Curriculum Vitae

Grayson Ostermeyer, MSc

Contact Information
1880 NE Terre View Dr., Apt. D303, Pullman, WA 99163
grayson.ostermeyer@wsu.edu
(260) 579-5469

LinkedIn: https://www.linkedin.com/in/grayson-ostermeyer-39a12579/
GitHub: https://github.com/GPOstermeyer

Integrative Physiology and Neuroscience
College of Veterinary Medicine
Washington State University
Pullman, WA 99164
grayson.ostermeyer@wsu.edu

Outpatient Heart & Vascular/Endoscopy
Emergency Department
St. Joseph Regional Medical Center
Lewiston, ID 83501
grayson.ostermeyer@sjrmc.org

Education

2016, Aug – 2019, May	Master of Science, Plant Biology, Washington State University, Pullman
2011, Aug – 2016, May	Bachelor of Science, Biology, Purdue University Fort Wayne Psychology Minor, Honors Program

Computer Science and Data Science Background

IBM Data Science Professional Certificate

Advanced knowledge of the Python programming language and its basic data analysis, visualization, and machine learning libraries, such as Pandas, NumPy, SciPy, Matplotlib, Seaborn, and Scikit-Learn
Using Jupyter notebooks to run Python scripts and to communicate ideas
Data collection using REST APIs
Webscraping using Python's BeautifulSoup module
Data wrangling in Python
Exploratory data analysis using visualizations and SQL
Interactive visual analytics using Folium and Plotly Dash
Predictive analysis using classification models in Python, such as KNN, Decision Trees, Support Vector Machines, and Logistic Regression, hyperparameter tuning, and model evaluation
Building data pipelines in Python
Leveraging git and GitHub repositories for big data project collaborations
Standard Microsoft Office programs
GIMP/Photoshop for image manipulation
MATLAB for basic mathematical computations
SAS for statistical analysis
Perl for bioinformatics
Fiji/ImageJ for image analysis
IMOD software for electron tomography volume reconstruction
Amira software for image processing, segmentation, mesh generation, visualization, and analysis
Designing and printing 3D models using TinkerCAD, Blender, and Cura

Publications

Ostermeyer GP, Franzen AR, Peters WS, Jensen KH, Knoblauch M. 2022. Spatial patterns of protophloem sieve element plasmodesmata shape vascular unloading dynamics in roots. (in prep)

Ostermeyer GP, Jensen KH, Franzen AR, Peters WS, Knoblauch M. 2021. Diversity of funnel plasmodesmata: the impact of geometry on plasmodesmal resistance. (in press, *Plant J*)
DOI: https://doi.org/10.1101/2021.05.05.442713

Song Y, Ostermeyer GP, Du D, Lin Y. 2021. Escherichia coli detection using carbon nanodot-hybridized silica nanospheres in immunoassay. *Sens Actuators B Chem* **349**:130730.
DOI: https://doi.org/10.1016/j.snb.2021.130730

Song Y, Cai X, Ostermeyer GP, Du D, Lin Y. 2021. Zeptomole imaging of cytosolic microrna cancer biomarkers with a light-controlled nanoantenna. 2021. *Nanomicro Lett* **13**:213.
DOI: https://doi.org/10.1007/s40820-021-00732-1, PMID: 34674052

Song Y, Cai X, Ostermeyer GP, Yu J, Du D, Lin Y. 2021. Self-assembling allochroic nanocatalyst for improving nanozyme-based immunochromatographic assays. 2021. *ACS Sens* **6**:220–228.
DOI: https://doi.org/10.1021/acssensors.0c02148, PMID: 33433202

Ostermeyer GP. Modeling the root protophloem unloading network. 2019. [Master's thesis]. Pullman, WA: Washington State University.

Song Y, Yan X, Ostermeyer GP, Li S, Qu L, Du D, Li Z, Lin Y. 2018. Direct cytosolic microrna detection using single-layer perfluorinated tungsten diselenide nanoplatform. *Anal Chem* **90**:10369–10376.
DOI: https://doi.org/10.1021/acs.analchem.8b02193, PMID: 30078310

Work History

Washington State University – **Research Intern** **Aug 2021 – present**
Integrative Physiology and Neuroscience

St. Joseph Regional Medical Center – **CNA/Patient Care Tech** **Nov 2019 – present**
Outpatient Heart & Vascular Nov 2019 – present
Endoscopy Apr 2020 – present
Emergency Department Jan 2020 – present

Washington State University – **Graduate Student/Teaching Assistant** **Aug 2016 – Dec 2019**
Franceschi Microscopy and Imaging Center
School of Biological Sciences

Purdue University Fort Wayne – **Peer Health Educator** **Jul 2013 – Jul 2016**
Health and Wellness, Lead Peer Health Educator Jul 2014 – Jul 2016

