

## ASHLEY E. ROSS, Ph.D.

### ADDRESS

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### POSITIONS:

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Assistant Professor, Department of Chemistry University of Cincinnati Faculty in Neuroscience Graduate Program Member of the Center for Pediatric Neuroscience	2017-present
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#### Current Research Areas:

- Electrochemical sensor development for neurochemical and immune signaling
- Microfluidic platforms for probing gut-immune and brain-immune interactions
- In/Ex vivo multiplexed cytokine sensors

Post-doctoral Researcher (AAI Careers in Immunology Fellow 2017) University of Virginia Advisor: Rebecca Pompano	2014-2017
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### EDUCATION:

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Ph.D., Analytical Chemistry, University of Virginia Advisor: Jill Venton Dissertation: Optimization of adenosine detection and characterization of adenosine function using fast-scan cyclic voltammetry	2014
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B.S., Chemistry, minor in Mathematics, Christopher Newport University <i>Magna Cum Laude</i> Research Advisor(s): Margaret Pippin and Gao Chen (NASA LaRC)	2009
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### HONORS AND AWARDS:

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Analyst Emerging Investigator	2018
Faculty Development Funds, Travel to Pittcon	2018
American Association of Immunologists Careers in Immunology Fellowship	2016-2017
New Horizons Travel Grant, University of Virginia	2016
Robert J. Huskey Travel Fellowship, University of Virginia	2014
13 <sup>th</sup> Annual Huskey Graduate School Research Exhibition Oral Presentation, 3 <sup>rd</sup> place	2013
Robert J. Huskey Travel Fellowship, University of Virginia	2012
Christopher Newport University Chemistry Departmental Honor Award	2009
ACS Division of Environmental Chemistry Undergraduate Award	2009
NASA Group Achievement Award for the Surface Ozone Protocol for the GLOBE Project	2009

## PUBLICATIONS:

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### Peer-reviewed journal articles:

G.N. Lim and A.E. Ross. Purine functional group type and placement modulate the interaction at carbon-fiber microelectrodes. Submitted.

M.T. Cryan and **A.E. Ross**. Subsecond detection of guanosine using fast-scan cyclic voltammetry. *Analyst (Emerging Investigator Series)*, 2018, DOI: 10.1039/C8AN01547C

A.L. Hensley, A. Colley, and **A.E. Ross**. Real-time detection of melatonin using fast-scan cyclic voltammetry. *Anal Chem.* 90 (14), 8642-8650. DOI: [10.1021/acs.analchem.8b01976](https://doi.org/10.1021/acs.analchem.8b01976).

### Work prior to UC:

**A.E. Ross** and R.R. Pompano. Diffusion of cytokines in live lymph node tissue using microfluidic integrated optical imaging. *Analytica Chimica Acta*, 1000, 205-213, 2018. **Invited publication.**

**A.E. Ross**, M. Belanger, J. Woodroof, R.R. Pompano. Spatially resolved microfluidic stimulation of lymphoid tissue ex vivo. *Analyst*, 142, 649-659, 2017.

M.D. Nguyen, **A.E. Ross**, M. Ryals, S.T. Lee, and B.J. Venton. Clearance of rapid adenosine release is regulated by nucleoside transporters and metabolism. *Pharmacology and Research Perspectives* 3(6), e00189, 2015.

**A.E. Ross** and B.J. Venton. Adenosine transiently modulates dopamine by A1 receptors in the caudate putamen. *J. of Neurochem*, in 132(1), 51-60, 2015.

A.G. Zestos, C.B. Jacobs, E. Trikantopoulos, **A.E. Ross**, B.J. Venton; Polyethylenimine carbon nanotube fiber electrodes for enhanced detection of neurotransmitters. *Anal. Chem.*, 86(17), 8568-8575, 2014.

**A.E. Ross** and B.J. Venton. Sawhorse waveform voltammetry for selective detection of adenosine, ATP, and hydrogen peroxide. *Anal. Chem.* 86(15), 7486-7493, 2014.

