Editor’s Farewell Note
By Ashley Wagoner, Editor of The Neurotransmitter

It has truly been my pleasure to serve as the editor of The Neurotransmitter for the last 3 years. During my time as editor, we’ve produced 9 newsletters that I hope have been enjoyable and informative! As the official publication of the Western North Carolina Chapter of SfN (WNCSfN), our intention for the newsletter was and still is to foster communication and collaboration among our Chapter members, as well as the larger scientific community. With each issue The Neurotransmitter aims to bring you new “hot topics” in neuroscience, inform about upcoming events in the community, highlight Brain Awareness Council’s events and updates, and provide professional development advice and guidance.

As editor and contributor to the newsletter, I have interviewed new faculty and alumni from the Neuroscience program, taken pictures at events, investigated science-related events in the community, all while bringing in new ideas to assemble the best newsletter possible. Although my tenure ends with this issue, the newsletter will continue to be published and staffed by faculty and graduate student Chapter members. This current issue outlines the many exciting Brain Awareness Week events, Brain Awareness Council request for supplies and new officers, and provides details about how you can get involved in BAC, WNCSfN, and The Neurotransmitter! I hope that you have enjoyed reading each issue as much as I have loved publishing them. As always, we hope you find the contents of this issue useful and informative, and welcome feedback and suggestions.

Save the Date!
The 16th Annual Graduate Student and Postdoc Research Day brings together students, postdocs, and faculty from programs and departments across all schools and colleges of Wake Forest University. We hope that even more students, postdocs, and their faculty mentors will participate in order to display the full range of impressive work being done by graduate students and postdoctoral fellows at Wake Forest University. This year’s event will be held on Thursday, March 24, 2016 at The Wake Forest Biotech Place Conference Center, at 575 N. Patterson Avenue in downtown Winston-Salem.

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WNCSFN Officers:
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Robert Hampson, Ph.D.
Clinical Councilor: Christopher Whitlow, M.D.
Student Councilor: Greg Alberto
Brain Awareness Council – Fall Recap

by Ashley Wagoner, Neuroscience PhD Student

The newly appointed BAC Steering Committee had a busy fall semester! Along with a full school visit schedule, the committee added new events to the docket to expand BAC outreach including Project Pumpkin and the Walk to End Alzheimer’s.

• **Project Pumpkin** is an annual service event on the Reynolda Campus at Wake Forest that brings over 1000 children of all ages to campus for safe trick-or-treating, carnival games, and fun learning experiences. BAC members brought the animal, human, and *monster* brains to reach a new audience in a family fun environment.

• **The Walk to End Alzheimer’s** was held on October 31st, 2015 at Tanglewood Park. This year was the first time BAC participated in this event and a great time was had by all including our members, friends, families, and furry companions (pictured below left)! Thanks to Brenna Beckelman for leading the BAC team as well as all our participants and donators who helped BAC reach its goal of $1000!

• BAC members who attend SfN also have the chance to present at the **SfN Educational Outreach Poster Session**. This session allows the BAC to share our outreach efforts as well as learn about new educational avenues. Thanks to Brenna Beckelman and Greg Alberto for representing BAC at SfN (pictured below right)!

### Upcoming BAC Events

#### Brain Awareness Week

- Winston Salem Children’s Museum: Saturday March 5 2016 (10:00 AM – 1:00 PM)
- Winston Salem SciWorks: Wednesday March 16 2016 (9:00 AM – 12:00 PM)

#### School Visits

- Kimmel Farm Elementary: Wednesday April 6 2016
- Bolton Elementary: Monday April 18 2016

Please contact Brenna Beckelman ([bbeckelm@wakehealth.edu](mailto:bbeckelm@wakehealth.edu)) to sign up!

Current BAC Steering Committee:

- Steering Committee Coordinator: Elaine Shing
- Outreach Course Coordinator: Brenna Beckelman
- BAW Coordinator: Sarah Ewin
- Webmaster & Public Relations: Position Available
- Neuroflix Chair: Greg Alberto
- Materials Manager & Lending Library: Madelyn Mauterer

BAW position open for Webmaster/Public Relations!

Contact [Elaine Shing](mailto:elaineshing@wakehealth.edu) for more details
Before your interview, you are just a piece of paper. How you tailor your CV/Résumés may be the deciding factor in having it read (and on your way to getting the position!) or tossed.

Most PhDs are taught that more is more: ten first author publications are better than one first author publication. That works when applying for a job in academia where a Curricula Vitae (CV) is often asked for. That CV is a fairly detailed overview of your life’s accomplishments. But, when it comes to being a strong industry applicant for a PhD job, less is more in the form of a Résumé. In contrast to a CV, a résumé is a general and concise introduction of your experiences and skills as they relate to a particular career or position. Below is a short summary on important components in building a CV/résumé and what academia and industry want to see from a recent graduate.

