Dr. Ulrike Boehm — Curriculum Vitae

Contact Information

Janelia Research Campus
Advanced Imaging Center
19700 Helix Drive
Ashburn, VA 20147 USA

Phone: +1 (202) 527-8121
E-mail: boehmu@janelia.hhmi.org
Home: ulrikeboehm.org

Research Interests

- Microscope design, development, and application across a wide range of biological models
- Development of image and data processing and analysis tools
- Machine learning and its application in microscopic image analysis
- Statistical methods for large datasets
- Open software and hardware tools for imaging and microscopy

Positions

Research Specialist 2019 - present
Janelia Research Campus, Advanced Imaging Center, Ashburn, VA, USA

- Handling and troubleshooting of advanced instruments (iPALM, Lattice Light Sheet Microscope, SiMView Light Sheet Microscope, Aberration Corrected Multifocal Microscope, MOSAIC, FIB-SEM, cryo-SIM, etc), sample preparation and image analysis
- Support of (inter)national visitors during technical consultations and their imaging sessions at AIC instruments
- Development and implementation of new image and data analysis strategies for users from around the world
- Review of AIC proposals and grants
- Design and realization of imaging and microscopy workshops and conferences

Postdoctoral Research Fellow 2017 - 2018
National Institutes of Health, National Cancer Institute, Bethedsa, MD, USA

- Design and construction a microscope for live-cell 5-color single-molecule transcription imaging in eukaryotic cells at high resolution in time and space to capture promoter-enhancer interactions
- Development of advanced fluorescence labeling strategies for the genome based on dCas9 (CAS-FISH)
- Computational modeling and data analysis of 4D genome data

Ph.D. Student 2010 - 2016
Max Planck Institute for Biophysical Chemistry, Göttingen, Germany
Department of NanoBiophotonics (Prof. Dr. Stefan Hell)
Dissertation title: "4Pi-RESOLFT nanoscopy"
Advisor: Prof. Dr. W. Stefan Hell

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

Master Student 2009
Max Planck Institute of Biochemistry, Martinsried/Munich, Germany
Department of Molecular Structural Biology (Prof. Dr. Wolfgang Baumeister)
Dissertation title: "Correlative microscopy at liquid nitrogen temperature"
Advisors: Dr. Jürgen M. Plitzko, Prof. Dr. Wolfgang Baumeister

- Development and testing of a cryo transfer shuttle (CryoStage^2) for the reliable transfer of amorphous frozen-hydrated samples from a fluorescence to an electron microscope for correlative microscopy

- Further development and testing of the software based on scale-invariant feature transform (SIFT) for the correlative microscopy approach

Undergraduate Researcher - various research assistant positions 2005 - 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 (2008)
- Analysis of Multi-SANS data (with MIRA) and data of Cytochrom C (with the Neutron Spin Echo RESEDA) at the Research Neutron Source Heinz Maier-Leibnitz (FRM II), Munich, Germany - Dr Robert Georgii and Prof Peter Böni (2007)
- 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 (2006)
- Data analysis of water levels of the Baltic Sea at the Leibnitz Institute for Baltic Sea Research, Warnemünde, Germany - Dr Torsten Seifert (2005)

Education

MicroMasters in Statistics and Data Science 2020 - 2021
Massachusetts Institute of Technology, Cambridge, MA, USA

