

**Genetics Society of America Response to NIGMS Request for Information
Innovative Approaches to Technology Development for the Biomedical Research Community**

[Request for Information \(NOT-GM-15-118\)](#)

Responses due August 7, 2015

The Genetics Society of America (GSA) is strongly in favor of the National Institute of General Medical Sciences (NIGMS) continuing to support technology development, especially at its earliest stages. New technologies continue to drive research in genetics, as seen in the spectacular advances the last few years in areas like DNA sequencing, genome engineering, and microscopy.

While there are examples of technological achievements that arise from the study of specific research questions, the GSA notes that much important technology development is carried out by researchers interested solely or mainly in technology development. Indeed, there are a growing number of investigators drawn to questions in technology who see a career path in developing methodologies that span multiple research applications.

The notion that technologies typically arise because researchers “hit a wall” in solving their research problem applies only to a minority of circumstances and is not consistent with the history of many useful technologies. While there may be times where coupling technology with research questions can be helpful—perhaps especially in software development—we believe that it may often be counterproductive, inhibiting developers’ creativity and freedom and encouraging caution and conservatism.

In the review of technology development applications, NIGMS and the National Institutes of Health more generally should encourage a wide scope of future utility. Some of the best technologies—for example, PCR—are put to many innovative uses not foreseen by their developers when these ideas were conceived. As such, it is necessary for the peer review of proposed technologies to consider potential applications at least one or two grant cycles further in time, and study sections should be composed of those with a wide diversity of research interests. Criteria for review of these applications should explicitly note that a large fraction of new technologies either never work or, even when successful, never supplant existing technologies. Encouraging investigators to engage in high-risk, high-reward projects might be especially important for technology development, and NIGMS should expect that a significant fraction of supported efforts may not succeed.

Because much of technology is inherently interdisciplinary, with a wide range of potential applications, it can be a challenge for many funders to see it as their responsibility to support this

area. For example, imaging is used by scientists across many fields, but is not owned by one in particular. In addition, many of the investigators developing new technologies may not be life scientists, causing traditional sponsors of biomedical research to sometimes view those PIs as outside of their scope. To that end, NIGMS is in a strong position to provide leadership in this area because it already supports a diverse array of foundational work across many disciplines. NIGMS should therefore invest sufficient resources in technology development to ensure that this critical field continues to thrive.

Industrial partnerships in developing technology can be useful at later stages of the development cycle, but they are rarely available or appropriate at the earliest stages when commercial applications may not be apparent.

Finally, the GSA believes that NIGMS should consider all possible funding mechanisms for technology development. These could include the R21 mechanism for proposals with high impact, but little preliminary data; R01 for standard grants; and P01, P41, and P50 for groups of investigators interested in technology development.

Thank you for the opportunity to provide input on behalf of our more than 5,000 members worldwide. We appreciate the leadership that NIGMS has shown in engaging the community while considering how the institute can continue to support the development and dissemination of innovative technologies that will help advance biomedical research. The GSA and our members stand ready to assist you as these conversations continue to advance.



ABOUT GSA: Founded in 1931, the [Genetics Society of America](http://www.genetics-gsa.org) (GSA) is a professional scientific society with more than 5,000 members worldwide working to deepen our understanding of the living world by advancing the field of genetics, from the molecular to the population level. GSA promotes research and fosters communication through a number of GSA-sponsored conferences including regular meetings that focus on particular model organisms. GSA publishes two peer-edited scholarly journals: [GENETICS](#), which has published high quality original research across the breadth of the field since 1916, and [G3: Genes|Genomes|Genetics](#), an open-access journal launched in 2011 to disseminate high quality foundational research in genetics and genomics. The Society also has a deep commitment to education and fostering the next generation of scholars in the field. For more information about GSA, please visit www.genetics-gsa.org. Also follow GSA on Facebook at facebook.com/GeneticsGSA and on Twitter [@GeneticsGSA](https://twitter.com/GeneticsGSA).