CAROLINE PROULX, Ph.D.

Associate Professor,
Department of Chemistry,
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North Carolina State University,
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PROFESSIONAL EXPERIENCE

Associate Professor 2023 – present
Department of Chemistry, North Carolina State University, Raleigh, NC.

Assistant Professor 2016 – 2023
Department of Chemistry, North Carolina State University, Raleigh, NC.

NSERC Postdoctoral Fellow 2012 – 2016
Lawrence Berkeley National Laboratory, Berkeley, CA.
Supervisor: Dr. Ronald N. Zuckermann

EDUCATION

Ph.D. Chemistry Dec 2012
Université de Montréal, Montréal, Québec, Canada.
Thesis title*: "Methodology for the combinatorial synthesis of azapeptides: application to the synthesis of aza-GHRP-6 analogs as CD36 receptor ligands."*
Supervisor: Dr. William D. Lubell.
Dean's honor list.

Hon. B. Sc. Biopharmaceutical Sciences, Medicinal Chemistry May 2007
University of Ottawa, Ottawa, Ontario, Canada.
Undergraduate research project supervisor: Dr. Robert N. Ben.
Dean's honor list.

AWARDS AND DISTINCTIONS

2023	Goodnight Early Career Innovators Award *($66,000).*
2022	NIH R35 Maximizing Investigators' Research Award (MIRA) for Early Stage Investigators *($1,805,062).*
2021	NSF CAREER Award *($685,000).*
2021	Early Career Lectureship, American Peptide Society.
2020	LeRoy and Elva Martin Award for Teaching Excellence.
2013-2015	Postdoctoral Fellowship (PDF), Natural Sciences and Engineering Research Council of Canada (NSERC) *($80,000).*
2013	Dean's honor list, Ph.D. graduation, Université de Montréal.
2010-2012	Post-Graduate Doctoral Scholarship (PGS D2), Natural Sciences and Engineering Research Council of Canada (NSERC) *($42,000).*
2009	Boehringer-Ingelheim Scholarship *($19,000).*
2008	Scholarship for direct transfer to the Ph.D. *($14,000).*
2007-2008	Post-Graduate Scholar Master's Award, Natural Sciences and Engineering Research Council of Canada (NSERC) *($34,600).*
2008	Best poster award, Québec-Ontario Minisymposium on Bio-Organic and Synthetic Chemistry *($100).*
2008	Merck Index Women in Chemistry Scholarship Award of Special Recognition *($500)*.
Summer 2006	NSERC Undergraduate Student Research Award *($4,500).* (USRA, Prof. Robert N. Ben)
Summer 2005	NSERC Undergraduate Student Research Award *($4,500).* (USRA, Prof. Ann English)
2003-2006	Dean's List, University of Ottawa.
2003-2006	University of Ottawa Admission scholarship *($14,000)*

Awards Declined:

May 2007 Ontario-Québec Fellowship Exchange Scholarship, valued at $10,000, renewable 2 years.

RESEARCH CONTRIBUTIONS

Refereed Journal Publications

From NCSU *Proulx Lab participants are in bold and undergraduate students are underlined.*

37. **Davern, C. M.**; **Proulx, C.*** "Late-Stage Chloride Displacements Enable Access to Peptoids with cis-Inducing Alkylammonium Side Chains" *Org. Lett.* **2023**, *25*, 6195-6199.
36. Galiakhmetov, A. R.; **Davern, C. M.**; Esteves, R. J. A.; Awosanya, E. O.; **Guthrie, Q. A. E**.; **Proulx, C**.; Nevzorov, A. A.* "Highly Alignable Peptoid-Based Macrodiscs for the Structural Studies of Membrane Proteins by Oriented-Sample NMR." *Biophysical Journal.* **2022**, *121*, 3263-3270.
35. **Young, H. A**.; **Proulx, C**.* "On-Resin Cα-Functionalization of *N*-Arylglycinyl Peptides with Boronic Acids". *Org. Biomol. Chem."* **2022**, *20*, 6245-6249.
34. **Bowles, M. O.**; **Proulx, C.*** "Late-Stage *N*-Alkylation of Azapeptides". *Org. Lett.* **2022**, *24*, 1768-1773.
    **Highlighted in Synfacts 2022; 18(06): 0692 DOI: 10.1055/s-0041-173758.*
33. **Davern, C. M.**; **Lowe, B. D.**; **Rosfi, A.**; Ison, E. A.; **Proulx, C.*** "Submonomer Synthesis of Peptoids Containing *trans*-inducing *N*-imino- and *N*-alkylamino-glycine Monomers". *Chem. Sci.* **2021**, *12*, 8401-8410.
32. **Bowles, M.**; **Proulx, C.*** "Solid Phase Submonomer Azapeptide Synthesis". *In Methods in Enzymology,* ed. E. J. Petersson, Academic Press, **2021**, vol. 656, pp. 169-190.
31. **Proulx, C.** "Catching up to nature's ribosomes". *Science* **2020**, *368*, 941.
    **Perspective on an article by Hartrampf, N. et al. Synthesis of proteins by automated flow chemistry. Science 2020, 368, 980-987.*
30. **Young, H. A.**; **Guthrie, Q. A. E**.; **Proulx, C**.* "*N*-Arylation of Amino Acid Esters to Expand Side Chain Diversity in Ketoxime Peptide Ligations". *J. Org. Chem.* **2020**, *85*, 1748-1755.
29. Reese, H. R.; Shanahan, C. C.; **Proulx, C.**; Menegatti, S.* "Peptide Science: a "Rule Model" for New Generations of Peptidomimetics". *Acta Biomaterialia* **2020**, *102,* 35-74.
28. **Proulx, C.**; Zhang, J.; Sabatino, D.; Chemtob, S.; Ong, H.; Lubell, W. D.* Synthesis and Biomedical Potential of Azapeptide Modulators of the Cluster of Differentiation 36 Receptor (CD36). *Biomedicines.* 2020, *8*, 241.
27. Frégeau, G.; Sarduy, R.; Elimam, H.; Esposito, C. L.; Mellal, K.; Ménard, L.; Leitão da Graça, S. D.; **Proulx, C**.; Zhang, J.; Febbraio, M.; Soto, Y.; Lubell, W. D.; Ong, H.; Marleau, S.* Atheroprotective and Atheroregressive Potential of Azapeptide Derivatives of GHRP-6 as Selective CD36 Ligands in Apolipoprotein E-deficient Mice. *Atherosclerosis* 2020. *307*, 52-62.
26. **Guthrie, Q. A. E.**; **Young, H. A.**; **Proulx, C.***; "Ketoxime Peptide Ligations: Oxidative Couplings of Alkoxyamines to *N*-Aryl Peptides". *Chem. Sci.* **2019**, *10*, 9506-9512.
25. **McMechen, M. A**.; **Willis, E. L**.; **Gourville, P. C**.; **Proulx, C.*** "Aza-amino Acids Disrupt Beta-sheet Secondary Structures". *Molecules* **2019**, *24*, 1919.
24. **Guthrie, Q. A. E**.; **Proulx, C**.* "Oxime Ligation *via in situ* Oxidation of *N*-Phenylglycinyl Peptides". *Org. Lett.* **2018**, *20*, 2564-2567.
    **Highlighted in Synform 2018/09, A137–A140.*
23. Battigelli, A.; Kim, J. H.; Dehigaspitiya, D. C.; **Proulx, C**.; Robertson, E. J.; Murray, D. J.; Rad, B.; Kirshenbaum, K.; Zuckermann, R. N.* "Glycosylated Peptoid Nanosheets as a Multivalent Scaffold for Protein Recognition." *ACS Nano*. **2018**, *12*, 2455-2465.
22. Huynh, D. N.; Bessi, V. L.; Menard, L.; Piquereau, J.; **Proulx, C.**; Febbraio, M.; Lubell, W. D.; Carpentier, A. C.; Burelle, Y.; Ong, H.; Marleau, S.* "Adiponectin has a Pivotal Role in the Cardioprotective Effect of CP-3(iv), a Selective CD36 Azapeptide Ligand, after Transient Coronary Artery Occlusion in Mice". *FASEB J.* **2018**, 32, 807-818.
21. Chingle, R.; **Proulx, C.**; Lubell, W. D.* "Azapeptide Synthesis Methods for Expanding Side-Chain Diversity for Biomedical Applications" *Acc. Chem. Res.* **2017**, *50*, 1541-1556.