**A.E. Ross**, M.D. Nguyen, E. Privman, and B.J. Venton. Mechanical stimulation evokes rapid increases in extracellular adenosine concentration in the prefrontal cortex. *J. of Neurochem*, 130 (1), 50-60, 2014.

M.D. Nguyen, S.T. Lee, **A.E. Ross**, M. Ryals, V.I. Chaudhry, and B.J. Venton. Characterization of spontaneous, transient adenosine release the caudate-putamen and prefrontal cortex. *PLOS one*, 9(1): e87165.

H. Fang, M. L. Pajski, **A.E. Ross**, B.J. Venton. Quantitation of dopamine, serotonin, and adenosine in a single brain slice using capillary electrophoresis with fast-scan cyclic voltammetry. *Analytical Methods*, 5, 2704-2711, 2013.

**A.E. Ross** and B.J. Venton. Nafion-CNT coated carbon-fiber microelectrodes for enhanced detection of adenosine. *Analyst*, 137 (13), 3045-3051, 2012.

M.J. Peairs\*, **A.E. Ross\***, and B.J. Venton. Comparison of Nafion- and overoxidized polypyrrole carbon-nanotube electrodes for neurotransmitter detection. *Analytical Methods*, 3, 2379-2386, 2011. \*Equal contribution

**Book Chapters:**

**A.E. Ross** and B.J. Venton. Electrochemical detection of adenosine *in vivo*. In, "Advances in real-time molecular neuroscience. Compendium of In Vivo Monitoring in Real-Time Molecular Neuroscience (Volume 1)". World Scientific Publishing Co: Singapore, Editors: G.S. Wilson and A.C Michael, 2014.

**INVITED TALKS:**

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**A.E. Ross.** Unraveling the mechanism of melatonin signaling in the immune system using fast-scan cyclic voltammetry. Wright State University. September 14<sup>th</sup>, 2018.

**A.E. Ross.** Rapid electrochemical sensing in the brain and immune system. 3<sup>rd</sup> Annual Sensors Retreat, University of Cincinnati. January 5<sup>th</sup>, 2018

**A.E. Ross.** Rapid neurochemical sensing within the brain-immune system. UC College of Medicine: Neuroscience Seminar, Cincinnati OH. September 7<sup>th</sup>, 2017.

**A.E. Ross.** Spatially and temporally resolved electrochemical detection of brain-immune interactions on-chip. Huntington University, Huntington IN. November 10<sup>th</sup>, 2017.

**A.E. Ross** and R.R. Pompano. Transport analysis of cytokines in live lymph node tissue on-chip. American Chemical Society National Meeting, Washington DC, August 2017.

**Prior to UC:**

**A.E. Ross** and R.R. Pompano. Spatially discrete targeting of lymph node slices on a microfluidic chip. Annual Post-doctoral Symposium University of Virginia, May 2015.

**CONFERENCES/SYMPOSIUMS: (Note: Presented under Ross and Mertens)**

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**A.E. Ross.** Analytical tools to investigate neurotransmitter regulated immunity. MUACC at MSU 2018.

**A.E. Ross.** Detection of melatonin dynamics in the immune system using fast-scan cyclic voltammetry. ACS National Meeting. Boston 2018

M. Cryan and **A.E. Ross.** Optimizing subsecond guanosine detection using fast-scan cyclic voltammetry. ACS National Meeting. Boston 2018

M. Cryan and **A.E. Ross.** Subsecond guanosine detection in the brain using fast-scan cyclic voltammetry. UC Gardner Neuroscience Institute/Neuroscience Research Center Research Day. Cincinnati Children's Hospital. April 17<sup>th</sup>, 2018.

A. Hensley\*, A. Colley\*, and **A.E. Ross.** Rapid electrochemical monitoring in the immune system. SEAC poster session at PITTCON, Orlando FL, March 2018.

