Tyler McCray

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Education

Bachelor of Science in Chemistry, A.C.S. Certified, May 2015
Indiana University-Purdue University Indianapolis (IUPUI), Indianapolis, IN

- ***Relevant Courses:***
  - Biomolecules and Catabolism
  - Biosynthetic Pathways and Central Metabolism
  - Principles of Chemical Instrumentation
  - Molecular Basis of Neurodegenerative Diseases

Bachelor of Science in Biology, May 2015
Indiana University-Purdue University Indianapolis (IUPUI), Indianapolis, IN

- ***Relevant Courses:***
  - Biological Chemistry
  - Genetics and Molecular Biology
  - Immunology
  - Microbiology

Work and Research Experience

Laboratory Technician, August 2016 to Current
Stark Neurosciences Research Institute, IUPUI, Indianapolis, IN (Dr. Bruce Lamb's Lab)

- Aided in planning and investigation of role of specific genes (TREM2 and CCR2) in tau mouse models
- Maintained several mouse lines; husbandry, genotyping, and records of mouse colonies
- Conducted perfusions and subsequent microdissections of mouse brains
- Performed immunohistochemistry on brain tissue
- Imaged and characterized varying brain regions with tau pathologies
- Analyzed images quantitatively and qualitatively based on morphological parameters and staining via ImageJ and Ilastik

Laboratory Research Assistant, August 2014 to May 2015
Biology Department, IUPUI, Indianapolis, IN

- Performed immunocytochemistry on treated retinal neuroglial cells
- Researched and developed standardized image analysis protocol for in vitro and in vivo glial cell studies
- Characterized morphological parameters of imaged cells via ImageJ software
- Analyzed data and interpreted results to ascertain if gliosis was induced

Chemistry and Biology Tutor, October 2012 to May 2013
Student Support Services, IUPUI, Indianapolis, IN

- Tutored chemistry and biology students one-on-one on a regular basis throughout semester
- Planned and organized weekly study sessions
- Maintained consistent contact with students to ensure adequate performance

Peer Led Team Learning (PLTL) Chemistry Mentor, August to December 2010 and May to June 2012
Chemistry Department, IUPUI, Indianapolis, IN

- Instructed a weekly, two-hour classroom workshop for chemistry students
- Developed lesson plans for each session's content and topics

Lab Equipment and Techniques

Biology:

- Fluorescence, Light, Confocal Microscopy
- Pipetting
- Rodent Handling
- Mouse Perfusions
- Western Blots
- ELISA
- Plasmid Maxi- and Mini-prep
- IHC
- PCR

Chemistry:

- Titrations
- TLC
- UV-Vis
- FTIR

Computer:

- Microsoft Word
- Microsoft Excel
- ChemBioDraw
- ImageJ
- Ilastik
- Adobe Photoshop

Presentations

CCR2-mediated peripheral macrophage recruitment is essential for regulating tau pathological outcomes
McCray TJ, Jadhav VS, Miller CM, Landreth GL, Lamb BT, Bemiller SM
Indiana University School of Medicine – Stark Neurosciences Research Institute, IN
Neuroscience 2017, November 14, 2017

Morphological analysis of BMP7-treated retinal glia
McCray TJ, Dharmarajan S, Belecky-Adams TL
Science Department, IUPUI, Indianapolis, IN
IUPUI Research Day, April 15, 2015

Publications

Bemiller S.M., **McCray TJ**, Allan K., Formica S.V., Xu G., Wilson, G., Kokiko-Cochran O.N.,Landreth G.E., Ransohoff, R.M., Crish, S.D., Lamb B.T.; (2017) **TREM2 deficiency exacerbates tau pathology through dysregulated kinase signaling in a mouse model of tauopathy** *Mol. Neurodegener* Oct. 16; 12(1):74. doi: 10.1186/s13024-017-0216-6

Michael J. Mlodzianoski, Paul J. Cheng-Hathaway, Shane M. Bemiller, **Tyler J. McCray**, Sheng Liu, David A. Miller, Bruce T. Lamb, Gary E. Landreth, Fang Huang. **Volumetric Single Molecule Super-Resolution Imaging through Large Depth and Brain Sections**. (Under Rev. 2017 *Nature Methods*)

Awards and Honors

Dean's List, IUPUI (4 Semesters)
Alpha Lambda Delta – National Academic Honor Society
Phi Eta Sigma – National Academic Honor Society