CURRICULUM VITAE

Daniel E. Bath, PhD

Research scientist working in neuroscience, behaviour and horticultural technology.

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Experience

2020 – present

Research Scientist, Horticulture Automation

Vineland Research and Innovation Centre · Vineland Station, ON

- Applied research in horticultural automation, imaging and data for Canada's horticulture sector

2016 – 2020

Postdoctoral Researcher

Max Planck Institute of Animal Behavior · Konstanz, Germany

- Designed and built a closed-loop projection facility for studying perception in fish schools
- Causal and Bayesian modelling of collective decision-making
- Project Leader for transgenic organisms, Department of Collective Behaviour (2017–2020)

2014 – 2016

Visiting Scientist

HHMI Janelia Research Campus · Ashburn, VA, USA

- Neural circuits of courtship arousal and action sequencing
- Designed and built a high-throughput, 18-chamber opto- and thermogenetic behaviour box; three rigs remained in use for years

2011 – 2014

PhD Student

Institute of Molecular Pathology, Vienna (2011–13) · HHMI Janelia (2013–14)

- Developed FlyMAD (*Nature Methods*, 2014) for targeted neuronal control in freely walking flies

2008 – 2010

M.Sc. Student & Research Assistant

University of Western Ontario · London, ON

Education

2011 – 2014

Ph.D., Neuroscience

University of Vienna, Austria

2008 – 2010

M.Sc., Molecular Biology

University of Western Ontario

2004 – 2008

B.Sc. (Honours), Genetics

University of Western Ontario

Skills

Data & software

Python · Pandas · NumPy · SciPy · OpenCV · YOLO · Data pipelines · Causal inference · Bayesian modelling

Instrumentation

ROS robotics · Real-time tracking · Optical systems · Temperature & light control · Multi-device sync · Spectral imaging

Biology

Neuroscience · Opto- & thermogenetics · Genetics · PCR / qRT-PCR · Transgenesis · Animal behaviour · Plant physiology

Languages

English (native) · German (fluent) · French (written)

Fellowships & awards

2011 – 2013	NSERC Postgraduate Scholarship
2009 – 2010	NSERC Canada Graduate Scholarship
2009	Ontario Graduate Scholarship (declined)
2008	NSERC Undergraduate Summer Research Award

Teaching

2016 – 2018	Guest Lecturer, Advanced Neuroscience · University of Konstanz
2017	Lecturer, Neuroscience Intensive Graduate Course · University of Konstanz

2008 – 2010	Teaching Assistant, Introductory & Advanced Genetics (4 terms) · Western

Mentorship

2020	Master's student: machine-learning control of fish schools · Konstanz
2017 – 2018	Undergraduate: animal behaviour research · Konstanz
2014	Janelia Undergraduate Scholar: optogenetics · HHMI Janelia
2009	NSERC summer student: *Drosophila* development · Western

Service & outreach

2022 – present	Director, Wainfleet Agricultural Society (gates & ticketing, Fall Fair)
2024 – present	Founder, Fleeter Farm Kids programme
2017 – 2020	Project Leader, transgenic organisms · Max Planck
2014 – 2016	School science outreach in Virginia & West Virginia · HHMI
2011	Organizing committee, PhD Students' Symposium · IMP Vienna
2009 – 2010	Outreach & Event Coordinator, Society of Graduate Students; Let's Talk Science · Western

Publications

Bath DE, Stowers JR, Hörmann D, Poehlmann A, Dickson BJ, Straw AD (2014). FlyMAD: rapid thermogenetic control of neuronal activity in freely walking *Drosophila*. *Nature Methods* 11(7): 756–762.

McKellar CE, Lillvis JL, **Bath DE**, Fitzgerald JE, Cannon JG, Simpson JH, Dickson BJ (2019). Threshold-based ordering of sequential actions during *Drosophila* courtship. *Current Biology* 29(3): 426–434.

Bath DE, Graving J, Walter T, Couzin ID. Causal role of group size in collective signal detection. *In preparation.*

Selected invited talks

2026 · Neeganii-Iishawin Northern Economic Development Gathering, Thunder Bay

2023 · Northern Ontario Farm Conference, Sudbury

2019 · ASAB Summer Conference, Konstanz

2018 · Conference on Collective Behaviour, ICTP Trieste; HHMI Janelia

2014 · Max Planck Dept. of Circuits, Computation & Models, Munich

2013 · Cold Spring Harbor Meeting on Drosophila Neurobiology