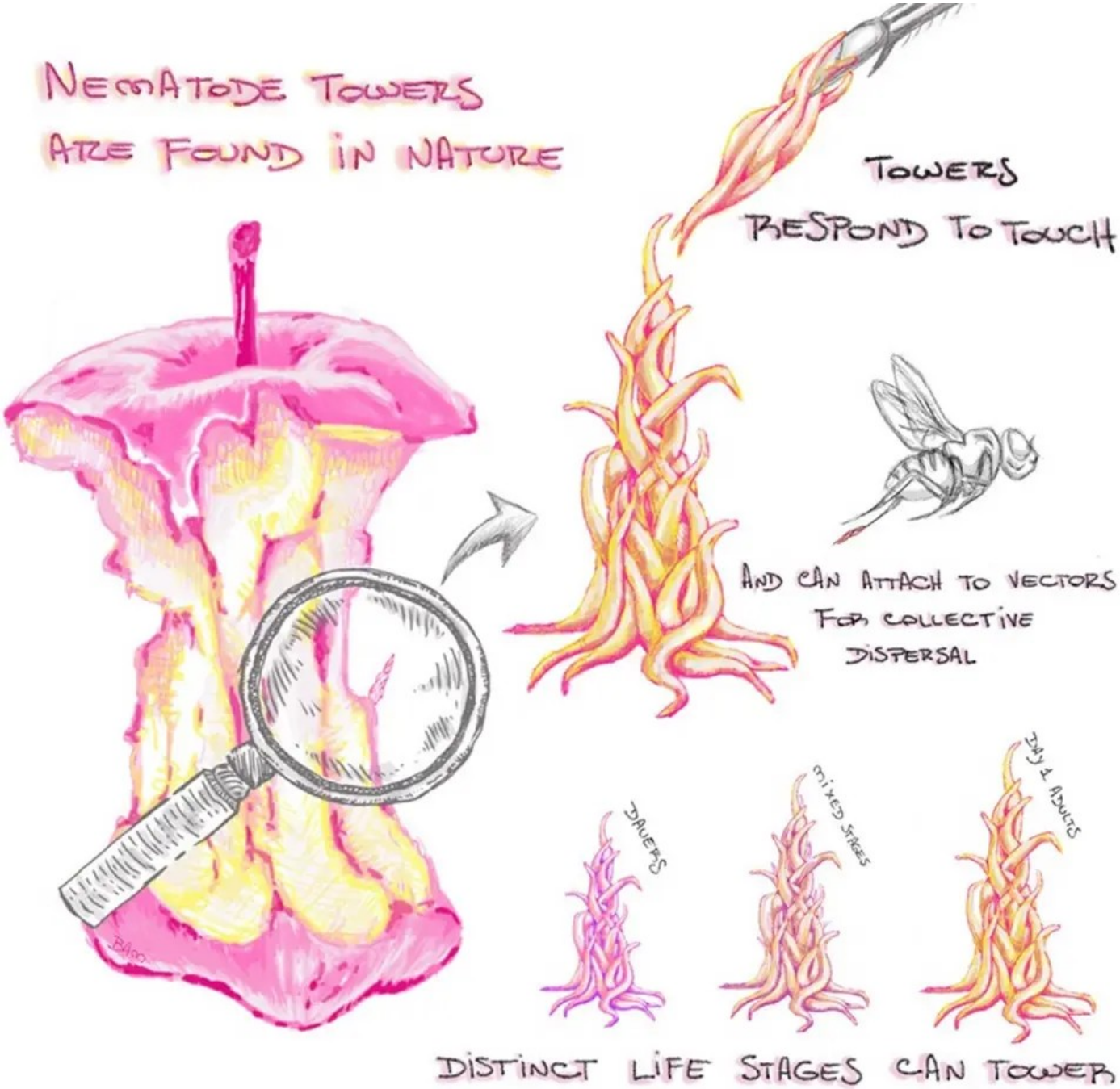
IMPRS
for Quantitative Behaviour, Ecology & Evolution
INTERNATIONAL MAX PLANCK RESEARCH SCHOOL



Towering behaviour and collective dispersal in nematode groups

Supervisor: Dr. Serena Ding (MPI-AB)
Application deadline 13. January 2026

DECEMBER 23, 2025

Project background

How animals choose between individual versus collective behavioural strategies, how they execute the behaviour from a mechanistic point of view, and how they navigate the cooperative versus competitive social dynamics when behaving together in a group are central questions to this PhD project.

Nematodes are the most abundant animals on Earth; many nematode species live a boom-bust lifestyle and disperse frequently. These tiny little worms often hitchhike on passing vectors to move great distances in search of new resources. Nematodes can disperse individually; we recently found that Caenorhabditis nematodes can also build worm towers to disperse collectively (↗ Ref). Moreover, we identified natural dispersal vectors for our local nematode species in southwestern Germany (↗ https://doi.org/10.64898/2025.12.16.694592). Together, these work pave way for combining the empirical tractability of our study system, including the model organism species *C. elegans*, with the relevant ecological context to investigate why and how nematodes behave collectively.

Project details

Research will involve designing, executing, and analysing experiments to address one or more of the questions we ask above. The student may also propose their own questions in addition. The student will develop their own research approach with the support and guidance from our international team of collaborators specialising in behavioural ecology, evolutionary biology, molecular biology, quantitative behaviour, computer vision, and physics of behaviour. We envision this project to primarily involve laboratory-based investigations, although the student will have the opportunity to join field work to gain insights into the study system.

Supervision and Research Community

The student will join the Genes and Behavior research group led by Dr. Serena Ding. The Max Planck Institute of Animal Behavior and the University of Konstanz together form a thriving research community representing a global hotspot for collective behavior, including the Centre for the Advanced Study of Collective Behaviour. The student will join the International Max Planck Research School for Quantitative Behaviour, Ecology and Evolution from lab to field (IMPRS-QBEE), a cooperative doctoral program between the Max Planck Institute of Animal Behavior and the University of Konstanz.

Qualifications

Essential requirements:

- MSc in biology, animal behaviour, collective behaviour, or a related field
- Fundamental interest in biological phenomena and questions
- Experimental and analytical capability, critical thinking, literature awareness

- Excellent verbal and written communication skills in English. German language skills are not required

Desirable experience:

- Hypothesis-driven experimental design and implementation in animal behaviour
- Quantitative data analysis skills; proficiency in one or more programming languages (R, Matlab, Python)
- Video-based approach to behavioural analysis is beneficial
- Competence with *C. elegans* and/or fluorescence imaging techniques is beneficial but not necessary

Application

The position is fully funded for three years, with the possibility of a one-year extension. Applications should be submitted via the IMPRS-QBEE online portal ↗ OpenCampus.

To be considered for this position, applicants must include a CV and a research statement that addresses the following points:

1. Describe your main research interest, how they developed, and how they relate to the proposed research project (1 page)
2. Describe how you would approach 1-2 of the research questions for this project. List your hypotheses, describe the experiments and analyses you would perform to address them, and include a mock figure of what your results might look like (1-2 pages)

Starting date: ASAP in 2026, but can be flexible.
Application deadline: January 13, 2026
Further information: ↗ https://www.serenadinglab.com/
Questions about this position should be addressed to Dr. Serena Ding, serena.ding@ab.mpg.de