Prior to NCSU, from Ph.D. and postdoc studies

20. Robertson, E. J.; **Proulx, C.**; Su, J. K.; Garcia, R. L.; Yoo, S.; Nehls, E. M.; Connolly, M. D.; Taravati, L.; Zuckermann, R. N.* "Molecular Engineering of the Peptoid Nanosheet Hydrophobic Core" *Langmuir* **2016**, *32*, 11946-11957.
    **Featured as the ACS Editors' Choice*
19. **Proulx, C.**; Noë, F.; Yoo, S.; Connolly, M. D.; Zuckermann, R. N.* "On-Resin *N*-Terminal Peptoid Degradation: Toward Mild Sequencing Conditions". *Biopolymers (Pept. Sci.)* **2016**. *106,* 726-736.
18. Flood, D.; **Proulx, C**.; Robertson, E. J.; Battigelli, A.; Wang, S.; Schwartzberg, A.; Zuckermann, R. N.* "Improved Chemical and Mechanical Stability of Peptoid Nanosheets by Photo-crosslinking the Hydrophobic Core". *Chem*. *Commun*. **2016**, *52*, 4753-4756.
    **Featured as the inside front cover for the April 4th, 2016 issue.*
17. Robertson, E. J.; Battigelli, A.; **Proulx, C.**; Mannige, R. V.; Haxton, T. K.; Whitelam, S.; Zuckermann, R. N.* "Design, Synthesis, Assembly and Engineering of Peptoid Nanosheets". *Acc. Chem. Res.* **2016**,*49*, 379-389.
    **Featured as the front cover for the March 16th, 2016 issue.*
16. Mannige, R. V.; Haxton, T. K.; **Proulx, C.**; Robertson, E. J.; Battigelli, A.; Butterfoss, G. L.; Zuckermann, R. N.*; Whitelam, S.* "Peptoid Nanosheets Exhibit a New Secondary Structure Motif*". Nature* **2015***, 526*, 415-420.
    **Featured in C&En news article: "Peptoids Do a Double Twist", C&En, Oct. 12th, 2015, 93(40), p.30.*
15. **Proulx, C.**; Yoo, S.; Connolly. M. D.; Zuckermann, R. N.* "Accelerated Submonomer Solid-Phase Synthesis of Peptoids Incorporating Multiple Substituted *N*-Aryl Glycine Monomers". *J. Org. Chem.* **2015,** *80*, 10490-10497.
    **Featured as the front cover for the November 6th, 2015 issue.*
14. Sanii, B.; Haxton, T. K.; Olivier, G. K.; Cho, A.; Barton, B.; **Proulx, C**.; Whitelam, S.; Zuckermann, R. N.* "Structure-Determining Step in the Hierarchical Assembly of Peptoid Nanosheets". *ACS Nano* **2014**, *8*, 11674-11684.
13. Robertson, E. J.; Olivier, G. K.; Qian, M.; **Proulx, C.**; Zuckermann, R. N.*; Richmond, G. L.* "Assembly and Molecular Order of Two-Dimensional Peptoid Nanosheets at the Oil-Water Interface". *Proc. Natl. Acad. Sci.* **2014***, 111*,13284-13289.
12. Zhang, J.; **Proulx, C.**; Tomberg, A.; Lubell, W. D.* "Multicomponent Diversity-Oriented Synthesis of Aza-Lysine-Peptide Mimics". *Org. Lett.* **2014**, *16*, 298-301.
11. **Proulx, C.**; Lubell, W. D.* "Analysis of *N*-amino-imidazolin-2-one Peptide Turn Mimic 4-position Substituent Effects on Conformation by X-ray Crystallography". *Biopolymers (Pept. Sci.)* **2014**, *102*, 7-15.
10. **Proulx, C.**; Lubell, W. D.* "*N*-Amino-imidazolin-2-one Peptide Mimic Synthesis and Conformational Analysis". *Org. Lett.* **2012**, *14*, 4552-4555.
    **Article recognized as a significant contribution in the field of peptide sciences by Dr. Roger Freidinger (F1000 Faculty).*
9. García-Ramos, Y.; **Proulx, C.**; Lubell, W. D.* "Synthesis of Hydrazine and Azapeptide Derivatives by Alkylation of Carbazates and Semicarbazones". *Can. J. Chem.* **2012**, *90*, 985-993.
8. **Proulx, C.**; Picard, É.; Boeglin, D.; Pohankova, P.; Chemtob, S.; Ong, H.; Lubell, W. D.* "Azapeptide Analogs of the Growth Hormone Releasing Peptide 6 as Cluster of Differentiation 36 Receptor Ligands with Reduced Affinity for the Growth Hormone Secretagogue Receptor 1a". *J. Med. Chem.* **2012**, *55*, 6502-6511.
7. Sabatino, D.; **Proulx, C.**; Pohankova, P.; Ong, H.; Lubell, W. D.* "Structure-Activity Relationships of GHRP-6 Azapeptide Ligands of the CD36 Scavenger Receptor by Solid-Phase Submonomer Azapeptide Synthesis". *J. Am. Chem. Soc.* **2011**, *133*, 12493-12506.
6. **Proulx, C.**; Sabatino, D.; Hopewell, R.; Spiegel, J.; García Ramos, Y.; Lubell, W. D.* "Azapeptides and their Therapeutic Potential". *Future Med. Chem.* **2011**, *3*, 1139–1164.
5. Bolduc, O. R.; Lambert-Lanteigne, P.; Colin, D. Y.; Zhao, S. S.; **Proulx, C.**; Boeglin, D.; Lubell, W. D.; Pelletier, J. N.; Féthière, J.; Ong, H.; Masson, J.-F.* "Modified Peptide Monolayer Binding His-tagged Biomolecules for Small Ligand Screening with SPR Biosensors". *Analyst* **2011**, *136*, 3142-3148.
4. **Proulx, C.**; Lubell, W. D.* "Aza-1,2,3-triazole-3-alanine Synthesis via Copper-Catalyzed 1,3-Dipolar Cycloaddition on Aza-progargylglycine". *J. Org. Chem*. **2010**, *75*, 5385-5387.
    **Article in Synfacts (2010) 11: 1311.*
3. **Proulx, C.**; Lubell, W. D.* "Copper-Catalyzed *N*-Arylation of Semicarbazones for the Synthesis of Aryl-Azaglycine Containing Azapeptides". *Org. Lett.* **2010**, *12*, 2916-2919.

