



Master's Thesis (M.Sc.) AI Agents for Biological Discovery

Can an AI agent spot what everyone else has missed?

Background: Biological datasets are full of unexplored patterns and unanswered questions. Recent work by Anthropic (Yoon et al., 2026) shows how AI agents can investigate biological data and identify unexpected features worth pursuing. Inspired by this work, we want to explore how autonomous agents can turn data, scientific tools, and literature into promising research leads.

Objective: Build and evaluate an AI agent that explores biological data, follows up on interesting observations, and critically examines its own hypotheses. You will work at the intersection of modern language models, bioinformatics, and scientific discovery.

Key tasks:

- **Build an AI researcher:** Connect language models with scientific tools, data, and literature.
- **Explore and investigate:** Develop workflows that let agents pursue promising observations and challenge their initial interpretations.
- **Put discovery to the test:** Evaluate the quality, reproducibility, and efficiency of the agents' findings against suitable baselines.

Prerequisites:

- Good Python programming skills and a foundation in machine learning.
- A background in biology or bioinformatics, **or a strong willingness to learn the biological foundations during the thesis.**
- Curiosity, initiative, and enthusiasm for careful experimentation.

Department 18
Electrical Engineering and
Information Technology
Self-Organizing Systems Lab

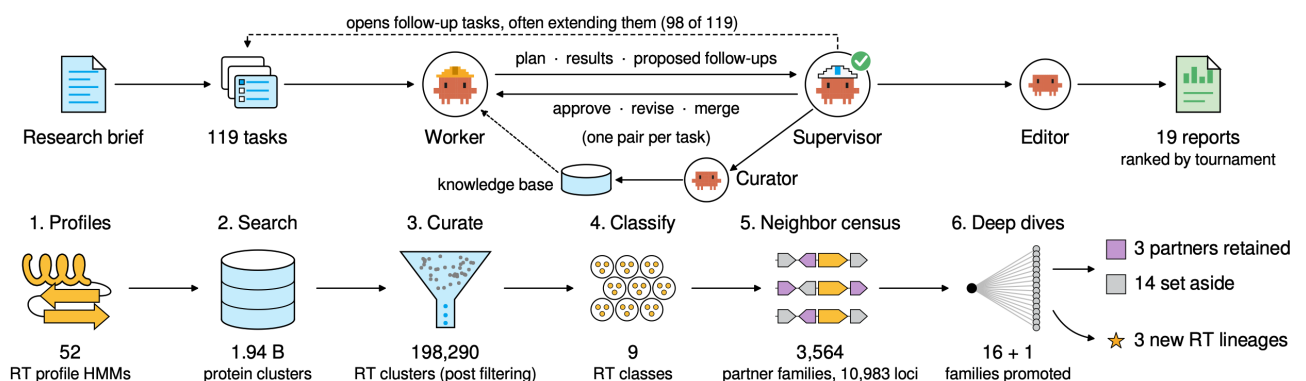
Prof. Dr. Heinz Koepl
Head of lab

Philipp Froehlich and
Jérémie Marlhens
Project supervisor

S3|06 206
Merckstrasse 25
64283 Darmstadt

philipp.froehlich@tu-
darmstadt.de
jeremie.marlhens@tu-
darmstadt.de
<https://www.bcs.tu-darmstadt.de>

September 28, 2026



For further information, please contact Philipp Froehlich and Jérémie Marlhens.

References

P. H. Yoon, J. S. Athukoralage, E. Ameisen, E. Kauderer-Abrams, N. T. Perry, and M. G. Durrant. *Autonomous AI agents discover reverse transcriptases with tandem repeat arrays*. Anthropic, preprint, 2026.