

# Ashley M. Kopec

## *Curriculum Vitae*

July 14, 2017

114 16<sup>th</sup> Street  
3<sup>rd</sup> Floor; Bilbo Lab  
Charlestown, MA 02129

Lab Tel: 617-726-7991  
Email: akopec@partners.org  
Website: www.ashleymkopec.com

### EDUCATION

- 2015 Ph.D.; Center for Neural Science, New York University  
Title: "Spatiotemporal coordination of growth factor signaling during long-term memory formation in *Aplysia californica*."  
Advisor: Dr. Thomas J. Carew
- 2009 Bachelor of Science in Psychology, Carroll University

### RESEARCH EXPERIENCE AND RELATED TRAINING

- 2015- Post-Doctoral Associate; Dept. of Pediatrics, Harvard Medical School/Massachusetts General Hospital  
\*moved with laboratory from Duke University (2015-2016) to HMS/MGH (2016-present)
- 2010-15 Graduate Student; Center for Neural Science, New York University
- 2013 Advanced Techniques in Molecular Neuroscience; Cold Spring Harbor
- 2009-10 Clinical Research Coordinator; Epilepsy and Cognition Lab, Massachusetts General Hospital
- 2008 Amgen Scholar Summer Research Student; Dynamic Neuroimaging lab, University of San Francisco

### RESEARCH SUPPORT

- 2017-20 NRSA Post-Doctoral Fellowship; NIDA (F32DA043308)  
Title: "Sex-Specific Neuroimmune Molecular Networks Underlying Adolescent Vulnerability to Drugs of Abuse"  
Total Funding: ~\$171,000
- 2013-15 NRSA Pre-Doctoral Fellowship; NIMH (F31MH100889)  
Title: "Growth Factor Signaling in Two-Trial Long-term Memory formation in *Aplysia*"  
Total Funding: ~\$85,000

### TEACHING AND MENTORSHIP

- 2017- Next Generation Scholars Mentorship Program (Mentor); New York Academy of Science
- 2017 Neurobiology Intern; Harvard University
- 2016- Post-Baccalaureate volunteer student; Duke University and Harvard Medical School
- 2015-16 Graduation with Distinction Senior Honor's Thesis student mentor (currently in Post-Baccalaureate program at NIMH); Duke University

- 2014 Brain and Behavior Lab course content and manual re-design; New York University
- 2014-15 Blueprint Program for Enhancing Neuroscience Diversity through Undergraduate Research Education Experiences (BP-ENDURE) undergraduate project mentor (currently in a Ph.D. program); New York University
- 2012-15 Brain and Behavior Course (CORE-UA 306) Teaching/Lab Assistant; New York University
- 2012-13 Master's student thesis mentor (currently in Ph.D. program); New York University
- 2011 Neurobiology and Behavior (N110L) Lab Instructor; University of California Irvine

### HONORS AND AWARDS

- 2017 Poster Presentation Travel Grant; New York Academy of Sciences  
Total Funding: \$725
- 2016 Neural Science Department's Nominee for Dean's Outstanding Dissertation Award; New York University
- 2015 Communication in Teaching and Learning Excellence Certificate Recipient; New York University
- 2014 Dean's Student Travel Grant; New York University  
Total Funding: \$500
- 2013 Nominee for Joint Center for Neural Science-School of Medicine Integrative Neuroscience Training Program in Learning, Memory, Development and Plasticity (withdrew due to NRSA award); New York University
- 2012 Teaching and Learning Excellence Certificate Recipient; New York University
- 2009 Joseph E. Runkel Honor's Award in Psychology; Carroll University
- 2009 Magna Cum Laude Graduation honors; Carroll University

### PUBLICATIONS

#### Peer-Reviewed Publications

\*Indicates equivalent contributions

1. Lacagnina MJ, **Kopec AM**, Cox SS, Hanamsagar R, Wells C, Slade S, Grace PM, Watkins LR, Levin ED, Bilbo SD. (2017). Opioid self-administration is attenuated by early-life experience and gene therapy for anti-inflammatory IL-10 in the nucleus accumbens. *Neuropsychopharmacology*, epub ahead of print.
2. **Kopec AM**, Rivera PD, Lacagnina MJ, Hanamsagar R, Bilbo SD. (2017). Optimized solubilization of TRIzol-precipitated protein permits Western blotting analysis to maximize data available from brain tissue. *Journal of Neuroscience Methods*, 280:64-76.

