

# CURRICULUM VITAE

## Personal data

Birthplace and date: Budapest, Hungary; 14 May, 1986  
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## Working experience

- 2020-** **University of Oklahoma, Health Sciences Center**  
 /Oklahoma Center for GeroScience and Healthy Brain Aging, Vascular Cognitive Impairment and Neurodegeneration Program, Neurosciences PhD Program/
- 2024- **Department of Neurosurgery** – Research Assistant Professor [CURRENT POSITION]  
*Translational Neuroscience Division: Brain Network and Neuroimaging Laboratory*  
Research: investigating neural and vascular mechanisms of cognitive impairment, development of predictive and prognostic functional biomarkers, testing interventions in geriatric, oncological and neurosurgery patient populations
- 2023-2024 **Department of Neurosurgery** – Postdoctoral Fellow  
Research:  
*Translational Geroscience Laboratory* (head of the lab: Andriy Yabluchanskiy, MD PhD)
  - Participating in double-blinded randomized clinical trials (NCT05230732: “Neuromodulation of Inflammation and Endothelial Function”, The NCT05483465: “Effect of NAD Supplementation on Brain Vascular Health in Aging”
- 2020-2023 **Department of Biochemistry and Molecular Biology** – Postdoctoral Fellow  
Research:  
*Translational Geroscience Laboratory* (head of the lab: Andriy Yabluchanskiy, MD PhD, senior PIs: Zoltan Ungvari, MD PhD; Anna Csiszar, MD PhD)
  - Investigating vascular mechanisms of age-related cognitive decline: non-invasive assessment of neurovascular coupling responses and functional brain networks in human physiological and clinical studies.
  - Main methods: NIRS – near-infrared spectroscopy; TCD – transcranial Doppler sonography, DVA – dynamic vessel analysis in the retina, FMD – flow-mediated dilation, cognitive testing, gait assessment, blood serum analysis
  - Participating in clinical studies of geriatric diseases (peripheral artery disease, heart failure, cerebral microhemorrhage) and other etiologies of cognitive impairment (e.g. chemotherapy) aimed at revealing peripheral and cerebrovascular pathophysiological mechanisms of cognitive decline
  - Identifying biomarkers from physiological measurement improving diagnosis and prognosis of diseases highly prevalent among old people, developing

predictive models, testing intervention effects: exercise, nutrition, dietary supplement

Teaching:

Moderator and presenter at journal club seminars for graduate students /Translational Geroscience course/

**2019**

**Reynolds Oklahoma Center on Aging** – Visiting Researcher

**2006-**

2024-

2023-2024

2015-2023

2006-2015

**Semmelweis University, Faculty of Medicine**

**Department of Public Health** – Assistant Professor

**Department of Public Health** – Assistant Lecturer

**Department of Physiology** – Assistant Lecturer

**Institute of Human Physiology and Clinical Experimental Research** – teaching assistant, volunteer researcher student, PhD-student, and assistant lecturer

Research:

*Laboratory of Microcirculation and Fractal Physiology* (head of the lab: Andras Eke, MD PhD)

- Uni- and multimodal investigation of complex dynamics inherent human physiological processes (systemic and cerebral hemodynamics, brain electrical activity): hemodynamic and neurophysiological measurements, functional brain imaging
- Main methods: EEG – electroencephalography; NIRS – near-infrared spectroscopy; fMRI – functional magnetic resonance imaging, cooperation: Peter Herman, MD, PhD; Yale University. Experience with transcranial Doppler technique and tonometric blood pressure measurements.
- Assessment of cerebrovascular effects of hemoglobin-based oxygen carrier molecules (“blood substitutes”) in an animal model of hemorrhagic shock.
- Developing and testing algorithms for time series analysis based on principles of statistical physics (for example multifractal analysis; platform: MATLAB).

Teaching:

Physiology for 2<sup>nd</sup> year medical and dental students (Hungarian, English): lecture, seminar, and practice; oral examination.

**2005-2006**

**Institute of Experimental Medicine**

*Laboratory of Gene Technology and Developmental Neurobiology (Zsolt Lele, PhD)*

## Education

- 2023-2024**     **Harvard Medical School – Semmelweis University**  
*Clinical Sciences Scholar Postgraduate Training*
- 2011 – 2019**     **Semmelweis University School of PhD Studies, Basic and Translational Medicine**  
*PhD-student, candidate*  
Thesis: Multifractal analysis of spontaneous hemodynamic fluctuations
- 2011 - 2015**     **Pázmány Péter Catholic University Faculty of Information Technology and Bionics Research**  
*Molecular bionics engineering curriculum for medical students* | certificate of completed courses
- 2004 - 2011**     **Semmelweis University, Faculty of Medicine**  
*general physician* | M.D. (cum laude)
- 1998 - 2004**     **Fazekas Mihály Elementary School and High School of Budapest**  
*special mathematics class* | graduation

## Languages

- **Hungarian** – native language
- **English** – intermediate level (C type, 2004/03), daily usage for written and oral communication in an academic environment
- **French** – basic level

## Scientific interest

- Identifying biomarkers of age-related cognitive decline, evaluating the efficacy of therapeutic interventions aimed at preserving cognitive function based on functional imaging of the human brain
- Investigating the impact of aging on cognitive dysfunction with a special emphasis on the neuronal and vascular mechanisms by using non-invasive methods to assess neurovascular coupling and regulation of cerebral circulation
- Characterizing resting-state dynamics and physiological adaptation to cognitive challenges, by applying tools of statistical physics and network theory

## Scientometric data

Number of publications [peer-reviewed articles]: 57

Number of citations [Scopus]: 869 (independent: 638)