<table>
<thead>
<tr>
<th>Component</th>
<th>Academia</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Though it is recommended to limit page length, an academic CV may be several pages in length.</td>
<td>Industry employers suggest your résumé to be one to two pages.</td>
</tr>
<tr>
<td>What is the emphasis?</td>
<td>Emphasize scientific knowledge, research, grants, teaching and publications.</td>
<td>The emphasis is more on work experience and transferable skills that pertain to a particular job.</td>
</tr>
<tr>
<td>What is the focus?</td>
<td>The focus can be on your training, activities, skills, research techniques, etc.</td>
<td>The focus needs to be on the outcomes you achieved—not how you achieved them. Your accomplishments are most important as that is what you bring to the company.</td>
</tr>
<tr>
<td>Publications</td>
<td>Include all publications: book chapters, journal articles, manuscripts in submission or in preparation, web-based publications.</td>
<td>Most industry employers want to see work experience and results. Publications and education history do not need to be expanded upon.</td>
</tr>
<tr>
<td>References</td>
<td>It is commonly recommended to include references.</td>
<td>It is not necessary to include references as it takes up space. Employers will expect that you have references.</td>
</tr>
<tr>
<td>Objective</td>
<td>Summary of research interests and training plan.</td>
<td>Describe what value you will offer the company.</td>
</tr>
<tr>
<td>Wording</td>
<td>Make it detail oriented, highlighting academic achievements and research interests.</td>
<td>Use specific action-oriented verbs that describe relevant skills and experiences.</td>
</tr>
<tr>
<td>Tips</td>
<td>Think of a CV as a living document that will need to be updated frequently.</td>
<td>Streamline your document by removing extraneous information and use clear and concise formatting.</td>
</tr>
</tbody>
</table>

For more information about Résumés and CVs check out the [Cheeky Scientist Association blog](https://www.cheeky-scientist.com/)!
**Better Know A Lab: Mark Ferris, PhD**
*Interview conducted by Stephen Day, IPP Graduate Student*

What are the main research questions being investigated in your lab?
The primary theme of the research in my laboratory is to understand the neurobiology of reward and reinforcement learning and how learning-induced changes in neurobiology shape goal-directed / motivated behavior. We seek to understand the function of specific receptors and rapid neurotransmitter signaling under normal learning conditions and in neuropsychiatric disorders; drug addiction in particular. Currently we focus on interactions of dopamine and acetylcholine, particularly at the nicotinic receptors in limbic brain structures.

What are the primary techniques are used to answer those questions?
We use a number of techniques in the laboratory including drug and natural reward self-administration in rodents, voltammetry in freely-behaving rodents to detect rapid dopamine signals in real time as animals interact with their environment, voltammetry in brain slices and anesthetized preparations, microdialysis coupled to high-pressure liquid chromatography (HPLC), viral-mediated gene transfer technologies, histochemistry, microscopy, and various behavioral assays (locomotor activity and conditioned learning for example). We detect neurotransmitters en passant as animals interact with their environment or we stimulate neurotransmitter release using traditional pharmacology, electrical stimulation of specific brain regions, or light-stimulation with optogenetics.

Who is in your lab?
I currently have one research technician, an undergraduate research assistant from Wake Forest University, and a postdoc will that will start this summer.

Why did you choose to come to Wake Forest to study neuroscience?
It was an excellent fit for my research and intellectual interests. Wake Forest Department of Physiology and Pharmacology has a long (30+ years) and internationally renowned research program in substance abuse and neuropsychiatric diseases.

During your scientific career what helped you decide you wanted to stay in academics?
I like the autonomy that comes with running my own lab, particularly the freedom to explore what interests me intellectually. I also like the many challenges, diversity in skillset, and environment of constant learning that comes out of the academic research laboratory. I’ve also had some success at publishing and receiving funding for my research ideas (so far). So, in short, it’s fun and I’m able to do it.

Do you have any new and exciting findings that you would like to share with the local neuroscience community?
We are about to publish results showing that nicotinic receptors exert opposing effects on rapid dopamine signaling that is important associative learning and motivation in drug use prone vs drug use resistant animals. This finding suggests that these receptors may confer some degree of individual vulnerability to substance use disorders.

How would you describe your mentoring style and what are you looking for in a student who would join your lab?
My mentoring style is individualized for the student. However, I would prefer to give autonomy under a particular framework that is set up in early meetings by the student and me and be a results driven mentor with an open door policy (and not just “data results”). This approach places quite a bit of responsibility on the student, which is good, and is usually better suited for graduate students who have a year or so of lab work under their belt.

Are you working on any projects in which you would be interested in collaborating with other laboratories in order to utilize additional techniques and expertise?
Yes, in fact I am already collaborating with several laboratories and I’m always looking for solid collaborations that might blossom into interesting research programs.