\*undergraduate researchers

**Prior to UC:**

**A.E. Ross** and R.R. Pompano. Diffusional analysis of cytokines in lymph node tissue on a microfluidic chip. American Association of Immunologists (AAI), Washington DC, May 2017.

**A.E. Ross** and R.R. Pompano. Diffusional analysis of cytokines in lymph node tissue on a microfluidic chip. PITTCON, Chicago IL, March 2017.

**A.E. Ross** and R.R. Pompano. Local stimulation of lymph node slices on-chip. **Conference Proceedings:** MicroTAS. Dublin, Ireland October 2016.

**A.E. Ross** and R.R. Pompano. Local stimulation of live lymph node slices on a microfluidic chip. Select Biosciences: Organ-on-Chip World Congress. Boston, MA, July 6-8, 2016.

**A.E. Ross**, Jacob Woodroof, and R.R. Pompano. Discrete stimulation of lymph node slices on-chip. The Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (PITTCON), Atlanta, GA. March 6-10, 2016.

**A.E. Ross** and R.R. Pompano. Lymph node slice-on-a-chip: Microfluidic culture and local stimulation of intact lymph node tissue. **Conference proceedings:** MicroTAS. Gyeongju, KOREA October 25 – 29, 2015.

**A.E. Ross** and B.J. Venton. Electrochemical monitoring of adenosine modulation of dopamine in brain slices. 14<sup>th</sup> Annual Robert J. Huskey Graduate Research Oral Session, Charlottesville, VA, March 18, 2014.

**A.E. Ross** and B.J. Venton. Electrochemical monitoring of adenosine modulation of dopamine in brain slices. PITTCON, Chicago, IL, March 2-7, 2014.

**A.E. Ross** and B.J. Venton. Transient adenosine release modulates dopamine release in slices. 13<sup>th</sup> Annual Robert J. Huskey Graduate Research Oral Session, Charlottesville, VA, March 26, 2013.

**A.E. Ross** and B.J. Venton. Electrochemical determination of adenosine uptake kinetics and neuromodulation of dopamine. The Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (PITTCON) Philadelphia, PA, March 17-21, 2013.

**A.E. Ross** and B.J. Venton. Modified Carbon-Fiber Microelectrodes for Measuring Adenosine Clearance Rates and Stimulated Efflux. ACS Southeastern Regional Meeting;SERMACS, Richmond VA, October 26-29, 2011.

**A.E. Ross** and B.J. Venton. Modified carbon fiber microelectrodes for measuring adenosine clearance rates and stimulated efflux. Society for Neuroscience Conference (SfN), Washington D.C., Nov 12-16, 2011.

**A.E. Ross** and B.J. Venton. Nafion Coating Carbon Fiber Microelectrodes for Enhanced Detection of Adenosine. 11<sup>th</sup> Annual Robert J. Huskey Graduate Research Poster Session, Charlottesville, VA, March 28, 2011.

**A.E. Ross** and B.J. Venton. Nafion Coating Carbon Fiber Microelectrodes for Enhanced Detection of Adenosine. Society for Electroanalytical Chemistry (SEAC) section of The

Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, PITTCON, Atlanta, GA, March 13-18, 2011.

G.Chen, M. Kleb, **A.Mertens**, and M. Pippin. Using Airborne Observation for Global Model Assessment, In Hemispheric Transport of Air Pollutants (HTAP) and Atmospheric Chemistry and Climate (AC &C) joint meeting in Washington DC, June 11-13, 2008.

M.Kleb, G. Chen, M. Pippin, J. Olson, J. Crawford and **A. Mertens**. Creating Airborne ESDR Products for Global and Regional Model Assessment. In American Geophysical Union(AGU) conference in San Francisco, CA Dec. 15-19, 2008.

