

Opinion

***Nu Rho Psi*, The National Honor Society in Neuroscience: A decade of progress**

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Nu Rho Psi, the National Honor Society in Neuroscience, celebrates its 10th anniversary by reflecting back upon a decade's worth of growth, successes, and accomplishments of its membership. Fundamentally, *Nu Rho Psi* seeks to engage the nation's best and brightest science students early in their educational pursuits and steer them towards future careers in neuroscience, thereby driving higher quality neuroscience education and research at all levels. This article details the history of *Nu Rho Psi* since its founding by the Faculty for Undergraduate

Neuroscience (FUN) and reviews the current programs, benefits, and future initiatives of the Society. We make the case that *Nu Rho Psi* has enhanced the opportunities for undergraduate students of neuroscience and created a new culture among this vital cohort of budding scientists, reminiscent of the substantial network of faculty educators and departments of neuroscience established by FUN.

Key words: education; undergraduate; neuroscience; *Nu Rho Psi*; honor society; non-profit; Faculty for Undergraduate Neuroscience

The year 2016 marks the 10th anniversary of the founding of *Nu Rho Psi*, the National Honor Society in Neuroscience. *Nu Rho Psi* is the only national honor society specifically related to neuroscience, and its 3,000+ membership includes students and researchers of neuroscience at all levels from 65+ chapters sheltered by colleges and universities across the United States. *Nu Rho Psi* was founded in 2006 by the Faculty for Undergraduate Neuroscience (FUN) and now operates as an independent, grassroots 501(c)(3) non-profit agency, governed by a membership-elected National Council.

Initial discussions about establishing an Honor Society for the relatively new interdisciplinary field called Neuroscience began in the early 1990s within the FUN community under the Past President, Jack Boitano (Fairfield University). Concurrently, local clubs and honor societies – some with the name “*Nu Rho Psi*” – were organizing at schools such as Johns Hopkins University and Emory University. When it became apparent that there was substantial interest among neuroscience students in having “our own” National honor society, an organizing committee was formed consisting of Andy Mickley (Baldwin Wallace University), Jean Hardwick (Ithaca College), Joe Achor (Baylor University), Eric Wiertelak (Macalester College), Shubhik DebBurman (Lake Forest College), and Ilsun White (Morehead State University). Working with the FUN executives, this committee drafted a [Constitution and By-Laws](#), proposed an insignia (see *Figure 1*), and drafted a transition plan suggesting that the FUN leadership temporarily serve as the *Nu Rho Psi* governing group. In the spring of 2006, these seminal documents were sent to FUN-President Michael Kerchner (Washington College), approved by the FUN Council, and subsequently enthusiastically supported by the FUN membership at large. Applications to shelter a Chapter of *Nu Rho Psi*, the National Honor Society in

Neuroscience, were openly solicited, and on 7 November 2006, the first charter was granted to Baldwin Wallace College (now, Baldwin Wallace University). Soon thereafter, charters were granted to Baylor University and Macalester College. The FUN Council continued to provide the governing structure for *Nu Rho Psi* until the honor society was incorporated in Ohio and received its own Federal tax-exempt status (both in 2011). The first [Nu Rho Psi National Council](#) elections were held that spring and one of the original organizers, Joe Achor, was elected as the first President. Now fully independent, the *Nu Rho Psi* National Office was established at Baldwin Wallace University where it remains today. One of the other original organizers, Andy Mickley, has served as Executive Director since the Society's founding.

Since its inception *Nu Rho Psi* has worked to fulfill its mission which includes: encouraging scholarship and professional interest in neuroscience; awarding recognition for excellence in scholarship; advancing the discipline of neuroscience; encouraging membership networking and mentorship; and increasing public awareness of neuroscience and its benefits for the individual and society. Thus, although one function of *Nu Rho Psi* is to recognize and honor student achievement, the organization's broader purposes include aiding in the professional development of its members and encouraging its members to contribute to the scientific and public discourse on neuroscience.

