

# Darius Vasco Köster

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## Academic Experience

- 2018 **Assistant Professor** at Warwick Medical School, Biomedical Sciences, Biophysics of the cell cortex – plasma membrane interface. **Tenure track position**
- 2017 – 2018 **Research Fellow** in the laboratory of Prof. M. Balasubramanian, Warwick Medical School, Biomedical Sciences
- 2011 – 2017 **Research Fellow** in the laboratory of Prof. S. Mayor, National Centre for Biological Sciences (Bangalore, IN) supported by an AXA research fund fellowship and an NCBS fellowship
- 2007 – 2010 **Ph.D. project** in the laboratories of Dr. P. Bassereaux and Dr. C. Lamaze, Institut Curie (Paris, FR) supported by an Institut Curie International PhD fellowship  
**Thesis:** Role of Caveole in Membrane Tension
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## Education

- Sep 2010 Dr. rer. nat., Physics (Leipzig University (GE) and University Pierre et Marie Curie, Paris (FR)). Advisors: P. Nassoy (Institut Curie), J. Käs (Leipzig University), Degree with 'summa cum laude'
- Dec 2006 Diplom (M.Sc.) in Physics from Leipzig University
- Oct 2002 enrolment at Leipzig University (GE)
- Jul 2001 *Abitur* (high school diploma) at the *Gymnasium zum Grauen Kloster* in Berlin (GE)
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## Research funding

**Current funding:** Start-up grant from WMS (£130,000), Warwick Research Development Fund award (£24,803), Warwick Global Research Project fund (£5,000) Royal Society Research Grant (£18,948, RGS\R2\192442).

**Post-doctoral fellowships:** Reconstructing the cell surface in a test tube - **NCBS Campus fellow** (2013, £65000); Deciphering the role of active remodeling of cortical actin on the spatiotemporal organization of cell surface molecules using an in vitro assay - **AXA Fellowship** (2011, £105,000)

**Conference grants:** **EMBO** conference grant (2017, £26000, main organizer); **DFG** (German science foundation) conference grant (2015, £17000, co-organizer), **Wellcome Trust/ DBT** (Department of Biotechnology, Govt. of India) outreach grant (2015, £11000, main organizer), **ICTS** (International Centre for Theoretical Sciences) conference grant (2015, £20000, main organizer), **ICTS** conference grant (2013, £25000, main organizer)

**Ph.D.:** scholarship of the Institut Curie for foreign PhD candidates; **studies:** scholarship of the *Studienstiftung des deutschen Volkes* (stipend and expenses for books and workshops)

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## Awards

- Sep 2016 Zeeshan Memorial best paper Award
- Sep 2016 travel award of the Company of Biologists to visit the Kukura lab in Oxford
- Mar 2016 best poster award at OWLS (Optics within Life Sciences), Mumbai
- Dec 2014 IUBMB travel award to attend the ASCB meeting, Philadelphia
- Sep 2014 FEBS letters best poster award at EMBO/FEBS conference, Paris
- Sep 2014 FEBS travel award to attend the EMBO/FEBS conference, Paris
- Feb 2014 travel award by the Department of Science and Technology, Govt. of India, to attend the BPS meeting, San Francisco
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### **Other Activities**

Reviewer for the journals *eLife*, *Proceedings of the National Academy of Sciences* (USA), *Nature Communications Biology*, *Nanoscale* of the Royal Society of Chemistry,

Mar 2017	main organizer of the EMBO lecture course at NCBS <a href="#">'Experimental and Theoretical Approaches to Cell Mechanics'</a>
Oct 2016	co-organiser for the meeting <a href="#">Mechanical Forces in Cell Biology</a> at NCBS
Sep 2015	co-organiser for the <a href="#">6<sup>th</sup> symposium Physics of Cancer</a> at Leipzig University
2015	Organization of the Art-Science project 'Bodystorm Hits Bangalore' at NCBS with the dance company Black Label Movement (Minnesota) and dancers and scientists from Bangalore
Apr 2015	main organizer of the 2 <sup>nd</sup> ICTS program ' <a href="#">Mechanical Manipulations and Responses at the Scale of Cells and Beyond</a> ' at NCBS
2013 & 2014	member of the Howard-Hughes Medical Institute-Summer Institute at the Marine Biology Laboratories, Woods Hole, Massachusetts, USA
Apr 2013	main organizer of the 1 <sup>st</sup> ICTS program ' <a href="#">Mechanical Manipulations and Responses at the Scale of Cells and Beyond</a> ' at NCBS
2012-2017	board member in the Postdoctoral Fellow Association at NCBS
2007-2009	delegate for the CJC (French young researchers' association) at Eurodoc (European young researchers' association)

