

# Curriculum Vitae: Ulrike Böhm

NCI, National Institutes of Health, Laboratory of Receptor Biology & Gene Expression  
41 Medlars Drive, Bethesda, MD-20892, United States of America  
Phone: +1 (240) 760 6581, Fax: +1 (240) 541 4450  
Email: [ulrike.boehm@nih.gov](mailto:ulrike.boehm@nih.gov), Website: <http://www.ulrikeboehm.org>

## Education

2016 - present **Postdoctoral Fellow**, NCI, National Institutes of Health, United States of America  
2011 - 2015 **Ph.D. in Physics**, University of Heidelberg, Germany  
Max Planck Institute for Biophysical Chemistry, Göttingen, Germany  
2004 - 2010 **Diploma in Physics**, Technical University of Munich, Germany  
Max Planck Institute of Biochemistry, Martinsried/Munich, Germany

## Research experience

2016 - present **Postdoctoral researcher**  
NCI, National Institutes of Health, Laboratory of Receptor Biology & Gene Expression  
Systems Biology of Gene Expression (Dr Daniel Larson)  
Research area: super-resolution fluorescence microscopy, single-molecule imaging, gene expression, computational modeling and data analysis  
Research activities focus on:

- Design and construction of a novel imaging modality which will allow visualization of the genome at high resolution during transcription in time and space
- Development of advanced fluorescence labeling strategies for the genome
- Computational modeling and data analysis of 4D genome data

2011 - 2015 **Ph.D. student**  
Max Planck Institute for Biophysical Chemistry, Göttingen  
Department of NanoBiophotonics (Prof Stefan Hell)  
Dissertation title: "4Pi-RESOLFT nanoscopy"  
Advisor: Prof Stefan Hell  
Research area: super-resolution fluorescence microscopy (STED, RESOLFT, 4Pi microscopy), nonlinear optics, computational modeling and data analysis  
Research activities focused on:

- Design and construction of a 4Pi-RESOLFT nanoscope, including optical and acquisition system. Controlling software was also developed.
- System / sample testing and optimization

2009 - 2010 **Diploma student**  
Max Planck Institute of Biochemistry, Martinsried/Munich  
Department of Molecular Structural Biology (Prof Wolfgang Baumeister)  
Dissertation title: "Correlative microscopy at liquid nitrogen temperature"  
Advisors: Prof Wolfgang Baumeister, Prof Jürgen Plitzko  
Research area: cryo-electron microscopy/tomography, cryo-fluorescence microscopy, correlative microscopy, computational modeling and data analysis  
Research activities focused on:

- Further development and testing of the construction of a cryo transfer shuttle (CryoStage<sup>2</sup>) for the reliable transfer of amorphous frozen-hydrated samples from a fluorescence to an electron microscope
- Further development and testing of the software for the correlative microscopy approach

- 2005 - 2008      **Various research assistant positions**  
 Research areas: biophysics, optical physics, neutron scattering, computational modeling and data analysis
- 2008      Evaluation of the mechanical properties of actin filaments in combination with different actin binding proteins at the Physics Department of the Technical University of Munich, Germany - Prof Andreas Bausch
- 2008      Study of HEK cells with FLIC-microscopy at the Max Planck Institute of Biochemistry, Martinsried, Germany - Prof Peter Fromherz
- 2007      Analysis of Multi-SANS data (with MIRA) and data of Cytochrom C (with the Neutron Spin Echo RESEDA) at the FRM II – “research reactor Munich II”, Munich, Germany - Dr Robert Georgii and Prof Peter Böni
- 2006      Study of surfaces and DNA with an AFM at the Physics Department of the Technical University of Munich, Germany - Prof Thorsten Hugel
- 2006      Performance evaluation of an animal PET scanner at the university hospital ‚Rechts der Isar‘, Munich, Germany - Prof Sibylle Ziegler
- 2005      Data analysis of water levels of the Baltic Sea at the Leibnitz Institute for Baltic Sea Research, Warnemünde, Germany - Dr Torsten Seifert

## Research interests

Optical imaging and spectroscopy, advanced optical imaging techniques in particular super-resolution fluorescence microscopy, optical physics, nanotechnology, single-molecule biophysics and macromolecular biochemistry, single-molecule imaging, gene expression, computational modeling and data analysis, single-molecule (force) spectroscopy, biomolecular engineering, nucleic acid nanotechnology

## Publications

**Böhm U**, Hell SW and Schmidt R (2016) “4Pi-RESOLFT nanoscopy.” *Nat. Commun.* 7, 10504

Ullal CK, Primpke S, Schmidt R, **Böhm U**, Egnér A, Vana P, Hell SW (2011) “Flexible Microdomain Specific Staining of Block Copolymers for 3D Optical Nanoscopy.” *Macromolecules*, 44, 7508–7510

Rigort A, Bäuerlein FJ, Leis A, Gruska M, Hoffmann C, Laugks T, **Böhm U**, Eibauer M, Gnaegi H, Baumeister W and Plitzko JM (2010) “Micromachining tools and correlative approaches for cellular cryo-electron tomography.” *J. Struct. Biol.* 172:169–179

## Awards

- 2017      Helmsley Fellowship
- 2010      Excellence award of the Max Planck Society
- 2009      Oskar Karl Forster Scholarship by the Technical University of Munich
- 2008      Study Career Scholarship by the Technical University of Munich

