

## NIKKI CROWLEY, PH.D.

Assistant Research Professor

Department of Biobehavioral Health | Penn State University  
Office: 354 F HHD | Lab: 145 HHD | University Park, PA 16802  
(814)-863-5802 (office phone)  
[nzc27@psu.edu](mailto:nzc27@psu.edu) (email) [crowley-lab.org](http://crowley-lab.org) (website)

---

### EDUCATION

2015	<b>University of North Carolina Chapel Hill</b> Ph.D. in Neurobiology
2011	<b>University of North Carolina Wilmington</b> M.A. in Psychology
2008	<b>James Madison University</b> B.S. in Psychology (major) and Statistics (minor)

---

### PROFESSIONAL POSITIONS

2018 –	Assistant Research Professor, Department of Biobehavioral Health, PSU
2019 –	Faculty Affiliate, Neuroscience PhD Program, PSU
2019 –	Faculty Affiliate, The Huck Institutes of the Life Sciences, PSU
2019 –	Faculty Affiliate, College of Medicine, PSU
2018 –	Faculty Affiliate, Center for the Molecular Investigation of Neurological Disorders, PSU
2016 – 2018	Postdoctoral Fellow, Department of Biology, Penn State University
2009 – 2011	Post-baccalaureate Intramural Research Training Award Fellow, National Institute on Alcohol Abuse and Alcoholism, NIH
2008	Post-baccalaureate Intramural Research Training Award Fellow, National Institute on Environmental Health Science, NIH

---

### PUBLICATIONS

[Find me on PubMed](#)

- [20] Torruella-Suarez, Vandenberg, Cogan, Tipton, Teklezghi, Dange, Patel, McHentry, Hardaway, Kantak, **Crowley**, DiBerto, Faccidomo, Hodge, Stuber, & McElligott (2019, accepted) Manipulations of central amygdala neurotensin neurons alter the consumption of ethanol and sweet fluids in mice. *Journal of Neuroscience* [Available as a BioRxiv preprint here](#)
- [19] Dao, Brockway, & **Crowley** (2019). Novel characterization of peptidergic release from prefrontal cortical somatostatin neurons. *Neuroscience*
- [18] **Crowley**, Magee, Bourcier, Dao, & Lowery-Gionta (2019). Animal models of alcohol use disorders and the brain: from casual drinking to dependence. *Translational Issues in Psychological Sciences*
- [17] Feng, **Crowley**, Patel, Guo, Bugni, & Luscher (2019). Reversal of a treatment-resistant, depression-related brain state with the Kv7 channel opener retigabine. *Neuroscience*
- [16] **Crowley**, Magee, Feng, Jefferson, Morris, Dao, Brockway, & Luscher (2019). An antidepressant dosage of ketamine normalizes binge drinking-induced defects in glutamatergic synaptic transmission

and ethanol drinking behavior. *Neuropharmacology*

- [15] Lowery-Gionta\*, **Crowley\*** [Co-First Authorship], Bukalo\*, Silverstein, Holmes, & Kash (2018). Chronic stress dysregulates amygdalar output to the prefrontal cortex. *Neuropharmacology*
- [14] Caruso, **Crowley**, Reiss, Caulfield, Luscher, Cavigelli, & Kamens (2018). Adolescent social stress increases anxiety-like behavior and alters synaptic transmission, without influencing nicotine responses, in a sex-dependent manner. *Neuroscience*
- [13] **Crowley**, Bloodgood, Hardaway, Kendra, McCall, Al-Hasani, McCall, Yu, Schools, Krashes, Lowell, Whistler, Bruchas, & Kash (2016). Dynorphin controls the gain of an amygdalar anxiety circuit. *Cell Reports*
- [12] Al-Hasani, McCall, Shin, Gomez, Schmitz, Bernardi, Pyo, Park, Marcinkiewicz, **Crowley**, Krashes, Lowell, Kash, Rogers, & Bruchas (2015). Distinct subpopulations of nucleus accumbens dynorphin neurons drive aversion and reward. *Neuron*
- [11] Pleil, Lowery-Gionta, **Crowley**, Li, Marcinkiewicz, McCall, Maldonado-Devicci, Morrow, & Kash (2015). Effects of chronic ethanol exposure on neuronal function in discrete regions of the prefrontal cortex and extended amygdala. *Neuropharmacology*
- [10] Vardy, Robinson, Li, Olsen, DiBerto, Sassano, Huang, Zhu, Urban, Rittiner, **Crowley**, Pleil, Song, Kash, Malanga, Krashes, & Roth (2015). A DREADD for multiplexing chemogenetic interrogation of neural circuits. *Neuron*
- [9] **Crowley** & Kash (2015). Kappa opioid receptor signaling throughout the brain: Involved circuitry and implications for treatment. *Progress in Neuro-psychopharmacology and Biological Psychiatry*
- [8] Hardaway\*, **Crowley\*** [Co-First Authorship], Bulik, & Kash (2015). Integrated circuits and molecular components for stress and feeding: Implications for eating disorders. *Genes, Brains, and Behavior*.
- [7] Kash, Pleil, Marcinkiewicz, Lowery-Gionta, **Crowley**, Mazzone, Sugam, Hardaway, & McElligott (2014). Neuropeptide signaling in the BNST. *Molecules and Cells*
- [6] Masneuf\*, Lowery-Gionta\*, Colacicco, Pleil, Li, **Crowley**, Stamatakis, Flynn, Holmes, & Kash (2014). Glutamatergic mechanisms associated with stress-induced amygdala excitability and anxiety related behavior. *Neuropharmacology*
- [5] DePoy, Daut, Wright, Camp, **Crowley**, Noronha, Lovinger, & Holmes (2014). Chronic alcohol alters reward behaviors and striatal plasticity. *Addiction Biology*
- [4] Parisiadou, Yu, Sgobio, Xie, Lui, Sun, Gu, Lin, **Crowley**, Lovinger, & Cai (2014). LRRK2 regulates synaptogenesis and dopamine receptor activation of striatal projection neurons through modulation of PKA activity. *Nature Neuroscience*