Kroger Company – **Frozen/Dairy Clerk** **Jun 2011 – Feb 2013**

Dupont Hospital – **Student Intern** **May 2010 – Aug 2010**

Distinguishing Awards

2021 Clinical Employee of the Quarter (St. Joseph Regional Medical Center)

2019 People Invested In Excellent Service (x3) (P.I.E.S., St. Joseph Regional Medical Center)

Outstanding CNA Student (Gritman Medical Center)

2016 Outstanding Senior in Biology (PFW Department of Biology)

Undergraduate Worker of the Year (PFW Career Services)

PFW Top 50 (PFW Office of the Dean of Students)

Audrey Moore Excellence in Leadership Nomination (PFW Office of the Dean of Students)

Youth Advocate and Partner (Drug and Alcohol Consortium of Allen County)

Research Positions

2021, Aug – present **Research Intern (Brown lab)**, Washington State University; resolving signaling pathways in intrinsically photosensitive retinal ganglion cell subtypes and examining the potential regulatory role of dopamine in retinal accommodation to different light intensities. Also, assisting with projects characterizing transporter function in bipolar cells and in heterologous systems. I am leading the electrophysiology portions of these experiments and partnering with Tiffany Schmidt, PhD (Northwestern University) and Phyllis Robinson, PhD (John Hopkin's University) who are performing the behavioral components.

2019 – present **Volunteer Research Collaborator (Knoblauch lab)**, Washington State University; advancing insights into root vasculature structure and physiology in collaboration with Jensen lab (Technical University of Denmark)

2018 – present **Volunteer Research Collaborator (Lin lab)**, Washington State University; collaborating on projects describing novel functional nanomaterials for bioscience

2016 – 2019 **MSc Candidate (Knoblauch lab)**, Washington State University; trialed tissue preservation protocols to optimize fixation quality of plant cells; investigated root protophloem structure in a variety of plant species by way of electron microscopy and 3D electron tomography; generated conceptual models of protophloem tissue ultrastructure and flow dynamics in plasmodesmata; catalogued root protophloem anatomical models, with a focus on cell typing and ultrastructure analysis

2016 – 2019 **Teaching Assistant (Franceschi Microscopy and Imaging Center)**, Washington State University; mentoring students in the EMIC 586/587 graduate-level microscopy courses by providing instruction on equipment operation, assisting students with techniques to procure data, sustaining laboratory equipment and reagents, conducting experiments as requested by FMIC staff, and supporting day-to-day facility operations as needed

2016, Mar – Sep	**Laboratory Assistant (Peters lab)**, Purdue University Fort Wayne; systematically procured serial sections of *Olivella columellaris* shells and produced over 10,000 images for data analysis of polyp colony morphological development
2015, Aug – Nov	**BSc Student (Mustafa lab)**, Purdue University Fort Wayne; managed a laboratory study investigating the physiological effects of immunomodulatory diets on tilapia cultivated under variable stress conditions
2013 – 2016	**Laboratory Assistant (Mustafa lab)**, Purdue University Fort Wayne; assisted with laboratory procedures to investigate the immunological effects of stressors on aquatic invertebrates and fish; aquatic animal caretaking volunteer

Research Involvement (beyond publications)

2019, June	**Research Talk** "Modeling the Protophloem Unloading Network" Fifth International Conference on Plant Vascular Biology, Monterey, CA
2019, March	**Research Talk** "Modeling the Protophloem Unloading Network" Biology Graduate Student Association Symposium Presentation, Moscow, ID
2018, December	**Research Talk** "Exploring Root Protophloem Anatomy in Angiosperms" WSU School of Biological Sciences, Biolunch Presentation
2018, September	**Applied Design** Submitted a self-closing forceps model to a public database (Thingiverse.com) that catalogues designs for 3D printing (https://www.thingiverse.com/thing:3110594)
2018, April	**Poster Presentation** "A Survey of Protophloem Unloading Patterns in Divergent Plant Species" Biology Graduate Student Association Symposium, Moscow, ID
2018, March	**Poster Presentation** "A Survey of Protophloem Unloading Patterns in Divergent Plant Species" WSU Academic Showcase
2018, February	**Professional Workshop** "Molecular Biology Workshop for Professionals" University of British Columbia, Vancouver, CA
2017, November	**Research Talk** "Investigating Phloem Physiology Using Modern Microscopy Techniques" WSU Biology Club Presentation
2017, June	**Poster Presentation** "A Survey of Protophloem Unloading Patterns in Divergent Plant Species" American Society of Plant Biologists Conference, Honolulu, HI
2016, April	**Conference Talk** "Step Up Speak Up: Be a Positive Bystander" BACCHUS/NASPA Regional Conference, Indianapolis, IN
2016, April	**Conference Attendance** Aquaculture 2016, Las Vegas, NV
2015, April	**Conference Attendance** BACCHUS/NASPA Regional Conference, Saginaw, MI
2014, October	**Research Discussion** During a biology student excursion to Belgium and the Netherlands, I participated in a colloquial discussion of my research involvements

	while part of PFW's aquatic biology laboratory with biology faculty members and graduate students at the University of Ghent in Belgium
2013, Fall	**Human Prosection** Conducted cadaveric dissections for Basic Human Anatomy students and presented labeled anatomical structures to students during laboratory sessions