3. Mirisis AA\*, Alexandrescu A\*, Carew TJ, **Kopec AM**. (2016). The contribution of spatial and temporal molecular networks in the induction of long-term memory and its underlying synaptic plasticity. *AIMS Neuroscience*, 3(3): 356-84.
4. Stough S\*, **Kopec AM\***, Carew TJ. (2015). Synaptic generation of an intracellular retrograde signal requires activation of the tyrosine kinase and mitogen-activated protein kinase signaling cascades in *Aplysia*. *Neurobiology of Learning and Memory*, 125: 47-54.
5. **Kopec AM**, Philips GT, Carew TJ. (2015). Distinct growth factor families are recruited in unique spatiotemporal domains during long-term memory formation in *Aplysia californica*. *Neuron*, 86(5): 1228-39.
6. Fischbach S\*, **Kopec AM\***, Carew TJ (2014). Activity-dependent inhibitory gating in molecular signaling cascades induces a novel form of intermediate-term synaptic facilitation in *Aplysia californica*. *Learning and Memory*, 21(4): 199-204.
7. Pu L, **Kopec AM**, Boyle HD, Carew TJ (2014). A novel cysteine-rich neurotrophic factor in *Aplysia* facilitates neuronal growth, MAPK activation, and long-term synaptic facilitation in identified sensory neurons. *Learning and Memory*, 21(4): 215-222.
8. **Kopec AM** & Carew TJ (2013). Growth factor signaling and memory formation: Temporal and spatial integration of a molecular network. *Learning & Memory*, 20(10): 531-539.
9. Philips GT, **Kopec AM**, Carew TJ (2013). Pattern and predictability in memory formation: From molecular mechanisms to clinical relevance. *Neurobiology of Learning and Memory*, 105: 117-124.
10. Philips GT, Ye X, **Kopec AM**, Carew TJ (2013). MAPK establishes a molecular context that defines effective training patterns for long-term memory formation. *The Journal of Neuroscience*, 33(17): 7565-73.

## ACADEMIC PRESENTATIONS

### Invited Talks

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|------------|---|
| June 2017  | Lurie Center for Autism Leadership Council meeting; Massachusetts General Hospital<br>Title: "The contribution of immune signaling to the development of sex-specific adolescent social behavior" |
| Jan 2017   | Addiction Grand Rounds; Massachusetts General Hospital<br>Title: "Neuroimmune signaling underlies a critical period of vulnerability to drugs of abuse in adolescence"                            |
| April 2015 | Brain and Behavior course (CORE-UA 306) Guest Lecture; New York University<br>Title: "Neural Mechanisms of Memory Formation"  |
| Sept 2014  | Neuroscience Open House; New York University<br>Title: "Spatiotemporal Coordination of Growth Factor Signaling during Long-Term Memory Formation"   |
| May 2014   | Neurobiology Supergroup; New York University<br>Title: "Spatiotemporal Coordination of Growth Factor Signaling during Long-Term Memory Formation"   |

April 2014      Brain and Behavior course (CORE-UA 306) Guest Lecture; New York University  
Title: "Molecular Mechanisms of Memory Formation"