- [3] **Crowley**, Cody, Davis, Lovinger, & Mateo (2013). Chronic methylphenidate exposure during adolescence reduces striatal synaptic responses to ethanol. *European Journal of Neuroscience*
- [2] Depoy, Daunt, Brigman, MacPherson, **Crowley**, Gunduz-Cinar, Pickens, Cinar, Saksida, Kunos, Lovinger, Bussey, Camp, & Holmes (2013). Chronic alcohol produces neuroadaptations to prime striatal learning. *Proceedings of the National Academy of Sciences*
- [1] Mathur, **Capik**, Alvarez, & Lovinger (2011). Serotonin-mediated competitive long-term depression at corticostriatal synapses. *Journal of Neuroscience* // paper published under maiden name

---

## **PUBLICATIONS – SUBMITTED OR IN REVIEW**

- [2] McSweeney, **Crowley**, Deng, Jian, Zou, Shi, Vitale, Liu, Luscher, & Mao (in revision). An exon junction complex factor, RBM8a, is required for normal interneuron development.
- [1] Swarhari, Nakamura, Stroud, Plestant, **Crowley**, Lowery-Gionta, Flowers, Liang, Kurtz, He, Sethupathy, Moy, Kash, Anton, Greenberg, & Deshmukh (in revision). MicroRNA-29 is an essential regulator of DNA methylation during brain maturation.

---

## **FUNDING**

### **Current Funding**

#### **NARSAD Young Investigator's Award**

*January 2019 – January 2021*

Role: PI

#### **National Institute on Alcohol Abuse and Alcoholism**

*August 2019-August 2021*

National Institutes of Health LRP Awardee

*Investigation of Key Pathways Modulated by Juvenile chronic variable social stress*

Role: PI

#### **Consortium to Combat Substance Abuse**

*June 2019-June 2021*

*Investigation of key opioid pathways modulated by adolescent chronic variable social stress*

Role: PI

### **Submitted Funding**

#### **National Institute of Alcohol Abuse and Alcoholism**

R21 (PI: Crowley) A0 Priority Score: 21

*Investigation of a novel prelimbic cortical peptidergic population in binge drinking behavior*

Role: PI

#### **The Whitehall Foundation**

Letter of Intent

Role: PI

*Elucidating somatostatin signaling in the bed nucleus of the stria terminalis*

**National Institutes of Health**

R01 (PI: Mao)

*Dissecting the molecular control for CTNNB1 syndrome*

Role: Co-I

**National Institutes of Health**

R01 (PI: Cavigelli). A0: not discussed

*Allergic asthma: effects on neurobiological development*

Role: Co-I

**Completed Funding**

**College of Health and Human Development**

*January 2016-January 2018*

**PSU Institutional Grant**

**National Institute on Alcohol Abuse and Alcoholism**

*August 2017-August 2019*

National Institutes of Health LRP Awardee

*Investigation of Key Pathways Modulated by Juvenile chronic variable social stress*