2. Bourguet, C. B.; **Proulx, C.**; Klocek, S.; Sabatino, D.; Lubell, W. D.* "Solution-phase Submonomer Diversification of Aza-dipeptide Building Blocks and their Application in Aza-peptide and Aza-DKP Synthesis". *J. Pept. Sci.* **2010**, *16*, 284-296.
1. Sabatino, D.; **Proulx, C.**; Klocek, S.; Bourguet, C. B; Boeglin, D.; Ong, H.; Lubell, W. D.* "Exploring Side-Chain Diversity by Submonomer Solid-Phase Aza-Peptide Synthesis". *Org. Lett.* **2009**, *11*, 3650-3653.

Patents

2. "Peptidomimetics Comprising *N*-Amino Cyclic Urea Residues and Uses Thereof" Lubell, William D.; Ong, Huy; **Proulx, Caroline**; Hopewell, Robert; Beauregard, Kim; García Ramos, Yésica, provisional patent No. US 61/655,682 filed June 5th, 2012.
1. "Azapeptides as CD36 Binding Compounds" Ong, Huy; Chemtob, Sylvain; Lubell, William D.; Boeglin, Damien, **Proulx, Caroline**, Sabatino, David, Sajjadi, Zohreh, serial No. PCT/CA2008/001162 Canada, USA, PCT filed June 18, 2008.

Refereed book chapters, conference proceedings, and other contributions from from Ph.D. and postdoc studies

5. Sun, J.; **Proulx, C.**; Zuckermann, R. N. Precision sequence control in bioinspired peptoid polymers. In *Sequence-Controlled Polymers: Synthesis, Self-Assembly, and Properties*, Jean-François Lutz, Makoto Ouchi, Tara Meyer and Mitsuo Sawamoto (Eds.) ACS Symposium Series; American Chemical Society: Washington, DC., 2014, 1170, pp. 25-53.
4. **Proulx, C.**; Lubell, W. D. "*O*-(3,4-Dihydro-4-oxo-1,2,3-benzotriazin-3-yl)-*N,N,N',N'*-tetramethyluronium tetrafluoroborate" *Encyclopedia of Reagents for Organic Synthesis*, 2012. A. B. Charette, D. Crich, P. L. Fuchs, G. A. Molander (Eds); John Wiley & Sons Ltd.: Chichester, 2nd Ed.; (I.D.: RN01543).
3. **Proulx, C.**; Lubell, W. D. "*O*-(6-Chloro-1H-benzotriazol-1-yl)-*N,N,N',N'*-tetramethyluronium tetrafluoroborate" *Encyclopedia of Reagents for Organic Synthesis*, 2012. A. B. Charette, D. Crich, P. L. Fuchs, G. A. Molander (Eds); John Wiley & Sons Ltd.: Chichester, 2nd Ed.; (I.D.: RN01544).
2. **Proulx, C.**; Lubell, W. D. Synthesis of [Azaphenylglycine^4]- and [Aza-1-phenyl-2,3-triazole-3-alanine^4]Growth Hormone Releasing Peptide-6 and Comparison of their Conformations with [AzaPhe^4]GHRP-6. In *Peptides: Building Bridges. Proceedings of the 22nd American Peptide Symposium*, Lebl, M., Ed. Prompt Scientific Publishing: San Diego, CA, 2011; pp 80-81.
1. **Proulx, C.**; Lubell, W. D. Solid-Phase Synthesis of Aza-Proline Analogs of GHRP-6. In *Peptides: Breaking Away. Proceedings of the 21st American Peptide Symposium*, Lebl, M., Ed. Prompt Scientific Publishing: San Diego, CA, 2009; pp 56-57.

