Hadrien Oliveri

Postdoctoral Researcher

CURRENT AFFILIATIONS

- Postdoctoral Research Associate – Mathematical Institute, Oxford Centre for Industrial and Applied Mathematics, University of Oxford, Oxford, OX2 6GG, United Kingdom
- Fulford Junior Research Fellow – Somerville College, University of Oxford, Oxford, OX2 6HD, United Kingdom

PERSONAL DETAILS

Nationality	French
Email	oliveri@maths.ox.ac.uk
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Institutional	www.maths.ox.ac.uk/people/hadrien.oliveri
Google	scholar.google.com/citations?user=t-GO214AAAAJ&hl=fr&oi=ao

MAIN SCIENTIFIC INTERESTS

Mathematical and computational modelling of biological systems · Growth and mechanics · Biological development

RESEARCH EXPERIENCE

Postdoctoral research associate (current position) 2019-2023

University of Oxford, Mathematical Institute, Oxford Centre for Industrial and Applied Mathematics

Supervisor: Prof. Alain Goriely.

EDUCATION

Ph.D. in computer science 2015-2019

University of Montpellier / Inria

"On the role of mechanical feedback in plant morphogenesis" (`https://hal.inria.fr/tel-02176096`).
Advisors: Dr. Christophe Godin, Dr. Jan Traas.

M. Eng. in computer science and applied mathematics 2012-2015

Grenoble Institute of Technology, Ensimag

Specialisation: Mathematical modelling, image and simulation. With honours (French "mention Bien")

Classes préparatoires aux grandes écoles 2010-2012

Lycée Vaugelas, Chambéry

Two-year preparation for national competitive entrance exams leading to French *grandes écoles*, specialising in mathematics and physics.

LANGUAGES

French (mother tongue) · English (professional proficiency) · Italian (very good level)

TEACHING

- Tutor:
  - Somerville College, Jan–Mar 2022 – Tutor for *Dynamics*, supervised by Prof. Renaud Lambiotte. 8 hours. `https://courses.maths.ox.ac.uk/course/view.php?id=55`
  - Mathematical Institute, Oct–Dec term 2021 – Tutor for *Solid Mechanics*, supervised by Prof. Dominic Vella. 6 hours. `https://courses.maths.ox.ac.uk/course/view.php?id=141`
  - Mathematical Institute, Jan–Mar 2021 and 2022 – Group supervisor for *Case Studies in Mathematical Modelling* supervised by Prof. Philip Maini – `https://courses.maths.ox.ac.uk/course/view.php?id=251`. 8 hours.
- Supervision:
  - Mathematical Institute – Assisting Prof. Alain Goriely in the supervision of 5 PhD students.
  - Mathematical Institute, Summer 2021 – Co-supervision of a postgraduate student, with Prof. Alain Goriely, Prof. Derek Moulton (Mathematical Institute), and Dr. Chris Thorogood (Oxford Botanic Garden) – *Dynamics of prey trapping in the carnivorous plant Nepenthes.*
  - Workshop *Modeling Shape and Size in Biological Development* (Lorentz Centre, Leiden, 2020) – Assisting Prof. Philip Maini in the supervision of a working group.
- Marking
  - University of Oxford / Mathematical Institute – Examiner for *Geometry* (1st year final examination, 2022).
  - University of Oxford / Mathematical Institute – Examiner for *Networks Mini-projects* (4th year, 2021).

OTHER ACADEMIC SERVICE

- University of Oxford / Mathematical Institute – Organiser of the weekly internal seminar of the *Oxford Centre for Industrial and Applied Mathematics* (ongoing).
- University of Oxford / Mathematical Institute – Co-organiser of the bi-weekly seminar of the *Oxford Brain Modelling Group* (ongoing).
- Member of a selection committee presided by Prof. Alain Goriely: shortlisting and interviewing applicants for a postdoctoral position.
- Peer-reviewer for *PNAS* (1 review), *Physical Review E* (2 reviews), *PLoS Computational Biology* (2 reviews) and *Brain Multiphysics* (1 review).

GRANTS & FELLOWSHIPS

Fulford Junior Research Fellowship (non-stipendiary) 2021-2023
Somerville College, University of Oxford

AWARDS & ACHIEVEMENTS

- *Recognition Award* for outstanding performance in 2021, awarded by Oxford Mathematical Institute, June 2022.
- Best ECR presentation – 6^{th} *Oxford International Neuron and Brain Mechanics Workshop*, awarded by Elsevier, April 2021.

PEER-REVIEWED PUBLICATIONS

*These authors contributed equally.

SELECTED PUBLICATIONS

- **Oliveri** & Goriely (2022). Mathematical models of neuronal growth. *Biomechanics and Modeling in Mechanobiology*. https://doi.org/10.1007/s10237-021-01539-0
- **Oliveri**, Franze & Goriely (2021). Theory for durotactic axon guidance. *Physical Review Letters* [**Editor's Suggestion**]. https://doi.org/10.1103/PhysRevLett.126.118101
- Moulton, **Oliveri** & Goriely (2020). Multiscale integration of environmental stimuli in plant tropism produces complex behaviors. *Proceedings of the National Academy of Sciences*. https://doi.org/10.1073/pnas.2016025117
- Zhao*, Du*, **Oliveri***, Zhou*, Ali*, Chen, Feng, Wang, Lü, Long, Schneider, Sampathkumar, Godin, Traas & Jiao (2020). Microtubule-mediated wall anisotropy contributes to leaf blade flattening. *Current Biology*. https://doi.org/10.1016/j.cub.2020.07.076
- **Oliveri**, Traas, Godin & Ali (2019). Regulation of plant cell wall stiffness by mechanical stress: a mesoscale physical model. *Journal of Mathematical Biology*. https://dx.doi.org/10.1007/s00285-018-1286-y

