Jessie Arneson

Department of Chemistry and Biochemistry
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Education:

North Dakota State University, Fargo, ND — Expected Graduation Date: May 2017
Biochemistry, PhD program
STEM Education, PhD program (dual option)
Major Advisor: Dr. Erika Offerdahl
Dissertation:
Current GPA: 4.00/4.00

North Dakota State University, Fargo, ND — Graduation Date: December 2012
Microbiology, Bachelor of Science
Biotechnology, Bachelor of Science
Minor in Chemistry
GPA: 4.00/4.00, Dean's List (9 semesters)

Honors and Awards:

- 2014-2017 National Science Foundation GRFP Fellowship
- 2013-2014 NDSU STEM Education PhD Research Fellowship

Funding:

- 2014-2017 NSF Graduate Research Fellowship Program awarded
- 2013-2015 NDSU STEM Education PhD Research Fellowship
- 2013 NSF Graduate Research Fellowship Program declined, positive reviews

Research Experience:

North Dakota State University Department of Chemistry and Biochemistry

Undergraduate/Graduate Research Assistant — April 2012 – present
Dr. Erika Offerdahl Lab

- Developed rubrics to code figures in textbooks and primary literature
- Designed and maintain project database
- Presented data at regional and national conferences
- Reviewing literature and writing manuscripts for future publication

Graduate Research Rotation Student — November 2013
Dr. John Wilkinson Lab

- Utilized cell culture techniques to maintain, count, and harvest MIAPaCa-2 and Panc-1 pancreatic cancer cell lines
- Performed experiments involving cell lysis, protein quantitation, SDS-PAGE, Western Blotting, and glucose consumption assay

Graduate Research Rotation Student October 2013
Dr. Stuart Haring Lab

- Designed and implemented the use of primers and protocols for PCR
- Gained experience with laboratory techniques including plasmid transformations into yeast and bacterial cells, DNA and protein extraction, protein quantitation assays
- Participated in weekly meetings and discussions of relevant primary literature

North Dakota State University Department of Veterinary and Microbiological Sciences
Undergraduate Research Assistant July 2011 – December 2012
Dr. John McEvoy Lab

- Utilized PCR and gel electrophoresis to identify presence of *Cryptosporidium* parasite in wildlife fecal samples
- Performed cell culture procedures to maintain HCT-8 cells
- Practiced laboratory techniques including primer/probe design, qPCR, RNA extraction, cDNA synthesis, and infection of HCT-8 cells with *Cryptosporidium*

Publications:

Presentations

Oral Presentations

- Offerdahl, E.; **Arneson, J**.; Momsen, J.; and Williams, A. "Actively passive: The role of textbook figures in developing visual thinking skills*". SABER annual conference*, Minneapolis, MN; July 2013.
- Offerdahl, E.; **Arneson, J**.; and Hull, J. "A picture is worth a thousand data points: An analysis of textbook visualizations in the molecular life sciences". *Experimental Biology 2013*, Boston, MA; April 2013. ASBMB Talk.
- Offerdahl, E.; **Arneson, J**.; and Hull, J. "A picture is worth a single word? An analysis of textbook visualizations in the life sciences". *SABER annual conference*, Minneapolis, MN; July 2012.
- **Arneson, J.** "Learning is a life-long commitment." *NDSU Phi Kappa Phi Induction Ceremony*, Fargo, ND, November 2011. Keynote Speaker.

Poster Presentations

- **Arneson, J.;** Offerdahl, E.; Derting, M.; Kliora, A. "Show me the data: An exploration of photographical data representation in undergraduate life sciences". *Society for the Advancement of Biology Education Research (SABER) annual conference*, Minneapolis, MN; July 12, 2013.
- Offerdahl, E.; **Arneson, J**.; and Hull, J. "A picture is worth a thousand data points: An analysis of textbook visualizations in the molecular life sciences". *Symposium on Excellence in Nurturing Undergraduate Research*, Fargo, ND; April 2013.

