

# Matthew Sims

*Curriculum Vitae*

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Leverhulme Centre for the Future of Intelligence  
Institute for Technology and Humanity  
University of Cambridge  
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## Current Position

2024 – 2025 **Research Associate**, *University of Cambridge, Leverhulme Centre for the Future of Intelligence*

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## Former Postdoctoral Positions

2023 – 2024 **Postdoctoral Researcher in Biology and Cognition**, *Ruhr-Universität Bochum, Institute of Philosophy II*

2021 – 2023 **Alexander Von Humboldt Postdoctoral Fellow**, *Ruhr-Universität Bochum*

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## Areas of Interest

- **AOS** Philosophy of Mind and Cognitive Science, Philosophy of biology
- **AOC** Philosophy of Science, Metaphysics, Epistemology

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## Education

2017– 2021 **PhD**, *University of Edinburgh*.

- Examination Committee: Professor Eva Jablonka (Hebrew University; London School of Economics); Dr Alistair Isaac (University of Edinburgh): doctorate awarded with no corrections.
- Supervisors: Dr David Ward, Dr Julian Kiverstein, and Professor Andy Clark

2016 – 2017 **MSc**, Philosophy by research, *University of Edinburgh*: graduated with distinction.

2012 – 2016 **BA**, Honours in philosophy *University of London, Birkbeck College*: graduated with first-class honours.

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## Visiting Positions

2018 **RA**, *Institute of Cognitive Sciences and Technologies (Rome)*

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## Research

### Published Books

2024 *Slime Mould and Philosophy*, Cambridge Elements in the Philosophy of Biology, Cambridge: Cambridge University Press (*forthcoming*).

### **Published Journal Articles and Chapters in Collected Volumes**

2024 The Principle of Dynamic Holism: guiding methodology for investigating cognition in non-neuronal organisms *Philosophy of Science*, <https://doi.org/10.1017/psa.2023.104>

2023 Ecological in Spirit: Predictive Processing and the Limits of Direct Perception in Manuel Curado and Steven S. Gouveia (eds) *Predictive Processing: New Models of the Brain and Information*, Vernon Press.

2023 Many paths to anticipatory behaviour: anticipatory model acquisition across phylogenetic and ontogenetic timescales *Biological Theory*, <https://doi.org/10.1007/s13752-022-00426-w>.

2022 Concern Across Scales: a biologically inspired embodied artificial intelligence *Frontiers in Neurobotics*, <https://doi.org/10.3389/fnbot.2022.857614>.

2022 Externalized memory in slime mould and the extended (non-neuronal) mind (M. Sims & J. Kiverstein) *Cognitive Systems Research*, <https://doi.org/10.1016/j.cogsys.2021.12.001>.

2021 Continuum of Intentionality: linking the biogenic and anthropogenic approaches to cognition *Biology & Philosophy*, <https://doi.org/10.1007/s10539-021-09827-w>

2021 Modelling ourselves: what the debate on the Free Energy Principle reveals about our implicit notions of representation (M. Sims & G. Pezzulo) *Synthese*, [doi.org/10.1007/s11229-021-03140-5](https://doi.org/10.1007/s11229-021-03140-5)

2021 Is Free energy minimization the mark of the cognitive? (K. Kiverstein & M. Sims) *Biology & Philosophy* 36(2), doi.org/ [10.1007/s10539-021-09788-0](https://doi.org/10.1007/s10539-021-09788-0).

2020 How to count biological minds: symbiosis, the Free-energy Principle, and reciprocal multiscale integration *Synthese*. doi.org/ [10.1007/s11229-020-02876-w](https://doi.org/10.1007/s11229-020-02876-w).

2019 Minimal-Perception: Responding to the Challenges of Perceptual Constancy and Veridicality with Plants *Philosophical Psychology*, [doi.org/10.1080/09515089.2019.1646898](https://doi.org/10.1080/09515089.2019.1646898).

2019 Coupling to variant information: an ecological account of comparative mental imagery generation *Review of Philosophy and Psychology*, [doi.org/10.1007/s13164-019-00454-9](https://doi.org/10.1007/s13164-019-00454-9).

### **Completed Paper Manuscripts (drafts available upon request)**

- On the Prospects of Basal Cognition Research Becoming Fully Evolutionary (Sims & Fábregas-Tejeda) (under review).
- Memory, Metabolic Individuality, and the Targets of Cognitive Explanation (under review).