In parallel with the [escalating public interest in neuroscience](#), *Nu Rho Psi* has seen substantial growth in the number of chapters and individual membership over the past few years (see *Figure 2*). Chapters are found at a diverse array of institutions, ranging from small liberal arts colleges to large public universities. Notable honorary members include Larry Squire, Robert Sapolsky, His Holiness the 14th Dalai Lama, Joanne Berger-Sweeney, Joseph LeDoux, Douglas MacDonald, and Eric Nestler.

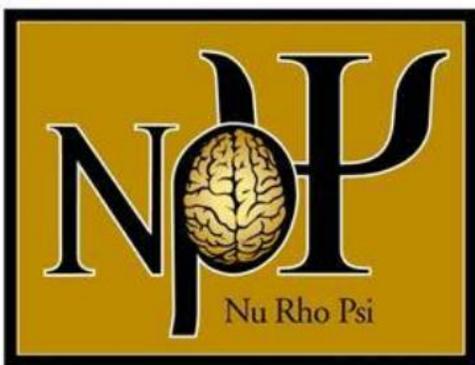


Figure 1. The official *Nu Rho Psi* insignia. The Greek letters of the honor society, “NPΨ”, designate the interdisciplinary science that engages its members in the study of the brain and the rest of the nervous system. The Greek letter Nu (N, ν) stands for the noun *Nous* (pronounced “noose”), meaning “Mind.” The letter Rho (P, ρ) stands for the verb *Pueaoai* (pronounced “hruesthigh”) meaning, “to cure.” The letter Psi (Ψ, ψ) stands for the noun *Psyche* (pronounced “psuke”), meaning “life.”

However, despite this growth, *Nu Rho Psi* is still a relatively small honor society, compared to older and more established societies. For example, *Psi Chi*, an honor society for psychology, was founded in 1929 and has a membership of over 700,000, and *TriBeta*, for the biological sciences, was founded in 1922 and has a membership of over 200,000. Although *Nu Rho Psi* does not have these extensive histories, the honor society’s prudent management and recent growth has allowed the offering of substantial benefits for neuroscience students and for institutions with neuroscience programs. We encourage readers to consider establishing a chapter at their own institution or getting involved with an existing chapter.

***Nu Rho Psi*’s Impact on the Neuroscience Education Community**

Nu Rho Psi’s impact on the education of neuroscience and the neuroscience community as a whole can be seen at the level of both individual members and chapter-wide efforts. The National Council works diligently to continually implement new benefits and programs for its members, and here we provide several examples of these initiatives and their significance in the enhancement of neuroscience education.

Benefits of Having a *Nu Rho Psi* Chapter

The existence of an active *Nu Rho Psi* chapter on campus can provide a framework for co-curricular activities for neuroscience students. Chapters are encouraged to organize neuroscience-related events on campus or in the broader community. In our experience, these sorts of co-curricular activities, including peer mentoring opportunities of new students by upperclassmen, help to build a sense of community within a neuroscience program, strengthen the quality of students enrolling in the associated neuroscience major or minor, and may directly increase retention of top

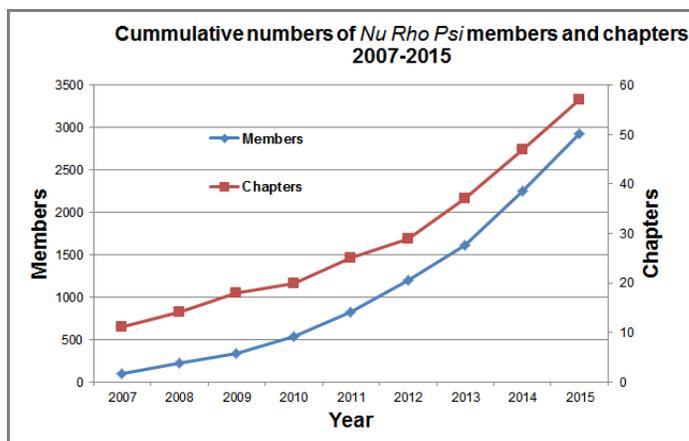


Figure 2. *Nu Rho Psi* membership and chapter growth from 2007-2015. Currently *Nu Rho Psi* has over 3,000 members and 58 chapters in all regions across the United States, ranging from small liberal arts colleges to large public universities. Between 2013-2014 the number of annual member inductions grew by one-third, and the society has inducted around 650 new members annually since then. Likewise, the number of new chapters has grown steadily each year, with 29 new charters granted between 2013-2015 alone. As there are currently about 200 institutions with Neuroscience majors in the United States (a number that continues to grow annually and does not include schools with only a minor in Neuroscience) *Nu Rho Psi* has substantial room for future growth and expansion (<https://www.mymajors.com/colleges/neuroscience-major/>).