Impact factor: **302.83**

Hirsch-index [Scopus]: 18

## List of publications

<https://www.ncbi.nlm.nih.gov/myncbi/1lgAs3ea5b7EMe/bibliography/public/>

1. Eke, A., Herman, P., Sanganahalli, B. G., Hyder, F., Mukli, P., & Nagy, Z. (2012). Pitfalls in Fractal Time Series Analysis: fMRI BOLD as an Exemplary Case. *Frontiers in Physiology*, 3, 417. doi:10.3389/fphys.2012.00417. PubMed PMID: 23227008 PMCID: PMC3513686 • IF: 0
2. Hartmann, A., Mukli, P., Nagy, Z., Kocsis, L., Herman, P., & Eke, A. (2013). Real-time fractal signal processing in the time domain. *Physica A: Statistical Mechanics and its Applications*, 392(1), 89-102. doi:10.1016/j.physa.2012.08.002. • IF: 1.72
3. Mukli P., Portoro I., Caccia D., Perella M., Ronda L., Mozzarelli A., & Eke A. (2014). Model-based assessment of blood substitute-induced vasoactivity and red blood cell aggregation. *Acta Physiologica*, 211, 175-176(s697). doi:10.1111/apha.12362 • IF: 0 (conference proceedings)
4. Mukli, P.\*, Nagy, Z., & Eke, A. (2015). Multifractal formalism by enforcing the universal behavior of scaling functions. *Physica A: Statistical Mechanics and its Applications*, 417, 150-167. doi:10.1016/j.physa.2014.09.002. • IF: 1.79
5. Nagy, Z., Mukli, P., Herman, P., & Eke, A. (2017). Decomposing multifractal crossovers. *Frontiers in Physiology*, 8(JUL), 533. doi:10.3389/fphys.2017.00533. PubMed PMID: 28798694 PMCID: PMC5527813 • IF: 3.39
6. Racz, F. S., Mukli, P., Nagy, Z., & Eke, A. (2017). Increased prefrontal cortex connectivity during cognitive challenge assessed by fNIRS imaging. *Biomedical Optics Express*, 8(8), 3842-3855. doi:10.1364/BOE.8.003842. PubMed PMID: 28856054 PMCID: PMC5560845 • IF: 3.34
7. Mukli, P.\*, Nagy, Z., Racz, F. S., Herman, P., & Eke, A. (2018). Impact of Healthy Aging on Multifractal Hemodynamic Fluctuations in the Human Prefrontal Cortex. *Frontiers in Physiology*, 9, 1072. doi:10.3389/fphys.2018.01072. PubMed PMID: 30147657 PMCID: PMC6097581 • IF: 3.20
8. Racz, F. S., Mukli, P., Nagy, Z., & Eke, A. (2018). Multifractal dynamics of resting-state functional connectivity in the prefrontal cortex. *Physiological Measurement*, 39(2), 024003. doi:10.1088/1361-6579/aaa916. PubMed PMID: 29350187 • IF: 2.25
9. Racz, F. S., Stylianou, O., Mukli, P., & Eke, A. (2018). Multifractal dynamic functional connectivity in the resting-state brain. *Frontiers in Physiology*, 9, 1704. doi:10.3389/fphys.2018.01704. PubMed PMID: 30555345 PMCID: PMC6284038 • IF: 3.20
10. Racz, F. S., Stylianou, O., Mukli, P., & Eke, A. (2019). Multifractal and entropy analysis of resting-state electroencephalography reveals spatial organization in local dynamic functional connectivity. *Scientific Reports*, 9, Article 13474. doi:10.1038/s41598-019-49726-5. PubMed PMID: 31530857 PMCID: PMC6748940 • IF: 4.00

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11. Csipo, T., Mukli, P.\*, Lipecz, A., Tarantini, S., Bahadli, D., Abdulhussein, O., Owens, C., Kiss, T., Balasubramanian, P., Nyúl-Tóth, Á., Hand, R.A., Yabluchanska, V., Sorond, F.A., Csiszar, A., Ungvari, Z. and Yabluchanskiy, A. (2019). Assessment of age-related decline of neurovascular coupling responses by functional near-infrared spectroscopy (fNIRS) in humans. *GeroScience*. 41(5):495-509. doi:10.1007/s11357-019-00122-x. PubMed PMID: 31676966 PMCID: PMC6885078 • IF: 6.44
12. Portoro, I., Mukli, P.\*, Caccia, D., Kocsis, L., Hermán, P., Perella, M., Ronda, L., Mozzarelli, A., & Eke, A. (2020). Model-based evaluation of microhemodynamic effects of PEGylated HBOC molecules in the rat brain cortex: a laser speckle imaging study. *Biomedical Optics Express*, 11(8): 4150-4175. doi:10.1364/BOE.388089. PubMed PMID: 32923034 PMCID: PMC7449705 • IF: 3.73
13. Racz, F.S., Stylianou, O., Mukli, P., Eke, A. (2020) Multifractal and Entropy-Based Analysis of Delta Band Neural Activity Reveals Altered Functional Connectivity Dynamics in Schizophrenia. *Frontiers in Systems Neuroscience*, 14(49). doi:10.3389/fnsys.2020.00049. PubMed PMID: 32792917 PMCID: PMC7394222 • IF: 3.29
14. Kaposzta, Z., Stylianou, O., Mukli, P., Eke, A., Racz, F.S. (2021). Decreased connection density and modularity of functional brain networks during n-back working memory paradigm. *Brain and Behavior*. 11(1):e01932. doi:10.1002/brb3.1932. PubMed PMID: 33185986 PMCID: PMC7821619 • IF: 2.22
15. Racz, F.S., Farkas K., Stylianou, O., Kaposzta, Z., Czoch, A., Mukli, P., Csukly, G., Eke, A. (2021) Separating scale-free and oscillatory components of neural activity in schizophrenia. *Brain and Behavior*. 11(5):e02047. doi:10.1002/brb3.2047. PMID: 33538105 PMCID: PMC8119820 • IF: 2.22
16. Stylianou, O., Racz, F.S., Eke, A., Mukli, P.# (2021) Scale-Free Coupled Dynamics in Brain Networks Captured by Bivariate Focus-Based Multifractal Analysis. *Frontiers in Physiology*. 11(1865). doi:10.3389/fphys.2020.615961. PubMed PMID: 33613302 PMCID: PMC7887319 • IF: 4.13
17. Mukli, P.\*, Nagy, Z., Racz, F.S., Portoro I., Hartmann A., Stylianou O., Debreczeni, R., Bereczki, D., Eke, A. (2021). Two-Tiered Response of Cardiorespiratory-Cerebrovascular Network to Orthostatic Challenge. *Frontiers in Physiology*. 12(216). doi:10.3389/fphys.2021.685417. PubMed PMID: 33737882 PMCID: PMC7960776 • IF: 4.13
18. Csipo, T., Lipecz, A., Mukli, P.\*, Bahadli, D., Abdulhussein, O., Owens, C. D., Tarantini, S., Hand, R. A., Yabluchanska, V., Kellawan, J. M., Sorond, F., James, J. A., Csiszar, A., Ungvari, Z. I., & Yabluchanskiy, A. (2021). Increased cognitive workload evokes greater neurovascular coupling responses in healthy young adults. *PloS one*, 16(5), e0250043. doi:10.1371/journal.pone.0250043. PubMed PMID: 34010279 PMCID: PMC8133445 • IF: 3.75
19. Mukli, P.\*, Csipo, T., Lipecz, A., Stylianou, O., Racz, F. S., Owens, C., Perry J. W., Tarantini, S., Sorond, F., Kellawan, J. M., Purebl, G., Yang, Y., Sonntag, W. E., Csiszar, A., Ungvari, Z. Yabluchanskiy, A. (2021). Sleep deprivation alters task-related changes in functional connectivity of the frontal cortex: a near-infrared spectroscopy study. *Brain and Behavior*, 11(8):e02135. doi:10.1002/brb3.2135. PubMed PMID: 34156165 PMCID: PMC8413792 • IF: 2.22

