

Esben Lorentzen
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Employment

Professor

Department of Molecular Biology and Genetics - Protein Science
Aarhus University
Aarhus C, Denmark
7 May 2024 → present

Research group leader

Max Planck Institute of Biochemistry
Martinsried, Germany
1 Jul 2009 → 30 Nov 2016

Postdoc

Birkbeck College
United Kingdom
1 Mar 2007 → 30 Jun 2009

Postdoc

European Molecular Biology Laboratory (EMBL)
Germany
1 Jul 2004 → 28 Feb 2007

Qualifications

Molecular Biology, PhD, Structure of three glycolytic enzymes, European Molecular Biology Laboratory (EMBL)
3 Jan 2001 → 30 Jun 2004
Award Date: 20 Aug 2004

Chemistry and molecular biology, MAster degree, Characterisation of the TFIIIA-5S rRNA complex, Aarhus University (AU)
1 Jun 2000 → 20 Nov 2001
Award Date: 20 Nov 2000

Scientific summary

- Cilium organelle biology: cell motility and signaling.
- Organization of the eukaryotic cell by intracellular trafficking.
- Molecular basis of disease mutations (ciliopathies).
- Single particle cryo-EM and X-ray crystallographic structure determination of megadalton size protein complexes.

Publication metrics

- Publications: total of 59 publications in peer-reviewed scientific journals, 12 as first and 26 as last and corresponding author
- H-index of 35, 4098 citations total (source: Google scholar)
- 62 structures deposited to the protein data bank (PDB)

The 10 most important and relevant last-author publications from my lab are listed below (IF: 2016 journal impact factor).

- Wachter, S., Jung, J., Shafiq, S., Basquin, J., Fort, C., Bastin, P., and Lorentzen E., (2019) Association of the unusual GTPase IFT22 with the IFT complex is required for flagellum construction. EMBO J., 10.15252/embj.2018101251, IF: 9.8

- Taschner, M, Lorentzen, A, Mourao, A, Collins, T, Freke, GM, Moulding, D, Basquin, J, Jenkins, D and Lorentzen, E. (2018) Crystal structure of intraflagellar transport protein 80 reveals a homo-dimer required for ciliogenesis. *Elife*, DOI: 10.7554/eLife.33067, IF: 7,7
- Wang, Q., Michael Taschner, Kristina Ganzinger, Alethia Villasenor, Michael Heymann, Petra Schwille, c Esben Lorentzen*, Naoko Mizuno* (2018) Membrane association and remodeling by intraflagellar transport protein IFT172. *Nature communications*, doi: 10.1038/s41467-018-07037-9, IF: 12.4 (* co-corresponding authors)
- Taschner M., Weber K., Mourão A., Vetter M., Awasthi M., Stiegler M., Bhogaraju S, and Lorentzen E., (2016) Intraflagellar transport proteins 172, 80, 57, 54, 38, and 20 form a stable tubulin-binding IFT-B2 complex. *EMBO J* 35(7):773-90, IF: 9,8
- Vetter, M., Stehle, R., Basquin, C., and Lorentzen, E., (2015) Structure of Rab11-FIP3-Rabin8 reveals simultaneous binding of FIP3 and Rabin8 effectors to activated Rab11, *Nature Structural & Molecular Biology*, 22(9):695-702, IF: 12,6
- Mourão, A., Nager, A.R., Nachury, M.V., and Lorentzen, E., (2014) Structural basis for membrane targeting of the BBSome by ARL6, *Nature Structural & Molecular Biology*, 21(12):10035-1041, IF: 12,6
- Taschner, M., Kotsis, F., Braeuer, P., Kuehn, W.E., and Lorentzen, E., (2014) Crystal structures of IFT70/52 and IFT52/46 provide insight into intraflagellar transport B core complex assembly, *J Cell Biol.*, 207(2):269-282, IF: 9,8
- Bhogaraju S., Cajanek L., Fort C, Blisnick T., Weber K., Taschner M., Mizuno N., Lamla S., Bastin P., Nigg EA., Lorentzen, E., (2013) Molecular Basis of Tubulin Transport Within the Cilium by IFT74 and IFT81, *Science* 341(6149):1009-12, IF: 37,2
- Taschner, M., Vetter, M., and Lorentzen, E., (2012) Atomic resolution structure of human α -tubulin acetyltransferase bound to acetyl-CoA, *PNAS*, 109(48):19649-54, IF: 9,7
- Bhogaraju, S., Taschner, M., Morawetz, M., Basquin, C. and Lorentzen, E., (2011) Crystal structure of the intraflagellar transport complex 25/27, *EMBO J.*, 30(10):1907-18, IF: 9,8

