Coleman Broaddus

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Molecular Cell Biology and Genetics

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Birth: September 8, 1987
Citizenship: United States

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Education

2005 — 2010	**Bsc, Physics** — Carnegie Mellon University	
2011 — 2015	**Msc, NanoBioPhysics** — Dresden University of Technology Thesis: *Pattern formation in chemically reactive, phase-separating systems*	
2015 — present	**PhD, Computer Science** — Max Planck Institute for Molecular Cell Biology and Genetics (MPI-CBG) Thesis: *Bioimage Methods For Tracking Cells During Development*	

Research Experience

Oct 2010 — Mar 2011
Internship — Max Planck Institute for the Physics of Complex Systems (MPI-PKS)
Supervisors: David Zwicker, Frank Jülicher
Brownian Dynamics simulation of centrosome growth

Mar 2013 — Oct 2013
Master's Thesis — MPI-PKS
Supervisors: David Zwicker, Frank Jülicher
Lattice Simulations of Pattern formation in chemically reactive, phase-separating systems

Jul 2014 — Dec 2014
Internship — MPI-PKS
Supervisors: Christoph Weber, Vasily Zaburdaev
Particle based solutions to nonlocal model of bacterial colony formation

Oct 2014 — Jun 2015
Internship — MPI-CBG
Supervisors: Florian Jug, Dagmar Kainmüller; Gene Myers
Instance segmentation of zebrafish mesynchymal cells in fluorescence images
Published: [Stapel et al., Development 2016]

Nov 2015 — Present
Doctorate — MPI-CBG
Supervisor: Gene Myers
Bioimage Methods For Tracking Cells During Development

Software

Languages
python • c • zig • OpenCL • SQL

Keywords
BioImage Analysis • Deep Learning • Mathematical Optimization

Work Experience

May 2007 — Aug 2007
B & L Builders, Inc.
Housing construction and lawn care

Jan 2008 — Dec 2008
Guru Networks, Inc.
Java based web development

May 2009 – Aug 2009
Self employed
Landscape architecture and construction

Publications

Broaddus C, Krull A, Weigert M, Schmidt U, Myers G. **Removing Structured Noise With Self-supervised Blind-spot Networks.** ISBI 2020.

Schmidt U, Weigert M, Broaddus C, Myers G. **Cell Detection with Star-convex Polygons.** MICCAI 2018.

Weigert M, et al. **Content-aware image restoration: pushing the limits of fluorescence microscopy.** Nature Methods 2018.

Stapel LC, Broaddus C, Vastenhouw NL. **Detection and Automated Analysis of Single Transcripts at Subcellular Resolution in Zebrafish Embryos.** RNA Detection 2018 (pp. 143-162).

Stapel LC, Lombardot B, Broaddus C, Kainmueller D, Jug F, Myers EW, Vastenhouw NL. **Automated detection and quantification of single RNAs at cellular resolution in zebrafish embryos.** Development. 2016.