# CURRICULUM VITAE

Thibaut Brunet – Principal Investigator, Unit of Evolutionary Cell Biology and Evolution of Morphogenesis
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Google Scholar: https://scholar.google.es/citations?user=5Ck0fykAAAAJ&hl=en
Up to date on January 22, 2025

## CURRENT AND PAST ACADEMIC POSITIONS

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| **2022-present** | Principal investigator, Evolutionary Cell Biology and Evolution of Morphogenesis Unit<br>Institut Pasteur, Paris, France |
| **2016-2021** | Postdoctoral fellow<br>University of California, Berkeley and the Howard Hughes Medical Institute, California, USA |
| **2011-2016** | PhD student (2011-2015) and "bridging" postdoctoral fellow (2015-2016)<br>European Molecular Biology Laboratory, Heidelberg, Germany |

## RESEARCH GRANTS

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| **2023** | ANR (Agence Nationale de la Recherche) collaborative grant, 150 k€<br>*"INCOMPLETE" with J.-R. Huynh (Collège de France, Paris, France) and Arnaud Echard (Institut Pasteur, Paris, France)* |
| **2023** | Vallee Foundation Scholar Award, 310 k€ |
| **2022** | European Research Council (ERC) Starting Grant "EvoMorphoCell", 1.5 M€ |
| **2021** | Institut Pasteur G5 start-up package (ca. 1M€) |

## AWARDS AND FELLOWSHIPS

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| **2024** | EMBO Young Investigator |
| **2024** | John Kendrew Award<br>*Recognizes excellence in science and/or science communication from former pre-doctoral or post-doctoral fellows of the European Molecular Biology Laboratory (EMBL)* |
| **2022** | Young Researcher Award, French Society for Cell Biology |
| **2017** | Human Frontier Science Program (HFSP) long-term postdoctoral fellowship |
| **2016** | European Molecular Biology Organization (EMBO) long-term postdoctoral fellowship |
| **2011** | European Molecular Biology Laboratory (EMBL) pre-doctoral fellowship |
| **2007** | **"**Allocation élève normalien", Ministère de l'Education Nationale, France |

## EDUCATION

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| **2023** | Habilitation à Diriger des Recherches – Université Paris-Saclay |
| **2015** | PhD (Dr. Rer. Nat.) – University of Heidelberg, Germany |

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| **2011** | Masters in Molecular and Cell Biology, Speciality in Developmental Biology – Ecole Normale Supérieure de Paris and Université Pierre et Marie Curie, Paris, France |
| **2010** | Agrégation de Sciences de la Vie, de la Terre et de l'Univers |
| **2008** | Bachelor in Biology, Ecole Normale Supérieure de Paris and Université Pierre et Marie Curie, Paris, France |
| **2005-2007** | Classes préparatoires BCPST (Biology, Chemistry, Physics and Earth Sciences) – Lycée Henri-IV, Paris, France |

## SUPERVISION OF PHD STUDENTS AND POSTDOCTORAL FELLOWS

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| **2024-present** | Mylan Ansel, PhD student, Université Paris-Cité (FIRE doctoral school)<br>Funded by a competitive "Allocation Elève Normalien" fellowship (ENS de Lyon) |
| **2023-present** | Uzuki Horo, PhD student, Université Paris-Cité (BioSPC doctoral school)<br>Funded by a competitive Pasteur Paris Université (PPU) fellowship |
| **2023-present** | Diede De Haan, EMBO and HFSP long-term postdoctoral fellow |
| **2023-present** | Eva Pillai, EIPOD postdoctoral fellow<br>(co-supervised with Alba Diz-Muñoz and Detlev Arendt, EMBL Heidelberg, Germany) |
| **2022-present** | Maite Freire Delgado, PhD student, Université Paris-Cité (BioSPC doctoral school)<br>Funded by a competitive BioSorbonne Paris Cité (BioSPC) PhD fellowship |
| **2022-present** | Núria Ros-Rocher, Marie Sklodowksa-Curie postdoctoral fellow |
| **2022-present** | 1 Licence 3 intern/4 Masters 1 interns/1 Masters 2 intern/1 Erasmus student |

