

FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

D I S P U T A T I O N

Freitag, 19. Dezember 2025, 10:00 Uhr

Ort: Seminarraum 007 & [WebEx](#)

(Fachbereich Mathematik und Informatik, Arnimallee 6, 14195 Berlin)

Disputation über die Doktorarbeit von

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Thema der Dissertation:

Comparative Analysis of Transposable Elements and KRAB Zinc Finger Genes in Human and Non-human Primates

Thema der Disputation:

Developing TEKRABber: A Cross-species Computational Pipeline for Transposable Element Analysis and Its Application to Primate Evolution

Die Arbeit wurde unter der Betreuung von **Prof. Dr. K. Nowick** durchgeführt.

Abstract: The content of this disputation presents my investigation into how transposable elements (TEs) and their repressors, KRAB zinc finger genes (KRAB-ZNFs), contribute to regulatory divergence among human and non-human primates. To support systematic and comparable analyses across species, I developed TEKRABber, a computational pipeline designed to standardize TE expression quantification and enable cross-species integration.

TEKRABber provides unified procedures for normalization, subfamily-level quantification, and differential expression analysis using outputs from widely used RNA-seq TE quantification tools. Using this framework, I analyzed multiple RNA-seq datasets, including brain tissues from human and non-human primates as well as human Alzheimer's disease samples, to identify evolutionary patterns in KRAB-ZNF-TE regulatory networks. In addition, by integrating RNA-seq and KAP1 ChIP-seq data from primate B-lymphoblastoid cells, I reconstructed species-specific regulatory modules and examined TE expression at locus-specific resolution. This disputation will begin by introducing current bioinformatics approaches for TE quantification and explaining the motivation behind developing TEKRABber as a solution for robust cross-species comparison. I will then present the results of applying this pipeline to primate evolution, highlighting how the dynamic interplay between TEs and KRAB-ZNFs has shaped lineage-specific regulatory landscapes.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

Interessierte werden hiermit herzlich eingeladen

Die Vorsitzende der Promotionskommission
Prof. Dr. K. Nowick