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From: Geert J. de Vries, Director
Subject: Academic Program Review

The Neuroscience Institute (NI) conducted a thorough self study of its academic programs in the summer and fall of 2015. Our Academic Program Review (APR) Committee was chaired by H. Elliott Albers and had as other members NI core faculty Charles D. Derby, Geert J. de Vries, Aras T. Petrulis, Walter Wilczynski, and NI associate faculty Daniel A. Weiskopf (Philosophy), Page L. Anderson (Psychology), and Bingzhong Xue (Biology). The APR committee met five times face to face to discuss procedures and results of the self study. On August 17 the APR committee organized a one-day institute-wide retreat (core and associate faculty included) to discuss status and future directions of our undergraduate, graduate, and research programs, and our contributions to cities and to globalization of the University. On October 28, we circulated a preliminary draft of the Self Study Report among core members for feedback. On November 17, the APR committee voted unanimously to present the document to the faculty for approval. On November 19, the Executive Committee unanimously approved the document, and on November 20 the core faculty did so as well. The document was then sent to all associate faculty for feedback and a vote, using the Survey Monkey website, which remained open through November 27. Associate faculty also unanimously approved the document. Here, I will highlight salient points of the review.

Where we are now
This is the first APR of the NI, as the institute was founded in 2008. The core, which functions as an academic department, currently has 19 core faculty and 2 non-tenure track faculty members. In addition, there are 52 associate members spread over the following departments: Biology, Chemistry, Computer Science, Law, Math & Statistics, Music, Nursing, Philosophy, Physical Therapy, Physics & Astronomy, and Psychology. Associate members can serve as primary mentors of our graduate students and vote on, e.g., changes in the Bylaws, the undergraduate, and graduate programs. Although this report considers the entire NI, it focuses on activities of core faculty.

Neuroscience research at GSU is strong and well funded. By far the strongest and most renowned group is behavioral neuroscience. This partly stems from activities of the Center for Behavioral Neuroscience, which antedated the NI. This group was responsible for obtaining the largest grant in GSU’s history and has continued to nurture grant-funded multi-PI research and educational activities. Another strong area is computational neuroscience. An emerging area is neurogenomics, which was boosted by three Second Century Initiative (2CI) senior faculty hires in the past four years. Compared to other Natural and Computational Science units in the College, the NI is relatively underrepresented in translational science (directly clinically relevant research). NI faculty members are well-cited, publish in first-rate journals, and provide significant service to the field, for example, as officers of national and international societies or as editorial board members and editors. They are also successful in bringing in grants. The APR Dashboard indicates that, last year, core faculty brought in over 4.4 million in external funding.
Our graduate program is in good shape. It started in 2010, with 27 students transferring from existing programs to Neuroscience. The program grew considerably from 2012-2014 and now has 49 PhD students. In response to a relatively long time-to-degree (currently 7 years) and moderate research activities of our graduate students in their first few years in the program, we convened an ad hoc Milestones and Curriculum Committee last year, which proposed a number of changes to align our graduate training better with that of other US graduate programs in terms of core demands. We also restructured the qualifying exam, making the program on the whole more efficient. We expect to see this reflected in a significant reduction in time-to-degree and an increase in productivity. Nevertheless, our graduate students publish in strong journals, including some of the top journals in our field, e.g., Journal of Neuroscience and eLife. Upon graduating, most of them get postdoctoral positions in top national universities, e.g., Harvard, Indiana, Emory, and the University of Texas, and some have already faculty positions, e.g., at Haverford College, Kent State, and Emory. Although our program is too young to have been included in most national rankings, we were ranked among the top 20 neuroscience graduate programs in United States in both 2014 and 2015 by Graduateprograms.com.

