

CONTACT
INFORMATION

Janelia Research Campus
Advanced Imaging Center
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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

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) and sample preparation
- 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
- Design and realization of imaging and microscopy workshops and conferences

Postdoctoral Research Fellow

2017 - 2018

National Institutes of Health, National Cancer Institute, Bethesda, 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 (CryoStage²) 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
	<ul style="list-style-type: none"> • 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	Ph.D. in Physics Heidelberg University, Heidelberg, Germany	2010 - 2015
	Diploma in Physics Technical University of Munich, Munich, Germany	2004 - 2009
HONORS & AWARDS	Helmsley Fellowship , Helmsley Charitable Trust 66th Lindau Nobel Laureate Meeting , Participant Excellence Award , Max Planck Society Oskar Karl Forster Scholarship , Technical University of Munich Study Career Scholarship , Technical University of Munich	2017 2016 2010 2009 2008
PUBLICATIONS	9. Galbraith J., Aaron J., Boehm U. , Chew T.-L. and Galbraith C., <i>Resolving the 3D Nano-architecture of the Actin Cytoskeleton</i> . Microscopy and Microanalysis, p1 (2020). doi:10.1017/S1431927620016736 8. Boehm U. , Hell S.W., Schmidt, R., <i>4Pi-RESOLFT nanoscopy</i> . Nature Comm. 7 (10504), p1-8 (2016). doi:10.1038/ncomms10504 7. Boehm U. , <i>4Pi-RESOLFT nanoscopy</i> . PhD Thesis, Heidelberg University (2016) doi: 10.11588/HEIDOK.00020200 6. Boehm U. , Schmidt R., Hell S.W., <i>Live cell 4pi nanoscopy</i> . 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., <i>Flexible Microdomain Specific Staining of Block Copolymers for 3D Optical Nanoscopy</i> . Macromolecules, 44, p7508–7510 (2011). doi: 10.1021/ma201504f 4. Ullal C., Schmidt R., Boehm U. , Primpke S., Vana P, Hell W.S., <i>STED Microscopy as a Characterization Tool for Three Dimensionally Nanostructured Block Copolymer Thin Films</i> . 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., <i>Micromachining tools and correlative approaches for cellular cryo-electron tomography</i> . 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 (<i>invited</i>), Janelia Research Campus, Ashburn, United States of America	2019
	Transcription Seminar (<i>invited</i>), Albert Einstein College of Medicine New York, United States of America	2019
	Microscopy Seminar (<i>invited</i>), Havard Medical School Boston, United States of America	2019
	Microscopy Lunch Seminar (<i>invited</i>), 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 (<i>invited</i>), Bethesda, United States of America	2018
	Chan Zuckerberg Initiative Imaging Workshop (<i>invited</i>), 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
	MPIIbpc Campus Seminar (<i>invited</i>), Göttingen, Germany	2016
	NCI Departmental Seminar (<i>invited</i>), Bethesda, United States of America	2016
	Departmental Seminar (<i>invited</i>), Wyss Institute at Havard University, Boston, United States of America	2016
	Lunch Talk (<i>invited</i>), 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 (<i>invited</i>), 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	Image Analysis with ImageJ/Fiji (workshop) Teaching assistant, National Institutes of Health, Bethesda, United States of America	2020
	Open Science in Imaging and Microscopy (breakout session during a workshop) Lead instructor, Janelia Research Campus, Ashburn, United States of America	2019
	Advanced Imaging Techniques in Biomedical Sciences (summer intern journal club) Lead instructor, National Institutes of Health, Bethesda, United States of America	2018

