

CURRICULUM VITAE

ZSOLT KOVÁCS PhD, habil.
(Associate professor)

CONTACT INFORMATION

- Workplace: Eötvös Loránd University, Savaria University Centre, Department of Biology; H-9700 HUNGARY, Szombathely, Károlyi Gáspár tér 4.
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EDUCATION AND QUALIFICATION

- 2008: *Habilitation*; University of West Hungary, Sopron, Hungary.
- 2003: *PhD degree*; Eötvös Loránd University, Budapest, Hungary (in molecular neurobiology; *summa cum laude*; title: Regional distribution of nucleosides and their metabolites in the human brain).
- 1998-2002: *Doctoral School*; Eötvös Loránd University, Biology Doctoral School, Faculty of Science (Molecular cell and neurobiology program), Budapest, Hungary.
- 1992-1995: *Assistant master of biology*; József Attila University, Faculty of Science; Szeged, Hungary.
- 1986-1990: *Elementary school teacher of biology and geography*; Berzsényi Dániel College; Szombathely, Hungary.

EMPLOYMENT

- **Eötvös Loránd University**, Savaria University Centre, Department of Biology (Szombathely, Hungary): associate professor, Head of Research Group of Neuromodulation and Epilepsy and *in vivo* Electrophysiology Laboratory (2017- ...).
- **University of West Hungary**, Savaria Campus, Faculty of Natural Sciences and Technology, Biological Institute, Department of Zoology (Szombathely, Hungary): associate professor, Head

of Research Group of Neuromodulation and Epilepsy and *in vivo* Electrophysiology Laboratory (2008-2017).

- **Berzsenyi Dániel College**, Department of Zoology (Szombathely, Hungary): associate professor (2002-2008), Head of *in vivo* Electrophysiology Laboratory; associate lecturer (2000-2002); lecturer (1996-2000); laboratory assistant (1991-1996).

TEACHING

- Animal anatomy, Animal histology, Immunology, Cell biology, Neurochemistry.

LANGUAGES

- English: advanced level C-type state certificate.

AWARDS

- Prima Award (in Vas County; For Hungarian Science; Szombathely, Hungary; 2016)
- For Scientific Work (University of West Hungary, SEK, Szombathely, Hungary; 2009)

RESEARCH TOPICS

- Investigation of pathomechanism of absence epilepsy (e.g., links between neuroimmunological reactions and epilepsy).
- Nutritional (metabolic) therapies for CNS disorders (e.g., epilepsy and anxiety).
- Distribution and functions of nucleosides in the brain (e.g., their effects on absence epilepsy).

METHODS

- Implantation of electrodes for EEG recording.
- *In vivo* electrophysiology and pharmacology; EEG recording of treated (i.p., i.c.v., gavage) freely moving rats.
- Behavioral tests (e.g., EPM and LDB).

RESEARCH LINKS

- Department of Molecular Pharmacology and Physiology; Department of Psychology; University of South Florida, Tampa, Florida, USA
- Laboratory of Proteomics, Eötvös Loránd University, Budapest, HUNGARY
- Department of Physiology and Neurobiology, Eötvös Loránd University, Budapest, HUNGARY
- Functional Pharmacology Research Group, Research Centre for Natural Sciences, Budapest, HUNGARY
- Department of Cellular and Network Neurobiology, Institute of Experimental Medicine, Budapest, HUNGARY
- Department of Experimental Zoology and Neurobiology, Institute of Biology, University of Pécs, HUNGARY

MANUSCRIPT REVIEWS, EDITORIAL EXPERIENCE

- **Editorial Board Member** of Molecular and Cellular Epilepsy (2013-...) and Neuroscience Communications (2015-...).
- **Guest-Editor** of Current Topics in Medicinal Chemistry (2011; 11(8): Kovacs Z, Dobolyi A, *Eds.*, Functions and metabolism of brain nucleosides and their metabolites. *IF: 4.112*) and Current Medicinal Chemistry (2014; 21(6): Kovacs Z, Dobolyi A, *Eds.*, Epilepsy and its therapy: present and future (*IF 2014: 4.07*).
- **Registered reviewer** of Frontiers in Neuroscience, European Journal of Neurology, Brain Research Bulletin, Epilepsy Research, Neural Regeneration Research, International Journal of Biomedical Science, Journal of Biochemistry and Cell Biology, Current Metabolomics, Current Drug Targets and so on.