## INVITED PRESENTATIONS

**2026: Invited conference presentations:** European Cytoskeletal Forum (Paris)

**2025: Invited seminars:** Vienna BioCenter, AMOLF (Amsterdam)

**Invited conference presentations:** EMBL Course on Transitions in Development (Heidelberg), Jacques Monod Conference "Metazoan origins" (Roscoff), American Academy of Microbiology symposium "Evolution of multicellularity" (Orlando), Vallee Foundation Plenary Symposium, Latsis Symposium "Cell diversity in a changing environment" (EPFL), EMBO Summer School "Emergence & Evolution of Multi-Level Regulatory Systems" (Venice), University of Minnesota Developmental Biology Symposium, "Origins of eukaryotic excitability" (University of Heidelberg), PROCOPE meeting on genetic engineering of marine organisms (EMBL)

**2024: Invited seminars**: Institut de Génomique Fonctionnelle de Lyon, Institut de Génétique et Développement de Rennes, Institut de Biologie-Valrose (Nice), Institut Jacques Monod (Paris), Institut Diversité, Écologie et Évolution du Vivant (Orsay)

**Invited conference presentations**: 4D Cellular Physiology Symposium (Janelia), Journées André Picard (Observatoire Océanologique de Banyuls-sur-Mer), EuroEvoDevo Conference (Helsinki), Cell Polarity (Janelia), EMBL 50th anniversary symposium 'From molecules to ecosystems' (Heidelberg)

**2023: Invited seminars**: University of Basel, Queen Mary University of London, Institut de Biologie du Développement de Marseille

**Invited conference presentations**: American Society for Cell Biology/EMBO meeting (Boston), European Developmental Biology Congress (Paris), EMBO Workshop on Cell Polarity and Membrane Dynamics

**2022: Invited seminars**: Michael Sars Centre, EMBL Barcelona, Institut Cochin, Virtual Gastrulation Seminar Series

**Invited conference presentations**: 10$^{th}$ EMTA International Association Conference (TEMTIA, Paris), Cell La Vie 2 (Paris), Royal Physiographic Society Jubilee Symposium "Cancer, multicellularity and complex systems" (Lund,

Sweden), West Pacific Marine Biology Network symposium (virtual), Paris Evolution Day, Mechanobiology in evolution (Heidelberg), Jacques Monod Conference "Metazoan origins" (Roscoff), Collège de France Symposium on Collective and individual cell motility (Paris), Journées Boris Ephrussi (PhD symposium of Sorbonne Universités, keynote lecture)

**2021: Invited seminars**: Institut Curie (Paris)

**Invited conference presentations**: Paris Cytoskeleton Day, Systems biology of the brain Workshop (University of Freiburg, Switzerland)

**2020: Invited seminars**: Instituto Gulbenkian de Ciencia

**Invited conference presentations**: Self-organization in biological systems (Fondation des Treilles)

**2019: Invited conference presentations**: VII European Congress of Protistology – ISOP meeting, International Choanoflagellate & Friends Workshop

## SCIENCE COMMUNICATION AND OUTREACH

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| **2022-present** | Middle Schoolers Observation Week<br>(visit of our lab at Institut Pasteur by 2-4 middle school students from middle schools in the Paris region; organized by Chantal Combredet in our lab) |
| **2021-present** | Regular discussions with journalists for English-speaking (*The Atlantic, Science News, Quanta, Science*, *Knowable*) and French-speaking venues (France Culture, *Science & Vie*, *Epsiloon)* |
| **2023** | Podcast interview "In the PI's seat" (host: Camila Valenzuela) |
| **2018** | Nerd Nite, San Francisco (popular science talk in a bar/concert venue)<br>"Love and Death in the Planktonic World" |
| **2016** | Exploratorium Night Life, San Francisco (encounters between scientists and the general public)<br>Demonstration of choanoflagellates and microscopic observations of plankton |
| **2014** | Heidelberg Science Slam, "Why do species exist?" (Best talk prize) |

## TEACHING

Regular guest lecturer for the following courses:

- Université Paris-Cité
  - Evolutionary Biology (Masters 1) – topic: evolution of multicellularity
  - Cell differentiation (Masters 2) – topic: evolution of cell differentiation
- Sorbonne Universités
  - Stem Cells (Masters 2) – topic: evolution of cell differentiation
- Ecole Normale Supérieure (Paris)
  - Cell Biology (Masters 1) – topic: introduction to evolutionary cell biology
  - Developmental Biology (Masters 1) – topic: evolution of multicellularity
- Institut Curie
  - "Cell Biology & Cancer" Curie Course – topic: evolution of multicellularity
- Institut Pasteur
  - "Molecular Biology of the Cell" Pasteur Course – topic: introduction to evolutionary cell biology

## PUBLICATIONS

*Major publications highlighted in grey.*

** equal contribution*

1. Brunet, T. (2024) Clues to the origin of embryonic development in animals. *Nature* **635**: 291-293 doi: 10.1038/d41586-024-03468-1
2. Ansel, M., Ramachandran, K., Dey, G. & **Brunet, T.** (2024) Origin and evolution of microvilli. *Biology of the Cell* e2400054 doi: 10.1111/boc.202400054
3. Combredet, C. & **Brunet, T.** (2024) A fast and robust gene knockout method for *Salpingoeca rosetta* clarifies the genetics of choanoflagellate multicellular development. *biorXiv* doi: 10.1101/2024.07.13.603360 (in revision at *Cell Reports*)
4. Ros-Rocher, N., Reyes-Rivera, J., Fouroughijabbari, Y., Combredet, C., Coyle, M., Larson, B. T., Houtepen, E., Vermeij, M.K., King., N. & **Brunet, T.** (2024) Clonal-aggregative multicellularity entrained by salinity in one of the closest relatives of animals. *biorXiv* doi: 10.1101/2024.03.25.586565
5. Glazenburg, M. M., Hettema, N. M., Laan, L., Remy, O., Laloux, G., **Brunet, T.,** Chen, X., Tee, Y. H., Wen, W., Rizvi, M. S., Jolly, M. K., Riddell, M. (2024) Perspectives on polarity–exploring biological asymmetry across scales. *Journal of cell science* 137 (5), jcs261987 doi: 10.1242/jcs.261987
6. Buttery, S., Goodson, H., Marshall, W. and **Brunet, T.** (2024) The beauty and challenges of studying cell biology in diverse organisms. *Cell* **187** (2), 225-227 doi: 10.1016/j.cell.2023.12.022
7. **Brunet, T.** (2023) Cell contractility in early animal evolution. *Current Biology* **33**: R966-R985 doi: 10.1016/j.cub.2023.07.054
8. Ros-Rocher, N. and **Brunet, T.** (2023) What is like to be a choanoflagellate? Perception, processing and behavior in the closest living relatives of animals. *Animal Cognition* doi: 10.1007/s10071-023-01776-z
9. Booth, D. S. and **Brunet, T.** (2023) Cell polarity in the protist-to-animal transition. *Current Topics in Developmental Biology* **154**: 1-36 doi: 10.1016/bs.ctdb.2023.03.001
10. Fung, L., Konkol, A., Ishikawa, B., Larson, B. T., **Brunet, T.** and Goldstein, R. (2023) Swimming, feeding and inversion in multicellular choanoflagellate sheets. *Physical Review Letters* 131: 168401 doi: 10.1103/PhysRevLett.131.168401
11. Reyes-Rivera, J., Wu, Y., Guthrie, B. G. H., Marletta, M., King, N., and **Brunet, T.** (2022) Nitric oxide signaling controls collective contractions in a colonial choanoflagellate. *Current Biology* **32** (11): 2539-2547.e5 doi: 10.1016/j.cub.2022.04.017
12. Chaigne, A., and **Brunet, T.** (2022) Incomplete abscission and cytoplasmic bridges in the evolution of eukaryotic multicellularity. *Current Biology* **32** (8): R385-R397 doi: 10.1016/j.cub.2022.03.021
13. **Brunet, T.**, and King, N. (2021) The single-celled ancestors of animals: a history of hypotheses. (invited book chapter in *The Evolution of Multicellularity*, edited by Matthew Herron, William Ratcliff and Peter Conlin, CRC Press, 2021) – doi: 10.20944/preprints202011.0302.v1
14. **Brunet, T.**, Albert, M., Roman, W., Spitzer, D. C., and King, N. (2020) A flagellate-to-amoeboid switch in the closest living relatives of animals. *eLife* 2021;10:e61037 doi: 10.7554/eLife.61037
15. Hallou, A., and **Brunet, T.** (2020) On growth and force: mechanical forces in development. *Development* 147: dev187302 doi: 10.1242/dev.187302
16. **Brunet, T.***, Larson, B. T.*, Linden, T. A.*, Vermeij, M. J. A., McDonald, K., and King, N. (2019) Light-regulated collective contractility in a multicellular choanoflagellate. *Science* **366**, 326-334 doi: 10.1126/science.aay2346
17. Nielsen, C.*, **Brunet, T.***, and Arendt, D*. (2018) Evolution of the bilaterian mouth and anus. *Nat. Ecol. Evol.* **2**: 1358-1376 doi: 10.1038/s41559-018-0641-0
18. Achim, K., Eling, N., Martinez Vergara, H., Bertucci, P. Y., Musser, J., Vopalensky, P., **Brunet, T.**, Collier, P., Benes, V., Marioni, J. C., and Arendt, D. (2018) Whole-body single-cell sequencing reveals transcriptional domains in the annelid larval body. *Mol. Biol. Evol.* **35**, 1047-1062 doi: 10.1093/molbev/msx336
19. **Brunet, T.**, and King, N. (2017) The origin of animal multicellularity and cell differentiation. *Dev. Cell* **43**, 124-140 doi: 10.1016/j.devcel.2017.09.016