Ph.D. in Physics 2010 - 2015
Heidelberg University, Heidelberg, Germany

Diploma in Physics 2004 - 2009
Technical University of Munich, Munich, Germany

Honors & Awards

Helmsley Fellowship, Helmsley Charitable Trust 2017

66th Lindau Nobel Laureate Meeting, Participant 2016

Excellence Award, Max Planck Society 2010

Oskar Karl Forster Scholarship, Technical University of Munich 2009

Study Career Scholarship, Technical University of Munich 2008

Publications

9. Galbraith J., Aaron J., **Boehm U.**, Chew T.-L. and Galbraith C., *Resolving the 3D Nanoarchitecture of the Actin Cytoskeleton.* Microscopy and Microanalysis, p1 (2020). doi:10.1017/S1431927620016736
8. **Boehm U.**, Hell S.W., Schmidt, R., *4Pi-RESOLFT nanoscopy.* Nature Comm. 7 (10504), p1-8 (2016). doi:10.1038/ncomms10504
7. **Boehm U.**, *4Pi-RESOLFT nanoscopy.* PhD Thesis, Heidelberg University (2016) doi: 10.11588/HEIDOK.00020200
6. **Boehm U.**, Schmidt R., Hell S.W., *Live cell 4pi nanoscopy.* European Biophysics Journal with Biophysics Letters 2015 Jul 1 (Vol. 44, pp. S75-S75). 233 SPRING ST, NEW YORK, NY 10013 USA: SPRINGER.
5. Ullal C.K., Primpke S., Schmidt R., **Boehm, U.**, Egner A., Vana P, Hell S.W., *Flexible Microdomain Specific Staining of Block Copolymers for 3D Optical Nanoscopy.* Macromolecules, 44, p7508–7510 (2011). doi: 10.1021/ma201504f
4. Ullal C., Schmidt R., **Boehm U.**, Primpke S., Vana P, Hell W.S., *STED Microscopy as a Characterization Tool for Three Dimensionally Nanostructured Block Copolymer Thin Films.* APS. 2011 Mar;2011:A43-002.

3. Rigort A., Bäuerlein F.J., Leis A., Gruska M., Hoffmann C., Laugks T., **Boehm U.**, Eibauer M., Gnaegi H., Baumeister W. and Plitzko J.M., *Micromachining tools and correlative approaches for cellular cryo-electron tomography.* J. Struct. Biol. 172, p169–179 (2010). doi: 10.1016/j.jsb.2010.02.011
2. Rigort A., Mathisen C., **Boehm U.**, Leis A., Lich B., Hayles M., Laugks T., Baumeister W. and Plitzko J.M., *Integrative Cryo-Correlative Microscopy Approaches.* Microscopy and Microanalysis. Vol 16(S2), p186–187 (2010). doi: 10.1017/S1431927610058216
1. **Boehm U.**, *Korrelative Mikroskopie bei Flüssigstickstoff-Temperatur.* Diploma Thesis, Technical University of Munich (2010)

Presentations

Junior Scientist Workshop on Biological Optical Microscopy *(invited)*, Janelia Research Campus, Ashburn, United States of America — 2019

Transcription Seminar *(invited)*, Albert Einstein College of Medicine New York, United States of America — 2019

Microscopy Seminar *(invited)*, Havard Medical School Boston, United States of America — 2019

Microscopy Lunch Seminar *(invited)*, UMass Medical School Worcester, United States of America — 2019

Single Biomolecules Meeting, Cold Spring Harbor Laboratories Cold Spring Harbor, United States of America — 2018

NIH Light Microscopy Interest Group Seminar *(invited)*, Bethesda, United States of America — 2018

Chan Zuckerberg Initiative Imaging Workshop *(invited)*, CZ Biohub San Francisco, United States of America — 2017

Chesapeake Bay Area Single Molecule Biology Meeting, Baltimore, United States of America — 2017

Frontiers in Imaging Science Conference, Ashburn, United States of America — 2017

Single Molecule Biophysics Conference, Aspen, United States of America — 2017

Labeling and Nanoscopy Conference, Heidelberg, Germany — 2016

MPIbpc Campus Seminar *(invited)*, Göttingen, Germany — 2016

NCI Departmental Seminar *(invited)*, Bethesda, United States of America — 2016

Departmental Seminar *(invited)*, Wyss Institute at Havard University, Boston, United States of America — 2016

Lunch Talk *(invited)*, Havard, Cambridge, United States of America — 2016

Biophysical Society Annual Meeting, Los Angeles, United States of America — 2016

Seeing Is Believing Symposium, Heidelberg, Germany — 2015

Deutsche Physikerinnen Tagung *(invited)*, Göttingen, Germany — 2015

Annual meeting of the European Light Microscopy Initiative (ELMI), Sitges, Spain — 2015

Focus On Microscopy (FOM), Göttingen, Germany — 2015

PROSPECTS. First Plenary Meeting, Punta Negra, Majorca/Spain — 2010

Teaching

Fiji Macros Programming (virtual workshop) — 2020
Co-lead instructor, Janelia Research Campus, Ashburn, United States of America

DECODE for Single Molecule Localization Microscopy (virtual workshop) 2020
at the *From Image to Knowledge with ImageJ & Friends* conference
Co-lead instructor, Janelia Research Campus, Ashburn, United States of America

Image Analysis with ImageJ/Fiji (virtual workshop) 2020
Teaching assistant, National Institutes of Health, Bethesda, United States of America

Open Science in Imaging and Microscopy (breakout session during a workshop) 2019
Lead instructor, Janelia Research Campus, Ashburn, United States of America

Advanced Imaging Techniques in Biomedical Sciences (summer intern journal club) 2018
Lead instructor, National Institutes of Health, Bethesda, United States of America

