

Rachel 'Rae' Eaton

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Summary Ph.D. candidate in analytical chemistry at the University of Washington with eight years of research experience in bioanalytical and biomedical chemistry. Developed new instrumentation and assays for protein analysis and pharmaceuticals monitoring at research labs both in the U.S. and U.K.

Skills

Analytical Instrumentation Design and Repair
Protein Assay Development
Polymerase Chain Reaction

Liquid chromatography, capillary electrophoresis, mass spectrometry commercial instrumentation
Academic Writing and Editing

Experience

University of Washington – Seattle, WA

08/2014 – Present **Graduate Student Researcher**

- Designed and constructed new ion mobility-mass spectrometry instrumentation to increase the speed and selectivity of gas-phase analyses of biomolecules
- Performed structural analyses of protein complexes using commercial and lab-built ion mobility and time-of-flight mass spectrometry instrumentation
- Automated data processing using scripts programmed in Python
- Presented work at three national and several local conferences; reported results in three academic papers
- Research funded by: National Science Foundation Graduate Research Fellowship (3 years, \$132,000), American Chemical Society Division of Analytical Chemistry Graduate Fellowship (9 months, \$21,000)
- Trained two junior graduate students in techniques relevant to research project

09/2014 – 03/2015 **Teaching Assistant (Introductory Chemistry Series)**

- Led lab and quiz sections (24 students / section) that emphasized student collaboration and problem solving
- Graded exams and lab reports; tutored students one-on-one and in small groups

Oberlin College – Oberlin, OH

09/2012 – 08/2014 **Researcher**

- Developed a DNA-based biochemical marker to identify HE4, a protein marker of ovarian cancer
- Modified methods to prepare and characterize DNA and proteins using capillary electrophoresis (ultraviolet or laser-induced fluorescence detection), polymerase chain reaction, Sandwich ELISA and absorbance spectroscopy
- Presented work at a national conference; published results from research in an academic journal
- Supervised and trained two undergraduate students in techniques relevant to research project
- September 2012 to June 2013 work was done for senior honors thesis (unpaid)

10/2011 – 05/2012 **Undergraduate Researcher (unpaid)**

- Prepared and characterized the products of capsaicin using the Gibbs assay
- Used UV/Vis absorbance spectroscopy and liquid chromatography-mass spectrometry analysis

09/2010 – 05/2013 **Teaching Assistant (Chemistry)**

- Developed and led weekly workshops that emphasized student collaboration and problem solving
- Answered questions concerning lab procedures and managed laboratory safety (20 students / section)

King's College – London, United Kingdom

06/2011 – 07/2012 **Research Intern (unpaid)**

- Worked to develop a method to generate drug metabolites for direct, on-line liquid chromatography-mass spectrometry analysis using trapped human liver microsomes

- Analyzed drug metabolites using an Orbitrap mass spectrometry detector
- Work was done from June 2011 – July 2011 and June 2012 – July 2012

Education

- Summer 2019** **Ph. D., Chemistry** (GPA: 4.0/4.0)
University of Washington – Seattle, WA
 Thesis Adviser: Matthew F. Bush
 Honors: ARCS Foundation Fellow (2014-2017), Lloyd E. and Florence M. West Fellowship in Chemistry (2017-2018)
- Spring 2019** **Certificate, Science, Technology, and Society Studies**
University of Washington – Seattle, WA
 Capstone Adviser: Leah M. Ceccarelli
- May 2013** **B.A., Chemistry and Biochemistry** (GPA: 3.6/4.0, High Honors in Biochemistry)
Oberlin College – Oberlin, OH
 Thesis Adviser: Rebecca Whelan
 Honors: Sigma Xi

Volunteer Experience

- 2017 – Present** **Science Communication Fellow, Pacific Science Center**
- Developed an interactive demo that teaches concepts from chemical separations to K-12 students and family
 - Presented public lecture on prototyping and instrument development
 - Facilitated daily engineering projects in Tinker Tank
- 2014 – Present** **Women in Chemical Sciences at the University of Washington**
- Elected positions: President (2017-2018), Outreach Coordinator (2015-2016)
 - Designed interactive activity and workshop that demonstrate key principles of chemistry and the scientific method
 - Organized lectures, workshops, and outreach events for membership and UW community
- 2017 – Present** **Out in Science, Technology, Engineering, and Math at the University of Washington**
- Elected position: Treasurer (2017-2018)
 - Monitored finances and fundraising events for student organization
- 2016 – 2018** **Mentor, UW Chemistry Mentor Network**
- Acted as a resource for two first-year graduate students on topics ranging from selecting a research group to finding housing in the Seattle area