M. Pippin, **A. Mertens**, L. Bush, P. Parker, and J. Fishman. Improvements to the Passive Ozone Measurement System used by GLOBE schools. Presented at American Geophysical Union (AGU) conference in San Francisco, CA Dec. 10-14, 2007.

## TEACHING EXPERIENCE:

### University Experience:

Survey of Biochemistry Lecture and Lab	Fall 2018
Special Topics in Analytical Chemistry: Bioanalytical methods	Fall 2017

### Pre-K and Primary Education Experience:

STEM Outreach at Indian Hill Primary	May 2018
Volunteer instructor for Fairview-Clifton outreach event	March 2018
Volunteer science instructor for the UVA chemistry LEAD program	2013-2016

### Teaching professional development:

Course Design Institute "Designing Engaging Courses" 4-day workshop	May 2018
Documenting effective teaching for RPT workshop	January 2018
GATE: Models of Teaching excellence (MOTE)	January 2018
CET&L Brownbag on Active learning and Evidence-based practices	July 2017
Process oriented guided inquiry learning (POGIL) 2-day workshop	2014

## SERVICE

### (1) ACADEMIC SERVICE:

Headship Committee, 2018  
 Organized Summer Research Program, 2018  
 Dissertation committee member for Rebecca Bailey (Neuroscience graduate student)  
 Committee member on 5 pre-doctoral students (Israel Belmonte, Scott Abernathy, Kiana Pickle, Connor Rahm, Kiera Grazica)  
 Committee Member, University of Cincinnati, Chemistry Department Graduate Admissions Committee, 2018-present  
 Elected member, RPT Committee, February 21, 2018

### (2) INVITED SERVICE:

Invited to be a member of the Editorial Advisory Board (Features Panel) for ACS Analytical Chemistry. January 2019-December 2021

Invited to Chair the “Advances in Electrochemistry Session” for Analytical Division at Fall ACS meeting in Boston August 2018.

### **(3) PROFESSIONAL SERVICE:**

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Journal of Neurochemistry Reviewer	
ACS Analytical Chemistry Reviewer	
ACS Chemical Neuroscience Reviewer	
RSC Analytical Methods Reviewer	
RSC Analyst Reviewer	
Analytica Chimica Acta Reviewer	
Judge for UC Undergraduate Scholarly Showcase	April 2018
Reviewer for Neuroscience Research Day at UC-poster session	April 2018

#### **Prior to UC:**

Invited reviewer for Postdoctoral Research Symposium	August 2016
Reviewer for New Horizons Travel Grant	October 2015
Robert J. Huskey Graduate Research Exhibition judge	2015-2016
Virginia Piedmont Regional science fair judge	March 2015
Volunteer science instructor for the UVA chemistry (Learning through Experiments And Demonstrations) program	2013-2016

### **PROFESSIONAL TRAINING AND DEVELOPMENT:**

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Writing Winning Grant Proposals-NIH Workshop	April 2018
Early CAREER Proposal Workshop	April 2018
UC Accelerator: Process, Opportunities, and Mini-workshop	March 2018
How to work with program officer's session	November 2017
Taking control of the RPT Process workshop	November 2017
Building a strong dossier: RPT Preparation by AAUP	October 2017
Communicating your research OoR session	October 2017
Proposal Development: UC Infrastructure	October 2017
How to find funding opportunities	September 2017

#### **Prior to UC:**

Flow Cytometry Core training (lecture and lab)  
 Working safely with animals training  
 Bloodborne pathogen and biosafety training  
 Laboratory animal training association: Rodents  
 Laboratory animal training association: Anesthesia and Analgesia of Rodents  
 GC-MS Training Workshop

### **PROFESSIONAL AFFILIATIONS:**

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American Chemical Society	2016-present
American Heart Association Member	2018-present
Society of Electroanalytical Chemistry (SEAC)	Lifetime member
American Association of Immunologists	2016-2018
Society of Neuroscience	2011-2012
Alpha Chi Honor Society, Virginia Zeta Chapter	2008-present