FORM D – IV A \hspace{1cm} INSTRUCTION

The faculty member is encouraged to use a range of evidence demonstrating instructional accomplishment, which can be included in portfolios or compendia of relevant materials.

1. **Undergraduate and Graduate Credit Instruction:**
   Record of instructional activities for at least the past six semesters. Include only actual participation in credit courses (on- or off-campus instruction) or virtual university on-line courses. In determining the “past six semesters,” the faculty member may elect to exclude any semesters during which s/he was on leave; additional semesters may be included on an additional page. Fill in or, as appropriate, attach relevant print screens from CLIFMS*.

<table>
<thead>
<tr>
<th>Semester and Year</th>
<th>Course Number</th>
<th>Credits (Number or Var)</th>
<th>Number of Sections Taught</th>
<th>Number of Students</th>
<th>Number of Assistants **</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2013</td>
<td>NEU 301</td>
<td>3</td>
<td>6 Lec</td>
<td>99</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring 2014</td>
<td>NEU 302</td>
<td>3</td>
<td>2 Lec</td>
<td>84</td>
<td>1</td>
<td>Guest lecturer</td>
</tr>
<tr>
<td></td>
<td>NEU 420</td>
<td>3</td>
<td>1 Lec</td>
<td>19</td>
<td>0</td>
<td>Guest lecturer</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>NEU 301</td>
<td>3</td>
<td>9 Lec</td>
<td>140</td>
<td>2</td>
<td>Co-taught with</td>
</tr>
<tr>
<td></td>
<td>PSL 950</td>
<td>1</td>
<td>1 Lec</td>
<td>10</td>
<td>0</td>
<td>Co-director with</td>
</tr>
<tr>
<td>Spring 2015</td>
<td>NEU 420</td>
<td>1</td>
<td>1 Lec</td>
<td>35</td>
<td>0</td>
<td>Guest Lecturer</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>NEU 301</td>
<td>3</td>
<td>10 Lec</td>
<td>100, 115</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NEU 807</td>
<td>2</td>
<td>1 Lec</td>
<td>10</td>
<td>0</td>
<td>Guest lecturer</td>
</tr>
<tr>
<td></td>
<td>PSL 950</td>
<td>1</td>
<td>1 Lec</td>
<td>10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Spring 2016</td>
<td>NEU 490</td>
<td>2</td>
<td>1 Lab</td>
<td>1</td>
<td>0</td>
<td>Independent Study for 1 student</td>
</tr>
<tr>
<td></td>
<td>NEU 420</td>
<td>3</td>
<td>1 Lec</td>
<td>30</td>
<td>0</td>
<td>Guest lecturer</td>
</tr>
<tr>
<td></td>
<td>NEU 302</td>
<td>3</td>
<td>2 Lec</td>
<td>100, 115</td>
<td>2</td>
<td>Guest lecturer</td>
</tr>
<tr>
<td>Fall 2016</td>
<td>NEU 301</td>
<td>3</td>
<td>12 Lec</td>
<td>261</td>
<td>2</td>
<td>Course Director and co-taught</td>
</tr>
<tr>
<td></td>
<td>PSL 813</td>
<td>3</td>
<td>1 Lec</td>
<td>13</td>
<td>0</td>
<td>Guest Lecturer</td>
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<tr>
<td></td>
<td>PSL 950</td>
<td>1</td>
<td>1 Lec</td>
<td>8</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

2. **Non-Credit Instruction:**
   List other instructional activities including non-credit courses/certificate programs, licensure programs, conferences, seminars, workshops, etc. Include non-credit instruction that involves international, comparative, or global content delivered either to domestic or international groups, either here or abroad.

**Spring 2013**

- **3/8/13 Neuroscience Student Club Panel on Neural Plasticity.** I gave a short presentation on drug-induced plasticity changes in the ventral tegmental area then helped to lead a panel discussion answering student questions on the topic.

- **5/18/13 Invited Speaker at University Laboratory Animal Research (ULAR) Monthly Meeting.** I gave a short presentation (~15 minutes) and then answered questions about animal models of depression and how to evaluate different types of stress-related behaviors in mice. This was attended by MSU ULAR employees.
Fall 2013

- **11/6/13 Invited Speaker at the MSU Epidemiology Group.** I gave a one-hour seminar on the molecular mechanisms underlying chronic drug and stress changes in the ventral tegmental area to cocaine epidemiology group. We then discussed possible collaborations between our research groups.

- **12/4/13 Invited Speaker for the MSU Pharmacology/Toxicology Seminar Series.** I gave a one-hour seminar on the role of ventral tegmental area dopamine neurons in drug reward and stress. This was attended by faculty and students of the MSU Pharmacology Department.

Spring 2015

- **1/27/15 Neuroscience Graduate Program Research Forum.** I participated on a panel to discuss undergraduate teaching experiences for Neuroscience Program graduate students.

Spring 2016

- **3/17/16 Neuroscience Graduate Program Research Forum.** I participated on a panel to discuss strategies on how to finish your thesis and pursue postdoctoral positions for Neuroscience Program graduate students.
FORM D – IV A  INSTRUCTION

3. Academic Advising:

a. Faculty member’s activity in the area of academic advising. The statement may include commentary on supplementary materials such as recruitment activities, international student advising, evidence of peer recognition, and evidence of student recognition.