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20. Csipo, T., Lipecz, A., Owens, C., Mukli, P., Perry, J. W., Tarantini, S., Balasubramanian, P., Nyul-Toth, A., Yabluchanska, V., Sorond, F. A., Kellawan, J. M., Purebl, G., Sonntag, W. E., Csiszar, A., Ungvari, Z., & Yabluchanskiy, A. (2021). Sleep deprivation impairs cognitive performance, alters task-associated cerebral blood flow and decreases cortical neurovascular coupling-related hemodynamic responses. *Scientific Reports*, 11(1), 20994, Article 20994. doi:10.1038/s41598-021-00188-8. PubMed PMID: 34697326 PMCID: PMC8546061 • IF: 5.00
21. Nyul-Toth, A., DelFavero, J., Mukli, P., Tarantini, A., Ungvari, A., Yabluchanskiy, A., Csiszar, A., Ungvari, Z., & Tarantini, S. (2021). Early manifestation of gait alterations in the Tg2576 mouse model of Alzheimer's disease. *GeroScience*, 43(4), 1947–1957. doi:10.1007/s11357-021-00401-6. PubMed PMID: 34160781 PMCID: PMC8492885 • IF: 7.58
22. Tarantini, S., Nyúl-Tóth, A., Yabluchanskiy, A., Csipo, T., Mukli, P., Balasubramanian, P., Ungvari, A., Toth, P., Benyo, Z., Sonntag, W. E., Ungvari, Z., Csiszar, A. (2021). Endothelial deficiency of insulin-like growth factor-1 receptor (IGF1R) impairs neurovascular coupling responses in mice, mimicking aspects of the brain aging phenotype. *GeroScience*, 43(5):2387-2394. doi:10.1007/s11357-021-00405-2. PubMed PMID: 34383203 PMCID: PMC8599783 • IF: 7.58
23. Tarantini, S., Balasubramanian, P., Delfavero, J., Csipo, T., Yabluchanskiy, A., Kiss, T., Nyúl-Tóth, Á., Mukli, P., Toth, P., Ahire, C., Ungvari, A., Benyo, Z., Csiszar, A., and Ungvari, Z. (2021). Treatment with the BCL-2/BCL-xL inhibitor senolytic drug ABT263/Navitoclax improves functional hyperemia in aged mice. *GeroScience*, 43(5):2427-2440. doi: 10.1007/s11357-021-00440-z. PubMed PMID: 34427858 PMCID: PMC8599595 • IF: 7.58
24. Stylianou, O., Racz, F. S., Kim, K., Kaposzta, Z., Czoch, A., Yabluchanskiy, A., Eke, A., and Mukli, P.# (2021). Multifractal Functional Connectivity Analysis of Electroencephalogram Reveals Reorganization of Brain Networks in a Visual Pattern Recognition Paradigm. *Frontiers in Human Neuroscience*, 15, Article 740225. doi:10.3389/fnhum.2021.740225. PubMed PMID: 34733145 PMCID: PMC8558231 • IF: 3.47
25. Kaposzta, Z., Czoch, A., Stylianou, O., Kim, K., Mukli, P., Eke, A., & Racz, F. S. (2022). Real-Time Algorithm for Detrended Cross-Correlation Analysis of Long-Range Coupled Processes. *Frontiers in Physiology*, 13, Article 817268. doi:10.3389/fphys.2022.817268. PubMed PMID: 35360238 PMCID: PMC8963246 • IF: 4.57
26. Kiss, T., Nyúl-Tóth, Á., Gulej, R., Tarantini, S., Csipo, T., Mukli, P., Ungvari, A., Balasubramanian, P., Yabluchanskiy, A., Benyo, Z., Conley, S. M., Wren, J. D., Garman, L., Huffman, D. M., Csiszar, A., & Ungvari, Z. (2022). Old blood from heterochronic parabionts accelerates vascular aging in young mice: transcriptomic signature of pathologic smooth muscle remodeling. *GeroScience*, 44(2), 953-981. doi:10.1007/s11357-022-00519-1. PubMed PMID: 35124764 PMCID: PMC9135944 • IF: 7.58
27. Mukli, P.\*, Wu, D. H., Csipo, T., Owens, C. D., Lipecz, A., Racz, F. S., Zouein, F. A., Tabak, A., Csiszar, A., Ungvari, Z., Tsitouras, P. D., & Yabluchanskiy, A. (2022). Urinary Biomarkers of Oxidative Stress in Aging: Implications for Prediction of Accelerated Biological Age in Prospective Cohort Studies. *Oxidative Medicine and Cellular Longevity*, Article 6110226. doi:10.1155/2022/6110226. PubMed PMID: 35571254 PMCID: PMC9106456 • IF: 6.54

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28. Owens, C. D., Mukli, P.\*, Csipo, T., Lipecz, A., Silva-Palacios, F., Dasari, T. W., Tarantini, S., Gardner, A. W., Montgomery, P. S., Waldstein, S. R., Kellawan, J. M., Nyul-Toth, A., Balasubramanian, P., Sotonyi, P., Csiszar, A., Ungvari, Z., & Yabluchanskiy, A. (2022). Microvascular dysfunction and neurovascular uncoupling are exacerbated in peripheral artery disease, increasing the risk of cognitive decline in older adults. *American Journal of Physiology-Heart and Circulatory Physiology*, 322(6), H924-H935. doi:10.1152/ajpheart.00616.2021. PubMed PMID: 35333116 PMCID: PMC9037702 • IF: 4.73
29. Racz, F. S., Czoch, A., Kaposzta, Z., Stylianou, O., Mukli, P., & Eke, A. (2022). Multiple-Resampling Cross-Spectral Analysis: An Unbiased Tool for Estimating Fractal Connectivity With an Application to Neurophysiological Signals. *Frontiers in Physiology*, 13, Article 817239. doi:10.3389/fphys.2022.817239. PubMed PMID: 35321422 PMCID: PMC8936508 • IF: 4.57
30. Williamson, J., Yabluchanskiy, A., Mukli, P., Wu, D. H., Sonntag, W. E., Ciro, C., & Yang, Y. (2022). Sex differences in brain functional connectivity of the hippocampus in mild cognitive impairment. *Frontiers in Aging Neuroscience*, 14, Article 959394. doi:10.3389/fnagi.2022.959394. PubMed PMID: 36034134 PMCID: PMC9399646 • IF: 5.75
31. Brinkley TE, Justice JN, Basu S, Bauer SR, Loh KP, Mukli P, Ng TKS, Turney IC, Ferrucci L, Cummings SR, Kritchevsky SB. (2022). Research priorities for measuring biologic age: summary and future directions from the Research Centers Collaborative Network Workshop. *GeroScience*, 44(6):2573-2583. doi:10.1007/s11357-022-00661-w. Epub 2022 Oct 15. PMID: 36242692 PMCID: PMC9768050.
32. Mukli, P.\*, Detwiler, S., Owens, C. D., Csipo, T., Lipecz, A., Pinto, C. B., Tarantini, S., Nyul-Toth, A., Balasubramanian, P., Hoffmeister, J. R., Csiszar, A., Ungvari, Z., Kirkpatrick, A. C., Prodan, C. I., & Yabluchanskiy, A. (2022). Gait variability predicts cognitive impairment in older adults with subclinical cerebral small vessel disease. *Frontiers in Aging Neuroscience*, 14, Article1052451. doi:10.3389/fnagi.2022.1052451. PubMed PMID: 36466602 PMCID: PMC9716182 • IF: 5.75
33. Stylianou, O., Kaposzta, Z., Czoch, A., Stefanovski, L., Yabluchanskiy, A., Racz, F.S., Ritter, P., Eke, A., & Mukli, P. (2022) Scale-Free Functional Brain Networks Exhibit Increased Connectivity, Are More Integrated and Less Segregated in Patients with Parkinson's Disease following Dopaminergic Treatment. *Fractal Fract*, 6(737). doi:10.3390/fractalfract6120737. • IF: 5.36
34. Chetan, A., Nyul-Toth, A., Delfavero, J., Gulej, R., Faakye, J., Tarantini, S., Kiss, T., Kuan-Celarier, A., Balasubramanian, P., Ungvari, A., Tarantini, A., Raghavendra, N., Yan, F., Tang, Q., Mukli, P., Csipo, T., Yabluchanskiy, A., Campisi, J., Ungvari, Z. & Csiszar, A. (2023). Accelerated cerebrovascular senescence contributes to cognitive decline in a mouse model of paclitaxel (Taxol)-induced chemobrain. *Aging Cell*, 22(7):e13832. doi:10.1111/accel.13832. PubMed PMID: 37243381 PMCID: PMC10352561 • IF: 11.01
35. Owens, C.D., Pinto, C.B., Detwiler, S., Mukli, P., Peterfi, A., Szarvas, Z., Hoffmeister, J., Galindo, J., Noori, J., Kirkpatrick, A.C., Dasari, T.W., James, J., Tarantini, S., Csiszar A., Ungvari, Z., Prodan, C.I. & Yabluchanskiy, A. (2023). Cerebral small vessel disease pathology in COVID-19 patients: a systematic review. *Aging Research Reviews*, Jul:88:101962. doi:10.1016/j.arr.2023.101962. PubMed PMID: 37224885 PMCID: PMC10202464 • IF: 11.79