OTHER PUBLICATIONS

- Boudissa, Bahl, **Oliveri**, Chabanas & Tonetti (2021). Virtual preoperative planning of acetabular fractures using patient-specific biomechanical simulation: a case-control study. *Orthopaedics & Traumatology: Surgery & Research*. https://doi.org/10.1016/j.otsr.2021.103004
- Boudissa, Noblet, Bahl, **Oliveri**, Herteleer, Tonetti & Chabanas (2021). Planning acetabular fracture reduction using a patient-specific biomechanical model: a prospective and comparative clinical study. *International Journal of Computer Assisted Radiology and Surgery*. https://doi.org/10.1007/s11548-021-02352-x
- Ali, **Oliveri**, Traas & Godin (2019). Simulating turgor-induced stress patterns in multilayered plant tissues. *Bulletin of Mathematical Biology*. https://doi.org/10.1007/s11538-019-00622-z
- Boudissa, **Oliveri**, Chabanas & Tonetti (2018). Computer-assisted surgery in acetabular fractures: Virtual reduction of acetabular fracture using the first patient-specific biomechanical model simulator. *Orthopaedics & Traumatology: Surgery & Research*. https://doi.org/10.1016/j.otsr.2018.01.007
- Boudissa, Chabanas, **Oliveri** & Tonetti (2015). Virtual fracture reduction of the acetabulum using a rigid body biomechanical model. *Revue de Chirurgie Orthopédique et Traumatologique*. https://doi.org/10.1016/j.rcot.2015.09.119

CONFERENCE PAPERS

- **Oliveri**, Boudissa, Tonetti & Chabanas (2017). Planning acetabular fracture reduction using patient-specific multibody simulation of the hip. In SPIE Medical Imaging 2017: Image-Guided Procedures, Robotic Interventions, and Modeling. *International Society for Optics and Photonics*. https://doi.org/10.1117/12.2250380
- Boudissa, **Oliveri**, Chabanas, Merloz & Tonetti (2017). Pre-operative planning in acetabular surgery: the first patient-specific biomechanical model. Orthopaedic Proceedings 99. https://online.boneandjoint.org.uk/doi/abs/10.1302/1358-992X.2017.20.018
- Boudissa, Chabanas, **Oliveri** & Tonetti. Virtual fracture reduction of the acetabulum using a rigid body biomechanical model. SURGETICA 2014. https://hal.archives-ouvertes.fr/hal-01233925/

SUBMITTED PREPRINTS

- **Oliveri**, De Rooij, Kuhl & Goriely (2022). Rheology of growing axons. bioRχiv. https://doi.org/10.1101/2022.04.01.485819
- Brennan, Thompson, **Oliveri**, Rognes & Goriely (2022). The role of clearance in neurodegenerative diseases. bioRχiv. https://doi.org/10.1101/2022.03.31.486533
- Putra, **Oliveri**, Thompson & Goriely (2021). Front propagation and arrival times in networks with application to neurodegenerative diseases. bioRχiv. https://doi.org/10.1101/2022.01.04.474911

TALKS & POSTERS

- Worshop *Bridging the Gap: from Brain Mechanics to Brain Dynamics*, Lorentz Centre, Leiden, Netherlands, Septembre 2022. https://www.lorentzcenter.nl/bridging-the-gap-from-brain-mechani html
- A field theory for plant tropisms. 10th Plant Biomechanics Conference, Lyon, France, August 2022. https://plantbiomech.sciencesconf.org
- A field theory for plant tropisms [**Invited**]. Workshop *Mechanics of Life*, Flatiron Institute, New York, USA, May 2022. https://www.simonsfoundation.org/event/mechanics-of-life-workshop/
- An optic ray theory for nerve durotaxis. *EMMC18*, Oxford, United Kingdom, April 2022. https://www.emmc18.org
- A field theory for plant tropisms. *Symposium of the French "groupement de recherche" on Plant Physics (PhyP)*, Carry-le-Rouet, France, March 2022. https://gdrphyp.wordpress.com/.
- An optic ray theory for nerve durotaxis. *5th Soft Tissue Modelling Workshop*, Glasgow, United Kingdom, June 2021. http://www.softmech.org/events/headline_791379_en.html
- An optic ray theory for nerve durotaxis. *6th Oxford International Neuron and Brain Mechanics Workshop*, Oxford, United Kingdom, April 2021. https://youtu.be/fk8A8rXChUU
- A multiscale mathematical theory for plant tropism [**Invited**]. Department of Mathematical Sciences, University of Durham, Durham, United Kingdom, March 2021.
- Stress-based regulation of multicellular plant growth: a finite element modeling approach applied to planar leaf morphogenesis [Poster]. *19th International Conference on Systems Biology*, Lyon, France, Octobre 2018. https://hal.archives-ouvertes.fr/hal-01897027
- Morphogenesis of plant organs: understanding the emergent behavior of stress-sensing tissues. *9th international plant biomechanics conference*, Montreal, Canada, August 2018. https://www.plantbiomech2018.com/
- Force-sensing at the cell wall: a multiscale physical model. *Meeting of the French groupement de recherche PhyP*, Marseille, France, June 2017. https://gdrphyp.wordpress.com/

OUTREACH

- On giants, bones, scales and forces. *JRF Research Forum*, Somerville College, Oxford, Nov 2021.