YOUNG SCIENTIST AWARD 2024

Jonathan Göke
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""For his pioneering work in developing computational methods for long read RNA sequencing data that have enabled the profiling of RNA transcription and modifications at unprecedented resolution and accuracy."

Dr Jonathan Göke is a computational biologist specialising in ribonucleic acid (RNA) research. His pioneering work in developing computational methods for third-generation, long-read RNA-Sequencing has been instrumental in advancing the ability to profile RNA expression and modifications at high resolution, paving the way for new insights into RNA biology and the role of RNA in human diseases.

RNA is the central messenger molecule that interprets the genetic information stored in DNA. Each cell contains hundreds of thousands of RNA molecules that collectively provide a detailed, high-dimensional picture. RNA sequencing is the technology that allows scientists to read these RNAs and study their roles and how they are affected in human diseases. However, it is not just the RNA sequence that defines their function; post-transcriptional, chemical modifications of RNA impact almost all aspects of RNA biology and have been essential for the success of mRNA-based vaccines.

Through the development of computational methods for long read RNA-sequencing, and the analysis of transcriptomics data in human patient samples, Dr Jonathan Göke has played a pioneering role in enabling the large-scale, high-accuracy, and high-resolution profiling of RNA sequences and modifications. By using machine learning algorithms combined with direct RNA Sequencing, his work has, for the first time, enabled the identification of RNA modifications at single-base, single-molecule resolution. His contributions to identifying modified RNA from the raw current signal of nanopore RNA sequencing data have made RNA modification profiling accessible to a much broader scientific community. Dr Göke's work has been published in high-impact journals such as Nature, Cell, Nature Biotechnology, and Nature Methods.His computational methods have been downloaded more than 200,000 times, and have been independently benchmarked as among the best in the field.

Since becoming a group leader, Dr Göke has supervised more than 25 postdoctoral, Phd students, and undergraduate students. His lab members have received numerous prizes and awards, including the GIS Graduate Student Award (2020, 2023), the ISMB Best Presentation Award (2021), the Postdoctoral Award at the RNA Meeting Singapore (2024), and an international DREAM Machine Learning Challenge to identify high-risk cancer

patients. Dr Göke has been active as a mentor for early-career scientists, postdoctoral and PhD students through mentorship programs from Agency for Science, Technology and Research (A*STAR) and Genome Institute of Singapore (GIS). In 2022, Dr Göke was appointed as Adjunct Associate Professor in the Department of Statistics and Data Science at the National University of Singapore where he teaches undergraduate students in genomics and data science.

Dr Jonathan Göke's scientific contributions have been widely recognised. He has been a scholar with the German Academic Exchange Service (2007 and 2012-2014), selected as a GIS Fellow (2014-2016), and an A*STAR Fellow (since 2024). Dr Göke actively participates in international consortia and leads the Singapore Nanopore Expression project (SG-NEx). He has delivered more than 30 presentations as an invited speaker in Singapore and around the world. Dr Göke has published 49 articles, with his work being featured on the covers of prestigious journals such as Cell, Nature, Molecular Cell, and Trends in Genetics.