students to pursue further graduate studies and careers related to neuroscience.

In support of these chapter-wide ventures, chapters may apply for *Nu Rho Psi* [Chapter Activity Grants](#) to promote their educational and community outreach initiatives. Many of these initiatives focus on the *Nu Rho Psi* **Annual Theme** which is announced each January for the following academic year. Themes have included “The Neuroscience of Drug Addiction” (2014-15) and “Traumatic Brain Injury” (TBI; 2015-16). The Society offers resources (both financial and scholarly) to encourage educational outreach in support of the Annual Theme. For example, *Nu Rho Psi* partnered with the U.S. Department of Defense (DoD) to provide educational materials and access to DoD scientists as chapters planned their education programs in 2015-2016. Some examples of recently funded chapter activities include:

- **Northeastern University** used the funds to support its affiliations with Northeastern’s Center for STEM Education and the Science Club for Girls during TBI Awareness Month. With this award, they not only spread awareness on TBI incidence to elementary and high school students in the greater Boston area, but also helped to inspire students to pursue careers in STEM.
- **Georgia State University** used the funds to start the Atlanta Neuroscience Symposium, held in conjunction with Emory University, Georgia Tech, and the

University of Florida to showcase neuroscience research conducted in the Atlanta and southeast U.S. This symposium covers a wide variety of topics related to neuroscience such as cognitive, molecular, systems, engineering, and neuroethics.



Photo 1. Induction of the 3,000th member of Nu Rho Psi. On 18 February 2016, Northeastern University inducted 34 *Nu Rho Psi* students, including Bailey Harrison (holding certificate), who had the honor of being the 3,000th member of *Nu Rho Psi*. Bailey, a third year student from Upstate New York, worked full-time in Wade Regehr's lab at Harvard Medical School during her second cooperative education rotation. She plans to pursue an M.D./Ph.D. program after graduation.

Chapters may also apply for the [Chapter of the Year Award](#) in recognition of their excellence in carrying out the mission of *Nu Rho Psi* on the local, regional and/or national level. For example, the 2014 Chapter of the Year Award was given to the **University of Virginia** for their active member recruitment and retention, a successful mentor/mentee program where underclassmen are paired with more senior students to facilitate their development in neuroscience, a consistent program of faculty and student research presentations, and a record of collaborating with other campus science groups to disseminate neuroscience education and community outreach. This award is one of the few national honors recognizing excellence that can be achieved by an undergraduate neuroscience program.

Benefits of Individual *Nu Rho Psi* Membership

Nu Rho Psi's efforts have contributed to the focus and promotion of undergraduate neuroscience education by supporting student access to conference travel, research, and advocacy resources. Students have documented the impact of these programs in their own words on the *Nu Rho Psi* [YouTube channel](#).

In collaboration with FUN, the honor society offers competitive [travel awards](#) for members to attend and present their research at the annual Society for Neuroscience meeting. Over the past 8 years, *Nu Rho Psi* has sponsored 21 student travel awards totaling **\$15,750**, a number which will only continue to grow over time. Student feedback suggests that these travel awards have a strong positive impact on career development, and the honor society plans to continue to work with FUN to provide conference travel support in the coming years.

- **Nate Bohm-Levine, 2015 NRP Travel Award recipient:** "The award completely surprised me. It felt great to know that an established group of scientists

actually saw the promise in the work I was doing, and saw promise in me as a capable researcher. On a more practical note, of course, the money from the award was extremely beneficial, especially at small school like Oberlin where funds for research can be quite limited. All in all, the [*Nu Rho Psi*-sponsored] FUN Travel Award allowed me to experience a truly formative event in my development, and has inspired me to work hard to be a successful and thoughtful scientist."

