Aitak Farzi

Key Researcher

Division of Pharmacology
Otto Loewi Research Center for Vascular Biology, Immunology and Inflammation
Medical University of Graz

ORCID ID: https://orcid.org/0000-0001-9606-3871

SCIENTIFIC & ACADEMIC CAREER

since 2023	Assistant Professor, Medical University of Graz, Austria
since 2021	*Venia docendi* (lecture qualification) in Pharmacology
since 2020	Specialist in Pharmacology and Toxicology
2012-2020	Registrar in Pharmacology, Medical University of Graz, Austria
2015-2017	Postdoctoral researcher at the Garvan Institute of Medical Research, Sydney, Australia
2010-2015	Ph.D. thesis, Medical University of Graz, Austria
2003-2009	Study of Medicine, Medical University of Graz, Austria

MAIN AREA OF RESEARCH

Aitak Farzi is a neuropharmacologist with a research focus on inter-organ communication pathways (especially along the gut-brain axis) and their impact on metabolism, brain function and behavior. Her work has characterized the impact of various innate immune pattern recognition receptors (including NOD-like receptors), antibiotic-induced gut-microbiome depletion as well as diet-induced obesity on intestinal microbiome composition, the interaction with immune and endocrine factors and the effects on brain function and behavior. Furthermore, she has characterized the impact of specific neuronal populations of the lateral hypothalamic area on ingestive behavior and metabolism. In the course of the MetAGE project, Aitak Farzi aims to characterize mechanisms through which anti-aging interventions affect brain-organ crosstalk and change brain function and behavior. Her main task will be to perform behavioral test batteries in murine aging models to assess the effects of dietary interventions on depression-like behavior and analyze the underlying brain-organ crosstalk. The focus will be on endocrine factors affecting brain function and behavior such as adipokines, circulating cytokines and corticosterone. These analyses will be combined with techniques assessing neuronal activation, neuroplasticity, and alterations in central neuroendocrine parameters relevant to depression and anxiety. Furthermore, she will translate preclinical findings to clinical MetAGE cohorts.

ADDITIONAL RESEARCH ACTIVITIES

2021	Member of the Executive Committee of the Research Field Neuroscience of the Medical University of Graz
2021	Board member of the Brain Research Initiative Styria

Selected Presentations

2024	“Fecal microbiota transplantation from healthy and bipolar donors elicit distinct emotional behaviors and gut-brain metabolite profiles in mice”, German Pharm-Tox Summit, Munich (Germany)

2023 "Gut-brain communication in bipolar disorder", 9th Mediterranean Neuroscience Society Conference, Carthage (Tunis)

2023 "Effects of gut hormone PYY on DSS-induced colitis", 13th NPY-PYY-PP Meeting, Pittsburgh (USA)

2023 "Antibiotic-induced microbiota depletion mitigates α2-adrenoceptor-induced inhibition of guinea-pig small intestinal peristalsis", HUPHAR Hungarian Congress of Pharmacology, Mátraháza (Hungary)

Honors & Awards

2022 Josef Krainer-Honorary Prize (habilitation)

2020 Brain, Behavior and Immunity Impact Award (co-author)

2018 Research Prize of the Brain Research Initiative Styria (publication)

2017 Anniversary price of the Rotary Club Graz (dissertation)

2017 Josef Krainer-Promotion Award (dissertation)

2017 Research Prize of the Brain Research Initiative Styria (dissertation)

2015 Erwin Schrödinger Fellowship, Austrian Science Fund (FWF)

2015 Research Prize of the Brain Research Initiative Styria (publication)

10 MOST IMPORTANT PUBLICATIONS

1. Farzi A, Ip CK, Reed F, Enriquez R, Zenz G, Durdevic M, Zhang L, Holzer P, Herzog H (2021). Lack of peptide YY signaling in mice disturbs gut microbiome composition in response to high-fat diet. **FASEB J.** 35(4): e21435-e21435. doi:10.1096/fj.202002215R.

2. Schroeder S, Hofer SJ, Zimmermann A, Pechlaner R, […] Farzi A, […] Kiechl S, Eisenberg T, Madeo F (2021). Dietary spermidine improves cognitive function. **Cell Rep.** 35(2):108985-108985. doi:10.1016/j.celrep.2021.108985.*

3. Hassan AM, Mancano G, Kashofer K, Liebisch G, Farzi A, Zenz G, Claus SP, Holzer P (2020). Anhedonia induced by high-fat diet in mice depends on gut microbiota and leptin. **Nutr Neurosci.** 1-14. doi:10.1080/1028415X.2020.1751508.*

4. Ip CK, Zhang L, Farzi A, Qi Y, Clarke I, Reed F, Shi YC, Enriquez R, Dayas C, Graham B, Begg D, Brüning JC, Lee NJ, Hernandez-SanchezD, Gopalasingam G, Koller J, Tasan R, Sperk G, Herzog H (2019). Amygdala NPY Circuits Promote the Development of Accelerated Obesity under Chronic Stress Conditions. **Cell Metab.** 30(1):111-128. doi:10.1016/j.cmet.2019.04.001.*

5. Farzi A, Hassan AM, Zenz G, Holzer P (2019) Diabesity and mood disorders: Multiple links through the microbiota-gut-brain axis. Mol Aspects Med. 66(2):80-93. doi:10.1016/j.mam.2018.11.003.*

6. Zenz G, Jačan A, Reichmann F, Farzi A, Holzer P (2019). Intermittent Fasting Exacerbates the Acute Immune and Behavioral Sickness Response to the Viral Mimic Poly(I:C) in Mice. **Front Neurosci.** 13: 359-359. doi:10.3389/fnins.2019.00359.*

7. Farzi A, Lau J, Ip CK, Qi Y, Shi YC, Zhang L, Tasan R, Sperk G, Herzog H (2018). Arcuate nucleus and lateral hypothalamic CART neurons in the mouse brain exert opposing effects on energy expenditure. **Elife.** 7. doi:10.7554/eLife.36494.*

8. Fröhlich EE, Farzi A, Mayerhofer R, Reichmann F, Jačan A, Wagner B, Zinser E, Bordag N, Magnes C, Fröhlich E, Kashofer K, Gorkiewicz G,Holzer P (2016). Cognitive impairment by antibiotic-induced gut

dysbiosis: Analysis of gut microbiota-brain communication. **Brain Behav Immun.** 56(6):140-155. doi:10.1016/j.bbi.2016.02.020.

9. Farzi A, Reichmann F, Meinitzer A, Mayerhofer R, Jain P, Hassan AM, Fröhlich EE, Wagner K, Painsipp E, Rinner B, Holzer P (2015). Synergistic effects of NOD1 or NOD2 and TLR4 activation on mouse sickness behavior in relation to immune and brain activity markers. **Brain Behav Immun.** 44(1):106-120. doi:10.1016/j.bbi.2014.08.011.

10. Brunner SM, Farzi A, Locker F, Holub BS, Drexel M, Reichmann F, Lang AA, Mayr JA, Vilches JJ, Navarro X, Lang R, Sperk G, Holzer P, Kofler B (2014). GAL3 receptor KO mice exhibit an anxiety-like phenotype. **Proc Natl Acad Sci U S A.** 111(19):7138-7143. doi:10.1073/pnas.1318066111.