe disease. Ann Transl Med. 2019 Jul;7(13):276. doi: 10.21037, PMID: 31392188

Francisca Benavente, Katja M Piltti, Mitra J Hooshmand, Aileen A Nava, **Anita Lakatos**, Brianna G Feld, Paul D Gershon, and Aileen J Anderson, Novel C1q Receptor-Mediated Signaling Controls Neural Stem Cell Behavior and Neurorepair, *eLife* 2020, DOI: 10.7554/eLife.55732, PMID: 32894219