

**Paul Clinton Spiegel, Jr., Ph.D.**

Western Washington University  
Department of Chemistry  
516 High Street, Bellingham, WA 98225-9150  
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Email: [Paul.Spiegel@wwu.edu](mailto:Paul.Spiegel@wwu.edu)  
Homepage: <https://sites.google.com/site/spiegelresearch/home>

**EDUCATION:**

Doctor of Philosophy, Biochemistry  
Program in Biomolecular Structure and Design  
University of Washington Department of Biochemistry and the Fred Hutchinson Cancer  
Research Center, Seattle, WA (2004)

Bachelor of Science, Biochemistry and Biophysics  
University Honors College, Oregon State University, Corvallis, OR (1999)

**EXPERIENCE:**

|                 |   |
|-----------------|---|
| 06/20 – present | Department Chair, Dept. of Chemistry, <i>Western Washington University</i>  |
| 09/16 – present | Professor, Department of Chemistry, <i>Western Washington University</i>  |
| 04/18 – 06/20   | Healthcare Professions Faculty Advisory, <i>Western Washington University</i>   |
| 09/12 – 09/16   | Associate Professor, Dept. of Chemistry, <i>Western Washington University</i>   |
| 09/13 – 06/14   | Visiting Professor, Dept. of Mol. Biol. and Biochem, <i>Simon Fraser University</i>   |
| 09/07 – 09/12   | Assistant Professor, Department of Chemistry, AMSEC, <i>Western Washington University</i> . Research Focus: Ribosome structure and function, Antibody Structure, Blood Coagulation, X-ray Crystallography.  |
| 09/04 – 09/07   | Jane Coffin Childs Postdoctoral Fellow, Department of Molecular, Cellular and Developmental Biology, <i>University of California, Santa Cruz</i> , in the lab of Dr. Harry F. Noller. Research Focus: Structural and functional studies of ribosome translocation.                                    |
| 06/99 – 08/04   | Graduate Student in the Division of Basic Sciences ( <i>Fred Hutchinson Cancer Research Center</i> ) and the Department of Biochemistry ( <i>University of Washington</i> ) in the lab of Dr. Barry L. Stoddard. Research Focus: Structural and mechanistic studies of blood coagulation factor VIII. |

## **HONORS/AWARDS:**

|  |           |
|--|-----------|
| Arlan Norman Award for Excellence in Student Mentoring   | 2017      |
| Henry Dreyfus Teacher-Scholar Award  | 2015      |
| Visiting Professor, Aflac Visiting Professor Series  | 2013      |
| Summer Research Grant, WWU Research and Sponsored Projects   | 2009      |
| Project Development Award, WWU Research and Sponsored Projects   | 2008-2010 |
| Jane Coffin Childs Fund for Medical Research Postdoctoral Fellow<br>(sponsored by the Agouron Institute) | 2005-2008 |
| NIH Ruth Kirschstein Predoctoral Molecular Biophysics Training Grant                                     | 2001-2004 |
| Summer Undergraduate Research Fellowship, Univ. of Texas, Southwestern                                   | 1998      |
| Oregon Space Grant Scholar   | 1998-1999 |
| Graduated from OSU <i>Magna Cum Laude</i> , member of the OSU Honors College                             | 1999      |

