

BRAE BIGGE

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EDUCATION

- PhD** University of Kansas Medical Center, Anatomy and Cell Biology May 2022
Committee: Prachee Avasthi (chair), Brenda Rongish, Sue Jaspersen, Bret Freudenthal, András Czirok
- BS** Wichita State University, Chemistry-Biochemistry May 2017
Magna Cum Laude, Honors Student

HONORS AND AWARDS

- Dartmouth Molecular and Cell Biology Retreat Poster Award** 2020
One of the top 3 posters at the Dartmouth MCB Retreat for PhD students
- Madison and Lila Self Graduate Fellowship** 2018-2020
Provides financial support and professional development opportunities for promising graduate student leaders at The University of Kansas.
- Kansas Idea Network of Biomedical Research Excellence Scholar** 2016-2017
Strengthens Kansas research by funding undergraduate research.

RESEARCH EXPERIENCE

- Dissertation**, University of Kansas Medical Center, Kansas City, KS 2022
Advisor: Prachee Avasthi, PhD
- Project: Untangling biochemical differences between a conventional actin and an evolutionarily divergent actin in *Chlamydomonas reinhardtii*
- Undergraduate Research**, Wichita State University, Wichita, KS 2016 to 2017
Advisor: Moriah Beck, PhD
- Project: Myopalladin's role in cardiac muscle function and disease
- Undergraduate Research**, Wichita State University, Wichita, KS 2014 to 2016
Advisor: Mark Schneegurt, PhD
- Project: Microbiology media preparation

TEACHING EXPERIENCE

- University of Kansas Medical Center**, Kansas City, KS
Graduate Student Mentor, Anatomy and Cell Biology
- Abigail Salberg, Undergraduate Student, May 2019-Dec 2019
 - Rotation Students: Amy Conaway, Lia Michaels, Larissa Dougherty, Ananya Nidamangala
- Wichita State University**, Wichita, KS Jan 2017 to May 2017
Tutor, Disability Services
- Reviewed and translated biochemistry and medicinal chemistry lessons for a visually impaired student, aided with homework and studying for exams
- Wichita State University**, Wichita, KS July 2016
Research mentor, Cohen Honors College Summer Research Institute

- Worked with high school students from highly diverse Kansas counties to help them develop, carry out, and present original research
- Built relationships with students

PUBLICATIONS

Craig, E.W., Mueller, D.M., **Bigge, B.M.**, Schaeffer, M., Engel, B. D., and Avasthi, P. "The elusive actin cytoskeleton of a green alga expressing both conventional and divergent actins." *MBoC*, vol. 30, no. 22, 2019. doi.org/10.1091/mbc.E19-03-014.

Bigge, B.M., Rosenthal, N.E., Sept, D., Schroeder, C.M., Avasthi, P. "Initial ciliary assembly in *Chlamydomonas* requires Arp2/3-dependent recruitment from a ciliary protein reservoir in the plasma membrane." *BioRxiv*. 2020. doi.org/10.1101/2020.11.24.396002.

PRESENTATIONS

Bigge, B.M., Avasthi, P. "Internalization Of Membrane Adhesion Proteins During Mating In *Chlamydomonas* Occurs Through Actin And Arp2/3 Dependent Endocytic Mechanisms" *Cell Bio* 2020. December 2020. Virtual. (Poster).

Bigge, B.M., Avasthi, P. "Arp2/3 Nucleated Actin Networks Are Required For Ciliary Assembly In *Chlamydomonas*" *Cell Bio* 2020. December 2020. Virtual. (Poster).

Bigge, B.M., Sept, D., Schroeder, C.M., Avasthi, P. "Conventional and divergent actin networks mediated by Arp2/3 in endocytosis, higher order actin structures, and cilia in *Chlamydomonas*" Dartmouth College Molecular and Cell Biology Retreat. August 2020. Virtual. (Poster).