Our undergraduate program, which offers a bachelor of science in Neuroscience, started in 2011 and has expanded quickly, with just 31 students enrolled in the fall of 2011 to now more than 320 majors and a growth rate suggesting that these numbers will double in the next five years. Our majors are academically strong students with high school GPA, Freshman Index, SAT, and ACT numbers on the high end of University-wide numbers. The ethnic and gender composition of our majors reflect the high degree of diversity seen across campus. Surveys of our alums suggest that about two thirds go on to advanced degree programs, with students enrolling, for example, in graduate programs at Georgia Tech, Emory, Columbia, University of Texas, and Cornell. Surveys of our alums as well as our current students show a high degree of satisfaction with the program. An exception is the availability and variety of elective courses, which I will address below.

In terms of contributions to cities, the NI is especially active in K-12 educational programs and plays a clear leadership role in the Atlanta Science Festival. We also run an NIH-funded program to immerse high school students and teachers from the Atlanta region in neuroscience research, and organize professional development workshops for high school science teachers. We maintain a lending library providing neuroscience teaching material to K-12 teachers in the Atlanta area, and have set up public education exhibits at the Atlanta Zoo. We plan to maintain this same level of involvement going forward. In terms of contributions to globalizing the University, neuroscience by nature is a globally connected field. Indeed, our faculty have given numerous international presentations, taught at international courses, served on international professional societies, organized sessions at or served on program committees of international conferences, and hosted international visitors in their labs. We don’t expect this to change.

Where we want to go
Looking ahead, the NI core will face a number of demographic challenges. Our faculty is unbalanced across ranks. Fourteen of our nineteen faculty members are full Professors (six of whom are sixty years and older) and five are Associate Professors (three of whom have been in that rank for six years or longer). Also, although we have a new assistant professor joining the NI in May, we have no other junior tenure-track faculty members and we have limited diversity, which is hurting us. We would, therefore, like to hire new outstanding tenure-track faculty members with exceptional promise to establish well-funded and independent research programs, as well as contribute to the diversity of our program. We plan to justify hiring additional faculty in part with the growth of our educational programs (see below).
We expect that the new hires will help us maintain our excellence in behavioral neuroscience and build strength in areas likely to match well with ongoing research in other units on campus such as neurogenomics and neuroinflammation research. With respect to the latter, we propose to develop a Center for Neuroinflammation. This center would map on well with strength already present on campus in inflammation, immunity, and medicinal chemistry and would build strength in an area likely to generate significant research funding. We hope to propel the development of this center by hiring a senior faculty member, using funds generated by the University’s Next Generation program.

We plan to strengthen our graduate program, both in terms of numbers and in terms of breadth of educational offerings. With respect to the former, we have a strong pool of applicants each year and have to turn down students because of lack of training sites. Increasing the number of research faculty and finding new ways to encourage our associate faculty to mentor graduate students would be ways to deal with this. We also plan to grow our Master Program, for example, via broader advertisement of our 4+1 option, in which students can earn a BS and MS in Neuroscience in five years, and via a non-thesis MS program targeted to science professionals. Partly in response to the graduate student survey done for this APR, we will develop new courses that align better with the research areas we want to grow. We will also place a stronger emphasis on career preparation, including preparation for career paths beyond academia. Finally, we will formalize and enhance training in teaching.

Our undergraduate program is in a healthy state with the number of majors rapidly expanding and possibly doubling in the next five years. In response to the APR survey of our alums and current majors, we plan to increase the variety and numbers of electives. We will form an ad hoc curriculum committee consisting of core and associate NI faculty to evaluate and re-structure our undergraduate program so that we can do this. We plan to work with the College to deal with the increased demand for teaching as the major grows. We also plan to develop new ways to give our majors a meaningful laboratory experience, preferably in ways that do not further tax the limited space available for lab-based courses.

Finally, we want to develop a formal post-doctoral training program. Although we have been successfully training postdocs funded by individual NIH and NSF research grants and National Research Service Awards, the responsibility for training has rested almost exclusively with the mentor. We plan to work with Dr. Lisa Armistead, Associate Provost for Graduate Education, to implement our plans for formalizing and enhancing our postdoctoral training program. We also plan to apply for federal training grants to support postdoctoral training.