Undergraduate: 8

Undergraduate Advising: I currently have three undergraduate students in my laboratory, and to date have mentored eight undergraduates in research projects in my lab. I am fortunate that each semester 20-30 undergraduate students e-mail me asking about positions in my lab. When I have an opening, I individually interview 5-10 students and then choose one or two, depending on the number of openings in the lab. I limit the number the undergraduate students in my lab so that they can initially be paired one-to-one with a graduate student. The trainees then spend their first few weeks or months learning techniques that prepare them for an independent project, including lab bench skills, data record keeping, and data analysis. When possible, they also attend weekly lab meetings and present their data to our lab group, allowing them to improve their presentation skills and develop confidence in answering questions about their work. When the student develops the skills required for independence, I help them design a project. This involves the student becoming familiar with relevant background research, developing testable hypotheses, and assisting with experimental design, data analysis and interpretation. I also encourage the students to apply for scholarships that provide for paid time in the lab, both within MSU and at the national level, many of which have been funded (see below). All students then present their project at UURAF and many students also go on to present their work at national conferences and earn co-authorship on publications (detailed in the table below). Many of these students will move on to careers in science and/or medicine, and their research productivity in my lab and my letters of recommendation will likely play a critical role in their continued academic success. Thus, in summary, my goals in mentoring undergraduate students are to develop their critical thinking skills, provide positive exposure to neuroscience laboratory research that may inform their career choices, cultivate an environment that encourages discourse and creativity, and enhance their communication skills so they can confidently convey their knowledge to others.

Undergraduate Students Advised in [REDACTED] Lab (Spring 2013 – Present)

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>Major</th>
<th>Years Mentored</th>
<th>Honors &amp; Achievements</th>
</tr>
</thead>
</table>
| [REDACTED]    | Neuroscience| Spring 2013 – Fall  | • Co-Mentored [REDACTED]
|               |             | 2015                | • Lyman Briggs Research Fellowship (Fall 2013)
|               |             |                     | • Vanderbilt Research Scholar (Summer 2013)
|               |             |                     | • First-Auther Poster at Society for Neuroscience Annual Meeting
|               |             |                     |   o 2014, Washington, DC
|               |             |                     | • Faculty for Undergraduate Neuroscience Travel Award to SnA Annual Meeting, 2014
|               |             |                     | • Award-winning Poster at UURAF (2014)
|               |             |                     | • Goldwater Scholarship, Honorable Mention, 2014
|               |             |                     | • Goldwater Scholarship awardee, 2015
|               |             |                     | • CNS Fowler Research Award (summer 2015)
|               |             |                     | • Jeffrey Cole Excellence Award (2014 and 2015)
|               |             |                     | • Middle-author publication in the Journal of Neuroscience
|               |             |                     |   o Eagle et al., 2015
|               |             |                     | • Graduated Dec. 2015, currently medical student in MSU Human Medicine

| [REDACTED]    | Neuroscience| Spring 2013 – Fall  | • Co-Mentored with [REDACTED]
|               |             | 2015                | • CNS Fowler Summer Research Award (2013 and 2015)
### FORM D – IV A INSTRUCTION

<table>
<thead>
<tr>
<th>Area</th>
<th>Details</th>
</tr>
</thead>
</table>
| Two First-Author Posters at Society for Neuroscience Annual Meeting | - 2014, Washington, DC  
- 2015, Chicago, IL          |
| Faculty for Undergraduate Neuroscience Travel Award to SfN Annual Meeting, 2014 | - Cates et al., 2014  
- Vialou et al., 2015       |
| Two second-author publications in the *Journal of Neuroscience and Neuropharmacology* | - Invited seminar at Vanderbilt University Neuroscience 3/26/15  
- Graduated Dec. 2015   |

#### Undeclared
- Undeclared  
- Fall 2013  
- Professorial Assistant Program

#### Neuroscience and Psychology
- Neuroscience and Psychology  
- Fall 2014 - Spring 2016  
- MSU Neuroscience Program Undergraduate Research Scholarship (Spring 2015)  
- Lyman Briggs S-STEM Scholarship  
- UURAF Poster Presentation (2015 and 2016)  
- Middle Author on Poster at Society for Neuroscience Annual Meeting (2015 and 2016)  
- Graduated May 2016

#### Medical Microbiology (Univ. of Puerto Rico, Arecibo)
- Medical Microbiology (Univ. of Puerto Rico, Arecibo)  
- Summer 2015 and 2016  
- Visiting undergraduate through “Bridge to PhD in Neuroscience Program”  
  - MSU Research Program for underrepresented minorities  
  - First-Author Poster at Society for Neuroscience Annual Meeting  
  - 2015, Chicago, IL  
- Annual Biomedical Research Conference for Minority Students (ABRCMS) Travel Award  
- First-Author Poster at ABRCMS  
  - 2015, Seattle, WA  
  - 2016, Tampa, FL  
- Annual Society for Advancement of Chicanos/Hispanics and Native American Scientists (SACNAS) Travel Scholarship (2015 and 2016)  
- First-Author Poster at SACNAS  
  - 2015, Washington D.C.  
  - 2016, Long Beach, CA