## **INDEPENDENT PUBLICATIONS († - undergraduate, \* - MS graduate student):**

12. \*Smith IW, †d'Aquino AE, Coyle CW, Fedanov A, Parker ET, Denning G, Spencer HT, Lollar P, Doering CB, **Spiegel PC Jr.** (2020). The 3.2 Å structure of a bioengineered variant of blood coagulation factor VIII indicates two conformations of the C2 domain. J Thromb Haemostasis 18(1): 57-69.
11. \*Vincent CT, †Long ET, †Jones HC, Young JC, **Spiegel PC**, O'Neil GW. (2019) Suzuki Coupling-based Synthesis of VAPase Inhibitor Archazolid Natural Product Derived Fragments. RSC Advances 9(55): 32210-32218.
10. \*Carlson MA, †Haddad BG, \*Weis AJ, †Blackwood CS, †Shelton CD, †Wuerth ME, \*Walter JD, **Spiegel PC.** (2017). Ribosomal Protein L7/L12 is Required for GTPase Translation Factors EF-G, RF3 and IF2 to Bind in their GTP State to 70S Ribosomes. FEBS J 284(11):1631-1643.
9. O'Neil GW, †Craig AM, \*Williams JR, Young JC, **Spiegel PC.** (2017) Synthesis of the C<sub>1</sub>-C<sub>23</sub> Fragment of the Archazolids and Evidence for V-ATPase but not COX Inhibitory Activity. Synlett 28(09): 1101-1105.
8. \*Wuerth ME, †Cragerud, RK, **Spiegel PC.** (2015). X-ray Crystal Structure of the Human Factor VIII C2 Domain in Complex with the Classical 3E6 Inhibitory Antibody. Scientific Reports 5:17216.
7. †Brison CM, †Mullen SM, \*Wuerth ME, †Podolsky K, †Cook M, †Herman JA, \*Walter JD, Meeks SL, **Spiegel PC.** (2015). The 1.7 Å X-ray Crystal Structure of the Porcine Factor VIII C2 Domain and Binding Analysis to Anti-Human C2 Domain Antibodies and Phospholipid Surfaces. PLoS One 10(3): e0122447.
6. Sevy AM, Healey JF, Deng W, **Spiegel PC**, Meeks SL, Li R. (2013). Epitope mapping of inhibitory antibodies targeting the C2 domain of coagulation factor VIII by hydrogen-deuterium exchange mass spectrometry. J Thromb Haemost 11(12): 2128-36. *Cover Article*
5. \*Walter JD, \*Werther RA, †Brison CM, †Cragerud RK, Healey JF, Meeks SL, Lollar P, **Spiegel PC Jr.** (2013). Structure of the factor VIII C2 domain in a ternary complex with 2 inhibitor antibodies reveals classical and nonclassical epitopes. Blood 122(26): 4270-8. *Cover Article*

4. \*Walter JD, \*Werther RA, †Polozova MS, Healey JF, Meeks SL, Lollar P, **Spiegel PC**. (2013). Characterization and Solution Structure of the Factor VIII C2 Domain in a Ternary Complex with Classical and Non-Classical Antibody Inhibitors. Journal of Biological Chemistry 288(14): 9905-14.
3. \*Walter JD, †Hunter M, †Cobb M, †Traeger G, **Spiegel PC**. (2012). Thiostrepton Inhibits Stable 70S Ribosome Binding and Ribosome-Dependent GTPase Activation of Elongation Factor G and Elongation Factor 4. Nucleic Acids Research 40(1): 360-70.
2. Karanicolas J, Corn JE, Chen I, Joachimiak LA, Dym O, Chung S, Albeck S, Unger T, Hu W, Liu G, †Delbecq S, Montelione G, **Spiegel C**, Liu DR, Baker D. (2011). A De Novo Protein Binding Pair by Computational Design and Directed Evolution. Molecular Cell. 42(2): 250-60.
1. \*Walter JD, †Littlefield P, †Delbecq S, Prody G, **Spiegel PC**. (2010). Expression, Purification, and Analysis of Unknown Translation Factors from Escherichia coli: A Synthesis Approach. Biochemistry and Molecular Biology Education. 38(1): 17-22.