What kind of lab dynamic do you strive for?
First and foremost the lab has to be a vehicle for members to find purpose and passion and not feel stifled intellectually or personally. If done well by both myself and the student, then this purpose and passion should be in the context of a fun and relaxed environment as well. Science is fun. Also the lab should never become technique driven, but theory driven which guides what techniques will be used. This is where collaborations are important in your previous question.
Rhiannon Mayhugh is a third year graduate student in the Neuroscience graduate program. She works with Dr. Paul Laurenti and Dr. Jonathan Burdette in the Laboratory for Complex Brain Networks (LCBM). She received a Bachelor’s degree from the University of Central Florida in Psychology where she developed an interest in Neuroscience. Following her matriculation, she worked for several years before moving to Winston Salem and worked as a volunteer in Dr. Laurenti’s lab before starting graduate school. Her lab uses fMRI to examine how disrupting the habits of daily social (non-dependent) drinkers affects various regions of the brain, and is using network theory to quantify these changes. The title of her project is, “Effects of Stress and Alcohol Abstinence on Brain Networks in Daily Social Drinkers”. After she completes her degree she would like to continue in academic research and work towards understanding consciousness and how the brain works globally, as well as contribute to the field of alcoholism.

**WNCSfN Annual Student Research Day 2015**

*By Ashley Wagoner, Neuroscience PhD Student*

The annual student research day, held December 8th, brought graduate students, postdocs, and faculty at Wake Forest together to share research and continue building community within the program and WNCSfN. The poster session showcased 20 neuroscience projects conducted by 1st year students to recent PhD graduates. In addition to the student-organized poster session, there was a student-organized data blitz, where 4 senior graduate students had 5 minutes or less to discuss new findings in their lab. Congrats to Dominic Gioia and Chris Hauser for winning the poster competition this year!

Our featured speaker was Regina Carelli, PhD. Dr. Carelli did her postdoc here at Wake Forest and is now a Stephen B. Baxter Distinguished Professor and the Associate Chair of the Department of Psychology at UNC Chapel Hill. Dr. Carelli gave an engaging lecture on the role of reward-related processing in learning, motivation, and decision-making. She also participated in the poster session visiting most, if not all, student’s posters to discuss their work.

Thank you to everyone that participated in helping make this research day a continued success!
Are you thinking of a beautiful sunset? If so, look more closely. The trees like black shadows are of the 'Purkinje' cells, some of the largest neurons in the human brain. These trees like branches transfer electrical signals to and from the brain to synchronize our movements. In birth disorders like Autism, these Purkinje cells are missing or have very few branches. Hence, people with such disorders show an abnormal way of walking, seizures, involuntary eye movement, or uncoordinated movement of the hands.

Artist: Dr. Gauri Kulkarni
Medium: Acrylic on Canvas
Contact: bestgk@gmail.com

Preview: The Octopus, Intelligent Life Without Bones
Ronald Oppenheim, Ph.D., Professor Emeritus Neuroscience Program

The attached brief article that can be accessed via this link provides a summary of the remarkable behavior of the octopus, a cephalopod mollusk that is thought to be the most intelligent invertebrate on the planet. Despite the bad reputation of octopuses and squids, based largely on accounts in science fiction and horror movies, they are, in fact, solitary, soft-bodied, reclusive animals posing no threat to humans (in fact, because of our love of grilled octopus and deep-fried calamari - the Italian word for squid used on restaurant menus to avoid the "icky" response - the opposite is true). Perhaps best known for their extraordinary ability at defensive camouflage, by using sophisticated neural control of muscles that modulate the size and activity of pigment cells in the skin, they can mimic the color and pattern of diverse substrates, produce moving skin patterns of color and even physically modify their skin texture to match the background (coral, rocks, etc.). As amazing as this is, however, behaviorally it is just the tip of the iceberg, so to speak, of the accomplishments of these amazing marine creatures. For example, Jacques Cousteau relates that in the book The Compleat Goggler (Gilpatric, 1939), his friend the author and pioneer underwater explorer Guy Gilpatric, wrote that “he once brought an octopus home and put it in an aquarium, which we then covered with a heavy lid. A short-time later, the aquarium was empty, and Gilpatric found the octopus going through his library, book by book, turning the pages with its arms “(p. 29 Cousteau and Diolé, 1973). Apocryphal? Elsewhere they write “We have been able to determine that the curiosity of the octopus is virtually without limits” (p 250).

Jacques Cousteau using SCUBA to observe the Mediterranean Octopus (O. vulgaris)
The WNCsFN and Neurotransmitter Staff would like to congratulate the following students and faculty for their recent awards!

**Veronica Scerra**  
NRSA from NEI  
“Frontal Mechanisms of Visuomotor Control”  
Advisors: Emilio Salinas and Terrence Stanford

**William John**  
NRSA from NIDA  
“Determinants of Cannabinoid Maintained Behavior and Effects on Cognition in Rhesus Monkeys”  
Advisor: Michael Nader

**Adrienne Adler**  
Young Investigator Travel Award  
American Pain Society meeting in Austin, Texas  
Advisor: Fadel Zeidan

What *The Neurotransmitter* can do for YOU:

- Inform you about new and upcoming events in the NC Triad
- Find out how to get involved in the neuroscience community
- Advertise current or forthcoming clinical trials
- Connect and network with neuroscience faculty
- Show off snazzy pictures taken in (or out) of lab!

Have something to share? Interested in getting involved? Email Stephen Day (sday@wakehealth.edu) for more information!

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