#### Neuroscience
- Neuroscience  
- Fall 2015 - Present  
- CNS Fowler Summer Research Award (2016)

#### Neuroscience
- Neuroscience  
- Fall 2016 - Present  
- Osteopathic Medical Scholar

#### Neuroscience and English
- Neuroscience and English  
- Fall 2016 - Present  
- Co-mentor with CNS Fowler Summer Research Award (2016)
  - Professorial Assistant Program  
  - CNS Dean’s Research Scholar (2016-2017)  
  - Catherine Fredin Hooper Award

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**Graduate: 4**

**Graduate Advising:** I currently have three PhD students in my laboratory and have graduated an MS student. Thus, graduate students constitute the majority of my full-time laboratory personnel and a large proportion of my research effort is dedicated to training and advising graduate students in order to empower them to achieve the laboratory’s research goals. My goal in training graduate students is to facilitate their path toward scientific independence by helping them to develop technical expertise, effective communication, and analytical skills necessary for any science-based career. I
FORM D – IV A  INSTRUCTION

provide direct training in the approaches we use in the lab including: mouse behavior and surgery, molecular biology, biochemistry, histology, and microscopy techniques. I also oversee their research project, assisting them with experimental design, data interpretation, and writing. I also encourage my students to seek out opportunities to present their work both within MSU and at national conferences, and help them to improve their scientific communication skills and facilitate networking with colleagues. Finally, all of my graduate students apply for graduate fellowships, as I feel this is an invaluable experience for them to think critically about their research project and gain practical skills in grant writing. This training approach has benefitted my students as evidenced by my senior graduate student, [mask], who was awarded a prestigious graduate fellowship from the PhRMA foundation, already has two peer-reviewed middle-author publications and a first-author review paper (and a first-author paper currently under review), and has also won multiple merit-based awards (see table below). My two newer students, [mask] and [mask], are on a similar track, with [mask] recently being selected as the recipient of a national travel award and receiving positive reviews on her NRSA fellowship application. In addition to mentoring the students within my own lab, I serve on numerous PhD advisory committees, am very active in recruitment for the Biomolecular Sciences and Neuroscience graduate programs, and serve on the Physiology Department Graduate Student Affairs committee, highlighting my dedication to the training and advising of graduate students.

I have also had the following graduate students conduct research rotations in my lab (listed below are students that did not ultimately join my lab):

- [mask] Neuroscience (DO/PhD) summer 2015

In addition to the students in my laboratory, I have also served on the following PhD thesis advisory committees:

- [mask] Psychology 2013 (graduated)
- [mask] Pharmacology/Toxicology 2013 – 2016 (graduated)
- [mask] Neuroscience 2014 - present
- [mask] Physiology 2014 - present
- [mask] Neuroscience (DO/PhD) 2014 - present
- [mask] Pharmacology/Toxicology 2014 - present
- [mask] Physiology 2015 - present
- [mask] Physiology 2016 – present

Graduate Students Advised in [mask] Lab (Spring 2013 – Present)

<table>
<thead>
<tr>
<th>Graduate Student</th>
<th>Major</th>
<th>Years Mentored</th>
<th>Honors &amp; Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>M.S. in Pharmacology/Toxicology, Summer 2014</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>First-Author Presentations at:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>○ Council of Graduate Students (COGS) Graduate Academic Conference, MSU, March 2014</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>○ Two middle-author publications in the <em>Journal of Neurochemistry</em> and <em>Journal of Neuroscience</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>○ Heller et al., 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>○ Vialou et al., 2014</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Center for Integrative Toxicology Travel Award, 2014</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ASPET Travel Award to Experimental Biology, 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ASPET Career Development Award, 2016</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Second Place ASPET Poster Competition, 2016</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PhRMA Foundation Graduate Fellowship, 2016 – 2017 ($20K/year)</td>
</tr>
</tbody>
</table>
• First-Author Presentations at:
  - Experimental Biology: American Society of Pharmacology and Experimental Therapeutics (ASPET), Boston, MA, 2015
  - Society for Neuroscience Annual Meeting, Chicago, IL, Oct 2015
  - Experimental Biology: ASPET, San Diego, CA 2016

• Middle-author publications in the Journal of Neurochemistry and Neuropharmacology
  - Heller et al., 2015
  - Vialou et al., 2015

• One first-author review article in eLS

<table>
<thead>
<tr>
<th>neuroscience</th>
<th>Fall 2014 - Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trainee on the Interdisciplinary Training Program in Neuroscience Grant (NIH T32NS044928), 2013 – 2014</td>
<td></td>
</tr>
<tr>
<td>Trainee Professional Development Award, Society for Neuroscience, 2016</td>
<td></td>
</tr>
<tr>
<td>First-Author Presentations at:</td>
<td></td>
</tr>
<tr>
<td>- Society for Neuroscience Annual Meeting, Chicago, IL, Oct 2015</td>
<td></td>
</tr>
<tr>
<td>One middle-author publication in Neuropharmacology</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>neuroscience</th>
<th>Spring 2016 - Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trainee on the Interdisciplinary Training Program in Neuroscience Grant (NIH T32NS044928), 2013 – 2014</td>
<td></td>
</tr>
<tr>
<td>First-Author Presentations at:</td>
<td></td>
</tr>
</tbody>
</table>