## **PREVIOUS PUBLICATIONS**

10. Shen BW\*, **Spiegel PC\***, *et. al.*, Stoddard, BL. (2008). Tertiary Structure and Domain Organization of Coagulation Factor VIII. Blood. 111(3): 1240-7. \* Co-first author.
9. **Spiegel PC**, Ermolenko DN, Noller HF. (2007). Elongation Factor G Stabilizes the Hybrid-State Conformation of the 70S Ribosome. RNA. 13(9): 1473-82.
8. Ermolenko DN, Majumdar ZK, Hickerson RP, **Spiegel PC**, Clegg RM, Noller HF. (2007). Observation of Intersubunit Movement of the Ribosome in Solution Using FRET. Journal of Molecular Biology. 370(3): 530-40.
7. Ermolenko DN\*, **Spiegel PC\***, Majumdar ZK, Hickerson RP, Clegg RM, Noller HF. (2007). The Antibiotic Viomycin Traps the Ribosome in an Intermediate State of Translocation. Nature Structural and Molecular Biology. 14(6): 493-7. \*Co-first author.
6. **Spiegel PC**, Chevalier B, Sussman D, Turmel M, Lemieux C, Stoddard BL. (2006). The Structure of I-CeuI Homing Endonuclease: Evolving Asymmetric DNA Recognition from a Symmetric Protein Scaffold. Structure. 14(5): 869-880.
5. **Spiegel PC**, Murphy P, Stoddard BL. (2004). Surface-exposed hemophilic mutations across the factor VIII C2 domain have variable effects on stability and binding activities. Journal of Biological Chemistry. 279(51): 53691-8. *Cover Article*
4. **Spiegel PC**, Kaiser SM, Simon JA, Stoddard BL. (2004). Disruption of protein-membrane binding and identification of small molecule inhibitors of coagulation factor VIII. Chemistry and Biology. 11(10): 1413-22.
3. Bolduc JM, **Spiegel PC**, Chatterjee P, Caprara MG, Waring RB Stoddard BL. (2003). The structure and DNA recognition of a bifunctional homing endonuclease and group I intron splicing factor. Genes and Development. 17(23): 2875-88. *Cover Article*

2. **Spiegel PC** and Stoddard BL. (2002). Optimization of factor VIII replacement therapy: can structural studies help in evading antibody inhibitors? British Journal of Haematology. 119(2): 310-22.

1. **Spiegel PC**, Jacquemin M, Saint-Remy JM, Stoddard BL, Pratt KP. (2001). Structure of a factor VIII C2 domain-immunoglobulin G4kappa Fab complex: identification of an inhibitory antibody epitope on the surface of factor VIII. Blood. 98(1): 13-9. *Plenary Cover Article*.

## **BOOK CHAPTERS**

1. Noller HF, Ermolenko DN, Korostelev A, Laurberg M, Zhu J, Asahara H, Lancaster L, Horan L, Hirschi A, Donohue JP, Trakhanov S, **Spiegel C**, Hickerson R, Cornish P, Ha T. (2011). Studies on the Mechanisms of Translocation and Termination. Ribosomes. Ch 28. ISBN 978-3-7091-0214-5

## **MANUSCRIPTS IN PREPARATION**

4. \*Smith IW, †d'Aquino A, Parker E, Doering C, **Spiegel PC**. (2018) The 3.2 Å X-ray Crystal Structure of Bioengineered Factor VIII Construct. *In preparation*.

3. †Littlefield P, Ashworth J, Baker D, **Spiegel PC**. (2018). X-ray Crystal Structures of I-Msol Mutants with Non-specific Activities Bound to DNA Target Site Variants. *In preparation*.

2. †Sigurjonssen J, *et al.*, **Spiegel PC**, Anthony-Cahill SJ. (2018). X-ray crystal structure and ligand binding of a 64 kDa recombinant human hemoglobin composed of two single-chain alpha-beta subunits is similar to R-state hemoglobin A. *In preparation*.

1. \*Murphy MP, *et al.*, **Spiegel PC**, Anthony-Cahill SJ. (2018). Association of two wild-type alpha globins with two circularly-permuted beta globins forms a heterotetramer with interfaces similar to those in R-state hemoglobin A. *In preparation*.