Departmental Seminars from independent Research at NC State University

25. Iowa State University, Ames, IA, November 3rd, 2023.
24. University of Rochester, Rochester, NY, October 20th, 2023.
23. University of North Carolina Wilmington, Wilmington, NC, September 15th, 2023
22. National Cancer Institute, Frederick, MD, March 9th, 2023.
21. University of Sydney, Sydney, NSW, Australia, May 2nd, 2022.
20. Scripps Research, La Jolla, CA, April 22nd, 2022.
19. University of Missouri, Columbia, MO, April 8th, 2022.
18. New York University, New York, NY, April 5th, 2022.
17. Temple University, March 17th, 2022, over Zoom.
16. University of Delaware, March 16th, 2022, over Zoom.
15. University of Pennsylvania, March 14th, 2022, over Zoom.
14. University of Pittsburgh, March 4th, 2022, over Zoom.
13. University of North Carolina at Chapel Hill, Chapel Hill, NC, February 24th, 2022.
12. University of California Irvine, February 16th, 2022, over Zoom.
11. Vanderbilt University, January 31st, 2022, over Zoom.
10. University of South Florida, Tampa, FL, January 19th, 2022.
9. Emory University, December 6th, 2021, over Zoom.
8. Université de Montréal (Canada), November 24th, 2021, over Zoom.
7. University of Windsor (Canada), November 3rd, 2021, over Zoom.

6. University of Texas at San Antonio, October 22nd, 2021, over Zoom.
5. North Carolina State University, Biochemistry department, September 23rd, 2021.
4. University of Bath and Evotec joint seminar, September 7th, 2021, over Zoom.
3. Wayne State University, February 10th, 2021, over Zoom.
2. Appalachian State University, Boone, NC, November 1st, 2019.
1. Seton Hall University, South Orange, NJ, April 9th, 2019.

Oral Presentations at Conferences (*denotes presenting author)

From Independent Research at NC State University, including Proulx lab student presentations

25. Bowles, M. O.*; Proulx, C. "Exploring the reactivity of azapeptides through late-stage functionalization.", SERMACS, Durham, NC, October 25-28th, 2023.
24. Warner, E. J. T.*; Guthrie, Q. A. E.; Humphrey, B.; Proulx, C. "New method for cyclic peptide synthesis using hydrazone linkages with high side chain diversity.", SERMACS, Durham, NC, October 25-28th, 2023.
23. Proulx, C.* "Late-stage azapeptide functionalizations", Chemistry and Biology of Peptides Gordon Research Conference (GRC), Oxnard, California, October 3th-November 4th, 2022. (*Invited talk*).
22. Davern, C. M.*; Proulx, C. "Submonomer synthesis of peptoids containing *trans*-inducing *N*-imino- and *N*-alkylamino-glycines", 27th American Peptide Syposium, Whistler, BC, Canada, June 11-16th, 2022. (*Contributed*, *3 min Flash talk*).
21. Proulx, C.* "New tools for peptide mimicry and functionalization", 27th American Peptide Syposium, Whistler, BC, Canada, June 11-16th, 2022. *(Early Career Lectureship - Award Lecture)*
20. Proulx, C.* "New methods for the chemoselective functionalization of peptides", 14th Australian Peptide Conference, Gold Coast, QLD, Australia, May 8-12th, 2022**.** *(Invited)*
19. Proulx, C.* "On-Resin Late-Stage Functionalization of Azapeptides", 8th Modern Solid Phase Peptide Synthesis & Its Applications Symposium, Gold Coast, QLD, Australia, May 6-8th, 2022**.** *(Contributed)*
18. Young, H. A.*; Proulx, C. "Chemoselective functionalization of *N*-aryl peptides on solid support", American Chemical Society (ACS) National Meeting, March 20-24th, 2022, over Zoom. *(Contributed)*
17. Bowles, M. O.*; Proulx, C. "Late-stage functionalization of azaglycine-containing peptides"**,** American Chemical Society (ACS) National Meeting, March 20-24th, 2022, over Zoom. *(Contributed)*
16. Proulx, C.* "Synthesis and reactivity of electron-rich *N*-aryl peptides: from site-selective Cα-functionalizations to peptide ligation reactions", Pacifichem, Advancing frontiers in peptide and protein science with nano to macromolecular solutions, new technologies in polyamide synthesis, and applications, December 18th, 2021, over Zoom. *(Contributed)*
15. Davern, C. M.*; Proulx, C. "Submonomer synthesis of peptoids containing *trans*-inducing *N*-imino and *N*-alkylamino glycine monomers", Online Peptoid Symposia 2021/22, December 7th, 2021. *(Contributed)*
14. Proulx, C.* "Submonomer synthesis of peptoids containing *trans*-inducing *N*-imino- and *N*-alkylamino glycines", 262nd ACS National Meeting, Development of New Peptidomimetics for Biological Applications, Atlanta, GA, August 2021. *(Invited)*
13. Proulx, C.* "Peptide ligations from tunable *N*-aryl peptide precursors", First Canadian Peptide and Protein Community Virtual Symposium, May 27th 2021, over zoom. *(Invited)*
12. Young, H. A.*; Guthrie, Q. A. E.; Proulx, C. "Synthesis of *N*-aryl peptides for expansion of side-chain diversity in ketoxime ligations", American Chemical Society (ACS) National Meeting, April 5-16th, 2021, over Zoom. *(Contributed)*
11. Davern, C. M.*; Proulx, C. "Submonomer synthesis of peptoids containing *trans*-inducing *N*-imino and *N*-alkylamino glycine monomers", American Chemical Society (ACS) National Meeting, April 12th, 2021, over Zoom. *(Contributed)*
10. Proulx, C.* "New strategies for ketoxime peptide ligations", Boulder Peptide Symposium 2019, Boulder, CO, September 23-26th, 2019. *(Invited)*
9. Proulx, C.* "*In situ* oxidation of *N*-phenylglycinyl peptides for oxime bond formation at neutral pH", American Peptide Symposium 2019, Monterey, CA, June 22-27th, 2019. *(Contributed)*
8. Guthrie, Q. A. E.*; Proulx, C. "Mild Oxidation of *N*-phenylglycinyl peptides for bioconjugation reactions", American Chemical Society (ACS) National Meeting, Orlando, FL, April 3rd, 2019. *(Contributed)*