Graduate/Professional: 0

Other: 0

b. Candidate’s undergraduate advisees (if applicable to individual under review):

<table>
<thead>
<tr>
<th>Number of current undergraduate advisees</th>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

c. Candidate’s graduate/graduate-professional advisees (limit to principal advisor or committee chairpersonship status):

<table>
<thead>
<tr>
<th>Number of students currently enrolled or active</th>
<th>Masters</th>
<th>Doctoral</th>
<th>Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of graduate committees during the reporting period</td>
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<tr>
<td>Degrees awarded during the reporting period</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Degrees awarded during career</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
4. **List of Instructional Works:**
List publications, presentations, papers, grants received (refer to Form D-IVE), and other works that are primarily in support of or emanating from instructional activity.

5. **Other Evidence of Instructional Activity:**
Cite other evidence of instructional productivity such as works/grants in progress or under review (refer to Form D-IVE). Address instructional goals and approaches; innovative methods or curricular development; significant effects of instruction; and curatorial and patient care activities, etc. Include evidence of instructional awards and peer recognition (within and outside the university).
## CNS RPT Numerical Student Evaluation Summaries

<table>
<thead>
<tr>
<th>Semester and Year</th>
<th>Course Number</th>
<th>Number of student responses</th>
<th>Instructor Involvement (average of SIRS items 1-4)</th>
<th>Student Interest (average of SIRS items 5-8)</th>
<th>Student-Instructor Interaction (average of SIRS items 9-12)</th>
<th>Course Demands (average of SIRS items 13-16)</th>
<th>Course Organization (average of SIRS items 17-20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2015</td>
<td>NEU 301-001</td>
<td>56 (65%)</td>
<td>1.98</td>
<td>1.84</td>
<td>2.17</td>
<td>2.58</td>
<td>2.59</td>
</tr>
<tr>
<td>COMP</td>
<td></td>
<td></td>
<td>2.02</td>
<td>1.95</td>
<td>2.41</td>
<td>2.41</td>
<td>2.47</td>
</tr>
<tr>
<td>NEU 301-002</td>
<td>COMP</td>
<td>20 (83%)</td>
<td>2.13</td>
<td>1.85</td>
<td>2.51</td>
<td>3.05</td>
<td>2.77</td>
</tr>
<tr>
<td>COMP</td>
<td></td>
<td></td>
<td>1.96</td>
<td>1.85</td>
<td>2.08</td>
<td>2.6</td>
<td>2.57</td>
</tr>
<tr>
<td>NEU 301-003</td>
<td>COMP</td>
<td>52 (68%)</td>
<td>2.17</td>
<td>1.85</td>
<td>2.3</td>
<td>2.71</td>
<td>2.51</td>
</tr>
<tr>
<td>COMP</td>
<td></td>
<td></td>
<td>2.14</td>
<td>1.85</td>
<td>2.18</td>
<td>2.55</td>
<td>2.39</td>
</tr>
</tbody>
</table>

From the CNS P&T Guidelines adopted March 16, 2011:
For each course taught, list semester and year, course number, number of student responses, and average SIRS (or equivalent) scores (1.0-5.0, with lower numbers better) in each of the categories listed, along with corresponding average scores in comparable ("COMP", either same course taught by other instructors, or courses at same level and with a comparable audience) courses immediately below. If department-specific evaluations are used, provide appropriate average scores corresponding to categories listed above and rescale to SIRS 1.0-5.0 scale.
FORM D - IV B  RESEARCH AND CREATIVE ACTIVITIES

1. **List of Research/Creative Works:**
   Attach a separate list of publications, presentations, papers, and other works that are primarily in support of or emanating from Research and Creative Activities. Indicate how the primary or lead author of a multi-authored work can be identified. The list should provide dates and, in particular, accurately indicate activity from the reporting period. Items to be identified:
   1) Books
   2) Book chapters
   3) Bulletins or monographs
   4) Articles
   5) Reviews
   6) Papers and presentations for learned professional organizations and societies
   7) Artistic and creative endeavors (exhibits, showings, scores, performances, recordings, etc.)
   8) Reports or studies

   Indicate peer-reviewed or refereed items with a “*”.
   Indicate items with a significant outreach component with a “**” (determined by the faculty member)

2. **Quantity of Research/Creative Works Produced:**
   For each of the categories listed in question one above, list the number of research and creative works produced.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>During the reporting period</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16</td>
<td>1</td>
<td>29</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>During career</strong></td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>35</td>
<td>3</td>
<td>&gt;50</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

   My work has been highly cited. The citation data below are from Google Scholar as of 6/15/2016 and reveal a trend of rapidly increasing dissemination and citation of my papers.