## **ORAL PRESENTATIONS:**

“Structurally Deciphering the Antibody Response to Hemophilia A Treatment”, University of Puget Sound Science Seminar Series, Tacoma, WA, March 2018

“X-ray Crystallographic Studies of the Factor VIII C2 Domain in Complex with O-phospho-L-serine Indicate that Arginine 2320 Contributes to the Phospholipid Membrane Binding Site”, The International Society of Thrombosis and Hemostasis Conference, Berlin, Germany, July 2017

“Should Human Genetic Data be Public or Private?” WWU Ethics in Research Seminar Series, May 2017

“Structurally Deciphering the Antibody Response to Hemophilia A Treatment” WWU Biology Department Seminar Series, February 2017

“Structurally Deciphering the Immune Response to Blood Coagulation Factor VIII: Hemophilia A and Antibody Inhibitors” WWU Chemistry Promotion Talk, October 2016.

“Inhibitors: What Can We Learn From Crystal Structure Modeling” Symposium on Inhibitors of FVIII: Translating the Bench to Bedside. Nationwide Children’s Hospital, Columbus, Ohio, May 18, 2015.

“Structural Studies of Blood Coagulation Factor VIII to Overcome the Immune Response” The Centre for Blood Research Seminar Series, University of British Columbia, December 2013

“Structural Studies of Blood Coagulation Factor VIII to Overcome the Immune Response” Department of Molecular Biology and Biochemistry, Simon Fraser University, October 2013

“Structurally Deciphering the Immune Response to Blood Coagulation Factor VIII” Seattle Pacific University, May 2013

“Structurally Deciphering the Immune Response to Blood Coagulation Factor VIII” Aflac Cancer and Blood Disorders Center, Aflac Visiting Lecture Series, Emory University, April 2013

“Activation, Function and Inhibition of Ribosome-Dependent GTPases” Department of Biochemistry and Biophysics, Oregon State University, January 2013

“Where did all these structures come from? A survey of current structural biology methods” WWU Chemistry REU Lunch Seminar Series, July 2012

“Blood Coagulation: Hemophilia Treatments and Complications” Bellingham Rotary Club, February 2012

“Better Living Through Biochemistry: Structural and Mechanistic Studies of Hemophilia Treatment, Antibiotic Function, and Protein Design” WWU Chemistry Tenure and Promotion Talk, October 2011

“Ribosomes: Inhibition and Activation of GTPases Associated with Ribosomal Translocation” WWU Chemistry REU Symposium, August 2011

“Ancient Molecules, Antibiotic Targets, and the Connection between Genotype and Phenotype”, Western Washington University Faculty Lectures, February 2011

“Structural Movements of the 70S Ribosome: The Elongation Phase of Translation and the Mechanism of Inhibition by Viomycin”, Simon Fraser University, Burnaby, BC, 2009

“Structural Movements of the 70S Ribosome: The Elongation Phase of Translation and the Mechanism of Inhibition by Viomycin”, Volcano Conference in Chemical Biology, Pack Forest, WA, 2009

“Structural Dynamics of the Ribosome”, Pacific University, Forest Grove, OR, 2008

“The Structure and Function of the Ribosome”, Fred Hutchinson Cancer Research Center, Graduate Course Lecture, Seattle, WA, 2008

“Movements of Ribosome-bound tRNA During the Elongation Phase of Translation”, Western Washington University, October, 2007.

“Movements of tRNA during ribosomal translocation”, UC Santa Cruz RNA Club, January 2007.

“Ribosome Function in an RNA World”, Western Washington University, December 2006.

“Structural investigations into tRNA movements during ribosomal translocation”, The Scripps Research Institute, August 2006.

“Crystal Structure of the LAGLIDADG Homing Endonuclease, I-*CeuI*”, UC Santa Cruz Structure Club, January 2005.

“Factor VIII, Hemophilia A, and Antibody Inhibitors”, Dissertation Defense, FHCRC, July 2004.