Grants and Scholarships

2019	Higginbotham Travel Grant ($950)
2017	Higginbotham Travel Grant ($1,500)
2015	IPFW ORES Summer Research Support Fund ($1,000)
2015	Office of the Dean of the College of Arts and Sciences has awarded a grant to attend the World Aquaculture Conference in Spring 2016 ($200)
2015	Office of Sponsored Programs awarded a grant to attend the World Aquaculture Conference in Spring 2016 ($250)
2015	The Department of Biology awarded a grant to attend the World Aquaculture Conference in Spring 2016 ($150)
2013-2016	**Dr. Beaumont S. Cornell Scholarship ($30,000 over 3 years)**
2013	Mary F. and Clara A. Wehnert Scholarship ($2,000)
2011-2012	The Lutheran Foundation Scholarship ($1,000)

Clinical Education & Memberships

2021 – 2025	Trauma Nursing Core Course
2021 – 2023	Basic Life Support Training, American Heart Association
2021 – 2023	Pediatric Advanced Life Support, American Heart Association
2021 – 2022	Emergency Nurses Association
Unlimited	BACCHUS/NASPA Certification for Collegiate Health Educators
2019 – 2021	Certified Nursing Assistant, Idaho
2019 – 2021	Advanced Cardiovascular Life Support, American Heart Association
2019	Sigma Xi Scientific Research Honor Society Nomination
2017 – 2018	American Society of Plant Biologists

2016	Psi Chi Psychological Honor Society
2015 – 2016	Aquaculture Society of America
2013	Tri-Beta Biological Honor Society

Foremost Volunteering Commitments (non-research)

2021 – present	Stop the Bleed Campaign – **American College of Surgeons**	
2016, 2017, 2018	WSU Biology Graduate Student Association Family Fun Day Volunteer	
2013 – 2015	**Kingston Healthcare** *Student Volunteer*	2013 – 2015
2012 – 2019	**Erin's House for Grieving Children** *Grief Facilitator*	2012 – 2019
2012 – 2013	**Green Action Club** *President*	2012 – 2013
2011 – 2012	**Dupont Hospital** *Student Volunteer*	

Core Laboratory Training: Techniques and Proficiencies

Microscopy
- Transmission electron microscopy
- 3D electron tomography
- Scanning electron microscopy
  - Including elemental analysis
- Confocal laser scanning microscopy
  - Including tile-scanning, z-stack generation, and spectral dye separation
- Light microscopy and applications
  - Including fluorescence microscopy and illumination techniques
- Familiar with microscope alignment and cleaning protocols

Specimen Prep and Microtechnique for Microscopy
- Fixing and embedding biological samples for electron and light microscopy
- Sectioning by ultramicrotome, histology microtome, and cryotome
- Staining techniques for LM and EM samples
- Sample dehydration by critical point dryer and freeze dryer
- General lab maintenance – preparing solutions, chemical inventory, waste disposal
- Familiarity with health and safety protocols in a laboratory setting

Electrophysiology
- Patch clamping, including voltage and current clamp
- Operating (and repairing) other rig equipment such as micromanipulators and vibration tables
- Aseptic surgery in mice
- Vibratome for preparing fresh tissue slices

Intravitreal injections off AAV vectors
Pulling borosilicate pipettes
Using lambda DG4 in light experiments
Software: HEKA, PatchMaster

Microbiology Techniques
Preparation of media and buffers
Isolating, plating, and culturing specimens using aseptic technique
Cleaning and autoclaving glassware
Mounting, staining, and imaging microbial samples
Cultivating bacteria, viruses, and fungi on differential, selective, and enriched media
Performing biochemical assays on microbial cultures

Methods employed in Molecular Biology and Biochemistry
Extraction, purification, and amplification of DNA
Polymerase chain reaction
Cloning and vector expression, transformation
Forward & reverse genetic approaches
Mini prep for plasmid preparation
Agarose gel electrophoresis, imaging
SDS PAGE
Spectrophotometry
Proteomics workflow, including western blotting

Bioinformatics
Genomic sequencing using the ion torrent platform
Using online tools and databases for sequence alignment, analysis, and retrieval
Finding patterns in protein and DNA/RNA sequences, including profiles and motifs
Protein structure prediction
An academic background in sequence data processing and interpretation
High-throughput sequencing
NGS sequencing and data analysis
Variant calling and data visualization
Microarray and sequencing applications, systems biology
Analysis of mass spectrometry data

Instrumentation in Cellular Biology/Hematology
Experience handling micropipettes, centrifuges, and needled syringes
Hematocrit
Hemocytometer
Refractometer

Chemical Techniques
Manipulating chemical samples, data extraction and interpretation
Purification by filtration and distillation
Column, thin-layer, and gas chromatography
Infrared spectroscopy
Nuclear magnetic resonance spectroscopy (^{1}H and ^{13}C)
Mass spectrometry

References available upon request