7. Guthrie, Q. A. E; Proulx, C.* "Aerobic oxidation of *N*-phenylglycinyl peptides for catalyst-free oxime ligations", American Chemical Society (ACS) meeting, Orlando, Florida, March 31st-April 4th, 2019. *(Contributed)*

Prior to NCSU, from Post-doc and Graduate Studies

6. Proulx, C.*; Yoo, S.; Connolly, M. D.; Zuckermann, R. N. "Molecular engineering of the peptoid nanosheet hydrophobic core", Canadian Society for Chemistry (CSC) meeting, Ottawa, Ontario, June 13-17th, 2015.
5. Proulx, C.*; Yoo, S.; Connolly, M. D.; Zuckermann, R. N. "Influence of backbone flexibility on the two-dimensional assembly of peptoid nanosheets", American Chemical Society (ACS) meeting, San Francisco, California, August 10-14th, 2014.
4. Proulx, C.*; Yoo, S., Zuckermann, R. N. "Improvements in the solid-phase synthesis of peptoids incorporating weak nucleophile submonomers", Canadian Society for Chemistry (CSC) meeting, Vancouver, British Columbia, June 1-5th, 2014.
3. Zhang, J.; Proulx, C.*; Lubell, W. D. "Multi-component diversity-oriented synthesis of aza-lysine-peptide mimics", Canadian Society for Chemistry (CSC) meeting, Vancouver, British Columbia, June 1-5th, 2014.
2. Proulx, C.*; Lubell, W. D. "Tuning the selectivity of GHRP-6 towards the CD36 vs GHS-R1a receptor by exploiting the reactivity of semicarbazones and aza-propargyl glycine in combinatorial azapeptide synthesis", Canadian Society for Chemistry (CSC) meeting, Montréal, Québec, June 5-9th, 2011.
1. Proulx, C.*; Lubell, W. D. "Copper-catalyzed *N*-arylation of a semicarbazone building block for the parallel synthesis of aryl-azaglycine containing azapeptides", Canadian Society for Chemistry (CSC) meeting, Toronto, Ontario, May 29-June 2nd, 2010.

Poster Presentations (*denotes presenting author)

From Independent Research at NC State University, including Proulx lab student presentations

56. Prieto, K.*; Carter, M.; Bowles, M. O.; Gouveia, L.; Ison, E. A.; Proulx, C. "Experimental and Computational Analysis of the Rotational Energy Barrier of Azapeptoids and N1,N2-dialkylated Azapeptides", Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS), Phoenix, Az, November 15-18th, 2023.
55. Witte, K.E.*; Harrelson, S.; Allego, E.; Davern, C. M.; Warner, E. J. T.; Proulx, C.; Barycki, J.J..; Simpson, M.A. "Selective inhibition of UGDH with a series of novel peptide and peptoid analogs", SERMACS, Durham, NC, October 25-28th, 2023.
54. McKinney, K.*; Young, H. A.; Warner, E. J. T. Broderick, M.; Proulx, C. "Synthesis of N-Aryl Peptides: Comparing the efficiency of Pd-catalyzed *N*-arylations and nucleophilic aromatic substitutions", SERMACS, Durham, NC, October 25-28th, 2023.
53. Carter, M.*; Bowles, M. O.; Cartrette, K.; Proulx, C. "Azapeptoid synthesis: Determining amino acid compatibility during late-stage azaglycine alkylations", SERMACS, Durham, NC, October 25-28th, 2023.
52. Gage, S.*; McKinney, K.; Warner, E. J. T.; Proulx, C. "Exploring the reactivity of *N*-aryl peptides in organic solvents", NC State Undergraduate Research & Creativity Symposium, NCSU, July 27th, 2023.
51. Prieto, K.*; Carter, M.; Bowles, M. O.; Gouveia, L.; Ison. E. A.; Proulx, C. "Experimental and computational analysis of the rotational energy barrier of azapeptoids and N1,N2-dialkylated azapeptides", NC State Undergraduate Research & Creativity Symposium, NCSU, July 27th, 2023.
50. Harrelson, S.*; Witte, K.; Allego, E.; Warner, E.; Proulx, C.; Barycki, J. J.; Simpson, M. A. "Selective inhibition of UGDH with a series of novel peptide and peptoid analogs." American Peptide Symposium, Scottsdale, Arizona, June 24-29, 2023.
49. Carter, M.*; Bowles, M. O.; Cartrette, K.; Proulx, C. "Azapeptoid synthesis: determining amino acid compatibility during late-stage azaglycine alkylations", American Peptide Symposium, Scottsdale, Arizona, June 24-29, 2023.
48. Warner, E. J. T.*; Guthrie, Q. A. E.; Humphrey, B.; Proulx, C. "Head-to-tail peptide cyclizations using *N*-aryl peptide hydrazides", American Peptide Symposium, Scottsdale, Arizona, June 24-29, 2023.