“Identification and characterization of small molecule inhibitors of Factor VIII and coagulation”, Friday Evening Seminar, FHCRC, November 2003.

“Identification and characterization of small molecule inhibitors of Factor VIII and coagulation”, Molecular Biophysics Seminar, UW, December 2003.

“Crystallographic studies of a group I intron-encoded homing endonuclease and putative maturase from *Chlamydomonas eugametos* (I-*CeuI*)”, Molecular Biophysics Seminar, UW, March 2003.

“Coagulation factor VIII, hemophilia A, and antibody inhibitors”, 2002 Volcano Conference in Bioorganic Chemistry, Feb. 23, 2002.

“Structural and Mechanistic Studies of Blood Coagulation Factor VIII”, Molecular Biophysics Seminar, UW, December 2001.

“Crystal structure of the factor VIII C2 domain complexed with the Fab fragment of a factor VIII inhibitor antibody”, Friday Evening Seminar, FHCRC, December 2000.

“Crystal structure of the factor VIII C2 domain complexed with the Fab fragment of a factor VIII inhibitor antibody”, 42nd Annual Meeting of the American Society of Hematology, Dec 2000.

## **GRANTSMANSHIP:**

“Unraveling the Immune Response to Factor VIII” National Institutes of Health (NIH/NHLBI), U54, 2018-2023, **\$520,000** (sub-contracted project)

“REU Site: Research Experience for Undergraduates at Western Washington University” National Science Foundation (NSF), 2018-2021, **\$270,000** (Co-Principal Investigator).

“Structure and Biochemical Studies of Factor VIII to Overcome the Immune Response” Academic Research Enhancement Award (AREA), National Institutes of Health (NIH), 2017-2020, **\$388,491** (Principal Investigator).

2015 Henry Dreyfus Teacher-Scholar Award, Dreyfus Foundation, 2015-2020, **\$60,000**

“MRI: Acquisition of a Single Crystal X-Ray Diffractometer for Molecular Structure Analysis at Western Washington University” National Science Foundation (NSF), 2014-2016, **\$300,000** (Principal Investigator).

“REU Site: Research Experience for Undergraduates at Western Washington University” National Science Foundation (NSF), 2014-2018, **\$280,000** (Principal Investigator).

“Structural Requirements for Ribosome-Dependent GTPase Activation and Hybrid State Formation” Academic Research Enhancement Award (AREA), National Institutes of Health (NIH), 2014-2017. **\$284,083** (Principal Investigator).

“Molecular Recognition in Biochemistry with Optical Biosensors” WWU Student Technology Fee Grant, 2013-2015, **\$44,000** (Principal Investigator).

“REU Site: Research Experience for Undergraduates at Western Washington University” National Science Foundation (NSF), 2011-2013, **\$330,000** (Co-Principal Investigator).

“Structure and Stability Studies of Factor VIII to Overcome the Immune Response” Academic Research Enhancement Award (AREA), National Institutes of Health (NIH), 2010-2013, **\$389,288** (Principal Investigator).

“Homing Endonuclease Genes (HEGs) as a New Platform for Malaria Control” Grand Challenges in Global Health, Foundation for the National Institutes of Health, 2010 – 2012, **\$25,000** (sub-contract).

“Biochemical Studies of Bacterial Ribosomes: From Genotype to Phenotype” Summer Research Grant, Western Washington University, **\$5,000**.

“Crossing the Biology/Chemistry Bridge: An Integrated Undergraduate Research Project that Harnesses Genetics, Cell Biology, and Biochemistry to Dissect mRNA Processing in

Neurodevelopment” Conservation, Research and Education Opportunities (“CREO”), 2009-2010, **\$9,700**.

“Deciphering the Roles of Ribosomal Translocases in the Regulation of Translation” Cottrell College Science Award, Research Corporation, 2010-2012, **\$44,661** (Principal Investigator).