Role: PI

**Pennsylvania State University**

*August 2016-August 2019*

Social Science Research Institute Level 2 Award

*Investigation of the role of somatostatin neurons in alcohol consumption*

Role: PI

**UNC School of Medicine**

*August 2015-December 2015*

**Dissertation Completion Fellowship**

Awarded at the recommendation of the Graduate School for Excellence in Research

Role: Fellow

**National Institute on Alcohol Abuse and Alcoholism**

*June 2013-December 2015*

Ruth L. Kirschstein NRSA

*Alcohol Regulation of kappa opioid receptor systems in the extended amygdala. (Priority Score: 10)*

Role: Fellow

**National Institute on Alcohol Abuse and Alcoholism**

*June 2009-August 2011*

Intramural Research Training Award

Role: Fellow

**National Institute of Environmental Health Sciences**

*May 2008-September 2008*

Intramural Research Training Award

Role: Fellow

**James Madison University Department of Psychology**

*January 2008-May 2008*

Undergraduate Research Grant

*Saccharin concentration impact on consumption and preference within the Chronic Mild Stress procedure*

Role: PI

---

## INVITED SYMPOSIA

**Crowley (2018)** Binge drinking and the brain: the role of synaptic balance in the prefrontal cortex. Department of Biobehavioral Health, University Park, PA.

**Crowley (2018)** Alcohol and the brain. Guest speaker at Westfield High School, Chantilly, VA.

**Crowley & Luscher (2017)** An antidepressant dosage of ketamine normalizes binge drinking-induced defects in glutamate synaptic transmission and ethanol drinking behavior. Center for the Investigation of Neurological Disorders Annual Retreat, University Park, PA.

**Crowley & Luscher (2016)** Genetic models of major depressive disorder and alcohol use disorder comorbidity. Symposium at the Second Annual Penn State Addiction Symposium, Hershey, PA.

**Crowley & Luscher (2016)** Comorbid mechanisms underlying alcoholism and major depressive disorder. Center for the Investigation of Neurological Disorders Annual Retreat, University Park, PA.

**Crowley (2016)** Dynorphin controls the gain of an amygdala anxiety circuit. Center for the Investigation of Neurological Disorders Symposia, University Park, PA.

**Crowley & Kash (2015)** Chronic intermittent ethanol exposure (CIE) modulates BNST GABA and glutamate transmission and social behavior in a kappa opioid receptor (KOR) dependent manner. Symposium at the annual meeting on the Therapeutic Potential of Kappa Opioids in Pain and Addiction, Chapel Hill, NC.

**Crowley (2014)** Using Optogenetics to Alter Neural Signaling in the Amygdala: Novel Targets for the Treatment of Anxiety Disorders. Invited presentation, Arizona State University, Phoenix, AZ.

**Crowley & Kash (2014)** Extended amygdala circuits and behavior. Nanosymposium, Annual Meeting for the Society for Neuroscience, Washington, DC.

---

## CONFERENCE PRESENTATIONS (POSTERS – FIRST AUTHOR ONLY)

- Crowley & Luscher (2017)** Assessing the contribution of somatostatin-positive interneurons in the Drinking in the dark binge-like ethanol consumption model. Research Society on Alcoholism, Denver, CO.
- Crowley & Luscher (2017)** Assessing the contribution of somatostatin-positive interneurons in the Drinking in the dark binge-like ethanol consumption model. Alcohol and Stress: A Framework for Future Treatment Strategies, Volterra, Italy
- Crowley & Luscher (2016)**. Comorbid mechanisms underlying alcoholism and major depressive disorder. Center for the Investigation of Neurological Disorders Annual Retreat, University Park, PA

