

# AI modelling of Healthcare trajectories and Danish and UK history with genetics.

This lecture consists of two projects: one on AI modeling of healthcare trajectories and another on Danish and UK history through genetics.

The first project leverages generative AI techniques, specifically attention-based transformers, to model healthcare data from the UK BioBank and validate it with Danish data. Our model predicts all diseases (ICD10 codes) and accurately samples future health trajectories.

The second project uses identical by descent (IBD) analysis to trace genetic links between individuals from Denmark and the UK, revealing population movements from 500AD to 1100AD. With over 13 billion comparisons across 800,000 individuals, we verified the IBD map's accuracy against Danish pedigrees. The historical insights gained from IBD sharing between Denmark, the UK, and the North Sea region will be highlighted.

**Host:** Juraj Bergman, Tenure Track Assistant Prof. at the Department of Molecular Biology and Genetics, Aarhus University.



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Date: **Wednesday 23 April 2025**  
Time: **13:15 – 14:00**  
Venue: **1871-120**  
Address: **Universitetsbyen 81  
8000 Aarhus C**

**OPEN TO ALL INTERESTED.**  
Coffee and cake after the lecture