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36. Faakye, J., Nyul-Toth, A., Gulej, R., Csik, B., Tarantini, S., Shanmugarama, S., Prodan, C.I., Mukli, P., Yabluchanskiy, A., Conley, S., Toth, P., Csiszar, A. & Ungvari, Z. (2023). Imaging the Time Course, Morphology, Neuronal Tissue Compression and Resolution of Cerebral Microhemorrhages in Mice Using Intravital Two-Photon Microscopy: Insights into Arteriolar, Capillary, and Venular Origin. *GeroScience*, 45(5):2851-2872. doi:10.1007/s11357-023-00839-w. PubMed PMID: 37338779 PMCID: PMC10643488 • IF: 5.30
37. Owens, C. D., Bonin Pinto, C., Mukli, P., Szarvas, Z., Peterfi, A., Detwiler, S., Olay, L., Olson, A. L., Li, G., Galvan, V., Kirkpatrick, A. C., Balasubramanian, P., Tarantini, S., Csiszar, A., Ungvari, Z., Prodan, C. I., & Yabluchanskiy, A. (2023). Vascular mechanisms leading to progression of mild cognitive impairment to dementia after COVID-19: Protocol and methodology of a prospective longitudinal observational study. *PLoS One*, 18(8), e0289508. doi:10.1371/journal.pone.0289508. PubMed PMID: 37535668 PMCID: PMC10399897 • IF: 3.71
38. Gulej, R., Nyul-Toth, A., Ahire, C., Delfavero, J., Balasubramanian, P., Kiss, T., Tarantini, S., Benyo, Z., Pacher, P., Csik, B., Yabluchanskiy, A., Mukli, P., Kuan-Celarier, A., Krizbai, I. A., Campisi, J., Sonntag, W. E., Csiszar, A., & Ungvari, Z. (2023). Elimination of senescent cells by treatment with Navitoclax/ABT263 reverses whole brain irradiation-induced blood-brain barrier disruption in the mouse brain. *GeroScience*, 45(5):2983-3002. doi:10.1007/s11357-023-00870-x. PubMed PMID:37642933 PMCID: PMC10643778 • IF: 5.30
39. Pandics, T., Major, D., Fazekas-Pongor, V., Szarvas, Z., Peterfi, A., Mukli, P., Gulej, R., Ungvari, A., Fekete, M., Tompa, A., Tarantini, S., Yabluchanskiy, A., Conley, S., Csiszar, A., Tabak, A. G., Benyo, Z., Adany, R., & Ungvari, Z. (2023). Exposome and unhealthy aging: environmental drivers from air pollution to occupational exposures. *GeroScience*, 45(6):3381-3408. doi:10.1007/s11357-023-00913-3. PubMed PMID:37688657 PMCID: PMC10643494 • IF: 5.30
40. Dasari, T.W., Chakraborty, P., Mukli, P., Akhtar, K., Yabluchanskiy, A., Myers, J., Cunningham, M., Csiszar, A. & Po, S.S. (2023). Noninvasive Low-Level Tragus Stimulation attenuates inflammation and oxidative stress in acute heart failure. *Clinical Autonomic Research*, 33(6):767-775 doi:10.1007/s10286-023-00997-z. PubMed PMID: 37943335. • IF: 5.80
41. Ungvari, A., Gulej, R., Csik, B., Mukli, P., Negri, S., Tarantini, S., Yabluchanskiy, A., Benyo, Z., Csiszar, A. & Ungvari, Z. (2023). The Role of Methionine-Rich Diet in Unhealthy Cerebrovascular and Brain Aging: Mechanisms and Implications for Cognitive Impairment. *Nutrients*. 15(21):4662. doi: 10.3390/nu15214662. Pubmed PMID: 37960316; PMCID: PMC10650229. • IF: 5.72
42. Mukli, P.\*, Pinto, C.B., Owens, C.D., Csipo, T., Lipecz, A., Szarvas, Z., Peterfi, A., Langley, A.C.d.C.P., Hoffmeister, J., Racz, F.S., Tarantini, S., Nyul-Toth, A., Sorond, F.A., Yang, Y., James, J., Kirkpatrick, A.C., Prodan, C.I., Toth, P., Galindo, J., Gardner, A.W., Sonntag, W.E., Csiszar, A., Ungvari, Z. & Yabluchanskiy, A. (2023). *Advanced Science*, e2303516, Impaired neurovascular coupling and increased functional connectivity in the frontal cortex predict age-related cognitive dysfunction. doi: 10.1002/adv.202303516. Pubmed PMID: 38155460 PMCID: PMC10962492 • IF: 17.51
43. Gulej, R., Csik, B., Faakye, J., Tarantini, S., Shanmugarama, S., Chandragiri, S., Mukli, P., Conley, S., Yabluchanskiy, A., Csiszar, A., Ungvari, Z. & Nyul-Toth, A. (2023) Endothelial deficiency of insulin-like growth factor-1 receptor (IGF1R) leads to blood-brain barrier disruption and accelerated endothelial senescence in mice, mimicking aspects of brain aging phenotype. *Microcirculation*, 11:e12840. doi:10.1111/micc.12840. Pubmed PMID: 38082450. • IF: 2.4

\* first author, # corresponding author



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## Manuscripts under review and in preparation

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Racz, F.S., Farkas, K., Becske, M., Molnar, H., Fodor, Z., Mukli, P. & Csukly, G. (2024). Reduced temporal variability of cortical excitation/inhibition in schizophrenia. *Manuscript under review*

Muranyi, M., Pinto, C.B., Owens, C.D., Csipo, T., Lipecz, A., Szarvas, Z., Peterfi, A., Langley, A.C.d.C.P., Hoffmeister, J., Racz, F.S., Tarantini, S., Nyul-Toth, A., Sorond, F.A., Yang, Y., James, J., Kirkpatrick, A.C., Prodan, C.I., Toth, P., Galindo, J., Gardner, A.W., Sonntag, W.E., Csiszar, A., Ungvari, Z., Yabluchanskiy, A. & Mukli, P., (2024). Spatiotemporal profile of gait patterns during dual task significantly predict chronological aging and subtle deterioration of cognitive performance associated with aging. *Manuscript in preparation*

Mukli, P.\*, Pinto, C.B., Vass, A., Stylianou, O., Racz, F.S., Kaposzta, Z., Czoch, A., Yabluchanskiy, A., Farkas, K., Csukly, G. & Eke, A (2024). Impact of Aging on Multifractal Functional Connectivity and Its Association With Cognitive Performance: an EEG Study. *Manuscript in preparation*

