

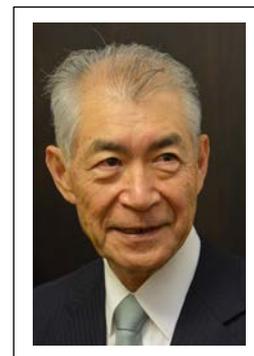
[Kakenhi Essay]

May 2014 Issue

Research Grants: Personal Gratitude and Hopes

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None of my research accomplishments would have been possible without the Grants-in-Aid for Scientific Research (Kakenhi). I have benefited from Kakenhi every year since returning from the US in 1974 to take up a position as an assistant professor at the University of Tokyo. On top of that, during my tenure as a professor at the Faculty of Medicine, Osaka University, I was extremely fortunate to receive funding through the grant program for Specially Promoted Research. Inaugurated in 1982, that was a large-scale Kakenhi that I received the first time I applied and on practically every occasion thereafter. To other researchers, my case in itself was somewhat unusual, so in that sense it might be thought that I am not in a position to complain. Nevertheless, having spent close to eight years in roles that included serving as Director of the JSPS Research Center for Science Systems and filling a seat on the Council for Science and Technology Policy, I was in a position to focus on the bigger picture of Kakenhi from a variety of angles. Accordingly, I decided to articulate my proposals for the grant framework in this essay with these perspectives in mind.

First, Kakenhi in the natural sciences in Japan tends to be tilted toward research with a clear benefit or end-goal in sight. This is extremely disappointing. However, it is not something limited to Japan as politicians the world over seem to be afflicted with the same disease and researchers from various countries are always complaining about this problem over the dinner table. That said, it is not anything new. For example, in the life sciences, cancer research has always enjoyed overwhelmingly generous grant funding from its earliest days. For the general public (and by analogy, politicians) to gain a better understanding of the significance of fundamental research, researchers themselves have to continue with their efforts to demonstrate how fundamental research leads to innovations. Providing the public with lots of real-life examples will be by far the most valuable approach to that end. As fortune would have it, an antibody inhibiting the PD-1—a molecule that I discovered by accident in 1992—now appears set to win approval this year as a cancer immunotherapy drug. As an advance in fundamental research, we used animal experiments to demonstrate the efficacy of PD-1 antibody as a cancer treatment. That was in 2002. From 2005 through 2009, I received support from the Ministry of Health, Labour and Welfare for drug development research. It is not unusual for a drug to be developed 20 years after the discovery of a key molecule or 10 years after the discovery of an important causal phenomenon. Discoveries in the academic research field are almost certain to lead to innovation. Innovative products would not be forthcoming in the absence of discoveries on this fundamental level.

Improvements to the application screening framework would be my first recommendation for the Kakenhi grants framework. This basically would entail a reorganization of the framework itself. The biggest problem with the scientific grant funding in Japan is that it has become too fragmented or overspecialized. This has had the effect of clouding our view of the flow of research as a whole and tends to produce researchers that cannot think outside the box of their own specialization. Furthermore, aside from the field-specific emphasis of grant funding, its categories starting from Specially Promoted Research to Scientific Research (C) and Encouragement of Scientists also tend to be overly divided into many categories by grant amount. Although in some cases, these categories were probably introduced as a product of policies hammered out to boost research grant funding under the prevailing political climate, I think the time has come to take a fresh look at the big picture and adopt a more generalized framework. As I have been saying for years, research grant funding on a per-project basis should be allocated on a scale at least generous enough to fund the research work of an entire research group. (The amounts needed for this purpose would vary by field.) To this end, grants should be divided into those for groups engaged in independent research on the one hand and those for projects led by individual investigators, on the other. In the life sciences field, grants for group-led projects would probably run into the tens of millions of yen whereas grants for individual projects conceivably would run around 1 million yen in scale. This would have the effect of narrowing down the number of applications for large, group-led projects. Additionally, I think the grant application screening framework should incorporate a review panel-based approach. Enlisting a panel of around 20 reviewers would enable the framework to eliminate arbitrary bias and oversights based on inadequate knowledge from the screening process. In the US, most of the grants for research in the life sciences are provided by the National Institutes of Health (NIH). The review panel framework employed by the NIH has become a model for the entire international community, and in my view, is the single biggest reason why US research in the life sciences has such influential power today.

Next, we should bring Kakenhi grants programs into line with international standards. To that end, I think we should have foreign reviewers involved in the screening of applications for large-scale grants, and have the main part of these applicant statements of research plans submitted in English. Of course, research reports should also be written in English. For many years now, I have been asking the JSPS and MEXT why research reports have to be submitted in Japanese but to date, I have yet to receive a clear answer. Although I was once told that reports have to be in Japanese so that the accomplishments of research can be communicated to the Japanese public, I surmise the real reason is because the bureaucrats would have trouble reading them otherwise. It would be a mistake to assume that Kakenhi grants are solely intended to support research by Japanese in the interests of Japan. The accomplishments of research are not meant to be for the Japanese alone. Science must be a common foundation that we share with the rest of the world. Japanese research accomplishments have an influence in other countries as well and broader recognition of those accomplishments will only help to boost the level or quality of Japanese research in return. The government's 4th Science and Technology Basic Plan seeks to increase the share of foreigners among researchers at national universities to 10

percent. However, that goal is inconsistent with current reality. In view of the importance of the Grants-in-Aid for Scientific Research and in the interest of gaining broader public understanding and support, it seems imperative that researchers themselves assume the initiative in advocating and implementing improvements to the Grants-in-Aid for Scientific Research framework.