### **Work in Preparation**

- Memory without Learning: A Case Study with Acellular Slime Mould (invited chapter for: *Psychodiversity: Cognition and Sentience Beyond Humans*, Routledge).
- The Role(s) of Dormancy in Evolutionary Dynamics

- Convergent Evolution of Sessility in Early Metazoans and Plants: behavioural loss or behavioural adaptation?
- ‘As if’ Biophilia as a Strategy for Biological Conservation

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### **Additional Training**

- 2021 – 2023 Slime mould cultivation, experimental protocol, Prof. Michael Levin, *Allen Discovery Center*.
- 2018 – 2021 PPLS Tutor training, *University of Edinburgh*.
- 2019 Microbiota, Symbiosis and Individuality summer school, *ERC IDEM*.
- 2018 Extended Cognition in the Classroom workshop, *University of Edinburgh*.
- 2018 Data Carpentry workshop: R programming and visualisation with R, *University of Edinburgh*.
- 2017 Research Methods and Statistics 1, *University of Edinburgh*.
- 2014 Winter School of Ethics and Neuroscience, *Humboldt University & Berlin School of Mind and Brain*.

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### **Service and Professional Activities**

**Journal Referee:** *Synthese; Biology & Philosophy; Neuroscience of Consciousness; British Journal for the Philosophy of Science; Frontiers in Neurobotics; Cognitive Systems Theory; Philosophy of Science*

### **Conference and Event Organisation, Commentating and Chairing**

- 2024 **British Society of the Philosophy of Science annual meeting**, *University of York*: organised symposium: The Many Implications of Basal Cognition for the Philosophy of Science.
- 2024 **Agency, Directionality, & Function summit**, *University of Minnesota*: served as commentator and discussant.
- 2024 **Agency, Directionality, & Function workshop**, *Georgia Institute of Technology*: served as commentator and discussant.
- 2023 **European Society of Philosophy and Psychology**, *ESPP Prague*: organised Basal Cognition symposium.
- 2021 **Green Intelligence? Debating Plant Cognition**, *University of Basel*: served as commentator.
- 2019 **New Enlightenment Lecture**, *University of Edinburgh*: event organizer.
- 2019 **Timescales of Life and Mind conference**, *University of Edinburgh*: lead conference organizer, reviewer, moderator, and chair.
- 2019 **Timescales of Life and Mind workshop**, *University of Edinburgh*: lead workshop organizer and moderator.
- 2018 **Models of the Mind**, *University of Edinburgh*: served as reviewer and commentator.

2018 **The Open Sessions of the Aristotelian Society**, *Oxford University*: served as chair.

**Paper Presentations and talks** \*(invited)

2024 **British Society of the Philosophy of Science annual meeting**, *University of York*

- “On the Prospects of Basal Cognition Research Becoming Fully Evolutionary”

2023 **European Society of Philosophy and Psychology**, *Prague*

- “The Principle of Dynamic Holism: guiding methodology for investigating cognition in non-neuronal organisms” (symposium)

\*2023 **CeLab PhD Seminar Series**, *University of Lisbon*

- “The Principle of Dynamic Holism: guiding methodology for investigating cognition in non-neuronal organisms” (guest lecture)

\*2023 **IUSS Philosophy Seminar Seminars: kinds of mind seminar cycle**, *University of Pavia*

- “The Principle of Dynamic Holism: guiding methodology for investigating cognition in non-neuronal organisms” (guest lecture)

\*2022 **Cognition Academy**, *Max Plank School of Cognition Berlin*

- “The Principle of Dynamic Holism: guiding methodology for investigating cognition in non-neuronal organisms” (keynote)

\*2022 **HSI Philosophy Seminar Series**, *University of Wollongong*

- “The Intentionality Continuum thesis”

\*2022 **2<sup>nd</sup> Magnus Symposium: On the nature of information**, *University of Bremen*

- “4E Cognition: yesterday, today, and tomorrow”

\*2021 **Active Inference Lab**, *Livestream*

- “How to count biological minds: symbiosis, the Free-energy Principle, and reciprocal multiscale integration”

\*2021 **ESPP Symposium**, *University of Vienna*

- "Cognition in Bloom"

\*2021 **AIMS workshop**, *University of Wollongong*

- "Memory Making: Plasmodial slime mould and the extended (non-neuronal) mind"

\*2021 **Allen Discovery Center guest talk** (Michael Levin Lab), *Tufts University*

- "Adaptivity, Anticipation, and Major Transitions in Cognition"

\*2020 **Minimal Systems, Agency, and Intelligence**, *University of Wollongong*

- "Escaping the Grip of Folk Biology: the sensorimotor coordination criterion of cognition and a case of motility symbiosis"

\*2019 **XSPECT workshop**, *Sussex University*

- “Symbiotic Mind: a case for bio-cognitive pluralism”

2019 **Microbiota, Symbiosis, and Individuality ERC IDEM summer school**

- “Biological Foundations of Cognition and Predictive Processing”