## Conference presentations

- 2017      “4Pi-RESOLFT nanoscopy: Nanometer scale 3D fluorescence imaging in whole living cells” **Böhm U**, Hell SW, Schmidt R. Oral presentation (*invited*). Workshop: “Chan Zuckerberg Initiative Imaging Workshop”. San Francisco, United States of America.
- 2017      “4Pi-RESOLFT nanoscopy” **Böhm U**, Hell SW, Schmidt R. Poster presentation. Conference: “Chesapeake Bay Area Single Molecule Biology Meeting”. Baltimore, United States of America.
- 2017      “4Pi-RESOLFT nanoscopy: Nanometer scale 3D fluorescence imaging in whole living cells” **Böhm U**, Hell SW, Schmidt R. Poster and oral presentation. Conference: “Frontiers in Imaging Science Conference”. Ashburn, United States of America.
- 2017      “4Pi-RESOLFT nanoscopy” **Böhm U**, Hell SW, Schmidt R. Poster presentation. Conference: “Single Molecule Biophysics Conference”. Aspen, United States of America.

- 2016 "4Pi-RESOLFT nanoscopy: Nanometer scale 3D fluorescence imaging in whole living cells" **Böhm U**, Hell SW, Schmidt R. Poster presentation. Conference: "Labeling and Nanoscopy Conference". Heidelberg, Germany.
- 2016 "4Pi-RESOLFT nanoscopy" **Böhm U**, Hell SW, Schmidt R. Poster presentation. Conference: "Biophysical Society 60th Annual Meeting". Los Angeles, United States of America.
- 2015 "4Pi-RESOLFT nanoscopy" **Böhm U**, Hell SW, Schmidt R. Poster and oral presentation. Conference: "Seeing Is Believing Symposium". Heidelberg, Germany.
- 2015 "Far-field optical nanoscopy: principles and recent advancements" **Böhm U**. Oral presentation (invited). Conference: "19. Deutsche Physikerinnen Tagung" Göttingen, Germany.
- 2015 "Live cell 4Pi nanoscopy" **Böhm U**, Schmidt R, Hell SW. Poster presentation. Conference: "10th European Biophysics Congress (EBSA)". Dresden, Germany.
- 2015 "Super-Resolution Fluorescence Microscopy: Overview and Stimulated Emission Depletion (STED) Microscopy" **Böhm U**. Oral presentation (invited). Conference: "XLAB. International Science Camp". Göttingen, Germany
- 2015 "Live cell 4Pi nanoscopy" **Böhm U**, Schmidt R, Hell SW. Oral presentation. Conference: "15th annual meeting of the European Light Microscopy Initiative (ELMI)". Sitges, Spain.
- 2015 "Live cell 4Pi nanoscopy" **Böhm U**, Schmidt R, Hell SW. Poster presentation. Conference: "Focus on microscopy". Göttingen, Germany.
- 2010 "Development of tools for investigating subcellular structures: Targeting of features in frozen-hydrated cells via correlative cryomicroscopy" **Böhm U**, Leis A, Rigort A, Bäuerlein F, Laugks, Baumeister W, Plitzko JM. Poster presentation. Conference: "PROSPECTS. First Plenary Meeting". Punta Negra, Majorca/Spain. (2010)

## Teaching Experience

- 2017 **Summer intern journal club leader** - Topic: "Optical Microscopy & Imaging in the Biomedical Sciences" at the National Institutes of Health, Bethesda, United States of America
- 2011 **Teaching assistant** of an advanced physics laboratory course for physics students at the University of Heidelberg, Germany
- 2011 **Teaching assistant** for Experimental Physics III: Optics at the University of Göttingen, Germany - Prof Jörg Enderlein
- 2010 **Teaching assistant** for Experimental Physics IV: Quantum, atomic and molecular physics at the University of Göttingen, Germany - Prof Arnulf Quadt
- 2009 **Teaching assistant** for Theoretical Physics I: Theoretical Mechanics at the Technical University of Munich, Germany - Prof Friedrich
- 2008 **Teaching assistant** for Theoretical Physics II: Electrodynamics at the Technical University of Munich, Germany - Prof Friedrich

## Conference organization

- 2017/05 **I, Scientist Conference**, co-organizer, Berlin, Germany
- 2016/10 **2<sup>nd</sup> Labeling and Nanoscopy Conference**, co-organizer, Heidelberg, Germany
- 2011/10 **PhDnet General Meeting**, co-organizer, Bonn, Germany

## Leadership / Service

- Since 2017/01 **Visiting Fellows Committee**, committee member at the National Institutes of Health, Bethesda, United States of America
- Since 2016/11 **Light Microscopy Interest Group**, coordinator at the National Institutes of Health, Bethesda, United States of America
- Since 2016/10 **Arbeitskreis für Challengleichheit**, committee member in the German Physical Society, Bad Honnef, Germany
- 2016/06 **66<sup>th</sup> Lindau Nobel Laureate Meeting**, participant and "Women in Science"-correspondent for the Lindau Nobel Laureate Meetings, Lindau, Germany
- 2016/04 **Lise Meitner Gesellschaft e.V.**, co-founder, Berlin, Germany
- 2011 - 2012 **Max Planck PhDnet**, member of the PhDnet steering group and deputy spokesperson in the Max Planck Society, Munich, Germany

2011 - 2014      **PhD/Postdoc Community**, PhD/Postdoc representative of the Max Planck Institute for Biophysical Chemistry, Göttingen, Germany

### **Professional Affiliations**

American Physical Society  
Deutsche Physikalische Gesellschaft  
Lise Meitner Gesellschaft e.V.

### **Language Skills**

German	Native language
English	Fluent, spoken and written
French	Basic knowledge
Swedish	Basic knowledge