   ![Citation Graph]

   My h-index score as of 9/27/16 is 26, indicating that I have 26 publications that have been cited at least 26 times. Further, my i10-index is 32, meaning that 32 of my publications have been cited at least 10 times. My work has been cited a total of 2,301 times, with 1,567 of those citations coming during the reporting period (since January 2013).

   For publications on which I am first or corresponding (final) author, impact factor and citations are shown:

<table>
<thead>
<tr>
<th>Journal</th>
<th>Role</th>
<th>Impact Factor</th>
<th>Year</th>
<th># of Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain Research</td>
<td>First</td>
<td>2.8</td>
<td>2002</td>
<td>131</td>
</tr>
<tr>
<td>J. Neuroscience</td>
<td>First</td>
<td>6.7</td>
<td>2008</td>
<td>65</td>
</tr>
<tr>
<td>Neuropharmacology</td>
<td>First</td>
<td>5.1</td>
<td>2005</td>
<td>61</td>
</tr>
</tbody>
</table>
FORM D - IV B  RESEARCH AND CREATIVE ACTIVITIES

Neuron  First  15.1  2011  54
Cold Spring Harbor  First  9.5  2012  40
Perspectives in Medicine
Neuropharmacology  First  5.1  2005  33
Neurotransmitter Transporter  First  —  2006  21
PLoS One  First  3.2  2014  7
Scientific Reports  Corresponding  5.6  2015  2
Journal of Neurochemistry  Corresponding  4.3  2015  2

3. **Number of Grants Received** (primarily in support of research and creative activities; refer to Form D-IVE):
   During the reporting period: 4  During career: 6

4. **Other Evidence of Research/Creative Activity**:
   Cite other evidence of research and creative productivity such as: seminars, colloquia, invited papers; works/grants in progress or under review (refer to Form D-IVE); patents; formation of research-related partnerships with organizations, industries, or communities; curatorial and patient care activities, etc. Include evidence of peer recognition (within and outside the university).

**Seminars and Presentations**
Since starting at Michigan State University I have been invited to give a number of seminars, as listed below:

**Invited Presentations**
- May 5, 2013 Drug Abuse Research Network, Wayne State University, Detroit, MI. “Role of ventral tegmental area dopamine neurons in drug reward and stress”

**Invited Presentations at MSU**
- November 6, 2013 Epidemiology Department. “The role of ventral tegmental area dopamine neurons in drug reward”
- May 18, 2013 University Lab Animal Resources. “Animal models of depression”
- December 4, 2013 Department of Pharmacology. “Role of ventral tegmental area dopamine neurons in drug reward and stress”

**Oral Abstracts and Posters**
In addition to seminars, work from my lab has been featured in poster presentations at national meetings (only presentations from the reporting period are listed):

- 2016 Society for Neuroscience, San Diego, CA  Corresponding Author, 3 posters
- 2016 ABCRMS, Tampa, FL  Corresponding Author, 1 poster
- 2016 SACNAS, Long Beach, CA  Corresponding Author, 1 poster
- 2016 Michigan Chapter of the Society for Neuroscience, East Lansing, MI  Corresponding Author, 3 posters
- 2016 Experimental Biology/ASPET, San Diego, CA  Corresponding Author, 1 poster
- 2015 American College of Neuropsychopharmacology, Ft. Lauderdale, FL  Corresponding Author, 1 poster
- 2015 Society for Neuroscience, Chicago, IL  Corresponding Author, 2 posters  Co-Author, 1 poster
- 2015 Experimental Biology/ASPET, Boston, MA  Corresponding Author, 1 poster and talk
- 2015 Gordon Research Conference on Catecholamines, Newry, ME  Corresponding Author, 1 poster
- 2015 Michigan Chapter of the Society for Neuroscience, Mount Pleasant, MI  Corresponding Author, 2 posters
FORM D - IV B  RESEARCH AND CREATIVE ACTIVITIES

2015  Annual Biomedical Research Conference for Minority Students (ABRCMS), Seattle, WA  Corresponding Author, 1 poster
2015  Annual Society for Advancement of Chicanos/Hispanics and Native American Scientists (SACNAS), Washington DC  Corresponding Author, 1 poster
2014  American College of Neuropsychopharmacology, Phoenix, AZ  Corresponding Author, 1 poster
2014  Society for Neuroscience, Washington DC  Corresponding Author, 2 posters
2013  American College of Neuropsychopharmacology, Ft. Lauderdale, FL  Corresponding Author, 1 poster
2013  Society for Neuroscience, San Diego, CA  Co-Author, 2 posters
2013  Gordon Research Conference on Catecholamines, Mount Snow, VT  Corresponding Author, 1 poster

Grant Applications
Since arriving at MSU, I have secured four external grants, three as the principle investigator and one as mentor. The total direct costs of these grants are $1,340,000 as detailed below.

