

Prof. Ozgun Gokce

Klinik für Neurodegenerative Erkrankungen und Gerontopsychiatrie



Rheinische Friedrich-Wilhelms-Universität Bonn

Institute

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Research Expertise

Our research group is dedicated to understanding the cellular and molecular mechanisms that underlie age- and disease-related brain decay and its consequences. Recent studies, including our own, support the hypothesis that brain damage caused by disease or aging drives microglia reactivity, which may become maladaptive over time. This contributes to age-related brain disorders, infection-induced cognitive issues, and chemotherapy-related neurological symptoms.

Previously, we explored microglial responses to lipid-rich, tightly compacted myelin debris (Safaiyan et al. 2021 - *Neuron*). This debris activates microglia, leading to the recruitment of CD8 T cells to white matter and triggering interferon responses that result in the loss of white matter cells (Liu et al. 2021 - *StarProtocols*, Kaya et al. 2022 - *Nature Neuroscience*, Androvic et al. 2022 - in revision *Nature Comm*). Our long-term vision is to identify immune mechanisms involved in aging and neurodegeneration for the development of diagnostic markers and disease-modifying therapeutics.

At the University of Bonn, we aim to establish a research program focused on studying and modulating adaptive and innate immune responses associated with aging and neurodegeneration, harnessing the power of Big Data and Omics approaches.

Education / Training

2009 Doctor of Philosophy (Ph.D.) Diploma from Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland

2004 Molecular Biology and Genetics, Boğaziçi University, Istanbul, Turkey

Appointments /

W2 professor at Rheinische Friedrich-Wilhelms-Universität Bonn

Positions Held

2016 – 2023 Independent Research Group Leader at the Institute for Stroke and Dementia Research, Ludwig Maximilians-University of Munich (LMU), Germany

2009 – 2016 Research fellow, Stanford University School of Medicine, Stanford, CA.

Advisors: M.D. Thomas C. Südhof & Stephan Quake Ph.D.

Honors / Awards

Prof. Ozgun Gokce has earned numerous prestigious awards, most notably: in 2022, he received the German Research Council award, and in 2021, the Else Kröner-Fresenius-Stiftung Key Research Award. He joined the CZI Neurodegeneration Challenge Network NDCN in 2020 and was honored with the 2019 ARCHES Award from the Minerva Foundation. Prof. Gokce also received the NARSAD Young Investigator Award in 2014 and 2016, and the NIH Pathway to Independence Award (K99) in 2014.

10 Most Relevant Publications for Prof. Ozgun Gokce

1. Kaya T. *, Mattugini N. *, Liu L. *, et al., **Gokce O. #**, Simons M. #, (2022) CD8+ T cells induce interferon-responsive oligodendrocytes in white matter aging. *Nature Neuroscience*
2. Androvic P, Schifferer M, Perez Anderson K, Ji H, Liu L, Besson-Girard S, Knoferle J, Simons M, **Gokce O., (2022)** Spatial Transcriptomics correlated Electron Microscopy *Biorxiv*
3. Safaiyan S., Besson-Girard S., et al., **Gokce O. #**, Simons M. # (2021) White matter aging drives microglial diversity *Neuron* 109, 1–18
4. Stanley G. *, **Gokce O. ***, Malenka R.C., Südhof T.C., and Quake S.R., (2020) Discrete and Continuous Cell Identities of the Adult Murine Striatum. *Neuron* 105 (4), 688–699. e8
5. Cantuti-Castelvetri, L., Ojha, R.,..., **Gokce O.** et al., Simons M. (2020) Neuropilin-1 facilitates SARS-CoV-2 cell entry and provides a possible pathway into the central nervous system. *Science* eabd298
6. **Gokce O. ***, Stanley G. *, Treutlein B. *, Neff N.F., Camp G.J., Malenka R.C., Rothwell P.E., Fuccillo M.V., Südhof T.C., and Quake S.R., (2016) Cellular Taxonomy of the Mouse Striatum as Revealed by Single-Cell RNAseq. *Cell Reports* 16, 1–12
7. Fuccillo M. *, Foldy C. *, **Gokce O. ***, Rothwell P.E., Sun G.L., Robert C.M. and Südhof T.C., (2015) Single-Cell mRNA Profiling Reveals Cell-Type-Specific Expression of Neurexin Isoforms. *Neuron* 87, 326–340.
8. Rothwell P.E., Fuccillo M.V., Maxeiner S., Hayton S.J., **Gokce O.**, Lim B.K., Fowler S.C., Malenka R.C., and Südhof T.C., (2014) Autism-Associated Neuroligin-3 Mutations Commonly Impair Striatal Circuits to Boost Repetitive Behaviors. *Cell*; 158(1):198–212.
9. Treutlein B. *, **Gokce O. ***, Quake S.R., and Südhof T.C., (2014) Cartography of Neurexin Diversity Mapped by Single-Molecule Long-Read mRNA Sequencing. *PNAS* 111 (13) E1291-E1299;
10. **Gokce O.**, & Südhof T.C., (2013) Membrane-Tethered Monomeric Neurexin LNS-Domain Triggers Synapse Formation, *Journal of Neuroscience*, 33(36), 14617–14628.

Indicates * equal contribution # Correspondence