Forces and symmetries in cells and tissues

Eckert, J.

Publications

(1) **Eckert, J.**, Ladoux, B., Giomi, L., Schmidt, T. (2022). Hexanematic crossover in epithelial monolayers depends on cell adhesion and cell density. *bioRxiv 2022.10.07.511294*.

(2) Hoffmann, L. A., Carenza, L. N., **Eckert, J.**, and Giomi L. (2022). Theory of defect-mediated morphogenesis. *Science Advances 8*, eabk2712.

(3) Armengol-Collado, J.-M.*, Carenza, L. N.*, **Eckert, J.***, Krommydas, D.*, and Giomi, L. (2022). Epithelia are multiscale active liquid crystals. *arXiv:2202.00668*.

(4) Rodrigues de Mercado, R., van Hoorn, H., de Valois, M., Backendorf, C., **Eckert, J.***, and Schmidt, T.* (2022). Characterization of cell-induced astigmatism in high-resolution imaging. *Biomed. Opt. Express 13*, 464-473.

(5) **Eckert, J.***, Abouleila, Y.*, Schmidt, T., and Mashaghi, A. (2021). Single Cell Micro-Pillar-Based Characterization of Endothelial and Fibroblast Cell Mechanics, *Micro 1*, 242-249.

(6) Arslan, F. N.*, **Eckert, J.***, Schmidt, T., and Heisenberg, C.-P. (2021). Holding it together: when cadherin meets cadherin. *Biophysical Journal 120*, 4182-4192.

(7) **Eckert J.**, van Loon, J. J. W. A., Eng, L. M., and Schmidt T. (2021). Hypergravity affects cell traction forces of fibroblasts. *Biophysical Journal 120*, 773-780.

(8) Woodcock, E. M., Girvan, P., **Eckert, J.**, Lopez-Duarte, I., Kubánková, M., van Loon, J. J. W. A., Brooks, N. J., and Kuimova, M. K. (2019). Measuring Intracellular Viscosity in Conditions of Hypergravity. *Biophysical Journal 116*, 1984-1993.

* Equal contribution

Curriculum Vitae

From 2023	**Postdoctoral research position** **Alpha Yap Lab** – Institute for Molecular Bioscience, University of Queensland, Australia
2018 – 2022	**Ph.D.** in mechanobiology | cell- and tissue mechanics **Thomas Schmidt Lab** – Physics of Life Processes, Leiden Institute of Physics, Leiden University, The Netherlands
08/2021 – 01/2022	Visiting student & **EMBO Scientific Exchange Fellow** **Benoît Ladoux / René-Marc Mège Lab** – Cell Adhesion & Mechanics, Institut Jacques Monod - Université Paris Diderot / CNRS, France
10/2015 – 09/2018	**M.Sc. in Physics** Technische Universität Dresden, Germany - Specialization: Soft condensed matter and biological physics - Thesis: 'Influence of Hypergravity on Cell Traction Forces of 3T3 Fibroblasts'
07/2017 – 08/2018	Internship **Thomas Schmidt Lab** – Physics of Life Processes, Leiden Institute of Physics, Leiden University, The Netherlands - Master thesis project in collaboration with with TU Dresden and ESA/ESTEC - Funding: ERASMUS+ of the European Union

07/2017 – 01/2018
Internship
Physical Science Instrument Section, Mechatronics & Optics Division, Mechanical Engineering Department, Directorate of Technology, Engineering and Quality, **European Space Agency (ESA)/ European Space Research and Technology Centre (ESTEC)**, The Netherlands
- Master thesis project in collaboration with TU Dresden and Leiden University
- Funding: ERASMUS+ of the European Union

07/2016 – 12/2016
Student assistant
Stefan Diez Group – Biophysics of Single Motor Proteins, B CUBE – Center of Molecular Bioengineering at TU Dresden, Germany

08/2015 – 01/2016
Internship
Biology & Env. Monitoring Science Office, Science Department, Directorate Human Spaceflight & Operations, **European Space Agency (ESA)/ European Space Research and Technology Centre (ESTEC)**, The Netherlands
- Contributed to the Bio-X experiment | measurements of cell height changes under hypergravity and microgravity conditions
- Participated in the 63rd ESA parabolic flight campaign, granted by the European Low Gravity Research Association (ELGRA)

10/2011 – 09/2015
B.Sc. in Physics
Technische Universität Dresden, Germany
Thesis: 'Indirect determination of Jupiter's position using gravitational light deflection as part of ESA's Gaia space mission'


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