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<thead>
<tr>
<th>Year</th>
<th>Agency</th>
<th>Direct Costs</th>
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<tr>
<td>2016 – 2021</td>
<td>National Institute on Drug Abuse, NIH</td>
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<td>2015 – 2017</td>
<td>PhRMA Foundation Graduate Student Fellowship</td>
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<td>2015 – 2016</td>
<td>National Institute on Drug Abuse, NIH</td>
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<tr>
<td>2014</td>
<td>PhRMA Foundation, Research Starter Grant</td>
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List of Research/Creative Works:

Book Chapters


2. Familial orthostatic tachycardia due to norepinephrine transporter (SLC6A2) deficiency, Catecholamine Research: From Molecular Insights to Clinical Medicine, Kluwer Academic/Plenum Publishers, 499-504

Articles


List of Research/Creative Works:


13. *Fluoxetine epigenetically alters the CaMKII promoter in the nucleus accumbens to regulate delta FosB binding and antidepressant effects. 2014. Neuropsychopharmacology 39: 1178-86.


List of Research/Creative Works:


26. AKT signaling within the ventral tegmental area regulates cellular and behavioral responses to stressful stimuli. Biol Psychiatry 64: 691-700.

List of Research/Creative Works:


Reviews


2. *Opiate-Induced Molecular and Cellular Plasticity of Ventral Tegmental Area and Locus Coeruleus Catecholamine Neurons.* Cold Spring Harbor Perspectives in Medicine 2: a012070.

List of Research/Creative Works:

Papers and presentations for learned professional organizations and societies (Since 2013)

   Determination of morphological and molecular adaptations in ventral tegmental area dopamine neurons by chronic morphine.

   Examination of potential sex differences in the behavior of Rictor knockout mice.

   Drugs of abuse modulate serum- and glucocorticoid-inducible kinase phosphorylation and activity in the ventral tegmental area.

   Drugs of abuse modulate serum- and glucocorticoid-inducible kinase phosphorylation and activity in the ventral tegmental area.

5. Annual Biochemical Research Conference for Minority Students in Tampa, FL, 2016
   Induction of deltaFosB following physical and emotional stress.

6. Annual Society for Advancement of Chicanos/Hispanics and Native American Scientists in Long Beach, CA, 2016
   Induction of deltaFosB following physical and emotional stress.

   Drugs of abuse modulate serum- and glucocorticoid-inducible kinase phosphorylation and activity in the ventral tegmental area.

   Determination of morphological and molecular adaptations in ventral tegmental area dopamine neurons by chronic morphine.

   The effect of ventral tegmental area Rictor knockout on susceptibility to chronic social defeat stress and stress-induced changes in morphine reward.

10. Experimental Biology/ASPET meeting in San Diego, CA, 2016
    The effect of ventral tegmental area Rictor knockout on susceptibility to chronic social defeat stress and stress-induced changes in morphine reward.
List of Research/Creative Works:

11. American College of Neuropsychopharmacology in Fort Lauderdale, FL, 2015
   Physical and emotional stress alter voluntary morphine consumption and ventral tegmental area TORC2 signaling.

12. Society for Neuroscience in Chicago, IL, 2015
   Investigation of biochemical changes induced by chronic morphine and stress in the ventral tegmental area.

13. Society for Neuroscience in Chicago, IL, 2015
   Physical and emotional stress alter voluntary morphine consumption ventral tegmental area gene expression.

   FosB expression in ventral hippocampus regulates behavior in the social defeat model of depression.

15. Experimental Biology/ASPET meeting in Boston, MA, 2015
   Role of ventral tegmental area TORC2 signaling in stress-induced morphine reward.

   Physical and emotional stress alter voluntary morphine consumption ventral tegmental area TORC2 signaling.

   Role of ventral tegmental area TORC2 signaling in stress-induced morphine reward.

   Physical and emotional stress alter voluntary morphine consumption ventral tegmental area gene expression.

19. Annual Biochemical Research Conference for Minority Students in Seattle, WA, 2015
   Induction of deltaFosB following physical and emotional stress.

20. Annual Society for Advancement of Chicanos/Hispanics and Native American Scientists in Washington, DC, 2015
   Induction of deltaFosB following physical and emotional stress.

   Determining a role for Rictor in susceptibility to stress and morphine reward and consumption.

22. Society for Neuroscience in Washington DC, 2014
List of Research/Creative Works:

   Physical and psychological stress increase voluntary morphine consumption.

   Region-specific induction of FosB isoforms in mouse brain after stress or chronic fluoxetine exposure.

   The single prolonged stress (SPS) model of posttraumatic stress disorder (PTSD) induces a ptsd-like phenotype in male rats but a depressive-like phenotype in female rats.

26. American College of Neuropsychopharmacology in Fort Lauderdale, FL, 2013
   Susceptibility to chronic social defeat stress increases morphine reward.

27. Society for Neuroscience in San Diego, CA, 2013
   B-catenin mediates the development of behavioral resilience.

   Phasic firing-specific regulation of bdnf in vta-to-nac pathway is stress-contextual dependent.