“Biochemical Engineering of Molecules that Regulate Blood Coagulation” Partners in Science Program, M.J. Murdock Charitable Trust, 2009-2010, **\$15,000** (Principal Investigator).

“Biochemical Engineering of Molecules that Regulate Blood Coagulation” Project Development Award, Western Washington University, 2009-2010, **\$40,691**.

## **SERVICE:**

### **Academic Community:**

Reviewer, *Nucleic Acids Research*, since 2008 (eight research articles)  
Reviewer, *Journal of Chemical Education*, since 2010 (one article)  
Reviewer, *Enzyme Purification and Characterization: An Introduction*, Wiley (2012)  
Reviewer, *PLoS One*, since 2014 (two articles)  
Reviewer, *Journal of the American Chemical Society*, since 2015 (one article)  
Reviewer, *Journal of Thrombosis and Haemostasis*, since 2016 (three articles)  
Review Panelist, NSF Chemistry REU proposal review, December 2014  
Grant Proposal Reviewer, French National Research Agency, May 2017  
Reviewer, *Purification and Characterization of Secondary Metabolites*, Elsevier (2017)  
External Consultant, Biochemistry Hiring Committee, University of Puget Sound (2017, 2018)

### **Western Washington University:**

Beckman Scholars Program Proposal Committee, Chair (Summer 2009)  
NSF REU Program at WWU, Co-Director (2011-2013)  
WWU Faculty Senator (2012-2017)  
NSF REU Program at WWU, Director (2014-2018)  
CSE Personnel Committee (2014-2015)  
STS Task Force/Council (2015-present)  
Radiation Safety Officer (2014-present)  
University Biosafety Committee (2014-present)  
WWU Graduate Council (2016-present)  
Presenter, NIH Grant Proposal Workshop, WWU RSP, October 2016  
Molecular Genetics Faculty Search Committee, Biology Department (2016-2017)  
Western Reads Book Selection Committee (2017)  
Faculty Advisor, Pre-healthcare Advising (2018-present)

### **Western Washington University Department of Chemistry:**

Department Graduate Committee (2007-2013, 2015-present), Chair (Fall 2009-2013)  
Department Newsletter Committee, Chair (2008-2011)  
Lowell Eddy Memorial Fund for Summer Undergraduate Research Committee (2008-2012)



Department Library Committee (2007-2008)

“What, When, Where, and How of Graduate School in the Sciences”

Panelist (Fall 2007)

Lead Panel Moderator and Organizer (Fall 2008-2010)

Biochemistry Faculty Search Committee (2007-2008)

Result: hiring of Dr. Serge Smirnov

Analytical Chemistry Faculty Search Committee (2008-2009)

Result: hiring of Dr. Amanda Murphy

Organic Chemistry Faculty Search Committee (2011-2012)

Result: hiring of Dr. John Antos

Department Chair Search Committee (Summer 2012)

Result: selection of Prof. James Vyvyan as chair of Chemistry

Department Space Committee (2012-2015)

Department Chair's Executive Committee (2014-2015)

Department Budget Committee (2014-2016)

Department Fundraising Committee (2014-2015)

Temporary Instrument Specialist Search Committee Chair (March-April 2015)

Result: Hiring of Cyrus Schaaf

Biochemistry Faculty Search Committee, Chair (Fall 2016)

Result: hiring of Dr. Jeanine Amacher

Co-organizer of “Survey of Molecular, Cell, Chemical and Structural Biology”, Sehome High School AP Biology Class (annual event for the last four years)

#### M.S. Thesis Committees:

Laura Dettinger (2008)

Justin Walter (2010)

Halena Van Deusen (2008)

Jim Hall (2010)

Toby Ligon (2009)

Rachel Werther (2012)

Danielle Pfaff (2011)

Jacob Brockerman (2012)

Michael Murphy (2012)

Zach Tommavongsy (2013)

Jamie Apperson (2013)