Poster Presentations

1. **Kopec AM**, Ayre NR, Sweat SC, Bilbo SD (accepted). The natural developmental relationship between microglia and dopamine D1 receptors is altered by adolescent morphine exposure in the nucleus accumbens. 47<sup>th</sup> Annual Society for Neuroscience meeting. Washington, D.C.
2. **Kopec AM**, Ayre NR, Sweat SC, Bilbo SD (accepted). Sex-specific complement- and microglia-dependent elimination of dopamine D1 receptors during adolescent development in the nucleus accumbens. Neuro-Immune Axis: Reciprocal Regulation in Development, Health, and Disease. Sitges, Spain.
3. **Kopec AM**, Ayre NR, Sweat SC, Bilbo SD (2017). The natural developmental relationship between microglia and dopamine D1 receptors is altered by adolescent morphine exposure in the nucleus accumbens. Neuroplasticity, Neuroregeneration, and Brain Repair, New York Academy of Science. New York, NY.
4. **Kopec AM**, Ayre NR, Sweat SC, Bilbo SD (2017). The natural developmental relationship between microglia and dopamine D1 receptors is altered by adolescent morphine exposure in the nucleus accumbens. 9<sup>th</sup> Annual MassGeneral Hospital *for* Children Research Day. Boston, MA.
5. **Kopec AM**, Sweat SC, Ayre NR, Bilbo SD (2016). Neuroimmune signaling in the nucleus accumbens underlying the adolescent critical period for drugs of abuse. 46<sup>th</sup> Annual Society for Neuroscience meeting. San Diego, CA.
6. **Kopec AM**, Sweat SC, Ayre NR, Bilbo SD (2016). Neuroimmune signaling in the nucleus accumbens underlying the adolescent critical period for drugs of abuse. 15<sup>th</sup> Annual Molecular and Cellular Cognition Society. San Diego, CA.
7. **Kopec AM**, Sweat SC, Ayre NR, Bilbo SD (2016). Sexually dimorphic neuroimmune signaling in the maturing nucleus accumbens. Duke University Neural-Glial Group Retreat. Chapel Hill, NC.
8. **Kopec AM**, Mirisis AA, Carew TJ (2015). The role of growth factor signaling in post-transcriptional RNA regulation during long-term memory formation in *Aplysia*. 45<sup>th</sup> Annual Society for Neuroscience meeting. Chicago, IL.
9. **Kopec AM**, Mirisis AA, Carew TJ (2015). The role of growth factor signaling in post-transcriptional RNA regulation during long-term memory formation in *Aplysia*. 14<sup>th</sup> Annual Molecular and Cellular Cognition Society. Chicago, IL.
10. Stough S, **Kopec AM**, Carew TJ (2015). Synaptic generation of a retrograde intracellular signal requires tyrosine kinase and mitogen-activated protein kinase activity in *Aplysia*. 45<sup>th</sup> Annual Society for Neuroscience meeting. Chicago, IL. \*indicates co-first authorship
11. **Kopec AM**, Carew TJ (2014). Distinct growth factor families are recruited in unique spatiotemporal domains during long-term memory formation in *Aplysia*. Poster no. 561.02; 44<sup>th</sup> Annual Society for Neuroscience meeting. Washington, D.C.

12. **Kopec AM**, Philips GT, Carew TJ (2014). Distinct growth factor families are recruited in unique spatiotemporal domains during long-term memory formation in *Aplysia*. 13<sup>th</sup> Annual Molecular and Cellular Cognition Society. Washington, D.C.
13. **Kopec AM**, Carew TJ (2013). Distinct growth factor families have unique spatiotemporal profiles during the induction of Two-Trial long-term memory in *Aplysia*. Poster no. 193.13; 43<sup>rd</sup> Annual Society for Neuroscience meeting. San Diego, CA.
14. **Kopec AM**, Carew TJ (2013). Distinct growth factor families have unique spatiotemporal profiles during the induction of Two-Trial long-term memory in *Aplysia*. 12<sup>th</sup> Annual Molecular and Cellular Cognition Society. San Diego, CA.
15. **Kopec AM**, Carew TJ (2012). Growth factor signaling during long-term memory formation in *Aplysia*. Poster no. 292.16; 42<sup>nd</sup> Annual Society for Neuroscience meeting. New Orleans, LA
16. Leeman BA, **Kopec AM**, Macklin EA, Schomer DL, Meador KJ, O'Connor MG (2011). Long-term verbal memory outcomes after anterior temporal lobectomy: evidence for cognitive reserve. Poster no. PD4.007 American Academy of Neurology. Honolulu, HI.
17. **Kopec AM**, Dale CL, Simpson GV, Luks T (2009). Paying Attention When it Counts: Motivation Effects on Frontal Structures During Cognitive Control. Celebrate Carroll, Carroll University. Waukesha, WI.

#### **PROFESSIONAL SERVICE**

2016            Neural-Glial Group Retreat Scientific Committee; Duke University  
 2014            Brain and Behavior Laboratory Manual Design; New York University  
 2012-            New York Academy of Science member  
 2012-            Molecular and Cellular Cognition Society member  
 2010-            Society for Neuroscience member

#### AD HOC REVIEWER

Journal of Autism and Developmental Disorders  
 Brain, Behavior, and Immunity (assisted)  
 Cell (assisted)  
 Journal of Neuroscience (assisted)  
 Learning and Memory (assisted)  
 Neurobiology of Learning and Memory (assisted)  
 Psychopharmacology (assisted)