

Rae Eaton

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Summary

Ph.D. candidate in chemistry at the University of Washington with more than ten years of research experience, primarily in bioanalytical and biomedical chemistry. Developed instrumentation and assays for protein analysis and pharmaceuticals monitoring at research labs both in the U.S. and U.K.

Education

University of Washington

Seattle, WA

Ph.D. candidate in chemistry in the Bush research group. Currently employed as a full-time research assistant under the NSF Graduate Research Fellowship Program.

GPA: 3.98

Oberlin College

Oberlin, OH

Graduated with a Bachelor of Arts in Chemistry and Biochemistry with High Honors in May 2013. Participated in four years of undergraduate research culminating in a senior research thesis and defense. **Thesis: Optimization of CE-SELEX for HE4 Aptamer Selection.**

GPA: 3.63

Research

Experience

Summer 2014-

University of Washington

Seattle, WA

Adviser: Matthew F. Bush

Completed Research: Adapting Structures for Lossless Ion Manipulations (SLIM) technologies, developed novel ion mobility mass spectrometry instrumentation for improved control, transmission, and analysis of native-like proteins and protein complexes. Work was done in collaboration with another graduate student for the first two years. **Future Research:** SLIM technologies are currently being used to create a tandem ion mobility instrument, which will employ a CO₂ laser to enable energy-dependent studies of proteins to improve our understanding of how gas phase analyses can be related back to buffer solution conditions.

Publications: SJ Allen, RM Eaton, MF Bush. Analysis of Native-like Ions Using Structures for Lossless Ion Manipulations. *Anal. Chem.* **2016**, *88*, 9118-9126.

SJ Allen, RM Eaton, MF Bush. Structural Dynamics of Native-Like Ions in the Gas Phase: Results from Tandem Ion Mobility of Cytochrome C. *Anal. Chem.* **2017**, *89*, 7527-7534.

RM Eaton, SJ Allen, MF Bush. Fundamentals of Ion Selection and Trapping Using Structures for Lossless Ion Manipulations (SLIM). *In Progress*.

Presentations: "Studying the Structural Stability of Protein Complexes using Tandem Ion Mobility." Poster Presentation. Cascadia Proteomics Symposium. July 2018. Authors: RM Eaton, MF Bush.

"Structural Analysis of Native-Like Protein Ions using Structures for Lossless Ion Manipulations (SLIM)." Poster Presentation. Advancing Mass Spectrometry Conference. July 2017. Authors: RM Eaton, SJ Allen, MF Bush. Received a travel award from AMS.

"Stability of Trapped Native-like Protein Ions using Structures for Lossless Ion Manipulation." Oral Presentation. Cascadia Proteomics Symposium. July 2017. Authors: RM Eaton, SJ Allen, MF Bush.

"New Characterization Tools for Biomolecules: Recent Developments in Ion Mobility Mass Spectrometry" Oral Presentation. CPAC Summer Institute. July 2017. Authors: RM Eaton, MF Bush.

"Ion Mobility Separation of Native-like Protein Complex Ions using Structures for Lossless Ion Manipulation." Poster Presentation. American Society for Mass Spectrometry Asilomar Conference. October 2016. Authors: RM Eaton, SJ Allen, MF Bush. Received a travel award from ASMS.

"Analysis of Native-like Ions Using Structures for Lossless Ion Manipulation." Poster Presentation. American Society for Mass Spectrometry Asilomar Conference. October 2015. Authors: RM Eaton, SJ Allen, MF Bush. Received a travel award from ASMS.

	<u>Oberlin College</u>	Oberlin, OH
Fall 2012-	Adviser: Rebecca Whelan	
Summer 2014	Optimized and conducted CE-SELEX to find aptamers with affinity for the ovarian cancer biomarker HE4. Work was conducted as part of invited, thesis-based, honors project. Continued research for one year as paid postgraduate researcher. Gained experience using capillary electrophoresis, PCR amplification of DNA, and ELISA for protein analysis.	
	Publication: RM Eaton, JA Shallcross, LE Mael, KS Mears, L Minkoff, DJ Scoville, RJ Whelan, Selection of DNA Aptamers for Ovarian Cancer Biomarker HE4 using CE-SELEX and High-throughput Sequencing. <i>Anal. Bioanal. Chem.</i> 2015 , 407, 6965-6973.	
	Presentation: "Capillary Electrophoresis-based Selection of Nucleic Acid Aptamers for the Ovarian Cancer Biomarker HE4." Poster Presentation. PittCon. March 2014. Authors: RM Eaton, B Uhm, C Perez-Tineo, RJ Whelan.	
	Additional research experience (prior to 2012) available upon request.	
Teaching Experience		
	<u>University of Washington</u>	Seattle, WA
Fall 2014-	Chemistry Teacher's Assistant	
Winter 2015	Ran weekly lab sessions and developed lesson plans that emphasized student collaboration and problem solving for two groups of 24 general chemistry students. Met weekly with instructor to review lesson plans. Graded lab reports and tests for the chemistry class.	
Fall 2015-	TA Conference Workshop Facilitator	
Fall 2017	As a facilitator in the annual Conference on Teaching and Learning (formerly the TA/RA Conference), designed and led 75-minute workshops for TAs on topics ranging from effective quiz section techniques to best practices when managing a teaching laboratory.	
	<u>Oberlin College</u>	Oberlin, OH
Fall 2012-	Chemistry Lecture Teacher's Assistant	
Spring 2013	Developed lesson plans that emphasized student collaboration and problem solving for weekly sessions of 10-30 students enrolled in general or bioorganic chemistry classes. Attended lectures and met weekly with instructor to review lesson plans. Graded homework assignments and quizzes for the general chemistry class.	
Fall 2010-	Chemistry Lab Teacher's Assistant	
Spring 2013	Answered questions concerning lab procedures and reports for 20-50 organic and general chemistry students. Graded lab reports and met weekly with lab instructor to review experimental procedures.	
	Additional work experience available upon request.	
Awards		
2018-	Recipient, ACS Division of Analytical Chemistry Graduate Research Fellowship	
2018	Recipient, Lloyd and Florence West Chemistry Fellowship, University of Washington	
2015-2018	Recipient, National Science Foundation Graduate Research Fellowship	
2014-2017	Recipient, ARCS Foundation Scholarship	
Spring 2015	Recipient, Pacific Northwest National Laboratory Graduate Fellowship	
Winter 2017	Recipient, Pacific Science Center Science Communication Fellowship	
2013	Inductee, Sigma Xi	

**Volunteer
Experience**

2017-	President, Women in Chemical Sciences (member since 2014)
2017-	Science Communication Fellow, Pacific Science Center
	Presentation: "Out of the Attic, Into the Lab." Science and a Movie at Central Cinema. August 2018
2017-2018	Treasurer, Out in STEM at UW
2015-2016	Outreach Coordinator, Women in Chemical Sciences
2016-	Mentor, Chemistry Department Mentor Network