Pinto, C.B., Csipo, T., Lipecz, A., Owens, C.D., Szarvas, Z., Peterfi, A., Langley, A.C.d.C.P., Muranyi, M., Kaposzta, Z., Detwiler, S., Olay, L., Saleh-Velez, F., Smith, Z., Bauer, A., Tarantini, S., Yabluchanskiy, A & Mukli, P. (2024). Caffeine ingestion increases cortical neurovascular coupling related hemodynamic responses. *Manuscript in preparation*

Pinto, C.B., Saleh-Velez, F., Mukli, P., Owens, C.D., Szarvas, Z., Peterfi, A., Langley, A.C.d.C.P., Muranyi, M., Kaposzta, Z., Detwiler, S., Olay, L., Smith, Z., Bauer, A., Tarantini, S. & Yabluchanskiy, A. (2024). Neurovascular Interplay in Transcranial Magnetic Stimulation: Implications for Cognitive Function and Aging-Related Disorders. *Manuscript in preparation*

Fazekas-Pongor V., Dosa, N., Partos, K., Major, D., Kaposvari, C., Csipo, T., Fekete, M., Csik, B., Peterfi, A., Papp, M., Tarantini, S., Mukli, P., Yabluchanskiy, A., Negri, S., Gardner, A.W., Csiszar, A., Ungvari, A., Szarvas, Z. & Ungvari, Z. (2023). Exercise promotes healthy cerebrovascular and brain aging: from molecular and cellular mechanisms to public health interventions. *Manuscript in preparation*

Mukli, P., Tarantini, A., Peterfi, A., Kuan-Celarier, A., Owens, C.D., Detwiler, S., Pinto, C.B., Xing, A., Szarvas, Z., Csiszar, A. & Ungvari, Z., Yabluchanskiy, A. Chemotherapy Impairs Neurovascular Coupling Responses In Breast Cancer Survivors: A Pilot Study. *Manuscript in preparation.*

## International conferences and invited talks

talk / poster

- June 2024 **Annual Meeting of AGE (Madison, Wisconsin, USA)**  
Ana Clara da C. P. Langley, Camila B. Pinto, [Peter Mukli](#), Cameron Owens, Zsofia Szarvas, Anna Peterfi, Zalan Kaposzta, Stefano Tarantini, Andriy Yabluchanskiy – poster  
*Time-restricted eating to improve endothelial and cerebrovascular function in older adults*
- June 2024 **Annual Meeting of AGE (Madison, Wisconsin, USA)**  
Zalan Kaposzta, Cameron D. Owens, Camila Bonin Pinto, Peter Mukli, Rafal Gulej, Faddi Saleh Velez, Zsofia Szarvas, Mihaly Muranyi, Anna Peterfi, Ana Clara da C. Pinaffi Langley, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*Neurovascular Coupling in the Aging Brain: Insights into Traumatic Brain Injury*
- June 2024 **Annual Meeting of AGE (Madison, Wisconsin, USA)**  
[Peter Mukli](#), Camila Bonin Pinto, Agota Vass, Orestis Stylianou, Frigyes Samuel Racz, Zalan Kaposzta, Akos Czoch, Andriy Yabluchanskiy, Kinga Farkas, Gabor Csukly, Andras Eke – poster  
*Impact of Aging on Multifractal Functional Connectivity and Its Association With Cognitive Performance: an EEG Study*
- June 2024 **Annual Meeting of AGE (Madison, Wisconsin, USA)**  
Zsofia Szarvas, Anna Peterfi, Cameron D. Owens, Mihaly Muranyi, [Peter Mukli](#), Camila Bonin Pinto, Ana Clara da C. Pinaffi Langley, Zalan Kaposzta, Stefano Tarantini, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*The effect of NAD supplementation on vascular health in patients with peripheral artery disease: interim results from an on-going pilot open-label longitudinal clinical trial*
- June 2024 **Annual Meeting of AGE (Madison, Wisconsin, USA)**  
Anna Peterfi, [Peter Mukli](#), Anna Kuan-Celarier, Cameron D. Owens, Sam Detwiler, Camila Bonin Pinto, Zsofia Szarvas, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*The effect of chemotherapy on neurovascular coupling responses and cognitive performance in breast cancer survivors: a pilot cross-sectional study*
- June 2024 **Annual Meeting of AGE (Madison, Wisconsin, USA)**  
Zalan Kaposzta, ..., [Peter Mukli](#), ..., Andriy Yabluchanskiy – poster  
*Neurovascular Coupling in the Aging Brain: Insights into Traumatic Brain Injury*
- June 2024 **Annual Meeting of AGE (Madison, Wisconsin, USA)**  
Mihaly Muranyi, [Peter Mukli](#), Camila Bonin Pinto, Zsofia Szarvas, Cameron D. Owens, Anna Peterfi, Ana Clara da C. Pinaffi-Langley, Zalan Kaposzta, Stefano Tarantini, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*Assessing Age-Related Gait Changes in Community-Dwelling Adults: A Dual Approach through Functional and Molecular Evaluation of Chronological and Biological Aging*
- June 2024 **Annual Meeting of AGE (Madison, Wisconsin, USA)**  
Adam Nyul-Toth, Janet Faakye, Mihaly Muranyi, Rafal Gulej, Boglarka Csik, Stefano Tarantini, Calin Prodan, [Peter Mukli](#), Andriy Yabluchanskiy, Shannon Conley, Anna Csiszar, Zoltan Ungvari – poster  
*Senolytic Treatment Alleviates the Incidence and Effects of Hypertension Induced Cerebral Microhemorrhages in Aged Mouse Brain*
- June 2024 **Annual Meeting of AGE (Madison, Wisconsin, USA)**  
Camila Bonin Pinto, Jenny Swinton, Ana Luiza Oliveira Santos, Cameron Owens, [Peter Mukli](#), Zsofia Szarvas, Mihaly Muranyi, Anna Peterfi, Ana Clara da C. Pinaffi-Langley, Zalan Kaposzta, Cheyenne Gutierrez, Blair Aple Hill; Kate Singleton; Zyanna Stuart, Faddi G. Saleh Velez, Andriy Yabluchanskiy – poster