	Introduction to microscopy (graduate course) Teaching assistant, University of Massachusetts Medical School, Worcester, United States of America	2017
	Optical Microscopy & Imaging in the Biomedical Sciences (summer intern journal club) Lead instructor, National Institutes of Health, Bethesda, United States of America	2017
	Advanced physics laboratory course for physics students (undergraduate course) Teaching assistant, Heidelberg University, Germany	2011
	Experimental Physics III: Optics (undergraduate course) Teaching assistant, University of Göttingen, Germany	2011
	Experimental Physics IV: Quantum, atomic and molecular physics (undergraduate course), Teaching assistant, University of Göttingen, Germany	2010
	Theoretical Physics I: Theoretical Mechanics (undergraduate course) Teaching assistant, Technical University of Munich, Germany	2009
	Theoretical Physics II: Electrodynamics (undergraduate course) Teaching assistant, Technical University of Munich, Germany	2008
CONFERENCE ORGANIZATION	Virtual Janelia / EMBL OIG Seminar Series , Co-organizer Ashburn, United States of America	2020 - present
	Virtual Optical Interest Group (OIG) Seminar Series , Co-organizer Virtual seminar series with external speakers via Zoom during the COVID-19 lockdown Ashburn, United States of America	2020
	Imaging Africa Microscopy Club , Webinar support Ashburn, United States of America	2020
	Frontiers in Imaging Science Conference , Member of the local support team Ashburn, United States of America	2019
	Labeling and Nanoscopy Conference 2018 , Website and social media support Heidelberg, Germany	2018
	Division of International Services (DIS) Immigration Symposium , Co-organizer National Institutes of Health, Bethesda, United States of America	2018
	International Opportunities EXPO , Co-organizer National Institutes of Health, Bethesda, United States of America	2018
	Division of International Services (DIS) Immigration Symposium , Co-organizer National Institutes of Health, Bethesda, United States of America	2017
	I, Scientist Conference , Co-organizer Berlin, Germany	2017
	Labeling and Nanoscopy Conference 2016 , Co-organizer Heidelberg, Germany	2016
	Focus On Microscopy (FOM) , Social media support	2015 - present
	PhDnet General Meeting , Co-organizer Bonn, Germany	2011
PEER REVIEW	Angewandte Chemie (International ed.), Biophysical Journal	
PROFESSIONAL SERVICES	CZI Imaging Scientists Round 2 , Grant Reviewer San Francisco, United States of America	2020 - present
	QUAREP-LiMi , Vice-chair of the working groups for image quality	2020 - present

German BioImaging , Committee member of the working groups for (1) Training and Knowledge Transfer and (2) Image Data Analysis & Management	2020 - present
BioImaging North America (BINA) , Committee member of the working group for Quality Control and Data Management	2020 - present
Janelia's Optical Interest Group (OIG) , Co-coordinator Ashburn, Virginia, United States of America	2020 - present
GSO German Scholars Organization e.V. , Coordinator for Local Chapter of German Scientists, Ashburn	2020 - present
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 National Institutes of Health, Bethesda, United States of America	2018
NIH Visiting Fellows Committee , Co-chair National Institutes of Health, Bethesda, United States of America	2017 - 2018
NIH Light Microscopy Interest Group , Co-coordinator National Institutes of Health, Bethesda, United States of America	2016 - present
DPG Arbeitskreis für Challengengleichheit , Board member Bad Honnef, Germany	2016 - present
Lindau Nobel Laureate Meeting , Freelance writer Lindau, Germany	2016 - present
66th Lindau Nobel Laureate Meeting , "Women in Science"-correspondent Lindau, Germany	2016
Lise Meitner Gesellschaft e.V. , Co-founder and board member Berlin, Germany	2011
Max Planck PhDnet , Steering group 2011 member & deputy spokesperson Max Planck Society, Munich, Germany	2011
PhD/Postdoc Community , PhD/Postdoc representative Max Planck Institute for Biophysical Chemistry, Göttingen, Germany	2011 - 2014

CERTIFICATES & TRAINING

Fierce Conversations program A 6-week course offered by Howard Hughes Medical Institute about Feedback, Confrontation, Team, Delegation, Coaching and Accountability.	2020
LabVIEW Core 2 A certificate course offered by National Instruments about the LabVIEW basics.	2020
LabVIEW Core 1 A certificate course offered by National Instruments about the LabVIEW basics.	2020
HBS Entrepreneurship Essentials 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.	2020
HBS Management Essentials 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	2019

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

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