47. Bowles, M.; Carter, M.*; Trombley, M.; Proulx, C. “Exploring the Reactivity of Azapeptides Through Late-Stage Functionalization”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2023.
46. Warner, E. J. T.*; Guthrie, Q. A. E.; Humphrey, B.; Proulx, C. “Head-to-tail peptide cyclizations using *N*-aryl peptide hydrazides”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2023.
45. Davern, C. M.*; Proulx, C. “Submonomer synthesis of peptoids containing *trans*-inducing *N*-imino- and *N*-alkylamino-glycines”, Boulder Peptide Symposium, Boulder, CO, November 7-10, 2022.
44. Young, H. A.*; Proulx, C. "Synthesis of *N*-aryl peptides for expansion of side-chain diversity in ketoxime ligations", Boulder Peptide Symposium, Boulder, CO, November 7-10, 2022.
43. Davern, C. M.*; Proulx, C. “Restriction of peptoid amide bonds using *N*-imino and *N*-alkylamino glycines”, 11th Peptoid Summit, August 10-12th, 2022, virtual conference.
42. Bowles, M. O.*; Proulx, C. “Late-stage functionalization of azapeptides”, 27th American Peptide Syposium, Whistler, BC, Canada, June 11-16th, 2022.
41. Davern, C. M.*; Proulx, C. “Submonomer synthesis of peptoids containing *trans*-inducing *N*-imino- and *N*-alkylamino-glycines”, 27th American Peptide Syposium, Whistler, BC, Canada, June 11-16th, 2022.
40. Young, H. A.*; Proulx, C. “Chemoselective functionalization of *N*-arylglycinyl peptides with boronic acid derivatives on solid support”, 27th American Peptide Syposium, Whistler, BC, Canada, June 11-16th, 2022.
39. Broderick, M. R.*; Young, H. A.; Proulx, C.* “Development of a S_NAr reaction on resin-bound peptides for scope expansion in ketoxime ligations”, NCSU Office of Undergraduate Research Spring 2022 Symposium, April 26-27th, 2022.
38. Warner, E. J. T.*; Guthrie, Q. A. E.; Humphrey, B.; Proulx, C. “Head-to-tail peptide cyclizations using *N*-aryl peptide hydrazides”, Chemistry of Life Training Program Symposium, Raleigh, NC, April 21st, 2022.
37. Young, H. A.*; Proulx, C. "Synthesis of *N*-aryl peptides for expansion of side-chain diversity in ketoxime ligations", NC State Graduate Student Research Symposium, Raleigh, NC, April 6th, 2022.
36. Bowles, M.*; Proulx, C. “Late-stage functionalization of azapeptides”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2022.
35. Davern, C. M.*; Proulx, C. “Submonomer synthesis of peptoids containing *trans*-inducing *N*-imino and *N*-alkylamino glycine monomers”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2022.
34. Young, H.A.*; Guthrie, Q. A. E.; Proulx, C. "Synthesis of *N*-aryl peptides for expansion of side-chain diversity in ketoxime ligations", Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2022.
33. Warner, E. J. T.*; Guthrie, Q. A. E.; Humphrey, B.; Proulx, C. “Head-to-tail Peptide Cyclizations using *N*-aryl peptide hydrazides”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2022.
32. Keeler, C.*; Davern, C. M.; Proulx, C. “Exploring the *trans*-inducing effects of side chains in *N*-imino and *N*-alkylamino glycines with computational methods”, NC State’s Summer 2021 Hybrid Undergraduate Research & Creativity Symposium, July 29th, 2021.
31. Bowles, M.*; Proulx, C. “Towards the synthesis and characterization of metallo-azapeptide complexes.” Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2021
30. Davern, C. M.*; Proulx, C. “Synthesis and conformational analysis of peptoids containing hydrazone and hydrazine side chains”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2021.
29. Guthrie, Q. A. E.*; Warner, E. J. T.*; Humphrey, B.; Proulx, C. “New methods for peptide hydrazone ligations employing *N*-aryl peptide substrates” Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2021.
28. Young, H. A.*; Guthrie, Q. A. E.; Proulx, C. "Synthesis of *N*-aryl peptides for expansion of side-chain diversity in ketoxime ligations", Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2021.

27. Guthrie, Q. A. E.*; Humphrey, B.; Proulx, C. “New methods for peptide hydrazone ligations employing *N*-aryl peptide substrates”, 2020 NOBCChE Virtual Conference, September 24-25th, 2020.
26. Guthrie, Q. A. E.*; Proulx, C. “Unmasking of *N*-terminal *N*-aryl amino acids into reactive α-imino amide intermediates under mild conditions: applications in oxime ligations”, 2019 NC-ACS Local Section Meeting, November 8th, 2019.
25. Gourville, P. C.*; Willis, E. L.; McMechen, M. A.; Proulx, C. “Synthesis and conformational analysis of aza-peptide β-hairpin analogs,” Southeastern Regional Meeting of the American Chemical Society (SERMACS), Savannah, GA, October 20-23rd, 2019.
24. Lowe, B. D.*; Davern, C. M.; Proulx, C. “Synthesis and conformational analysis of substituted benzaldehyde hydrazone peptoid monomers”, NC State’s 18th Annual Summer Undergraduate Research Symposium, August 1st, 2019.
23. Gourville, P. C.*; Willis, E. L.; McMechen, M. A.; Proulx, C. “Development and characterization of aza-peptide substituted β-hairpin models,” NC State’s 18th Annual Summer Undergraduate Research Symposium, August 1st, 2019.
22. Guthrie, Q. A. E.*; Proulx, C. “Unmasking of *N*-terminal *N*-aryl amino acids into reactive α-imino amide intermediates under mild conditions: applications in oxime ligations”, American Peptide Symposium (APS) 2019, Monterey, CA, June 22-28th, 2019.
21. Willis, E. L.*; McMechen, M.; Gourville, P.; Proulx, C. “Impact of aza-amino acid substitution on β-hairpin stability”, American Peptide Symposium (APS), Monterey, CA, June 22-28th, 2019.
20. Davern, C. M.*; Proulx, C. “Synthesis and conformational analysis of peptoids containing hydrazone and hydrazine side chains”, American Peptide Symposium (APS), Monterey, CA, June 22-28th, 2019.
19. Young, H. A.*; Proulx, C. "*N*-Arylation of amino acid esters to expand side-chain diversity in oxime ligations", American Peptide Society (APS) Conference, Monterey, California, June 22-28th, 2019.
18. Guthrie, Q. A. E.*; Proulx, C. “Mild oxidation of *N*-phenylglycinyl peptides for bioconjugation reactions”, American Chemical Society (ACS) National Meeting, Orlando, FL, April 2nd, 2019.
17. Davern, C. M.*; Proulx, C. “Synthesis and conformational analysis of peptoids containing hydrazone and hydrazine side chains”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, March 2019.
16. Guthrie, Q. A. E.*; Proulx, C. “Unmasking of *N*-terminal *N*-aryl amino acids into reactive α-imino amide intermediates under mild conditions: applications in oxime ligations”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2019.
15. Willis, E. L.*, Proulx, C. “Metallo-azapeptides: progress towards modulation of dihedral angles via backbone-coordination”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2019.
14. McMechen, M.*, Proulx, C. “Structural impact of aza-amino acid substitution in β-hairpin model systems”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2018.
13. Price, W. T.*; Willis, E. L.; Gourville, P.; Proulx, C. “Towards one-bead-one-catalyst azapeptide library synthesis”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2018.
12. Guthrie, Q. A. E.*; Proulx, C. “Mild oxidation of *N*-phenylglycinyl peptides for bioconjugation reactions”, Annual NCSU Chemistry Department Recruitment Weekend Poster Session, North Carolina State University, March 2018.
11. Guthrie, Q. A. E.; Proulx, C.* “Oxime ligation *via in situ* oxidation of *N*-phenylglycinyl peptides”, Chemistry and Biology of Peptides Gordon Research Conference (GRC), Ventura, California, February 11-16th, 2018.
10. Davern, C. M.*; Guthrie, Q. A. E.; Proulx, C. “Synthesis and conformational analysis of peptoids containing hydrazone and hydrazine side chains”, NC State’s 16th Annual Summer Undergraduate Research Symposium, August 1st, 2017.