- **Dan Lowes, 2015 NRP Travel Award recipient:** "Thanks to your generosity, I will be able to present my research with the neuroscience community and work on my goal of becoming a professional neuroscientist. I look forward to presenting my undergraduate research at SfN, as it will allow me to practice my presentation skills and it will help me contribute to the neuroscience community's knowledge of the brain..." Altogether, attending SfN will let me experience what it is like to be a part of neuroscience academia while simultaneously making me a better member of the field of neuroscience."

In addition, *Nu Rho Psi* now offers **\$1,000 Undergraduate Research Grants** to facilitate our member's scholarly research projects, including senior theses. Awardee research projects cover a broad range of study topics. Recent grant-supported projects have assessed a possible role for alpha-synuclein in cadmium transport in animal models of Parkinson's disease, characterized the function of serum proteins in behavioral symptoms of *Lupus Erythematosus*, examined the cross-consumption of marijuana and alcohol in mice, and evaluated the potential protective effects of sumoylation in a yeast model of Parkinson's Disease.

Outside of financial awards, members also have access to several [publications](#) (e.g., *The Nu Rho Psi Guide to Graduate School in Neuroscience*) and networking opportunities through an exclusive LinkedIn™ network (currently containing over 900 members) and a group Facebook™ page. *Nu Rho Psi* offers a gathering point for its members at a **National Meeting** held each year in conjunction with the Society for Neuroscience conference. News and additional information about benefits are available to members via the [Nu Rho Psi Newsletter](#).

Finally, *Nu Rho Psi* supports and participates in regional neuroscience conferences where young neuroscientists from around the country gather to share scientific findings. In 2016, *Nu Rho Psi* began sponsoring a "**Best Poster/Paper**" award at established regional neuroscience meetings, such as NEURON, mGluRs, MIDBRAINS, and SYNAPSE.

Nu Rho Psi and the Next Decade of Neuroscience

Over the past decade, *Nu Rho Psi* has enhanced the opportunities for undergraduate students of neuroscience,

thus creating a new culture among this vital cohort, reminiscent of the substantial network of faculty educators and departments of neuroscience established by FUN. Future efforts include sustaining and growing our research, travel, and chapter activity awards; enhancing further networking opportunities among members; and further expanding the number of chapters, particularly into the Western region (which currently lacks a regional undergraduate neuroscience conference).

One notable way through which *Nu Rho Psi* intends to attain these goals is through the sustained growth of its **Endowment Fund**. In December of 2012, following a generous gift from [NeuroScience Associates](#) (a provider of premier neurohistology services), the *Nu Rho Psi* National Council established this Fund, the purpose of which is to support initiatives that enhance the professional development of our members and promote the study of neuroscience beyond the programs already supported through regular Society income. In the future, the Fund will be a major boon for *Nu Rho Psi* members and will enable the society to further expand its grant offerings.

In conclusion, looking back upon a decade of achievement and looking forward to a decade ahead of even-greater goals, it is clear that the creation of *Nu Rho Psi* has been a success and that the society is flourishing beyond original expectations. Fundamentally, *Nu Rho Psi* seeks to encourage the nation's best and brightest science students early in their educational pursuits and steer them towards future careers in neuroscience, thereby driving

higher quality neuroscience education and research at all levels.

How to start a *Nu Rho Psi* chapter: *Nu Rho Psi* is a federation of local chapters, each with their own Constitution and By-laws consistent with those documents for the national organization. Membership in *Nu Rho Psi* is granted only through our chartered schools, and any accredited college or university in the U.S. may apply for a *Nu Rho Psi* charter. The application process is aimed at determining the likelihood that the school has the curriculum, resources and desire to foster quality neuroscience education of their members. Questions about *Nu Rho Psi* and the charter application process may be directed to the Executive Director, G. Andrew Mickley: amickley@bw.edu or nurhopsi@bw.edu.

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