   Morphine and cocaine increase serum- and glucocorticoid-regulated kinase 1 activity in the ventral tegmental area.
# Funded Grants Only

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<thead>
<tr>
<th>Title</th>
<th>Principal Investigator</th>
<th>Co-Principal Investigators</th>
<th>Awarding Agency</th>
<th>Effective Dates</th>
<th>Total Amount Awarded Including Indirect Costs</th>
<th>Total Amount Awarded to Candidate Including Indirect Costs</th>
<th>Indirect Cost Rate</th>
<th>Nature of Candidate’s Participation (if not P.I.)</th>
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<tr>
<td>Role of serum- and glucocorticoid-inducible kinase 1 in a novel model of co-morbid opiate use and mood disorders</td>
<td>[Image]</td>
<td></td>
<td>PhRMA Foundation</td>
<td>2/1/14-1/31/15</td>
<td>$100,000</td>
<td>$100,000</td>
<td>0%</td>
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<tr>
<td>A novel emotional stress model of co-morbid opiate use and mood disorders</td>
<td>[Image]</td>
<td></td>
<td>NIH, NIDA</td>
<td>2/1/15-1/31/16</td>
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<td>Role of TORC2 activity in stress-induced changes in opiate reward and consumption</td>
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<tr>
<td>Neurobiological mechanisms underlying stress-induced changes</td>
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</table>
From the *CNS P&T Guidelines* revised November 21, 2013:
*A list of all the candidate’s funded grants (using the *CNS Funded Grants Only* worksheet) including the following in order: title, principal investigator, all co-principal investigators (unless prohibitively many), awarding agency, effective dates, total amount awarded, *total amount awarded to the candidate*, whether these amounts include indirect costs or not, and *the nature of the candidate’s participation in the grant if not P.I.*

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<thead>
<tr>
<th>in opiate reward</th>
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</table>

[To add another row to the table, push the tab key in the very last cell.]
1. Service within the Academic Community

a. Service to Scholarly and Professional Organizations:
List significant committee/administrative responsibilities in support of scholarly and professional organizations (at the local, state, national, and international levels) including: elected and appointed offices held; committee memberships and memberships on review or accreditation teams; reports written and submitted; grants received in support of the organization (refer to Form D-IVE); editorial positions, review boards and ad hoc review requests; and programs and conferences planned and coordinated, coordinated or served on a panel or chaired a session. Include evidence of contributions (e.g., evaluations by affected groups or peers).

Grant Peer Review
- 11/12/15 NIH Study Section (ZDA1 JXR-G, “Harnessing genome editing technologies to functionally validate genetic variants in substance use disorders)
- 2/8/16 – 2/9/16 NIH Study Section (Molecular Neuropharmacology and Signaling (MNPS))

Manuscript Peer Review
Ad hoc reviewer of more than 40 total manuscripts for the following journals:
- Behavioral Brain Research
- Brain Research
- Biological Psychiatry
- Hippocampus
- International Journal of Neuropsychopharmacology
- Journal of Neurochemistry
- Journal of Neuroscience
- Molecular Autism
- Molecular Metabolism
- Molecular Psychiatry
- Molecular Pharmacology
- Neuropeptide
- Neuropsychopharmacology
- Physiology and Behavior
- Translational Psychiatry

Memberships in Professional Societies:
- Society for Neuroscience: 2000 - Present
- American Society for Pharmacology and Experimental Therapeutics: 2013 - Present
- Faculty for Undergraduate Neuroscience: 2013 - Present

b. Service within the University:
List significant committee/administrative responsibilities and contributions within the University. Include service that advances the University’s equal opportunity/affirmative action commitment. Committee service includes: appointed and elected university, college, and department ad hoc or standing committees, grievance panels, councils, task forces, boards, or graduate committees. Administrative responsibilities include: the direction/coordination of programs or offices; admissions; participation in special studies or projects; collection development, care and use; grants received in support of the institution (refer to Form D-IVE), etc. Describe roles in any major reports issued, policy changes recommended and implemented, and administrative units restructured. Include evidence of contributions (e.g., evaluations by peers and affected groups).

University Service:
2013 - Present Interview prospective incoming Neuroscience Program Graduate Students and participate in recruitment lunches and dinners and poster session
### FORM D - IV C  SERVICE WITHIN THE ACADEMIC AND BROADER COMMUNITY

<table>
<thead>
<tr>
<th>Year</th>
<th>Role</th>
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<tbody>
<tr>
<td>2013 - Present</td>
<td>Interview prospective incoming Biomedical Sciences Graduate Students</td>
</tr>
<tr>
<td>2014 - Present</td>
<td>Physiology Department Graduate Affairs Committee</td>
</tr>
<tr>
<td>(2016 – Present)</td>
<td>Chair</td>
</tr>
<tr>
<td>2015 - Present</td>
<td>Physiology Department Systems Neuroscience Search Committee</td>
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<tr>
<td>2015 – Present</td>
<td>Neuroscience Program Graduate Comprehensive Exam Committee (Translational)</td>
</tr>
<tr>
<td>2016</td>
<td>Neuroscience Program Reappointment, Promotion, and Tenure (RPT) Committee</td>
</tr>
<tr>
<td>2016 - Present</td>
<td>College of Natural Science, Associate Dean for Faculty Development Search Committee</td>
</tr>
</tbody>
</table>
2. **Service within the Broader Community:**

As a representative of the University, list significant contributions to local, national, or international communities that have not been listed elsewhere. This can include (but is not restricted to) outreach, MSU Extension, Professional and Clinical Programs, International Studies and Programs, and Urban Affairs Programs. Appropriate contributions or activities may include technical assistance, consulting arrangements, and information sharing; targeted publications and presentations; assistance with building of external capacity or assessment; cultural and civic programs; and efforts to build international competence (e.g., acquisition of language skills). Describe affected groups and evidence of contributions (e.g., evaluations by affected groups; development of innovative approaches, strategies, technologies, systems of delivery; patient care; awards). List evidence, such as grants (refer to Form D-IVE), of activity that is primarily in support of or emanating from service within the broader community.