Introduction to microscopy (graduate course) 2017
Teaching assistant, University of Massachusetts Medical School, Worcester,
United States of America

Optical Microscopy & Imaging in the Biomedical Sciences 2017
(summer intern journal club)
Lead instructor, National Institutes of Health, Bethesda, United States of America

Advanced physics laboratory course for physics students (undergraduate course) 2011
Teaching assistant, Heidelberg University, Germany

Experimental Physics III: Optics (undergraduate course) 2011
Teaching assistant, University of Göttingen, Germany

Experimental Physics IV: Quantum, atomic and molecular physics 2010
(undergraduate course), Teaching assistant, University of Göttingen, Germany

Theoretical Physics I: Theoretical Mechanics (undergraduate course) 2009
Teaching assistant, Technical University of Munich, Germany

Theoretical Physics II: Electrodynamics (undergraduate course) 2008
Teaching assistant, Technical University of Munich, Germany

Mentoring

Janelia Buddy Program for International Scientists 2020-present
Focus: Facilitating the transition of international scientists to Janelia in partnership with Janelia's Human Resource Department
Janelia Research Campus, Ashburn, United States of America

Mentoring for Postbac Students 2020-present
Focus: Navigating a scientific career
Janelia Research Campus, Ashburn, United States of America

Mentoring of PhD, College and Highschool Students 2017-2018
Focus: Navigating a scientific career, how to work in an optics laboratory & in-depth support with individual research projects
National Institutes of Health, Bethesda, United States of America

Mentoring of PhD students and Master Students 2010-2016
Focus: Navigating a scientific career, how to work in an optics laboratory & in-depth support with individual research projects
Max Planck Institute for Biophysical Chemistry, Göttingen, Germany

Conference Organization

Microscopy Club for North America, Co-organizer 2021 - present
Ashburn, United States of America

Janelia & EMBL Optical Interest Group Seminar Series, Co-organizer 2020 - present
Ashburn, United States of America

Virtual Optical Interest Group (OIG) Seminar Series, Co-organizer 2020

Virtual seminar series with external speakers via Zoom during the COVID-19 lockdown
Ashburn, United States of America

Imaging Africa Microscopy Club, Webinar support 2020
Ashburn, United States of America

Frontiers in Imaging Science Conference, Member of the local support team 2019
Ashburn, United States of America

Labeling and Nanoscopy Conference 2018, Website and social media support 2018
Heidelberg, Germany

Division of International Services (DIS) Immigration Symposium, Co-organizer 2018
National Institutes of Health, Bethesda, United States of America

International Opportunities EXPO, Co-organizer 2018
National Institutes of Health, Bethesda, United States of America

Division of International Services (DIS) Immigration Symposium, Co-organizer 2017
National Institutes of Health, Bethesda, United States of America

I, Scientist Conference, Co-organizer 2017
Berlin, Germany

Labeling and Nanoscopy Conference 2016, Co-organizer 2016
Heidelberg, Germany

Focus On Microscopy (FOM), Social media support 2015 - present

PhDnet General Meeting, Co-organizer 2011
Bonn, Germany

Peer Review

Angewandte Chemie (International ed.), **Biophysical Journal**

Professional Services

QUAREP-LiMi, Chair of the "White Paper" working group 2020 - present
Freiburg, Germany

Frontiers in Bioinformatics, Review Editor for Computational BioImaging 2020 - present
Lausanne, Switzerland

CZI Imaging Scientists Round 2, Grant reviewer 2020
San Francisco, United States of America

QUAREP-LiMi, Vice-chair of the "Image Quality" working group 2020 - present
Freiburg, Germany

German BioImaging, Committee member of the working groups for 2020 - present
(1) Training and Knowledge Transfer and
(2) Image Data Analysis & Management

BioImaging North America (BINA), Committee member 2020 - present
of the "Quality Control and Data Management" working group

Janelia's Optical Interest Group (OIG), Co-coordinator 2020 - present
Ashburn, Virginia, United States of America

GSO German Scholars Organization e.V., Coordinator 2020 - present
for Local Chapter of German Scientists, Ashburn

Accelerating Science and Publication in Biology (ASAPbio), Ambassador 2018 - present

eLife Early-Career Advisory Group, Ambassador 2017 - 2019

NIH Laser Safety Advisory Committee, Committee member for the NCI 2018
National Institutes of Health, Bethesda, United States of America

NIH Visiting Fellows Committee, Co-chair 2017 - 2018
National Institutes of Health, Bethesda, United States of America