- Crowley**, McCall, Al-Hasani, McCall, Kendra#, Lopez#, Schools#, Krashes, Lowell, Bruchas, & Kash (2014). Dynorphin controls the gain of an amygdala anxiety circuit. Poster presentation at the inaugural Gordon Research Conference for Alcohol and the Nervous System, Galveston, TX.
- Crowley**, McCall, Al-Hasani, McCall, Kendra#, Lopez#, Schools#, Krashes, Lowell, Bruchas, & Kash (2014). Kappa opioid receptors modulate basolateral amygdala projections to the bed nucleus of the stria terminalis. Poster presented at annual conference Alcoholism and Stress: A Framework for Future Treatment Strategies, Volterra, Italy.
- Crowley**, McCall, Al-Hasani, McCall, Kendra, Lopez, Bruchas, & Kash (2014). Dynorphin controls the gain of an amygdala anxiety circuit. Kappa opioid receptors modulate basolateral amygdala projections to the bed nucleus of the stria terminalis.
- Capik**, McCall, Kendra, & Kash (2013). Kappa opioid receptors modulate basolateral amygdala projections to the bed nucleus of the stria terminalis. Poster presented at the annual meeting on the Therapeutic Potential of Kappa Opioids in Pain and Addiction, Boston, MA.
- Capik**, Lopez#, McCall, & Kash (2012). Differential modulation of glutamate and gaba via the kappa opioid receptor in the extended amygdala. Poster presented at the annual meeting for the Society of Neuroscience, Washington, DC.
- Capik**, Lopez#, McCall, & Kash (2012). Differential modulation of glutamate and gaba via the kappa opioid receptor in the extended amygdala. Poster presented at the annual meeting for the Research Society on Alcoholism, San Francisco, CA.
- Capik**, Lovinger, & Mateo (2010). Chronic adolescent methylphenidate administration causes behavioral alternations and synaptic changes in the striatum of C57BL/6J mice. Poster presented at the Society for Neuroscience Annual Meeting, San Diego, CA.
- Capik**, Lovinger, & Mateo (2010). Adolescent exposure to Ritalin modifies the striatal neuronal response to ethanol in adult rat. Poster accepted for presentation at the annual meeting of the Research Society on Alcoholism, San Antonio, TX, and the NIH/DHHS Spring Research Festival, Bethesda, MD.
- Capik**, Revri, Coleman, & Donlin (2010). The effects of random ratio shock on food consumption in a behavioral economics paradigm. Poster accepted for presentation annual meeting of the Association for Behavior Analysis, San Antonio, TX.
- Capik**, Revri, & Donlin, (2009). Examining punishment in a behavioral economics paradigm. Poster presented at the annual meeting of the Southeastern Association for Behavior Analysis, Wilmington, NC.
- Capik**, Key, McIntyre, Rosato, Welborn, & Donlin (2009). The validity of various smoking abstinence measures used in contingency management. Poster presented at the annual meeting of the Virginia Association for Behavior Analysis, Harrisonburg, VA.
- Capik**, Okada, Gianfranco, Salvador, Marczak, & Lazarus (2008). The effects of various mu-opioid antagonists on handling-induced convulsions in DBA/2J Mice. Poster presented at the annual meeting of the Southeastern Association for Behavior Analysis, Atlanta, GA.
- Capik**, Robertson#, & Serdikoff (2008). The Effects of Valerian Root on Anxiety in an Animal Model using the Elevated Plus Maze. Poster presented at the annual meeting of the Association of Behavior Analysis, Chicago, IL.
- Capik**, Robertson, Egan, Kopp, Hoffman, & Serdikoff (2007). The effects of saccharin concentration on saccharin consumption and preference: Implications for research involving the Chronic Mild Stress procedure. Poster presented at the annual meeting of the Southeastern Association for Behavior Analysis, Athens, GA.

---

## AWARDS & HONORS

2019	<b>NIH Center for Scientific Review</b> Early Career Reviewer Program (NAL – October 2019) <b>Neuroscience</b> Journal cover art selection ( <i>Issue #419C</i> )
2018	<b>NARSAD Young Investigator Award</b> Brain and Behavior Research Foundation ( <i>funding 01/2019-01/2021</i> )
2017	<b>Nominee, 2017 Dean's Climate and Diversity Award</b> Awarding Organization: Eberly College of Science, Penn State University
2014	<b>Best Poster Award</b> Awarding Organization: <i>International Congress on Alcoholism and Stress</i>
2013	<b>Student Merit Award</b> Awarding Organization: <i>Research Society on Alcoholism</i> <b>Ruth L. Kirschstein National Research Service Award</b> Awarding Organization: <i>National Institute on Alcohol Abuse and Alcoholism</i>
2012	<b>Student Merit Award</b> Awarding Organization: <i>Research Society on Alcoholism</i>
2010	<b>Graduate Research Award</b> Awarding Organization: <i>University of North Carolina – Wilmington</i> <b>Student Merit Award</b> Awarding Organization: <i>Research Society on Alcoholism</i>
2008	<b>Award for Outstanding Undergraduate Scholarship</b> Awarding Organization: <i>James Madison University Department of Psychology</i> <b>Travel Award</b> Awarding Organization: <i>Association for Behavior Analysis – International</i>
2007	<b>Best Poster Award</b> Awarding Organization: <i>Eastern Psychological Association</i> <b>Award for Outstanding Undergraduate Scholarship</b> Awarding Organization: <i>James Madison University Department of Psychology</i> <b>Travel Award</b> Awarding Organization: <i>Association for Behavior Analysis – International</i>
2006	<b>Award for Outstanding Undergraduate Scholarship</b> Awarding Organization: <i>James Madison University Department of Psychology</i>