**Outreach Presentations**

03/2014  Gave Brain Awareness Week presentation to 1st grade class at Cornell Elementary School
1. **Evidence of Other Scholarship:**
   Cite evidence of “other” scholarship as specified on p. 2 in the “summary rating” table (i.e., functions outside of instruction, research and creative activity, and service within the academic and broader community). Address the scholarship, significance, impact, and attention to context of these accomplishments.

2. **Integration across Multiple Mission Functions:**
   Discuss ways that your work demonstrates the integration of scholarship across the mission functions of the university—instruction, research and creative activities, and service within the academic and broader community.

   My work seeks to understand how molecular and structural changes in dopamine neurons within the ventral tegmental area contribute to neuropsychiatric disorders, in particular drug addiction and mood disorders. I have integrated my research interests into the teaching mission of the university by teaching in both undergraduate and graduate courses that cover the molecular mechanisms underlying drug abuse and depression as well as the normal physiology and activity of the ventral tegmental area and the brain reward circuit. This instructional activity also occurs within my lab, as I help undergraduate and graduate students understand the primarily literature that informs their research projects. We are also publicizing our research findings on the role of the ventral tegmental area signaling changes in neuropsychiatric disorders to the broader academic community through presentations at national meetings and publication of peer-reviewed manuscripts, and invited review articles. I also utilize my research expertise to serve the broader academic community by reviewing manuscripts and serving grant review panels (National Institute of Health study sections). Finally, I hope to disseminate my research interests and findings to the broader community through direct participation, as well as participation of my trainees, in outreach activities hosted by the Neuroscience Program and Dept. of Physiology (such as the Neuroscience Fair, Brain Awareness Week, and PhUn day). As my research program grows, I envision these activities will also grow proportionally, extending the influence of my work both within MSU and in the greater academic and lay community.

3. **Other Awards/Evidence:**
   Cite other distinctive awards, accomplishments of sabbatical or other leaves, professional development activities, and any other evidence not covered in the preceding pages. (If the reporting period differs from the usual review period, then justify and support that period here.)
List grant proposals submitted during reporting period relating to teaching, research and creative activities, or service within the academic and broader community. Include grants in support of outreach, international, urban, and extension activities.*

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<th>Name of Granting Agency (Grantor:) Focus of Grant (Focus:)</th>
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<th>$ Amount Funded</th>
<th>Not Funded</th>
<th>$ Amount Assigned to Faculty Candidate (if Applicable)</th>
<th>Principal/Co-Investigators (if not faculty candidate)</th>
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<tr>
<td>I. Instruction</td>
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<td>II. Research/Creative Activity</td>
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*Anyone with an MSU Net username and password can log onto the web-based Information Reference database, maintained by the Office of Contract and Grant Administration, to search for records of proposals and grant awards by principal investigator. Printouts may be attached to this page.
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<th>Name of Granting Agency (Grantor:) Focus of Grant (Focus:)</th>
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<th>Principal/Co-Investigators (if not faculty candidate)</th>
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<table>
<thead>
<tr>
<th>Name of Granting Agency (Grantor:) Focus of Grant (Focus:)</th>
<th>Date Submitted</th>
<th>$ Amount Requested</th>
<th>Status</th>
<th>$ Amt Funded</th>
<th>Not Funded</th>
<th>$ Amount Assigned to Faculty Candidate (if Applicable)</th>
<th>Principal/Co-Investigators (if not faculty candidate)</th>
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<tr>
<td>18 Grantor: Helen Hay Whitney Foundation Focus: The role of serum and glucocorticoid-inducible kinase 1 activity in the ventral tegmental area on drug seeking and reward behaviors</td>
<td>6/2016</td>
<td>$160,500</td>
<td>X</td>
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<td>19 Grantor: National Institute on Drug Abuse, NIH Focus: Determination of morphological and molecular adaptations in ventral tegmental area dopamine neurons by chronic morphine</td>
<td>8/2016</td>
<td>$57,958</td>
<td>X</td>
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<td>21 Grantor: Peter F McManus Charitable Trust Focus: Inhibition of SGK1 activity as a novel therapeutic approach for the treatment of drug addiction</td>
<td>8/2016</td>
<td>$50,000</td>
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<td>Principal Investigator</td>
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**ii. Professional/Patient Care Activities**

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### FORM D - IV E  GRANT PROPOSALS

<table>
<thead>
<tr>
<th>Name of Granting Agency (Grantor:) Focus of Grant (Focus:)</th>
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<tr>
<td>Focus:</td>
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</table>

#### iii. International Studies and Programs

**Grantor:**

**Focus:**

#### vi. Urban Affairs Programs

**Grantor:**

**Focus:**

#### v. Other

**Grantor:**

**Focus:**

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