OTHER EXPERIENCE AND PROFESSIONAL MEMBERSHIPS

- 2002- : Member of the VATT of the Hungarian Academy of Sciences (MTA VATT)
- 2001- : Member of the Federation of European Neuroscience Societies (FENS)
- 1998- : Member of the Hungarian Neuroscience Society (MITT)

SELECTED PUBLICATIONS

FULL PAPERS

(For more information, please see: 'Magyar Tudományos Művek Tára',
<https://m2.mtmt.hu/gui2/?type=authors&mode=browse&sel=10026478>

- Kovács, Z.**, Skatchkov, S.N., Veh, R.W., Szabó, Z., Németh, K., Szabó, P.T., Kardos, J., Héja, L. (2022). Critical Role of Astrocytic Polyamine and GABA Metabolism in Epileptogenesis. *Font. Cell. Neurosci.* *15*, 787319. (*SJR: Q2*) (*IF 2020: 5.505*) doi: 10.3389/fncel.2021.787319 <https://www.frontiersin.org/articles/10.3389/fncel.2021.787319/full>
- Brunner, B., Ari, C., D'Agostino, D.P., **Kovács, Z.** (2021). Adenosine Receptors Modulate the Exogenous Ketogenic Supplement-Evoked Alleviating Effect on Lipopolysaccharide-Generated Increase in Absence Epileptic Activity in WAG/Rij Rats. *Nutrients* *13*, 4082. (*SJR: D1*) (*IF 2020: IF 5.717*) <https://doi.org/10.3390/nu13114082> <https://www.mdpi.com/2072-6643/13/11/4082>
- Kovács, Z.**, Brunner, B., Ari, C. (2021). Beneficial Effects of Exogenous Ketogenic Supplements on Aging Processes and Age-Related Neurodegenerative Diseases. *Nutrients* *13*, 2197. (*SJR: D1*) (*IF 2020: IF 5.717*) doi: 10.3390/nu13072197. <https://www.mdpi.com/2072-6643/13/7/2197>
- Brunner, B., Rauch, E., Ari, C., D'Agostino, D.P., **Kovács, Z.** (2021). Enhancement of Ketone Supplements-Evoked Effect on Absence Epileptic Activity by Co-Administration of Uridine in Wistar Albino Glaxo Rijswijk Rats. *Nutrients* *13*, 234. (*SJR: D1*) (*IF 2020: IF 5.717*) doi: 10.3390/nu13010234 <https://www.mdpi.com/2072-6643/13/1/234>
- Kovács, Z.**, Brunner, B., D'Agostino, D.P., Ari, C. (2021). Age- and sex-dependent modulation of exogenous ketone supplement-evoked effects on blood glucose and ketone body levels in Wistar Albino Glaxo Rijswijk rats. *Front. Neurosci.* *14*, 618422. (*SJR: Q2*) (*IF 2020: 4.677*) doi: 10.3389/fnins.2020.618422 <https://www.frontiersin.org/articles/10.3389/fnins.2020.618422/full>
- Ari, C., Murdun, C., Goldhagen, C., Koutnik, A.P., Bharwani, S.R., Diamond, D.M., Kindy, M., D'Agostino, D.P., **Kovács, Z.** (2020). Exogenous Ketone Supplements Improved Motor Performance in Preclinical Rodent Models. *Nutrients*, *12*, 2459. (*SJR: D1*) (*IF 5.717*) doi: 10.3390/nu12082459 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7468837/>
- Kovács, Z.**, Brunner, B., D'Agostino, D.P., Ari, C. (2020). Inhibition of adenosine A1 receptors abolished the nutritional ketosis-evoked delay in the onset of isoflurane-induced anesthesia in Wistar Albino Glaxo Rijswijk rats. *BMC Anesthesiol.*, *20*:30. (*SJR: Q2*) (*IF 2.217*) doi: 10.1186/s12871-020-0943-z. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6993369/>