*Post-stroke cognitive impairment in the "extended stroke belt" region*

- April 2024 **Primer Prevention Forum (Budapest, Hungary)**  
Peter Mukli, Zoltan Ungvari, Daniel Belsky  
*Measuring biological age*
- November 2023 **Society for Neuroscience (SfN) 2023 (Washington, District of Columbia, USA)**  
Peter Mukli, Camila Bonin Pinto, Agota Vass, Orestis Stylianou, Frigyes Samuel Racz, Zalan Kaposzta, Akos Czoch, Andriy Yabluchanskiy, Kinga Farkas, Gabor Csukly, Andras Eke – poster  
*Impact of Aging on Multifractal Functional Connectivity and Its Association With Cognitive Performance: an EEG Study*
- June 2023 **Annual Meeting of AGE (Oklahoma City, Oklahoma, USA)**  
Adam Nyul-Toth, Rafal Gulej, Chetan Ahire, Jordan Delfavero, Priya Balasubramanian, Tamas Kiss, Stefano Tarantini, Boglarka Csik, Andriy Yabluchanskiy, Peter Mukli, Anna Kuan-Celarier, Judith Campisi, Anna Csiszar, Zoltan Ungvari – poster  
*Elimination of senescent cells reverses whole brain irradiation-induced blood-brain barrier disruption in mouse brain*
- June 2023 **Annual Meeting of AGE (Oklahoma City, Oklahoma, USA)**  
Zalan Kaposzta, Akos Czoch, Peter Mukli, Andras Eke, Frigyes Samuel Racz – poster  
*Detrended cross-correlation analysis reveals neurophysiological correlates of cognitive deficits related to healthy aging*
- June 2023 **Annual Meeting of AGE (Oklahoma City, Oklahoma, USA)**  
Peter Mukli, Anna Peterfi, Anna Kuan-Celarier, Cameron D. Owens, Sam Detwiler, Camila Bonin Pinto, Angela Xing, Zsafia Szarvas, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*Chemotherapy impairs neurovascular coupling responses in breast cancer survivors: A pilot study*
- October 2022 **Society of fNIRS 2022 (Boston, Massachusetts, USA)**  
Peter Mukli, Tamas Csipo, Agnes Lipecz, Cameron D. Owens, Stefano Tarantini, Adam Nyul-Toth, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*Age-related changes of global brain network function and its association to cognitive performance in human subjects*
- May 2022 **Annual Meeting of the American Aging Association (AGE) - Changing the Way We Age: 50 Years of Research in the Biology of Aging (San Antonio, Texas, USA)**  
Peter Mukli, Tamas Csipo, Agnes Lipecz, Cameron D. Owens, Stefano Tarantini, Adam Nyul-Toth, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*Age-related changes of global brain network function and its association to cognitive performance in human subjects*
- May 2022 **BRAIN & BRAIN PET 2022 (Glasgow, Scotland)**  
Stefano Tarantini, Zoltan Ungvari, Priya Balasubramanian, Jordan Delfavero, Janet Faakye, Rafal Gulej, Tamas Kiss, Adam Nyul-Toth, Tamas Csipo, Andriy Yabluchanskiy, Peter Mukli, Chetan Ahire, Zoltan Benyo, Anna Csiszar – poster  
*High fat diet-induced obesity exacerbates endothelial senescence and neurovascular dysfunction in Nrf2 deficient mouse model*
- May 2022 **BRAIN & BRAIN PET 2022 (Glasgow, Scotland)**  
Peter Mukli, Tamas Csipo, Agnes Lipecz, Cameron D. Owens, Stefano Tarantini, Jeremy M. Kellawan, Yuan Yang, William E. Sonntag, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster

*Age-related changes of global brain network function and its association to cognitive performance in human subjects*

May 2022

**BRAIN & BRAIN PET 2022 (Glasgow, Scotland)**

Stefano Tarantini, Priya Balasubramanian, Jordan Delfavero, Andriy Yabluchanskiy, Tamas Kiss, Adam Nyul-Toth, Peter Mukli, Chetan Ahire, Anna Ungvari, Zoltan Benyo, Anna Csiszar, Zoltan Ungvari – poster

*Treatment with the BCL-2/BCL-xL inhibitor senolytic drug ABT263/navitoclax improves functional hyperemia in aged mice*

May 2022

**BRAIN & BRAIN PET 2022 (Glasgow, Scotland)**

Anna-Kuan Celarier, Peter Mukli, Cameron D. Owens, Tamas Csipo, Agnes Lipecz, Federico Silva-Palacios, Tarun W. Dasari, Stefano Tarantini, Andrew W. Gardner, Adam Nyul-Toth, Priya Balasubramanian, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster

*Microvascular dysfunction and neurovascular uncoupling are exacerbated in peripheral artery disease, increasing the risk of cognitive decline in older adults*

October 2021

**Society of fNIRS Virtual Conference**

Cameron Owens, Tamas Csipo, Agnes Lipecz, Dhay Bahadli, Stefano Tarantini, Judith James, Anna Csiszar, Zoltan Ungvari, Jeremy Kellawan, Andriy Yabluchanskiy, Peter Mukli - poster

*Increased cognitive workload evokes greater neurovascular coupling responses in healthy young adults*

October 2021

**Society of fNIRS Virtual Conference**

Peter Mukli, Tamas Csipo, Agnes Lipecz, Orestis Stylianou, Frigyes Samuel Racz, Cameron Owens, Jonathan W. Perry, Stefano Tarantini, Farzenah Sorond, Jeremy Mikhail J. Kellawan, Gyorgy Purebl, Yuan Yang, William E. Sonntag, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster

*Sleep deprivation alters task-related changes in functional connectivity of the frontal cortex: a near-infrared spectroscopy study.*

November 2019

**Scientific seminar at Reynolds Oklahoma Center on Aging**

Mukli P.: Age-related changes of global brain network dynamics

August 2019

**Second International Summer Institute on Network Physiology (ISINP) 2019 (Como, Italy)**

Mukli P., Nemeth E., Nagy Z., Racz F. S., Darago A., Orban K., Portoro I., Ronkay K., Wappler-Guzzetta A. E., Gal J., & Eke A. – poster

*Multifractal analysis of perioperative cerebrocortical hemodynamics among patients undergoing cardiac surgery*

Racz F. S., Orestis S., Mukli P., & Eke A. – poster

*Multifractal and entropy analysis of resting-state electroencephalography reveals spatial organization in local dynamic functional connectivity*

June 2018

**The Second Britton Chance International Symposium on Metabolic Imaging and Spectroscopy (Philadelphia, United States)**

Mukli, P., Nagy, Z., Racz, F. S., Herman, P., & Eke, A. – short talk

*Multifractal hemodynamic fluctuations in the human brain cortex: impact of aging*

July 2017

**First International Summer Institute on Network Physiology (ISINP) 2017 (Como, Italy)**

Racz F. S., Mukli P., & Eke A. – poster

*Dynamic functional connectivity of the prefrontal cortex shows multifractal properties*

- September 2014      **European Association of Cardiothoracic Anaesthesiologists (EACTA) 2014 Annual Meeting (Firenze, Italy)** – poster  
Nemeth E., Mukli P., Nagy Z., Wappler E. A., Racz K., Gal J., & Eke A. – poster  
*Novel dynamic near-infrared spectroscopy parameter monitoring during on-pump cardiac surgery*
- August 2014      **Joint Meeting of the Federation of European Physiological Societies (FEPS) and the Hungarian Physiological Society (Budapest, Hungary)**  
Mukli P., Portoro I., Caccia D., Perella M., Ronda L., Mozzarelli A., & Eke A. – poster  
Model-based assessment of blood substitute-induced vasoactivity and red blood cell aggregation (conference proceedings: *Acta Physiologica*, 211, 175-176).
- June 2013      **From Medicine to Bionics – 1st European PhD Conference (Budapest, Hungary)**  
Mukli P., Nagy Z., Herman P & Eke A. – poster  
*Multifractal analysis of near-infrared spectroscopy (NIRS) signals recorded from the human brain cortex*
- January 2006      **International Brain Research Organization (IBRO) Workshop (Budapest, Hungary)**  
Lele Z., Mukli P., Erdelyi F., Vastagh C., & Szabo G. – poster  
*Expression and function of N-cadherin during mouse neural development*

