

Douglas M. Sheeley, Sc.D.
National Institute of General Medical Sciences
45 Center Drive MSC 6200
Bethesda, MD 20892-6200

RE: NOT-GM-16-104

June 17, 2016

Dear Dr. Sheeley,

The Endocrine Society appreciates the opportunity to comment on NOT-GM-16-104 - “Approaches for supporting team science in the biomedical research community”. We acknowledge the critical role of the NIGMS in supporting multidisciplinary projects involving large teams with diverse backgrounds.

Founded in 1916, the Endocrine Society is the world’s oldest, largest and most active organization devoted to research on hormones and the clinical practice of endocrinology. Our membership of over 18,000 includes basic researchers, clinical researchers, and clinicians in practice. As an interdisciplinary field of research, endocrine scientists understand that drawing together a multidisciplinary team of researchers and physician-scientists to solve a complicated biomedical problem remains a challenging task that requires skill and expertise beyond the scope of conventional scientific or medical training. Furthermore, compensation and incentive structures may not accurately capture the value of team-based contributions to biomedical research. Despite these and other challenges, there exists strong interest in team science among our membership. Based on an analysis of the average number of authors on original research reports published in Endocrine Society journals, increased collaboration has resulted in more authors per report. This holds true for basic research as well as clinical research¹.

In our comments, we issue several recommendations for the NIGMS to consider in efforts to support team science projects. Specifically, we recommend that NIH/NIGMS:

- Support programs for team science that enable the development of teams of specialists with varied subject matter expertise;
- Explore approaches to support collaboration opportunities among new or unconventional partners;
- Extend multi-PI support for grants to the international community of researchers;
- Provide additional support for mentored career development awards that provide training in multidisciplinary approaches; and
- Develop and provide instruction and training for study sections on how to appropriately evaluate team science.

¹ Goldberg, MA*, and Kaiser, UB*, “The Rise of the Asterisk: One Step to Facilitate Team Science.” *Mol Endocrinol*, July 2015, 29(7):943–945



Team composition

The composition of teams should reflect the diversity of expertise needed to address the biological question under investigation in a robust and reproducible manner. **We therefore recommend that programs to support team science enable the development of teams of specialists with varied subject-matter expertise. We also encourage the NIGMS to explore approaches to support collaborations between new or unconventional partnerships.** Teams could be composed of experts and trainees from diverse fields including biology, engineering, chemistry, physics and mathematics. Teams could also be composed of geographically diverse institutions, or institutions of different sizes. Enabling a broad approach to supporting team science will encourage research teams to address fundamental questions of biology in addition to translational or applied science projects.

Research teams should also be empowered to recruit specific skills and subject matter expertise where appropriate. Examples of disciplines that might be recruited in team-science based research proposals include professionals with expertise in data acquisition, for example mathematicians and bioinformaticians to support study design, determine the feasibility of objectives, examine the availability of publicly available genomic resources, and support data storage and data annotation. Experts in statistics should be included as needed to address questions relating to study design, data preprocessing, normalization, analysis, and the detection of artifacts. Data analysis teams could include experts in data visualization, modeling, inference and interpretation. As research projects progress towards real-world application, research teams should include basic, translational, and clinical scientists, epidemiologists, health care providers, and public health professionals where needed.

Resources and infrastructure

The Endocrine Society recognizes that team science needs to be a priority for future research and funding priorities and we support existing policies to encourage multi-principal investigator (PI) grants. **We recommend that multi-PI support also extend to the international community of researchers.** Researchers from under-resourced countries can provide unique benefits as part of a broader team of scientists in developed countries. For example, other countries may have substantial populations or communities that reflect minority populations in the United States, with diseases prevalences that may be similar or different. Examining research questions in international populations in collaboration with a team of international researchers could lead to exciting new breakthroughs that benefit communities in the United States and worldwide.

New educational experiences will also be required to broaden the perspectives of trainees and midcareer scientists and enable them both to participate fully in team science projects and lead teams of scientists with diverse expertise. For example, K-series awards could specifically support training in team science through multidisciplinary approaches by encouraging or requiring a multidisciplinary mentorship/advisory committee. **We therefore recommend additional support**



for mentored career development awards that provide skills and knowledge needed to collaborate with and eventually lead multidisciplinary research teams. Mentors and their mentees should be allowed the freedom to explore translational science and incorporate basic science, health-services, or other research disciplines as part of the award².

Assessment of team science

Finally, we **strongly recommend that NIGMS develop and provide instruction and training for study sections on how to appropriately evaluate team science.** A shift to a team science approach will need to address issues around publications (recognizing contributions other than first or senior author) for example. Recognition from study sections will help ensure that institutions recognize and reward participation in team science projects.

The Endocrine Society appreciates the role of the NIH in supporting multidisciplinary research projects to achieve coordinated research goals. We share your interest in identifying needs and opportunities that are best addressed through multidisciplinary approaches, and we thank you for considering our comments. If we can be of any further assistance in your efforts, please do not hesitate to contact Dr. Joseph Laakso, Associate Director of Science Policy at jlaakso@endocrine.org.

Sincerely,

Henry Kronenberg, MD
President,
Endocrine Society

² <https://www.endocrine.org/~media/endosociety/files/advocacy-and-outreach/society-letters/endocrine-society-comments-on-physician-scientist-workforce.pdf?la=en> Accessed May 30, 2016.