- Offerdahl, E.; **Arneson, J.;** and Hull, J. "A picture is worth a thousand data points: An analysis of textbook visualizations in the molecular life sciences". *Experimental Biology 2013*, Boston, MA; April 2013.

Teaching Experience:

North Dakota State University Department of Chemistry and Biochemistry

Undergraduate Learning Assistant

BIOC 460: Foundations of Biochemistry and Molecular Biology I Fall 2011, Fall 2012

A 50 min lecture held three times a week with ~300 students, 3 LAs, and an instructor.

- Assisted with student questions during lecture and proctored exams
- Graded quizzes and exams, and provided feedback for group projects
- Hosted weekly 3-hour review sessions

BIOC 303: The Science of Learning Fall 2012

A 75 min discussion-based course held once a week with 15 students who were serving as Learning Assistants in the College of Science and Mathematics, 1 LA, and instructor.

- Assisted with discussions designed to support Las across STEM disciplines
- Evaluated weekly writing assignments and compiled major themes for discussion
- Facilitated the class during the weeks that the primary instructor was not present

North Dakota State University Department of Veterinary and Microbiological Sciences

Primary Undergraduate Teaching Assistant:

MICR 445/645: Animal Cell Culture Techniques Spring 2012

A weekly 50 min lecture with ~100 students, 1 TA, and instructor with weekly 3-hour laboratory sessions with 12 students, 1 TA, and instructor per lab section.

- Prepared the necessary media and reagents for all laboratory sections every week
- Assisted with instruction and demonstrations during one laboratory section
- Proctored exams during the lecture and was available for student questions

Undergraduate Teaching Assistant:

MICR 350L: General Microbiology Laboratory Fall 2011

A 2-hour laboratory held twice weekly with 30 students, 2 TAs, and instructor per section.

- Prepared media and cultures with a partner for two lab sections held simultaneously
- Provided technique demonstrations and assisted with instruction for one lab section
- Set up, facilitated, and graded practical exams and homework assignments
- Hosted impromptu review sessions by student requests

Mentoring Experience:

- Mary Derting, Murray State University 2013 REU student
- Amanda Kliora, Bethel University 2013 REU student

- Jordyn Hull, Illinois Central College 2012 REU student
- Jan Ohm, Fargo North High School 2012 PICNICS student

Service:

North Dakota State University Biotechnology and Microbiology Club
President May 2012 – May 2013
Secretary October 2011 – May 2012

American Society for Microbiology-North Central Branch 2012 meeting, Fargo, ND
BMC Student Volunteer Coordinator October 2012

Membership:

- NDSU ChemBio Graduate Student Association since 2013
- Society for the Advancement of Biology Education Research since 2012
- NDSU Biotechnology and Microbiology Club since 2010

Outreach:

North Dakota State Science Olympiad, Fargo, ND
Co-Facilitator April 2009, 2013
Lead Facilitator April 2010-2012, 2014

- Developed written examinations and practical laboratory sessions for events in Cell Biology, Microbiology, and Genetics
- Managed teams of facilitators to proctor event sessions
- Organized and led event planning meetings

Camp Invention, Jamestown, ND
Camp Counselor Summers 2008-2011

- Encouraged children to get involved in science and technology through fun activities.
- Demonstrated ability to problem-solve by teaching children how to address difficult tasks and questions
- Communicated effectively in order to keep children, counselors, instructors, and administrators aware of situations

Techniques and Instrumentation:

- *General Microbiology*: growth cultures, isolation streaking, staining, light microscopy
- *Animal Cell Culture*: trypsinization, cell counts, viral/parasite infection, glucose consumption assays, inverted microscopy, immunofluorescence
- *Biochemistry/Molecular Biology Techniques:* PCR, RNA/protein extraction, SDS-PAGE, Western Blot, ELISA, yeast/bacterial transformation
- *Software*: Microsoft Office, large database maintenance (Access)

Special Training:

- IRB training (CITI online course) certified since May 2012