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Cultivating Global Science

IN OUR RAPIDLY EXPANDING GLOBAL SCIENTIFIC RESEARCH ENTERPRISE, GOOD SCIENCE ANYWHERE is good for science everywhere, provided that there exists an open flow of information with transparent processes to promote rigorous peer review and scientific integrity. Last year on this page, I emphasized that collaboration across national boundaries requires a global ecosystem that nurtures and accelerates the pace of scientific discoveries to address the many grand challenges facing humanity.* The heads of major science and engineering research funding agencies from nearly 50 countries—primarily representing the G-20 and the Organisation for Economic Co-operation and Development—took the first steps toward this goal by convening at the U.S. National Science Foundation (NSF) in Virginia, for the first Global Merit Review Summit. The outcomes and momentum from the meeting, held on 14 and 15 May 2012, reflect the serious commitment of nations to ensure that science functions in a coherent and well-coordinated manner among developed and developing nations, maintains the public trust, and addresses each nation's unique needs for economic growth, national security, and human capital development.

One major barrier to successful international scientific collaboration is variation in what constitutes appropriate peer review of research proposals. Over the past year, Summit participants and others held regional meetings coordinated by NSF in Brazil, South Africa, Saudi Arabia, Belgium, and India to discuss this issue. The results were synthesized into a coherent set of basic principles that were circulated for input from all participants. As a result, this inaugural summit released a *Statement of Principles of Scientific Merit Review*† and created a Global Research Council (GRC), a virtual organization of the heads of science and engineering funding agencies from around the world.

The principles identified in the statement include the most basic and essential ingredients of scientific merit review: expert assessment, transparency of the evaluation process, impartiality, appropriateness, confidentiality, and integrity and ethical consideration. The expectation is that the objectives are at such a universal level that countries will be strongly inclined to participate. As one example, across countries there is extreme variation in the selection process for those who review research proposals, presenting an obstacle for countries that wish to partner in specific research endeavors. To ensure fair evaluation across countries, principles are needed to guarantee that the appropriate scientific expertise is employed for peer review, with a clear awareness of potential conflicts of interest. Agreement on such issues would help to foster more effective international research cooperation.

The GRC represents a new model for discussing issues aimed at unifying and strengthening the global scientific enterprise. For countries with recently established funding agencies such as India's National Science and Engineering Research Board, as well as for countries, such as Nigeria and Vietnam, in the planning stages for such new agencies, participation in the GRC should accelerate their efforts in recognizing promising science, developing their science infrastructure, and collaborating with other nations.

Going forward, regional meetings over the next year will focus on identifying core principles of scientific integrity, seeking consensus on potential subjects such as authorship, accuracy of data, and human subjects protocols. Much work has been done on this topic, but the GRC hopes to identify principles on which there is widespread concurrence and explore compliance mechanisms. The objective will be to adopt basic principles at the 2013 Global Summit, which will be co-hosted by Germany and Brazil in Berlin. Regional meetings will also begin to address the very complex challenge of open and shared access to scientific information—both data and publications. By harmonizing the standards that underlie different national systems, we can create the smoothly operating system of global science essential to addressing the world's most pressing challenges.

– Subra Suresh

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*S. Suresh, *Science* **333**, 802 (2011). †www.nsf.gov/news/newsmedia/globalsummit/gs_principles.pdf