Bigge, B.M., Sept, D., Schroeder, C., Avasthi, P. "Arp2/3 nucleates conventional and divergent actin networks in *Chlamydomonas Reinhardtii*" Stowers Developmental Cell Biology Conference. April 2020. Kansas City, MO. (Poster, Cancelled due to COVID-19)

Bigge, B.M., Sept, D., Schroeder, C., Avasthi, P. "Arp2/3 nucleates conventional and divergent actin networks in *Chlamydomonas Reinhardtii*" KUMC Student Research Forum (SRF). March 2020. Kansas City, KS. (Oral Presentation, Cancelled due to COVID-19)

Bigge, B.M., Sept, D., Schroeder, C., Avasthi, P. "Arp2/3 nucleates conventional and divergent actin networks in *Chlamydomonas Reinhardtii*" Chicago Cytoskeleton Meeting. March 2020. Chicago, IL. (Poster, Cancelled due to COVID-19)

Bigge, B.M., Avasthi, P. "Arp2/3-mediated branched actin networks play a role in ciliary assembly and maintenance in *Chlamydomonas*" American Society of Cell Biology (ASCB). December 2019. Washington D.C. (Oral Presentation)

Bigge, B.M., Sept, D., Schroeder, C., Avasthi, P. "Arp2/3 nucleates conventional and divergent actin networks in *Chlamydomonas Reinhardtii*" American Society of Cell Biology (ASCB). December 2019. Washington D.C. (Poster)

Turkowitch, D., **Bigge, B.M.**, Craig, E.W., Avasthi, P. "Assembly of Divergent Actin Rings in *Chlamydomonas* is both formin and arp2/3 dependent but myosin independent." American Society of Cell Biology (ASCB). December 2019. Washington D.C. (Poster)

Salberg, A., **Bigge, B.M.**, Craig, E. W., Avasthi, P. "Novel actin ring structure in vegetative *Chlamydomonas* cells plays a potential role in nuclear integrity." American Society of Cell Biology (ASCB). December 2019. Washington D.C. (Poster)

Bigge, B.M., Sept, D., Avasthi, P. "Arp2/3 can nucleate filaments of a divergent actin with few conserved Arp2/3 binding residues" KUMC Student Research Forum (SRF). March 2019. Kansas City, KS. (Oral Presentation)

Bigge, B.M., Sept, D., Avasthi, P. "Arp2/3 can nucleate filaments of a divergent actin with few conserved Arp2/3 binding residues" American Society of Cell Biology (ASCB). December 2018. San Diego, CA. (Poster)

Bigge, B.M., Kadarla, K., Beck, M.R. "Myopalladin's Role in Cardiac Muscle Function and Disease" Kansas Idea Network of Biomedical Research Excellence (K-INBRE) Symposium. January 2017. Manhattan, KS. (Poster)

Bigge, B.M., Kadarla, K., Beck, M.R. "Myopalladin's Role in Cardiac Muscle Function and Disease" Undergraduate Research and Creative Activity Forum (URCAF). 2017. Wichita, KS. (Poster)

PROFESSIONAL TRAINING

Communication Coaching

Robert C. Roland, Ph.D. and Amy J. Devitt, Ph.D., Lawrence, KS, 2018-2022

Description: Ongoing oral and written communication classes teaching presentation skills, writing skills, and how to better communicate science

Lean Six Sigma Yellow Belt Training

Donna Whittaker, Ph.D., Lawrence, KS, Jan, 2020

Description: Introduction to the Lean Six Sigma method of process problem solving

Public Policy Seminar

Self Graduate Fellowship, Washington, D.C., Sept 2019

Description: A comprehensive introduction to public policy for graduate students

Negotiation and Conflict Resolution

Michael Haselhuhn, Ph.D., Lawrence, KS, Aug 13-14, 2019

Description: Two-day seminar demonstrating proper negotiation techniques

Discover Your Strengths, Clifton Strength Finder Seminar

Kathleen Ames-Stratton, Lawrence, KS, Jan 15, 2019

Description: Seminar to identify and harness personal strengths for relationship building, thinking strategically, executing plans, and influencing others to accomplish goals

Adaptive Leadership Seminar

Jill Hufnagel, Ph.D., Lawrence, KS, Aug 7-8, 2018

Description: Seminar that teaches how to use adaptability to enhance leadership skills

PROFESSIONAL AFFILIATIONS

American Society of Cell Biology

American Society of Biochemistry and Molecular Biology

American Genetics Society

PROFESSIONAL SERVICE

3 Minute Thesis Organization Committee

Student Research Forum, KUMC, 2018-2019

Co-Founder, administrator

Grad Student Slack, 2018-Present

COMMUNITY SERVICE/OUTREACH

Sinochips Diagnostics

Data entry for COVID-19 testing, Kansas City, KS, April-May 2020

Letters to a Pre-Scientist

Scientist/Letter writer, 2018-Present

Big Brothers Big Sisters

Mentor, Wichita, KS, 2013-2017

Kansas DNA Day

Ambassador, Wichita, KS, 2016-2017

Expanding Your Horizons

Volunteer, Wichita, KS, 2016-2017