- Ari, C., Murdun, C., Koutnik, A.P., Goldhagen, C.R., Rogers, C., Park, C., Bharwani, S., Diamond, D.M., Kindy, M.S., D'Agostino, D.P., **Kovács, Z.** (2019). Exogenous Ketones Lower Blood Glucose Level in Rested and Exercised Rodent Models. *Nutrients*. 11(10). pii: E2330. (*SJR: DI*) (*IF 4.546*) doi: 10.3390/nu11102330. <https://www.mdpi.com/2072-6643/11/10/2330>
- Kovács, Z.**, D'Agostino, D.P., Diamond, D., Kindy, M.S., Rogers, C., Ari, C. (2019) Therapeutic Potential of Exogenous Ketone Supplement Induced Ketosis in the Treatment of Psychiatric Disorders: Review of Current Literature. *Front. Psychiatry* 10:363. (*SJR: Q1*) (*IF 2.849*) doi: 10.3389/fpsyt.2019.00363 <https://www.frontiersin.org/articles/10.3389/fpsyt.2019.00363/full>
- Vincze, R., Péter, M., Szabó, Z., Kardos, J., Héja, L., **Kovács, Z.** (2019) Connexin 43 Differentially Regulates Epileptiform Activity in Models of Convulsive and Non-Convulsive Epilepsies; *Front. Cell. Neurosci.* 13:173. (*SJR: Q1*) (*IF 3.921*) doi: 10.3389/fncel.2019.00173 <https://www.frontiersin.org/articles/10.3389/fncel.2019.00173/abstract>
- Kovács, Z.**, D'Agostino, D.P., Diamond, D.M., Ari, C. (2019) Exogenous Ketone Supplementation Decreased the Lipopolysaccharide-Induced Increase in Absence Epileptic Activity in Wistar Albino Glaxo Rijswijk Rats. *Front. Mol. Neurosci.* 12:45. (*SJR: Q2*), (*IF 4.057*) <https://www.frontiersin.org/articles/10.3389/fnmol.2019.00045/full>
- Ari, C., D'Agostino, D.P., Diamond, D.M., Kindy, M., Park, C., **Kovács, Z.** (2019) Elevated Plus Maze Test Combined with Video Tracking Software to Investigate the Anxiolytic Effect of Exogenous Ketogenic Supplements. *J. Vis. Exp.*, (143), e58396. (*SJR: Q1*), (*IF 1.140*) <https://www.jove.com/video/58396/elevated-plus-maze-test-combined-with-video-tracking-software-to>
- Penke, B., Paragi, G., Gera, J., Berkecz, R., **Kovács, Z.**, Crul, T., Vigh, L. (2018) The Role of Lipids and Membranes in the Pathogenesis of Alzheimer's Disease: A Comprehensive View. *Curr. Alzheimer Res.*, 15, 1191-1212. (*SJR: Q2*), (*IF 3.211*) <http://www.eurekaselect.com/165315/article>
- Ari C., **Kovács Z.**, Murdun C., Koutnik A.P., Goldhagen C.R., Rogers C., Diamond D., D'Agostino D.P. (2018) Nutritional ketosis delays the onset of isoflurane induced anesthesia. *BMC Anesthesiol.*, 18(1):85. (*SJR: Q1*), (*IF 1.619*) <https://bmcanesthesiol.biomedcentral.com/track/pdf/10.1186/s12871-018-0554-0>
- Papp, P., **Kovács, Z.**, Szocsics, P., Juhász, G., Maglóczy, Z. (2018) Alterations in hippocampal and cortical densities of functionally different interneurons in rat models of absence epilepsy. *Epilepsy Res.*, 145, 40–50. (*SJR: Q2*), (*IF 2.178*) <https://www.sciencedirect.com/science/article/pii/S0920121118300317>
- Kovács, Z.**, D'Agostino, D.P., Ari, C. (2018) Anxiolytic effect of exogenous ketone supplementation is abolished by adenosine A1 receptor inhibition in Wistar Albino