Prior to NCSU, from Post-doc and Graduate Studies

9. Proulx, C.*; Su, J. K.; Yoo, S.; Olivier, G. K.; Garcia, R. L.; Connolly, M. D.; Mannige, R. V.; Haxton, T. K.; Whitelam, S.; Zuckermann, R. N. “Molecular Engineering of the Peptoid Nanosheet

Hydrophobic Core", Annual User Meeting, Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, California, August 25-26th, 2014.

8. Proulx, C.*; Lubell, W. D. "In search of azapeptide analogs of GHRP-6 with selective affinity for the CD36 vs GHS-R1a receptor: exploiting the reactivity of semicarbazones and aza-propargyl glycine in combinatorial azapeptide synthesis", American Peptide Symposium (APS), San Diego, California, June 25-30th, 2011.
7. Proulx, C.*; Lubell, W. D. "Synthesis of substituted imidazolinones *via* a cationic gold(I)-mediated intramolecular cyclization", Canadian Society for Chemistry (CSC) meeting, Montréal, Québec, June 5-9th, 2011.
6. Proulx, C.*; Lubell, W. D. "Teaching haemoglobin to third graders", Canadian Society for Chemistry (CSC) meeting, Montréal, Québec, June 5-9th, 2011.
5. Proulx, C.*; Lubell, W. D. "Copper-catalyzed *N*-arylation of semicarbazones for the synthesis of aza-arylglycine containing aza-peptides", American Chemical Society (ACS) meeting, San Francisco, California, March 21-25th, 2010.
4. Proulx, C.*; Lubell, W. D. "Cu(I)-catalyzed *N*-arylation of semicarbazones for the synthesis of aryl-aza glycine containing azapeptides", Ontario Minisymposium in Synthetic and Bioorganic Chemistry (QOMSBOC) meeting, Québec, Québec, Oct 30-Nov 1st, 2009.
3. Proulx, C.*; Boeglin, D.; Chemtob, S.; Ong, H.; Lubell, W. D. "Aza-peptide analogs of GHRP-6 with selective receptor affinity for CD36 versus GHS-R1a", American Peptide Symposium (APS) meeting, Bloomington, Indiana, June 7-12th, 2009.
2. Proulx, C.*; Boeglin, D.; Chemtob, S.; Ong, H.; Lubell, W. D. "Elucidation of structural and conformational requirements for GHRP-6 binding to the GHSR-1a and CD36 receptors using aza-peptides", Québec-Ontario Minisymposium on Bio-Organic and Synthetic Chemistry (QOMSBOC) meeting, Toronto, Ontario, November 2008.
1. Proulx, C.*; Boeglin, D.; Chemtob, S.; Ong, H.; Lubell, W. D. "Aza-peptide analogs of GHRP-6 with selective receptor affinity for CD36 versus GHS-R1a", American Chemical Society (ACS) meeting, Philadelphia, Pennsylvania, August 17-21st, 2008.

Conference discussion leader / session chair

5. American Peptide Symposium, Synthetic Methodology for Peptide and Protein Synthesis session, Whistler, BC, Canada (June 2022).
4. Australian Peptide Conference, Peptide Chemistry II session, Gold Coast, QLD, Australia (May 2022).
3. Pacifichem, Advancing frontiers in peptide and protein science with nano to macromolecular solutions, new technologies in polyamide synthesis, and applications (Dec 2021).
2. American Peptide Symposium, Nanomaterials and Peptide Assemblies session, Monterey, CA (June 2019)
1. GRC on Chemistry and Biology of Peptides, Advances in Peptide and Protein Synthesis session. Ventura, CA (Feb 2018).

TEACHING EXPERIENCE

Courses taught at NCSU

CH 495 – Special Topics in Chemistry: Organic Chemistry III (advanced undergraduate course)
Fall 2023 (13 students)

CH 721 – Physical Organic Chemistry (entry-level graduate course)
Fall 2020 (16 students)
Fall 2019 (24 students)
Fall 2018 (22 students)
Fall 2017 (24 students)
Fall 2016 (34 students)

CH 223 – Organic Chemistry II (undergraduate course)
Spring 2023 (199 students)

Fall 2022 (163 students)
Fall 2021 (189 students)
Spring 2021 (230 students)
Spring 2020 (200 students)
Spring 2019 (206 students)
Spring 2018 (126 students)

CH610G – Introduction to Graduate Studies, co-taught with Prof. Denis Fourches
Fall 2019 (30 students)
Fall 2018 (32 students)
Fall 2017 (37 students)

CH 601/801 – Chemistry Seminar Program (seminar course for all enrolled graduate students)
Fall 2019 (105 students)
Spring 2019 (91 students)
Fall 2018 (103 students)
Spring 2018 (107 students)
Fall 2017 (114 students)
Spring 2017 (100 students)

Students mentored at NCSU

Graduate Students

Current Ph.D candidates

Tyler Hobart, 11/23 – present, B.Sc. Hampden-Sydney College
Maxwell Bowles, 10/19 – present, B.Sc. Southern Utah University.
Ellen Warner, 10/20 – present, B.Sc. Davidson College.
Molly Carter, 10/23 – present, B. Sc. Wake Forest University.
Karlee McKinney, 10/23 – present, B. Sc. Belhaven University.
Kristiana Witte, 10/23 – present, B. Sc. UNC Wilmington

Past Graduates

Carolynn Davern, 06/18 – 06/23, now scientist at Vestaron Corporation (Durham, NC).
Hailey Young, 10/18 – 03/23, now scientist at Sterling Pharma Solutions (Cary, NC).
Quibria Guthrie, 10/16 – 04/21 Burroughs Wellcome Fellow (Spring 2019), Osteryoung Award in Research Excellence (Spring 2020), now research scientist at CEM (Charlotte, NC).
Evan Willis, M.Sc. 2020, Miles F. Anderson Award in Teaching, Spring 2019.
Michael McMechen, M.Sc. 2018, now scientist at Alcami corporation.
W. Tyler Price, graduate student 10/16 – 01/19.