## National and regional conferences

- March 2024 **GREAT Symposium 2024 (Oklahoma City, USA)**  
Peter Mukli, Camila Bonin Pinto, Cameron Owens, Tamas Csipo, Agnes Lipecz, Zsofia Szarvas, Anna Peterfi, Ana Clara de Costa Pinaffi Langley, Jordan Hoffmeister, Stefano Tarantini, Adam Nyul-Toth, Calin I. Prodan, William E. Sonntag, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*Age-related changes in brain network function and its association with cognitive performance in humans: a functional near-infrared spectroscopy study*
- October 2023 **Neuroscience Symposium 2023 (Oklahoma City, USA)**  
Peter Mukli, Camila Bonin Pinto, Cameron Owens, Tamas Csipo, Agnes Lipecz, Zsofia Szarvas, Anna Peterfi, Ana Clara de Costa Pinaffi Langley, Jordan Hoffmeister, Stefano Tarantini, Adam Nyul-Toth, Calin I. Prodan, William E. Sonntag, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*Age-related changes in brain network function and its association with cognitive performance in humans: a functional near-infrared spectroscopy study*
- October 2023 **Neuroscience Symposium 2023 (Oklahoma City, USA)**  
 Anna Peterfi, Peter Mukli, Anna Kuan-Celarier, Cameron Owens, Sam Detwiler, Camila Bonin Pinto, Angela Xing, Zsofia Szarvas, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*The effect of chemotherapy on neurovascular coupling responses and cognitive performance in breast cancer survivors: a pilot cross-sectional study*
- March 2023 **GREAT Symposium 2023 (Oklahoma City, USA)**  
 Camila Bonin Pinto, Peter Mukli, Cameron D. Owens, Zsofia Szarvas, Anna Peterfi, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*Caffeine ingestion increases cortical neurovascular coupling-related hemodynamic responses*
- March 2023 **GREAT Symposium 2023 (Oklahoma City, USA)**  
Peter Mukli, Tarun W. Dasari, Praloy Chakraborty, Khawaja Akhtar, Andriy Yabluchanskiy, Jennifer Myers, Madeleine Cunningham, Anna Csiszar, Sunny S. Po – short talk  
*Noninvasive Low-Level Tragus Stimulation attenuates inflammation and oxidative stress in acute heart failure.*
- March 2023 **GREAT Symposium 2023 (Oklahoma City, USA)**  
 Anna Peterfi, Peter Mukli, Anna Kuan-Celarier, Cameron Owens, Sam Detwiler, Camila Bonin Pinto, Angela Xing, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy  
*Chemotherapy impairs neurovascular coupling responses in breast cancer survivors: a pilot study*
- October 2022 **Neuroscience Symposium 2022 (Oklahoma City, USA)**  
Peter Mukli, Anna Kuan-Celarier, Cameron Owens, Sam Detwiler, Camila Bonin Pinto, Angela Xing, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy  
*Chemotherapy impairs neurovascular coupling responses in breast cancer survivors: a pilot study*
- March 2022 **GREAT Symposium 2022 (Oklahoma City, USA)**  
Peter Mukli, Cameron D. Owens, Tamas Csipo, Agnes Lipecz, Federico Silva-Palacios, Tarun W. Dasari, Anna-Kuan Celarier, Stefano Tarantini, Andrew W. Gardner, Adam Nyul-Toth, Priya Balasubramanian, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*Microvascular dysfunction and neurovascular uncoupling are exacerbated in peripheral artery disease, increasing the risk of cognitive decline in older adults*



- March 2021 **GREAT Symposium 2021 (Oklahoma City, USA)**  
Peter Mukli, Tamas Csipo, Agnes Lipecz, Jonathan W. Perry, Stefano Tarantini, Adam Nyul-Toth, Jeremy M. Kellawan, Yuan Yang, William E. Sonntag, Anna Csiszar, Zoltan Ungvari, Andriy Yabluchanskiy – poster  
*Age-related changes of global brain network function and its association to cognitive performance in human subjects*
- June 2019 **Joint Conference of the Hungarian Pharmacology, Anatomy, Microcirculation and Physiological Societies (FAMÉ) 2019, Budapest**  
Mukli P., Nemeth E., Nagy Z., Racz F. S., Darago A., Orban K., Portoro I., Ronkay K., Wappler-Guzzetta A. E., Gal J., & Eke A. – poster  
*Multifractal analysis of perioperative cerebrocortical hemodynamics among patients undergoing cardiac surgery*  
 Racz F. S., Orestis S., Mukli P., & Eke A. – poster  
*Multifractal and entropy analysis of resting-state electroencephalography reveals spatial organization in local dynamic functional connectivity*
- June 2018 **Hungarian Physiological Society Meeting 2018, Szeged**  
Racz F. S., Mukli P., Nagy Z., & Eke A. – poster  
*Dynamic functional connectivity of the prefrontal cortex shows multifractal properties*
- June 2016 **Joint Conference of the Hungarian Pharmacology, Anatomy, Microcirculation and Physiological Societies (FAMÉ) 2016**  
Mukli P., Racz F.S., & Eke A. – poster  
*Increased prefrontal cortex connectivity during cognitive challenge assessed by fNIRS imaging*
- August 2013 **Hungarian Medical Association of America (HMAA) Summer Conference in Balatonfüred**  
Mukli P., Nagy Z., Nemeth E., Portoro I., Darago A., Orban K., Csibi K., Ronkay K., Wappler E. A., Gal J., & Eke A. – poster  
*Monitoring brain hemodynamics and oxygenation with near-infrared spectroscopy (NIRS) during cardiopulmonary bypass surgery*  
Mukli P., Nagy Z., Nemeth E., Portoro I., Darago A., Orban K., Csibi K., Ronkay K., Wappler E. A., Gal J., & Eke A. – short talk  
*Monitoring brain hemodynamics and oxygenation with near-infrared spectroscopy (NIRS) during cardiopulmonary bypass surgery*
- April 2013 **PhD Scientific Days, Semmelweis University School of PhD studies**  
 Nagy Z., Mukli P., Nemeth E., Portoro I., Darago A., Orban K., Csibi K., Ronkay K., Wappler E. A., Gal J., & Eke A. – poster  
*Monitoring brain hemodynamics and oxygenation with near-infrared spectroscopy (NIRS) during cardiopulmonary bypass surgery*  
Mukli P., Nagy Z., Herman P., & Eke A. – poster  
*Multifractal analysis of near-infrared spectroscopy (NIRS) signals recorded from the human brain cortex*
- August 2012 **Hungarian Medical Association of America (HMAA) Summer Conference in Balatonfüred**  
Mukli P., Nagy Z., Hartmann A., Nemeth E., Kocsis L., Herman P., Eke A. – poster

*Real-time fractal analysis: application for characterizing complexity of cerebral hemodynamics during cardiopulmonary bypass*

June 2012

**Common Scientific Congress; Hungarian Anatomical Society, Hungarian Biophysical Society, Hungarian Physiological Society, Hungarian Society for Microcirculation and Vascular Biology, Budapest**

Mukli P., Nagy Z., Hartmann A., Nemeth E., Kocsis L., Herman P., Eke A. – poster

*Real-time fractal analysis: application for characterizing complexity of cerebral hemodynamics during cardiopulmonary bypass*

## Research Support

1. "Semmelweis University Magister Project" (TÁMOP-4.2.2/B-10/1-2010-0013) – support for PhD dissertation project of Dr. Peter Mukli [Semmelweis University]
2. "Development of scientific workshops for medical, health sciences and pharmaceutical training" project of the Hungarian Government (EFOP-3.6.3-VEKOP-16-2017-00009) – support of PhD dissertation project of Dr. Orestis Stylianou [Semmelweis University]
3. Cambridge Neuropsychological Test Automated Battery (CANTAB) Research Grant 2022, Project Title: Assessment of Chemotherapy-Related Cognitive Impairment (CRCI) – a pilot study