NIH Light Microscopy Interest Group, Co-coordinator — 2016 - present
National Institutes of Health, Bethesda, United States of America

DPG Arbeitskreis für Changengleichheit, Board member — 2016 - present
Bad Honnef, Germany

Lindau Nobel Laureate Meeting, Freelance writer — 2016 - present
Lindau, Germany

66th Lindau Nobel Laureate Meeting, "Women in Science"-correspondent — 2016
Lindau, Germany

Lise Meitner Gesellschaft e.V., Co-founder and board member — 2011
Berlin, Germany

Max Planck PhDnet, Steering group 2011 member & deputy spokesperson — 2011
Max Planck Society, Munich, Germany

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

Certificates & Training

Academic Writing Made Easy — 2020
A 6-week course by TUM to make your academic writing stand out for all the right reasons, including paragraphing, style, tone, paraphrasing and punctuation.

Data Analysis for Social Scientists — 2020
A 11-week course by MITx to learn methods for harnessing and analyzing data to answer questions of cultural, social, economic, and policy interest.

Probability - The Science of Uncertainty and Data — 2020
A 16-week course by MITx to build foundational knowledge of data science with an introduction to probabilistic models, including random processes and the basic elements of statistical inference.

Fierce Conversations program — 2020
A 6-week course offered by Howard Hughes Medical Instiute about Feedback, Confrontation, Team, Delegation, Coaching and Accountability.

LabVIEW Core 2 — 2020
A certificate course offered by National Instruments about the LabVIEW basics.

LabVIEW Core 1 — 2020
A certificate course offered by National Instruments about the LabVIEW basics.

HBS Entrepreneurship Essentials — 2020
Entrepreneurship Essentials is a 4-week, 30-hour online certificate program from Harvard Business School. Entrepreneurship Essentials introduces participants to the entrepreneurial journey from finding an idea to gaining traction in the marketplace to raising capital for a venture. Participants learn an overarching framework - People, Opportunity, Context, Deal - to evaluate opportunities, manage start-ups, and finance ventures.

HBS Management Essentials — 2019
Management Essentials is an 8-week, 35-hour online certificate program from Harvard Business School. Management Essentials takes a distinctive, hands-on approach to management. Participants in this course learn to identify, understand, design, and shape critical organizational and managerial processes as a means of getting the work done.

HBS CORe (Credential of Readiness) — 2019
CORe (Credential of Readiness) is a 150-hour certificate program on the fundamentals of business from Harvard Business School. CORe is comprised of three courses - Business Analytics, Economics for Managers, and Financial Accounting - developed by leading

Harvard Business School faculty and delivered in an active learning environment based on the HBS signature case-based learning model.

Scientists Teaching Science 2018
at the Office of Intramural Training and Education (OITE) at the National Institutes of Health, Bethesda, United States of America (9-week online pedagogy course)

Research Mentor Training 2018
at the Office of Intramural Training and Education (OITE) at the National Institutes of Health, Bethesda, United States of America

Business of Science for Scientists 2018
by SciPhD at the National Cancer Institute in Shady Grove, United States of America

Chromatin, Epigenetics and Gene Expression Course 2018
at the Cold Spring Harbor Laboratory (CSHL) in Cold Spring Harbor, NY, United States of America, Course instructors: Prof Karen Adelman, Dr Luciano Di Croce, Prof Geeta Narlikar, Prof Ali Shilatifard

Bio Tech 2: Recombinant DNA Methodology 2017
at the Foundation for Advanced Education in the Sciences at the NIH (FAES), Bethesda, United States of America

Management Bootcamp for Postdocs 2017
at the Office of Intramural Training and Education (OITE) at the National Institutes of Health, Bethesda, United States of America

Ethics in Research Training for Postdocs 2017
at the Office of Intramural Training and Education (OITE) at the National Institutes of Health, Bethesda, United States of America

Workplace Dynamic Series 2016
about Self-Awareness, Conflict & Feedback, Team Skills, Diversity In A Multicultural Society at the Office of Intramural Training and Education (OITE) at the National Institutes of Health, Bethesda, United States of America

Computer Skills

Languages: Python, MATLAB, Java, LabVIEW, C++, R
Software: Inventor (CAD), Zemax

Professional Affiliation

American Physical Society, German Physical Society, BioImaging North America (BINA), German BioImaging Society, Network of European BioImage Analyst (NEUBIAS), Quantitative BioImaging Society

Languages

German - native language
English - fluent, spoken and written
French - basic knowledge
Swedish - basic knowledge
Spanish - basic knowledge

References

Available upon request

Last updated November 29, 2020.