2018 **The Open Sessions of the Aristotelian Society**, *Oxford University*

- “Dissolving the Problem of Visual Mental Imagery for an Enactive Account of Predictive Processing”

### **Student Support Activities**

- 2024 – 2024 **Mentoring and Research Support for Visiting PhD Candidate,**  
Liberty Servers (University of Lisbon, PT) on agency in biological and artificial systems, *Ruhr University Bochum*
- 2023 – 2023 **Mentoring and Research Support for Visiting PhD Candidate,**  
Qiuran Wang (University of Padua, IT) on philosophical framework for interpreting plant behaviour experimental results, *Ruhr University Bochum*
- 2019 – 2020 **Mentoring and BA Dissertation Support,**  
Arturo Loiselle, *University of Edinburgh*

### **Other Activities**

- 2024 – present Slime mould classical conditioning experiment with Dr Qiuran Wang, *Ruhr University Bochum*

### **Affiliations**

- The Aristotelian Society
- British Society for the Philosophy of Science

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### **Studentships and Grants awarded**

#### **Conference Grants**

- 2019 University of Edinburgh Training and Development Fund: £2880
- 2019 Scots Philosophical Association: £1500
- 2019 EIDYN: £250
- 2019 Aristotelian Society: £250
- 2019 PPLS School of Philosophy: £200

#### **Studentships and Other Grants**

- 2022 University of Wollongong visiting research funding \$4000 (AU)
- 2021 Alexander von Humboldt Postdoctoral Fellowship €66,000
- 2019 European Research Council + Immunity Development and Microbiota £209
- 2018 Edinburgh University Erasmus + Traineeship Grant: £848
- 2018 Edinburgh Research Support Grant: £376

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### **Teaching**

- 2023 – 2024 **Basal Cognition and Related Topics Seminar:** organiser and lecturer, *Ruhr University Bochum*
- 2022 **Department of Humanities and Social Sciences Guest Lecture:** *Indian Institute of Technology, Ropar*

- “The Principle of Dynamic Holism: guiding methodology for investigating cognition in non-neuronal organisms” (keynote)
- 2022      **Philosophy Forum visiting undergraduate guest lecture**, *University of Wollongong*
- “Scientific methods for investigating non-neuronal cognition”
- 2022      **Return of the Organism in the Biological Sciences**: lecture series in the philosophy of biology, *Ruhr University Bochum*
- “The Intentionality Continuum Thesis: assessing goal directed behaviour across the biological board”
- 2021      **Cognition: current controversies in philosophy and cognitive science postgraduate seminar**, *Ruhr University Bochum*
- “Plant Perception and Cognition”

#### **Experience as a Teaching Assistant**

- 2020 – 2021      **Phil08004 – Logic**, lecturer: Dr Brian Rabern, *University of Edinburgh*.
- 2020 – 2021      **Phil08014 – Mind, Matter and Language**, lecturer: Dr Wolfgang Schwarz, *University of Edinburgh*.
- 2019 – 2020      **Phil08005 - Philosophy of Science 1**, lecturers: Dr Alistair Isaac & Joe Wolf, *University of Edinburgh*.
- 2018 – 2019      **Phil08017 - Knowledge and Reality**, lecturer: Dr Bryan Pickel, *University of Edinburgh*.

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#### **Awards**

- 2018- 2019      Edinburgh Teaching Award - nominee

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#### **Other Skills**

- Programming: R, Word, Excel, MouseTracker (kinaesthetic recording and analysis software), Pro Tools (audio recording software), Final Cut Pro (video editing software)
- Languages: English (native), German (intermediate level proficiency in speaking, reading, and writing)

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#### **Letters of Recommendation (available by request)**

Professor Eva Jablonka: [jablonka@tauex.tau.ac.il](mailto:jablonka@tauex.tau.ac.il) (external examiner)

Professor Tobias Schlicht: [tobias.schlicht@rub.de](mailto:tobias.schlicht@rub.de)

Dr Dave Ward: [dave.ward@ed.ac.uk](mailto:dave.ward@ed.ac.uk)

Professor Andy Clark: [andy.clark@sussex.ac.uk](mailto:andy.clark@sussex.ac.uk)

Dr Julian Kiverstein: [j.d.kiverstein@amsterdamumc.nl](mailto:j.d.kiverstein@amsterdamumc.nl)

Dr Giovanni Pezzulo: [giovanni.pezzulo@istc.cnr.it](mailto:giovanni.pezzulo@istc.cnr.it)

Professor Michael Levin: [michael.levin@tufts.edu](mailto:michael.levin@tufts.edu)

Dr Alistair Isaac: [a.m.c.isaac@ed.ac.uk](mailto:a.m.c.isaac@ed.ac.uk)

