Karl Ægir Karlsson

PhD | Professor of Neuroscience | Program Director in Neurotechnology

Reykjavík, Iceland | karlsson@ru.is | +354 825 6467

Google Scholar | September 2026

Neuroscientist and biotechnology executive working on CNS disease models and drug discovery. Research combines zebrafish genetics, behavioural phenotyping, electrophysiology, multiomics and human genetic evidence. Co-founder and CEO of 3Z and CEO of LTCC ehf, leading development of S-amlodipine as a potential non-stimulant treatment for ADHD. Academic work spans sleep and neural development, neuroanatomy, biomedical engineering education and neurotechnology.

Current appointments

Professor of Neuroscience and Program Director in Neurotechnology, Reykjavík University | 2026-present. Department of Neuroscience and Health Technology; **principal investigator of RU NEUROLAB.**

Co-founder and CEO, 3Z. Co-founded in 2008. Leads CNS drug discovery and repurposing using zebrafish disease models and automated behavioural screening.

CEO, LTCC ehf | 2026-present. Leads the S-amlodipine ADHD development programme, including preparations for Phase IIa, fundraising and coordination of regulatory, clinical and manufacturing work.

Group leader, Biomedical Center, University of Iceland | 2012-present. Research collaboration across neuroscience, disease modelling and molecular biology.

Research focus

CNS therapeutics. Genetic models of ADHD, schizophrenia and other brain disorders; screening and validation of repurposed drugs; translation of preclinical findings using human genetics and clinical data.

Neural mechanisms and measurement. Sleep and arousal, neuronal excitability and neural development; electrophysiology, automated behaviour analysis and integration of molecular and behavioural data.

Earlier academic appointments

Professor of Biomedical Engineering, Reykjavík University | 2014-2026. Department of Engineering; principal investigator of RU NEUROLAB.

2009-2014 Associate Professor, Reykjavík University.
2006-2009 Assistant Professor, Reykjavík University.
2005-2006 Postdoctoral Scholar, UCLA, laboratory of Jerome M. Siegel.
2000-2005 Research Assistant, University of Iowa.

Education

2005 PhD, Behavioral and Cognitive Neuroscience, University of Iowa.
2002 MA, Behavioral and Cognitive Neuroscience, University of Iowa.
1999 BA, Psychology, University of Iceland.

Leadership and public service

Deputy member, Science and Innovation Council of Iceland | 2023-present. Appointed by the Prime Minister for the 2023-2027 term; active participation in the council's work on national science and innovation policy.

Unit leadership, Department of Engineering, Reykjavík University. Appointed in 2024 with responsibility for quality and programme development across biomedical, electrical and mechatronic engineering, including faculty recruitment.

Chair, RANNÍS Infrastructure Fund | 2016-2018. Research infrastructure funding governance.

Board member, Icelandic Student Innovation Fund, 2019-2020; board member, Matís, 2017-2018; Research Dean, RU School of Science and Engineering, 2008-2009. Co-founder and first chair of the Icelandic Society for Neuroscience.

Teaching and supervision

Teaching in physiology, neuroscience and technology, and molecular and cell biology. As program director contributes to development of Reykjavík University's NeurotechEU EMN MSc pathway, including curriculum, admissions and laboratory infrastructure planning.

Supervises MSc and undergraduate research in biomedical engineering, mechatronics and biomedical science. Recent topics include machine learning for zebrafish behaviour, event-based cameras and neuromorphic computing, multiomics, neuroinflammation and schizophrenia models. PhD examiner and thesis committee experience at the University of Iceland.

Selected research and infrastructure funding

2022 | ISK 50 million. Technology Development Fund: novel treatments for ADHD.

2020 | ISK 50 million. Technology Development Fund: novel models of excessive daytime sleepiness.

2020 | ISK 24 million. Infrastructure Fund: joint RU and University of Iceland Cell Physiology Core Facility.

2019 | ISK 21 million. Infrastructure Fund: establishment of Reykjavík University Sleep Institute.

Innovation and selected talks

Co-inventor on patents and patent applications for CNS therapeutics, including ADHD. Developed university research into 3Z's drug discovery platform, combining genetic disease models, automated screening and translational pharmacology.

2026 Reinventing Amlodipine: A Drug Discovery Journey. NeurotechEU lecture, Reykjavík University.
2024 Repurposing L-type calcium channel blockers as a novel treatment for ADHD. Invited talk, Drug Discovery Nexus, Basel.
2022 ADHD drug repurposing seminars and talks in Chicago and at the Zebrafish Disease Modelling Society meeting, Sheffield.

Selected distinctions and professional service

University of Iowa Lewis Award (2005); National Bank of Iceland award for PhD studies abroad (2005); Gormezano Research Award (2004). Journal peer review and grant assessment for RANNÍS and the National University Hospital of Iceland.

Selected patents and patent applications

Karlsson KÆ, Þorsteinsson H. Compounds for use in the treatment of attention deficit hyperactivity disorder. EP4284356B1; grant published 2 April 2025. Related US application: Novel treatments, US20240130995A1; published 25 April 2024.

Selected publications

Recent papers and selected earlier contributions. Full publication list available through Google Scholar.

Grzymala B, et al. (2026). Reinventing amlodipine. *Journal of Pharmacology and Experimental Therapeutics, 393(6), 104900.*

Þorsteinsson H, et al. (2025). Validation of L-type calcium channel blocker amlodipine as a novel ADHD treatment through cross-species analysis, drug-target Mendelian randomization, and clinical evidence from medical records. *Neuropsychopharmacology, 50, 1145-1155.*

Grzymala B, et al. (2025). Metabolomic and lipidomic profiling reveals convergent pathways in attention deficit hyperactivity disorder therapeutics: Insights from established and emerging treatments. *Journal of Pharmacology and Experimental Therapeutics, 392(4), 103403.*

Bhagwandin A, et al. (2024). Where Do Core Thalamocortical Axons Terminate in Mammalian Neocortex When There Is No Cytoarchitecturally Distinct Layer 4? *Journal of Comparative Neurology, 532(7), e25652.*

Fontana BD, et al. (2023). adgrl3.1-deficient zebrafish show noradrenaline-mediated externalizing behaviors, and altered expression of externalizing disorder-candidate genes, suggesting functional targets for treatment. *Translational Psychiatry, 13, 304.*

Sveinsdóttir HS, et al. (2023). Novel non-stimulants rescue hyperactive phenotype in an adgrl3.1 mutant zebrafish model of ADHD. *Neuropsychopharmacology, 48, 1155-1163. First published online in 2022.*

Sveinsdóttir HS, et al. (2022). Motility phenotype in a zebrafish vmat2 mutant. *PLOS ONE, 17(1), e0259753.*

Manger PR, et al. (2021). Amplification of potential thermogenetic mechanisms in cetacean brains compared to artiodactyl brains. *Scientific Reports, 11, 5486.*

Christensen C, Þorsteinsson H, Maier VH, Karlsson KÆ (2020). Multi-parameter Behavioral Phenotyping of the MPP+ Model of Parkinson's Disease in Zebrafish. *Frontiers in Behavioral Neuroscience, 14, 623924.*

Blouin AM, et al. (2013). Human hypocretin and melanin-concentrating hormone levels are linked to emotion and social interaction. *Nature Communications, 4, 1547.*

Karlsson KÆ, Gall AJ, Mohns EJ, Seelke AMH, Blumberg MS (2005). The neural substrates of infant sleep in rats. *PLOS Biology, 3(5), e143.*