---

## TEACHING AND MENTORING EXPERIENCE

### SUPERVISION OF STUDENT RESEARCH

#### Graduate Students (Primary Mentor)

Dakota Brockway	Neuroscience PhD Program	2018-present
-----------------	--------------------------	--------------

#### Undergraduate Student (Primary Mentor)

Malini Nair	Biology	2018-present
Brody Moyer	BMB	2018-present
Veronica Sendao	Chemistry	2018-present

Sarah Magee	Biology (Millennium Scholar)	2016-2019
Alexandre Bourcier	Biology (Schreyer's Honors College)	2016-2019

<u>Title and source: student supported grants</u>	<u>Total</u>
Student Engagement Network (SEN)	\$1,000
Awarded to Malini Nair (Crowley: faculty mentor)	
Anita M. Collins Undergraduate Research Fund (2019)	\$478
Awarded to Malini Nair (Crowley: faculty mentor)	
Rock Ethics Institute Rise Up Award (2019)	\$1,000
Awarded to Alexandre Bourcier (Crowley: faculty mentor)	
Anita M. Collins Undergraduate Research Fund (2018)	\$1,800
Awarded to Alexandre Bourcier (Crowley: faculty mentor)	
Schreyer Honor's College Summer Research Fund (2018)	\$1,800
Awarded to Alexandre Bourcier (Crowley: faculty mentor)	
Edward C. Hammond Jr. Memorial Scholarship	\$2,000
Awarded to Alexandre Bourcier (Crowley: faculty mentor)	

## **TEACHING EXPERIENCE**

### Recent Guest Lectures

Penn State University BIO/BBH 469: *Formation and Elimination of Synapses*. Fall 2016  
Penn State University BIO/BBH 470: *Electrophysiology* Spring 2017  
Penn State University BIO/BBH 470: *Reward, Motivation, and Addiction* Spring 2017  
Penn State University BIO/BBH 470: *Animal Models of Alcoholism* Spring 2017  
Penn State University BIO/BBH 470: *Opioids* Spring 2017

### Teaching Assistant

James Madison University: PSYC 180 Introduction to Behavior Analysis  
James Madison University: PSYC 211 Psychological Research Methods  
James Madison University: PSYC 390 Psychology of Learning

### Graduate students

- BBSP First Year Mentor: Faculty Supervisor: Dr. Christopher Mack 2012-13. University of North Carolina (Biological and Biomedical Sciences Program)
- BBSP First Year Mentor: Faculty Supervisor: Dr. Donita Robinson 2013-14. University of North Carolina (Biological and Biomedical Sciences Program)

---

## **SERVICE & OUTREACH**

2019 Early Career Reviewer, NIH Center for Scientific Review (Study Section: NAL)

2017	Guest speaker, Westfield High School, Chantilly Virginia
2017	PSU Smoke Free Task Force ( <i>silent observer</i> )
2017	PSU Communications and Onboarding Working Group (Research Computing and Cyberinfrastructure Advisory Council to the Provost)
2016-Present	PSU Program for Translation Research on Adversity and Neurodevelopment (P-TRAN)
2016-Present	PSU Undergraduate Neighbor-Neighbor Outreach
2010-2015	UNC Biological & Biomedical Science's Student Liaison Committee
2013	UNC Perl Prize Committee
2012-2015	UNC School of Medicine Graduate Student Recruitment
2009-2010	NIH Scientific Careers Community Outreach

---

## PROFESSIONAL ACTIVITIES

### NIH CSR

2019 Early Career Reviewer – NAL

### Journal Reviewer

Frontiers in Molecular Neuroscience

### *Ad Hoc Reviewer*

Psychopharmacology

Alcohol

Neurobiology of Stress

2019-present	<i>Member</i> , Society for Biological Psychiatry
2011-present	<i>Member</i> , International Congress on Alcoholism and Stress
2010-present	<i>Member</i> , Society for Neuroscience
2010-present	<i>Member</i> , Research Society on Alcoholism
2006-2009	<i>Member</i> , Association for Behavior Analysis
2009-2010	<i>Member</i> , Society for Research in Child Development
2006-2009	<i>Member</i> , Eastern Psychological Association