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### **Invited talks**

Mar 2020	Kennedy Institute of Rheumatology, University of Oxford, UK
Feb 2020	Annual Meeting of the Biophysical Society, San Diego, UK
Mar 2019	University of Dundee, School of Life Science, UK
Jan 2019	'Reconstitution of Cell Cytoskeleton in vitro' CoB Workshop, Wiston house, UK
Feb 2018	Kent University, School of Biosciences, Canterbury, UK
Dec 2016	Max Planck Institute- Intelligent Systems, Stuttgart, GE
Jun 2016	University Geneva, Biochemistry Department, CH
Jun 2016	Gordon Research Conference – Bio Interfaces, Les Diablerets, CH
Apr 2016	Centre for Mechanochemical Cell Biology, Warwick University, UK
Apr 2016	Francis Crick Institute, London, UK
Apr 2016	King's College London, Randall Division, UK
Feb 2016	Mini-Symposium <i>Mechanobiology</i> , Biophysical Society meeting, L.A., USA
Oct 2015	Indo-French 'Frontiers of Cytoskeleton' meeting at IISER Pune, IN
Sep 2015	Lise-Meitner-Kolloquium at the Freie Universität Berlin, GE
Sep 2015	9 <sup>th</sup> Symposium Physics of Cancer at Leipzig University, Leipzig, GE
Jun 2015	Institut Curie, Paris, FR
Dec 2014	Mini-Symposium <i>Synthetic Biology</i> , ASCB annual meeting, Philadelphia, USA
Mar 2014	Max Planck Institute-Cellular Biology and Genetics, Dresden, GE

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### **Peer Reviewed Publications** (\*\* most important publications, # contributed equally)

1. Mosby, L., Polin, M, and **Köster DV**. A Python based automated tracking routine for myosin II filaments. *Journal of Physics D: Applied Physics* (2020).
2. \*\*Mosby L#, Hundt N#, Young G, Fineberg A, Polin M, Mayor S, Kukura P, **Köster D**. Visualization of myosin II filament dynamics in remodeling acto-myosin networks using interferometric scattering microscopy, *Biophysical Journal* (2020), doi:10.1016/j.bpj.2020.02.025

3. Das A, Bhat A, Sknepnek R, **Köster D**, Mayor S, Rao M, Assemblies of F-actin and myosin-II minifilaments: steric hindrance and stratification at the membrane cortex, *Science Advances* (2020), doi: 10.1126/sciadv.aay6093
  4. Palani S, **Köster DV**, Hatano T, Kamnev A, Kanamaru T, Brooker HR, Hernandez-Fernaud JR, Jones AME, Millar JBA, Mulvihill DP, Balasubramanian MK. Phospho-regulation of tropomyosin is crucial for actin cable turnover and division site placement in fission yeast. *J. Cell Biol.* (2019), doi: 10.1083/jcb.201809089
  5. **\*\*Ditlev JA<sup>#</sup>, Vega AR<sup>#</sup>, Köster DV<sup>#</sup>, Su X, Tani T, Lakoduk AM, Vale RD, Mayor S, Jaqaman K, Rosen MK.** A Composition-Dependent Molecular Clutch Between T Cell Signaling Clusters and Actin. *eLife* (2019); doi: 10.7554/eLife.42695
  6. Dewulf M, **Köster D**, Sinha B, Lesegno C V de, Chambon V, Bigot A, Tardif N, Johannes L, Nassoy P, Butler-Browne G, Lamaze C, Blouin C M, Lack of functional caveolae in Cav3 mutated human dystrophic myotubes results in deficient mechanoprotection and IL6/STAT3 mechanosignaling, *Nat. Commun.* (2019), 10, 1974
  7. Torrino S, Shen WW, Blouin CM, Mani SK, Viaris de Lesegno C, Bost P, Grassart A, **Köster D**, Valades-Cruz CA, Chambon V, Johannes L, Pierobon P, Soumelis V, Coirault C, Vassilopoulos S, Lamaze C. EHD2 is a mechanotransducer connecting caveolae dynamics with gene transcription. *J. Cell Biol.* (2018)
  8. **Köster D V**, Mayor S. Cortical actin and the plasma membrane: inextricably intertwined.
  9. *Curr. Opin. Cell Biol.* (2016), 38:81–89.
  10. **\*\*Köster DV**, Husain K, Iljazi E, Bhat A, Bieling P, Mullins RD, Rao M, Mayor S. Actomyosin dynamics drive local membrane component organization in an in vitro active composite layer. *Proc. Natl. Acad. Sci. USA* (2016), doi:10.1073/pnas.1514030113.
  11. Shrivastava, R., **Köster, D.**, Kalme, S., Mayor, S., Neerathilingam, M. Tailor-Made Ezrin Actin Binding Domain to Probe Its Interaction with Actin In-Vitro. *PLoS One* (2015); 10, e0123428
  12. Campillo C, Sens P, **Köster D**, Pontani LL, Lévy D, Bassereau P, Nassoy P, Sykes C. Unexpected Membrane Dynamics Unveiled by Membrane Nanotube Extrusion. *Biophys. J.* (2013); 104, 1248–1256
  13. **\*\*Sinha B<sup>#</sup>, Köster D<sup>#</sup>, Ruez R, Gonnord P, Bastiani M, Abankwa D, Stan RV, Butler-Browne G, Védie B, Johannes L, Morone N, Parton RG, Raposo G, Sens P, Lamaze C, Nassoy P.** Cells respond to mechanical stress by rapid disassembly of caveolae. *Cell* (2011); 144, 402–13
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