- Glaxo/Rijswijk rats. *Front. Behav. Neurosci.*, 12:29; (*SJR: Q1*), (*IF 2.622*)
<https://www.frontiersin.org/articles/10.3389/fnbeh.2018.00029/full>
- Lakatos, R.K., Dobolyi, Á., **Kovács, Z.** (2018) Uric acid and allopurinol aggravate absence epileptic activity in Wistar Albino Glaxo Rijswijk rats. *Brain Res.*, 1686, 1–9. (*SJR: Q1*), (*IF 2.929*) <https://www.sciencedirect.com/science/article/pii/S0006899318300702?via%3Dihub>
- Barna, J., Renner, É., Arszovszki, A., Cservenák, M., **Kovács, Z.**, Palkovits, M., Dobolyi, A. (2018) Suckling induced activation pattern in the brain of rat pups. *Nutr. Neurosci.*, 21, 317-327. (*SJR: Q1*), (*IF 3.950*) <https://www.ncbi.nlm.nih.gov/pubmed/28185482>
- Kovács, Z.**, D'Agostino, D.P., Dobolyi, A., Ari, C. (2017) Adenosine A1 receptor antagonism abolished the anti-seizure effects of exogenous ketone supplementation in Wistar Albino Glaxo Rijswijk rats. *Front. Mol. Neurosci.*, 10:235. (*SJR: Q1*), (*IF 3.902*)
<https://www.frontiersin.org/articles/10.3389/fnmol.2017.00235/full>
- Kovács, Z.**, Lakatos, R.K., Barna, J., Dobolyi, A. (2017) Absence epileptic activity in Wistar Albino Glaxo Rijswijk rat mothers. *Brain Res.*, 1657, 368–376. (*SJR: Q1*), (*IF 3.125*)
<https://www.sciencedirect.com/science/article/pii/S0006899317300057>
- Ari, C., **Kovács, Z.**, Juhasz, G., Murdun, C., Goldhagen, C.R., Koutnik, A.P., Poff, A.M., Kesl, S.L., D'Agostino, D.P. (2016) Exogenous ketone supplements reduce anxiety-related behavior in Sprague-Dawley and Wistar Albino Glaxo/Rijswijk rats. *Front. Mol. Neurosci.*, 9:137. (*SJR: Q1*), (*IF 5.076*) <http://journal.frontiersin.org/article/10.3389/fnmol.2016.00137/abstract>
- Lakatos, R.K., Dobolyi, Á., Todorov, M.I., Kékesi, K.A., Juhász, G., Aleksza, M., **Kovács, Z.** (2016) Guanosine may increase absence epileptic activity by means of A2A adenosine receptors in Wistar Albino Glaxo Rijswijk rats. *Brain Res. Bull.*, 124, 172-181. (*SJR: Q2*), (*IF 3.033*) <http://www.sciencedirect.com/science/article/pii/S0361923016300971>
- Kovács, Z.**, Kékesi, K.A., Juhász, G., Dobolyi, A. (2015) Modulatory effects of inosine, guanosine and uridine on lipopolysaccharide-evoked increase in spike-wave discharge activity in Wistar Albino Glaxo/Rijswijk rats. *Brain Res. Bull.*, 118, 46-57. (*SJR: Q2*), (*IF 2.572*)
<http://www.sciencedirect.com/science/article/pii/S0361923015300319>
- Volgyi, K., Juhasz, G., **Kovács, Z.**, Penke, B. (2015) Dysfunction of endoplasmic reticulum (ER) and mitochondria (MT) in Alzheimer's disease: The role of the ER-MT cross-talk. *Curr. Alz. Res.*, 12(7), 655-672. (*SJR: Q1*), (*IF 3.145*) <http://www.eurekaselect.com/132975/article>
- Kovács, Z.**, Kékesi, K.A., Dobolyi, Á., Lakatos, R., Juhász, G. (2015) Absence epileptic activity changing effects of non-adenosine nucleoside inosine, guanosine and uridine in Wistar

