KOEN REINDERS

Computational Biology • Machine Learning • Scientific Engineering

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PROFILE

I'm a biologist who thrives on problems that require more than biology. With an MSc in Integrative Biology, I combine computational modelling and machine learning with hands-on engineering. I enjoy moving between disciplines, and my experience spans scientific software development, simulation-based inference and the design of automated experimental systems, including research instruments now in use in the laboratory.

RESEARCH EXPERIENCE

Research intern – Automated plant phenotyping (Phenara)

University of Groningen Feb. – Aug. 2026

- Designed and built a modular automated phenotyping system for longitudinal plant morphology analysis, integrating custom mechanical components, 3D-printed parts and Raspberry Pi imaging hardware.
- Developed Python software and a React-based web interface for experiment planning, scheduled image acquisition, calibration and computer-vision analysis.
- Delivered a functional research platform now used for plant phenotyping at the University of Groningen's Plant Biology laboratory.

Research intern – Epidemiological modelling & parameter estimation

University of Groningen Apr. – Aug. 2025

- Developed deep-learning methods to estimate epidemiological parameters from agent-based outbreak simulations, investigating robustness to incomplete data.
- Built scalable simulation and machine-learning pipelines using Python, R, PyTorch and SLURM-based HPC, including automated hyperparameter optimisation.
- Evaluated parameter recovery under varying data-scarcity conditions using model comparisons, sensitivity analysis and explainability methods.

EXPERIENCE

Teaching Assistant – Biostatistics

University of Groningen Nov. 2025 – Jan. 2026

Volunteer science & nature educator

IVN Feb. 2018 – Jul. 2023

Led hands-on science and nature education for children through experiments, microscopy and outdoor activities.

Secretary

G.B.D. Calamari diving association Aug. 2023 – Aug. 2024

Board member responsible for administration, organisational coordination and communication.

EDUCATION

MSc Biology – Integrative Biology

University of Groningen Sep. 2024 – Aug. 2026

- Graduated with an average grade of **8.3/10**; focus on computational biology, scientific modelling and machine learning.

BSc Biology – Molecular Biology

University of Groningen Sep. 2019 – Aug. 2024

- Computational thesis on molecular parameterisation for molecular dynamics simulations using GROMACS.

TECHNICAL SKILLS

Programming & computing: Python, R, PyTorch, OpenCV, React, Git, Linux, SLURM, HPC.

Modelling & ML: Stochastic simulation, statistical inference, parameter estimation, neural networks, Optuna, model evaluation, computer vision.

Engineering & automation: FreeCAD, parametric CAD, FDM 3D printing, Raspberry Pi, experimental imaging systems, electronics troubleshooting, hardware–software integration.

LANGUAGES & INTERESTS

Languages: Dutch (native), English (native), Japanese (learning).

Interests: Scuba diving, electronics repair, mechanical design and maker projects.