## Awards

- March 2024 *The annual Graduate Research Education and Technology Symposium (GREAT), University of Oklahoma, Health Sciences Center*  
**Travel Award - BIO International Convention 2024**
- May 2022 *American Aging Association (AGE)*  
**Travel Award - Annual Meeting of AGE**
- January 2022 *Research Center Collaborative Network (RCCN)*  
**Travel Award – “Measuring biological age” workshop**
- March 2018 *Association of Friends of Semmelweis University*  
**„Dr. Balázs Dezső és Walter Julianna” Award, 1<sup>st</sup> Prize**
- June 2016 *Joint Conference of the Hungarian Pharmacology, Anatomy, Microcirculation and Physiological Societies (FAMÉ) 2016*  
**special award for poster presentation**
- August 2013 *Hungarian Medical Association of America (HMAA) Summer Conference*  
**special award for poster presentation**
- April 2013 *PhD Scientific Days, Semmelweis University School of PhD studies*  
**1<sup>st</sup> prize for poster presentation**
- April 2012 *PhD Scientific Days, Semmelweis University School of PhD studies*  
**1<sup>st</sup> prize for short talk**
  - Cardiopulmonary bypass impairs brain oxygenation as demonstrated by near-infrared spectroscopy (Supervisor: Andras Eke, MD, PhD)
- April 2011 *National Conference of Undergraduate Researchers*  
**1<sup>st</sup> prize for short talk** (co-author with Zoltan Nagy, MD)
  - Non-invasive fNIRS imaging of cognitive dynamics in the human brain (Supervisor: Andras Eke, MD, PhD)
- February 2011 *Regional Conference of Undergraduate Researchers, Semmelweis University*  
**1<sup>st</sup> prize for short talk** (co-author with Zoltan Nagy, MD)
  - Non-invasive fNIRS imaging of cognitive dynamics in the human brain (Supervisor: Andras Eke, MD, PhD)
- February 2008 *Regional Conference of Undergraduate Researchers, Semmelweis University*  
**2nd prize for short talk**
  - Hemoglobin based oxygen carrier’s effect on microregional vascular resistance in the brain (Supervisor: Andras Eke, MD, PhD)

## Professional society activities

### Academic Service

#### Associate Editor

- GeroScience, 2023-  
Editor of Special Issue „Advances in Neurostimulation in Aging: From Basic Science to Clinical Applications“
- Physiology international, 2022-

#### Guest editor:

- Fractal and Fractional (2022) Special Issue „Fractals in the Neurosciences: From Self-Similar Structures to Scale-Free Dynamics“

#### Review editor:

- Frontiers in Physiology, 2021-
- Frontiers in Cardiovascular Drug Delivery, 2021-
- Frontiers in Brain Imaging and Stimulation, 2022-

#### Independent peer review:

Scientific Reports (2), Geroscience (43), Biomedical Optics Express (2), Neuroimage (1), The Journal of Physical Chemistry B (1), Journal of Gerontology (1), Frontiers in Physiology (4), Frontiers in Neuroinformatics (1), Frontiers in Human Neuroscience (3), Frontiers in Aging Neuroscience (6), Frontiers in Neuroscience (5), Frontiers in Neurology (1), Frontiers in Psychiatry (1), Frontiers in Drug Delivery (1), Acta Psychologica (1), Neuropsychologica (1), Experimental Brain Research (1), Physiology International (1), Journal of Cognitive Science (1), Applied science (1), Tomography (1), Metabolite (1), Biosystems (1)

### Membership at scientific societies

- Hungarian Physiological Society (MÉT), 2015-
- Society for Functional Near Infrared Spectroscopy (SfNIRS), 2019-2023
- American Heart Association (AHA) 2020-
- North American Vascular Biology Organization (NAVBO) 2022
- American Aging Association (AGE) 2022-
- American Physiology Society (APS) 2022
- Society for Neuroscience 2023

### Other

Officer (treasurer) at the Postdoctoral Association of the University of Oklahoma Health Sciences Center 2021-2023

## Mentoring students, roles in undergraduate and graduate research program

### Doctoral research program (PhD) at Semmelweis University

- Supervision: Orestis Stylianou, MD (2019-2022)  
Title of thesis: "Scale-Free Functional Connectivity Of Brain Networks Revealed By Electroencephalography"
- Semmelweis University, Undergraduate Researcher Student's Conference (TDK); evaluating presentations of Biophysics and Bioinformatics (2012-2018)

### Undergraduate student research (TDK) program at Semmelweis University

- Co-supervision (with Andras Eke, Md PhD) of undergraduate researcher students (TDK):
  - Anita Darago, Kata Orban (2013): 1<sup>st</sup> prize, participation at National Conference of Undergraduate Researchers
  - Frigyes Samuel Racz (2016): 1<sup>st</sup> prize, participation at National Conference of Undergraduate Researchers
  - Orestis Stylianou (2017): 3<sup>rd</sup> prize
  - Csaba Farkas (2017): 3<sup>rd</sup> prize
- Supervision (with Orestis Stylianou, MD) of undergraduate research students
  - Keumbi Kim (2021): 3<sup>rd</sup> prize

### Activities as consultant and opponent at Semmelweis University

- Co-consultant of Rector's thesis (Andras Eke, MD, PhD):
  - Orestis Stylianou (2019): 1<sup>st</sup> prize
- Co-consultant of Diplomawork (Andras Eke, MD, PhD):
  - Csaba Farkas (PPKE-ITK, 2017)
  - Andras Fulop (PPKE-ITK, 2017)
- Opponent of Diplomawork:
  - Oruc Umur (SE-EPh, 2013)
  - Annamaria Farkas (SE-GYTK, 2014)
  - Judit Gili-Kovács (SE-AOK, 2015)
  - Geza Jakab (SE-GYTK, 2016)
  - Reka Racz (SE-AOK, 2018)

## Public appearances

- Interview with 2022 CANTAB Research Grant winner for the project entitled "Assessing Chemotherapy-Related Cognitive Impairment (CRCI)"  
<https://cambridgecognition.com/2022-cantab-research-grant-assessing-chemotherapy-related-cognitive-impairment-crci/>
- OU College of Medicine Researchers Identify Unique Behavior of Aging Brain (April 1, 2024)  
<https://www.ou.edu/news/articles/2024/april/ou-college-of-medicine-researchers-identify-unique-behavior-of-aging-brain>
- Oklahoma researchers test if Vitamin B supplement can prevent cognitive declines (March 30, 2024)  
<https://www.koco.com/article/oklahoma-ou-researchers-test-vitamin-b-supplement-prevent-cognitive-declines-brain-blood-flow/60349247>

## Further experiences, hobbies

- Advanced level skills in informatics including (but not limited to) the following softwares: MS Office, Statistica, GraphPad. In particular, I have been using MATLAB tools and programming language intensively since the beginning of my research career. Apart from that, I gained some experience in the following program languages: Python, R, C++ and Visual Basic for Applications.
- As a medical student, I actively participated in various undergraduate associations (Budapest Medical Student's Association, Association of Future Medical Scientists): organizing lectures and prevention programs
- Member of board responsible for counting votes (2009: European Parliament Election; 2010: National Elections, Hungary; 2010: Municipal and Local Elections)
- I like to spend some of my free time with sport: running, cycling, swimming, squash, soccer, skiing

**Date:** August 22, 2024