- Albino Glaxo Rijswijk rats. *Neuroscience*, 300, 593-608. (*SJR: Q2*), (*IF 3.231*)
<http://www.sciencedirect.com/science/article/pii/S0306452215004960>
- Kovács, Z.**, Kardos, J., Kékesi, K.A., Juhász, G., Lakatos, R., Héja, L. (2015) Effects of nucleosides on glia - neuron interactions open up new vistas in development of more effective antiepileptic drugs. *Curr. Med. Chem.*, 22(12), 1500-15014. (*SJR: Q2*), (*IF 3.455*)
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- Kovács, Z.**, Kékesi, K.A., Juhász, G., Barna, J., Héja, L., Lakatos, R., Dobolyi, Á. (2015) Non-adenosine nucleoside inosine, guanosine and uridine as promising antiepileptic drugs: a summary of current literature. *Mini Rev. Med. Chem.*, 14(13), 1033-1042. (*SJR: Q2*), (*IF 2.841*) <http://www.eurekaselect.com/125918/article>
- Kovács, Z.**, Kékesi, K. A., Juhász, G., Dobolyi, A. (2014) The antiepileptic potential of nucleosides. *Curr. Med. Chem.*, 21(6), 788-821. (*SJR: Q1*), (*IF 3.853*)
<http://www.eurekaselect.com/118147/article>
- Dobolyi, A., Kékesi, K. A., Juhász, G., Székely, A. D., Lovas, G., **Kovács, Z.** (2014) Receptors of peptides as therapeutic targets in epilepsy research. *Curr. Med. Chem.*, 21(6), 764-787. (*SJR: Q1*), (*IF 3.853*) <http://www.eurekaselect.com/118146/article>
- Györfy, B., **Kovács, Z.**, Gulyássy, P., Simor, A., Völgyi, K., Orbán, G., Baracska, P., Szabó, Z., Janáky, T., Dobolyi, Á., Juhász, G., Czurkó, A., Kékesi, K.A. (2014) Brain protein expression changes in WAG/Rij rats, a genetic rat model of absence epilepsy after peripheral lipopolysaccharide treatment. *Brain. Behav. Immun.*, 35, 86-95. (*SJR: D1*), (*IF: 5.889*)
<http://www.sciencedirect.com/science/article/pii/S0889159113004509>
- Kovács, Z.**, Dobolyi, Á., Juhász, G., Kékesi, K.A. (2014) Lipopolysaccharide induced increase in seizure activity in two animal models of absence epilepsy WAG / Rij and GAERS rats and Long Evans rats. *Brain Res. Bull.*, 104, 7-18. (*SJR: Q2*), (*IF: 2.718*)
<http://www.sciencedirect.com/science/article/pii/S0361923014000392>
- Danyadi, B., Szabadfi, K., Reglodi, D., Mihalik, A., Danyadi, T., **Kovács, Z.**, Batai, I., Tamas, A., Kiss, P., Toth, G., Gabriel, R. (2014) PACAP application improves functional outcome of chronic retinal ischemic injury in rats - evidence from electroretinographic measurements. *J. Mol. Neurosci.*, 54(3), 293-299. (*SJR: Q1*), (*IF: 2.343*) <http://link.springer.com/article/10.1007%2Fs12031-014-0296-5>
- Kovács, Z.**, Dobolyi, A., Kékesi, K. A., Juhász, G. (2013) 5'-nucleotidases, nucleosides and their distribution in the brain: pathological and therapeutic implications. *Curr. Med. Chem.*, 20(34), 4217-4240. (*SJR: Q1*), (*IF 3.715*) <http://www.eurekaselect.com/116019/article>