20. **Brunet, T.**, Fischer, A.H., Steinmetz, P.R., Lauri, A., Bertucci, P., and Arendt, D. (2016). The evolutionary origin of bilaterian smooth and striated myocytes. *eLife* **5**, e19607 doi: 10.7554/eLife.19607
21. **Brunet, T.**, and Arendt, D. (2016). Animal Evolution: The Hard Problem of Cartilage Origins. *Curr. Biol.* **26**, R685–R688 doi: 10.1016/j.cub.2016.05.062
22. **Brunet, T.**, and Arendt, D. (2016). From damage response to action potentials: early evolution of neural and contractile modules in stem eukaryotes. *Philos. Trans. R. Soc. Lond. B. Biol. Sci.* **371**, 20150043 doi: 10.1098/rstb.2015.0043
23. Arendt, D., Benito-Gutierrez, E., **Brunet, T.**, and Marlow, H. (2015). Gastric pouches and the mucociliary sole: setting the stage for nervous system evolution. *Philos. Trans. R. Soc. Lond. B. Biol. Sci.* **370**, 20150286 doi: 10.1098/rstb.2015.0286
24. Fernandez-Sanchez, M.-E., **Brunet, T.**, Röper, J.-C., and Farge, E. (2015). Mechanotransduction's Impact on Animal Development, Evolution, and Tumorigenesis. *Annu. Rev. Cell Dev. Biol.* **31**, 373–397 doi: 10.1146/annurev-cellbio-102314-112441
25. **Brunet, T.,** Lauri, A., and Arendt, D. (2015). Did the notochord evolve from an ancient axial muscle? The axochord hypothesis. *BioEssays* 37, 836–850 doi: 10.1002/bies.201500027
26. Lauri, A.*, **Brunet, T.***, Handberg-Thorsager, M., Fischer, A.H.L., Simakov, O., Steinmetz, P.R.H., Tomer, R., Keller, P.J., and Arendt, D. (2014). Development of the annelid axochord: insights into notochord evolution. *Science* 345, 1365–1368 doi: 10.1126/science.1253396
27. **Brunet, T.***, Bouclet, A.*, Ahmadi, P., Mitrossilis, D., Driquez, B., Brunet, A.-C., Henry, L., Serman, F., Béalle, G., Ménager, C., et al. (2013). Evolutionary conservation of early mesoderm specification by mechanotransduction in Bilateria. *Nat. Comm.* 4, 2821 doi: 10.1038/ncomms3821
28. Shimeld, S.M., Boyle, M.J., **Brunet, T.**, Luke, G.N., and Seaver, E.C. (2010). Clustered Fox genes in lophotrochozoans and the evolution of the bilaterian Fox gene cluster. *Dev. Biol.* 340, 234–248 doi: 10.1016/j.ydbio.2010.01.015