Undergraduate and High School Students

Current

Meric Trombley B. Sc. in progress, NCSU, Chemistry, 03/22 – present.
Chris Howard, B. Sc. in progress, NCSU, Chemistry, 08/23 – present

Past

Skylar Harrelson, B. Sc. in progress, Chemical Engineering and Biochemistry (Beckman Scholar, co-mentor with Melanie Simpson), 05/22 – 08/23.
Sheba Gage, High School student, ACS project SEED program, 05/23 – 08/23.
Keisy Prieto, B. Sc. in progress, Inter American University of Puerto Rico, NSF REU student, 05/23 – 08/23
Sasha Stark, B.Sc. in progress, Union College, Biochemistry, 06/19/23 – 07/28/23, summer intern working with Prof. Ellen Roberston.
Meghan Broderick, NCSU, Chemistry, 02/21 – 02/23.
Katelyn Cartrette, B. Sc. in progress, Georgia Southern University, NSF REU student, 05/22 – 08/22.
Sheba Gage, High School student, ACS project SEED program, 05/22 – 08/22.
Briley Humphrey, B. Sc. 2021, NCSU, Chemistry, Titanium Award, 08/19 – 05/21.
Adam Rosfi, B. Sc. 2021, NCSU, Chemistry, 08/19 – 05/21.
Preston Gourville, B.Sc. 2020 NCSU, Chemistry, Goodnight Scholar, Senior Award for Outstanding Scholarship in the Department of Chemistry, 10/17 – 04/20.
Brandon Lowe, B. Sc. in progress, Saint Vincent College, NSF REU student, 05/19 – 08/19.

Sophia Cornish, High School student, ACS project SEED program, 05/19 – 08/19.
Landon Brazda, B.Sc. in progress, NCSU, Biomedical Engineering, 10/18 – 04/19.
Jazmine Lumpan, B.Sc. St. Edward's U, Biochemistry, NSF REU student, 05/18 – 08/18.
Carolynn Davern, B.Sc. 2018, NC Wesleyan College, Chemistry, NSF REU student, 05/17 – 08/17.

Training of Undergraduate and Postbaccalaureate Students prior to NCSU

Falko Noe, B. A. Biochemistry/Molecular Biology, UC Berkeley 2015, Zuckermann lab 09/14 –05/15.
Dillon Flood, B. Sc. Chemistry, UC Berkeley 2016, Zuckermann lab 05/14 – 05/16.
Stan Yoo, B. Sc. Chemistry, UC Berkeley 2013, Zuckermann lab 09/13 – 08/14.
Anna Tomberg, B. Sc. McGill University, Lubell lab summer 2011.
Émilie Canuel, B. Sc. Université de Montréal, Lubell lab summer 2011.

SERVICE

Professional Service on Campus

2016 – present	Graduate Students Advisory Committee Member, Dept. of Chemistry and Dept. of Chemical and Biomolecular Engineering *(36 students total*).
2017 – present	NSF REU Mentor.
2018 – present	COS Faculty Advisory Committee.
2018 – present	METRIC Magnetic Resonance User Committee.
2019 – present	ACS Project SEED Mentor.
2021 – present	Beckman Scholars Selection Committee.
2021 – present	Academic advisor to undergraduate students, Dept. of Chemistry (*6 advisees*).
2022 – present	Beckman Scholars co-mentor (with Prof. Melanie Simpson).
2023 – present	Research Advisory Committee for the Integrative Sciences Initiative.
2023 – present	Undergraduate Program Committee
2023	Director of Research Administration in the College of Sciences Search Committee
2016 – 2020	Instructor, Introduction to Graduate Studies (CH 610G).
2021 – 2022	Tenure-track Faculty Search Committee.
2019 – 2020	Tenure-track Faculty Search Committee.
2019	Professional-track (Lecturer) Search Committee.

Professional Service off Campus

2022 – present	Councilor, American Peptide Society.
2016 – present	Reviewer: *Science*, *Nature Chemistry*, *Nature Communications, Chemical Society Reviews*, *Chemical Science*, *Organic Letters*, *Journal of Organic Chemistry, Journal of Medicinal Chemistry*, *Chemical Communications*, *ACS Medicinal Chemistry Letters, Peptide Science*, *ChemBioChem*.
2018 – present	Ad Hoc Reviewer, National Science Foundation (NSF), and Natural Sciences and Engineering Research Council of Canada (NSERC).
2019 – present	Fondation Lucien Piché scholarship program reviewing committee.
2020 – present	Co-organizer, online peptoid symposia series 2020/2021.
2020 – 2022	Proposal Review Board, the Molecular Foundry (Biological Nanostructures Facility)
2020	Guest Editor, Frontiers Chemistry, Special issue on "*Polyamide backbone modification in peptide and protein science*".

RESEARCH SUPPORT

Current

NIH R35 Maximizing Investigators' Research Award (MIRA) for Early Stage Investigators (2022-2027, $1,805,62)
"New Strategies for Peptide Mimicry"

NSF CAREER Award (2021-2026, $685,000)
"CAREER: Synthesis of Functional Biomolecules from Tunable *N*-aryl Peptide Precursors".

Goodnight Early Career Innovators Award (2023-2026, $66,000)

Past

Comparative Medicine Institute (CMI)-Chemistry of Life (CLP) Research Initiative at the Interface of Chemistry & Life Sciences award (Spring 2022, $10,000)
“Optimizing selective inhibitors to a novel target in progression of castration resistant prostate cancer” (PI: Melanie Simpson, co-PI: Caroline Proulx, Joe Barycki).

Faculty Research and Professional Development Fund, College of Sciences (2018-2019 / $3,000)
“Rapid Expansion of Chemical Space in Peptidomimetics: Using Aza-amino Acids as Backbone Metal Chelation Sites to Modulate Dihedral Angles in Short Peptides".