- Kovács, Z.,** Slézia, A., Bali, Z. K., Kovács, P., Dobolyi, Á., Szikra, T., Hernádi, I., Juhász, G. (2013) Uridine modulates neuronal activity and inhibits spike-wave discharges of absence epileptic Long Evans and Wistar Albino Glaxo/Rijswijk rats. *Brain Res. Bull.*, 97, 16-23. (*SJR: Q2*), (*IF 2.974*) <http://www.sciencedirect.com/science/article/pii/S0361923013000919>
- Kovács, Z.,** Czurkó, A., Kékesi, K. A., Juhász, G. (2012) Neonatal tricyclic antidepressant clomipramine treatment reduces the spike-wave discharge activity of the adult WAG/Rij rat. *Brain Res. Bull.*, 89, 102-107. (*SJR: Q2*), (*IF 2.935*) <http://www.sciencedirect.com/science/article/pii/S0361923012001797>
- Kovács, Z.,** Kékesi, K. A., Baracska, P., Juhász, G., Czurkó, A. (2011) Doxycycline could aggravate the absence-like epileptic seizures of WAG/Rij rats via matrix metalloproteinase inhibition. *Neurochem. Int.*, 59, 563-566. (*SJR: Q2*), (*IF 2.857*) <http://www.sciencedirect.com/science/article/pii/S0197018611002129>
- Kovács, Z.,** Czurkó, A., Kékesi, K. A., Juhász, G. (2011) Intracerebroventricularly administered lipopolysaccharide enhances spike-wave discharges in freely moving WAG/Rij rats. *Brain Res. Bull.*, 85, 410-416. (*SJR: Q2*), (*IF 2.818*) <http://www.sciencedirect.com/science/article/pii/S0361923011001468>
- Kovács, Z.,** Czurkó, A., Kékesi, K. A., Juhász, G. (2011). The effect of intraperitoneally administered dimethyl sulfoxide on absence-like epileptic activity of freely moving WAG/RIJ rats. *J. Neurosci. Methods*, 197, 133-136. (*SJR: Q2*), (*IF 1.98*) <http://www.sciencedirect.com/science/article/pii/S016502701100080X>
- Kovács, Z.,** Juhász, G., Palkovits, M., Kékesi, KA. (2011) Area, Age and Gender Dependence of the Nucleoside System in the Brain: a Review of Current Literature. *Curr. Top. Med. Chem.*, 11(8), 1012-1033. (*SJR: Q1*), (*IF 4.174*) <http://www.ncbi.nlm.nih.gov/pubmed/21401498>
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- Kovács, Z.,** Kékesi, K. A., Bobest, M., Török, T., Szilágyi, N., Szikra, T., Szepesi, Z., Nyilas, R., Dobolyi, A., Palkovits, M., Juhász, G. (2005). Post mortem degradation of nucleosides in the brain: comparison of human and rat brains for estimation of in vivo concentration of

nucleosides. *J. Neurosci. Methods*, 148, 88-93. (*SJR: Q2*), (*IF 1.784*)
<http://www.ncbi.nlm.nih.gov/pubmed/16054224>

Dobolyi, A., Szikra, T., Kékesi, A. K., **Kovács, Z.**, Juhász, G. (1999). Uridine is released by depolarization and inhibits unit activity in the rat hippocampus. *Neuroreport*, 10, 3049-3053. (*SJR: Q1*), (*IF: 2.682*) <http://www.ncbi.nlm.nih.gov/pubmed/10549821>

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SELECTED CONFERENCE ABSTRACTS

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