Stanislav Fedechkine (2013)

Michelle Wuerth (2015)

Markus Carlson (2015)

R. Corey Henderson (2016)

Rachel Hubbard (2016)

Joanna Hoppins (2016)

David Gruber (2017)

Heather Miers (2017)

Orion Banks (2017)

Amanda Weis (2017)

Serena Wo (2017)

Ian Smith (2018)

Sierra Reed (2018)

Johann Sigurjonsson (2018)

Sarah Clark (2018)

Nick Horvath (2019)

Joseph Gish (2019)

Chris Swanson (2019)

Sarah Struyvenberg (2018-pres)

Shaun Peters (2019-pres)

Micah Nakao (2019-pres)

AP Wang (2019-pres)

#### **UNDERGRADUATE RESEARCH STUDENTS:**

Total number of undergraduate students mentored to date: 65

Current undergraduate research students: 10

Quentin Wilkins  
Estelle Ronayne  
Sarah Haines

Lucy Innes  
Lexi Jarvis

**Student Research Awards:**

Melanie Cobb, Kelsey Roe – Honorable Mention, Scholars Week Poster Presentation, (2008)  
Scott Delbecq – Lowell Eddy Memorial Fellowship for Summer Research (2008)  
Peter Littlefield – WWU Washington Space Grate Research Award (2009)  
Geoff Traeger – WWU Washington Space Grant Research Award (2009)  
Peter Littlefield – WWU Washington Space Grant Summer Research Award (2009)  
Scott Delbecq – Department of Chemistry Outstanding Graduate (2009)  
Justin Walter – Best Graduate Poster, Scholars Week Poster Presentation, WWU (2009)  
Justin Walter – Best Graduate Poster, Scholars Week Poster Presentation, WWU (2010)  
Ben Allen – Lowell Eddy Memorial Fellowship for Summer Research (2010)  
Bryan Ager – Sea Bong Chang Memorial Award for Outstanding Biochemistry Student (2010)  
Ben Allen – Sea Bong Chang Memorial Award for Outstanding Biochemistry Student (2011)  
Levi Vincent – Sea Bong Chang Memorial Award for Outstanding Biochemistry Student (2012)  
Ayana Robinson – Olson Foundation Scholarship (2012-2013)  
Caileen Brison – Best Undergraduate Presentation, Protein Society Symposium (2012)  
Michelle Wuerth – Sea Bong Chang Memorial Award for Outstanding Biochem Student (2013)  
Anne d'Aquino, Amanda Weis – Best Undergraduate Poster, Scholars Week Poster Presentation, WWU (2014)  
Anne d'Aquino – NSF Predoctoral Fellowship (2014 – 2018)  
Mikko Sayre – Karen and Joe Morse Summer Undergraduate Fellowship (2016)  
Rachel Blazevic – Best Undergraduate Poster, Scholars Week Presentation, WWU (2017)  
Ian Smith – Arlan Norman Honorable Graduate Scholar, WWU (2018)  
Micah Nakao – RSP Graduate Student Mini-Grant, WWU (2019)

**GRADUATE STUDENTS:**

|                     |                           |
|---------------------|---------------------------|
| Justin Walter       | Fall 2008 – Fall 2010     |
| Rachel Werther      | Winter 2010 – Winter 2012 |
| Michelle Wuerth     | Fall 2013 – Summer 2015   |
| Markus Carlson      | Fall 2013 – Spring 2015   |
| Amanda Weis         | Fall 2015 – Summer 2017   |
| Serena Wo           | Fall 2015 – Summer 2017   |
| Ian Smith           | Fall 2016 – Spring 2018   |
| Joseph Gish         | Fall 2017 – Summer 2019   |
| Christopher Swanson | Fall 2017 – Fall 2019     |
| Shaun Peters        | Fall 2019 – present       |
| Micah Nakao         | Fall 2019 – present       |
| AP Wang             | Fall 2019 – present       |