Invited speaker at international conferences

- EMBO Young Scientists Forum, Prague, Czech Republic, 2019
- FASEB meeting 'Biology of Cilia & Flagella', Snowmass, CO, US, 2019
- Chair and talk at the Cilium conference, Copenhagen, Denmark, 2018
- Symposium "Cilia, Signaling, and Human Disease", ASCB, SF, US, 2016
- Stanford University School of Medicine, Stanford, CA, US, 2016
- Key note lecture, French cilium and centrosome meeting, Strasbourg, France, 2015
- EMBO conference on Microtubules, Heidelberg, Germany, 2014 • Jacques Monod Conference on cell cycle, Roscoff, France, 2014
- Gordon meeting on cilia, mucus and mucociliary interactions, Lucca, Italy, 2013
- Chair and talk at the FASEB meeting 'Biology of Cilia & Flagella', Niagara Falls, New York, US, 2013
- Retina Ciliopathies, Ft. Lauderdale, Florida, US, 2012
- FASEB conference on RNA quality control, Lucca, Italy, 2008
- RNA meeting, Berlin, Germany, 2008 RNA quality control Conference, Granada, Spain, 2008
- Molecular Microbiology Conference, Heidelberg, Germany, 2006
- Post-transcriptional control of gene expression, Snowmass, USA, 2006
- Structural biology of molecular recognition, Murnau, Germany, 2005
- RNA meeting, Banff, Canada, 2005 • Thermophiles meeting, University of Exeter, UK, 2003
- Enzymology and molecular biology of carbonyl metabolism, eleventh international symposium, Ystad, Sweden, 2002

Grants and Awards

A total of 6 million Euros of research funding have been secured as a PI over the last 10 years. I received Prestigious Young Investigator Awards from the Novo Nordisk Foundation (NNF) and from the European Molecular Biology Organization (EMBO). I furthermore secured the highly competitive starter grant from the European Research Council (ERC).

2020-2024: Marie Skłodowska-Curie International Training Network (300.000 Euro)

2018: Interreg (cross border science and society) project grant (25.000 Euro).

2016-2023: Novo Nordisk Young Investigator Award (2.7mill Euro, PI).

2014-2017: Project grant from the German research council (300.000 Euro, PI).

2012-2017: ERC starter grant (1.500.000 Euro, PI).

2012: Elected EMBO Young Investigator (YIP).

2009-2014: Emmy Noether grant from the German research council (1.400.000 Euro, PI).

2007: Long term research fellowship from HFSP, EMBO and FEBS.

2005: Research fellowship from Carlsberg Fondet.

2001-2004: PhD fellowship at the European Molecular Biology Laboratories (EMBL).

Teaching

I currently teach the bachelor and master courses on 'Biomolecular Structure Determination' and 'Proteins and their Interactions' at Aarhus University.

My previous teaching experience include:

- Lectures in cell biology and X-ray crystallography at the 'Biophysics of Molecules' (2012), Masters program in biophysics at the Ludwig-Maximilians University (LMU), Munich, Germany.

- Lecture at “EMBO Young Scientists’ Forum” workshop in Istanbul, Turkey (2012)
- Lectures at The International Max Planck Research School (IMPRS) ‘From Biology to Medicine’ lecture series (2009-2016).
- Lecture at the MPI for Developmental Biology, Tuebingen, PhD program (2010).
- Tutor at the EMBL crystallography practical course (2006).
- Tutor at the EMBO practical course on protein expression, purification and crystallization (2002).