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First let me congratulate again Dr. Suresh and everyone here for the birth of the new organization, and the adoption of the six principles for merit review.

My organization, Japan Society for the Promotion of Science, is the largest research funding agency in Japan that covers not just natural sciences and technology, but also social sciences and humanities, with the annual budget of about 3.5B US$, and also supporting more than 6,000 post-docs and doctoral students per year.

So I am from a typical, representative funding agency, different from the other panelists, all from organizations for specific research fields such as NIH, ARPA-E and NIST.

Let me briefly point out some critical issues for our research funding agencies, avoiding, as much as possible, the overlaps from the suggestions given already during these two days.

The first point is that one of the most critical issues is that the cycles of research have been shortened so rapidly by the new development of experimental apparatus and analysis and simulation technologies such as supercomputers that traditional schemes of research styles, how to publish academic articles, intellectual property rights issues, and the linear process of R&D from the curiosity-driven research to developmental and applied research through the so-called “valley of death”, have all been transformed to new schemes.

For the research styles, adding to the conventional hypothesis-driven research, the data-driven, data-mining-oriented research, particularly in the fields of environmental sciences, brain and cognitive sciences, genomic and other biological sciences, material science and nanotechnology, and many more, has been rapidly growing.

For how to publish academic papers, naturally "very advanced open access models" may appear, in which researchers upload their results directly on what may be called "intellectual commons" or "knowledge commons", from which people take information to use. On this "global knowledge sharing" infrastructure, those researchers are rewarded by their fame, or by IPR's they registered before they make their results in public.

For the process of R&D, the "death valley" would be eliminated, or at least diminished, and anyone who has some wisdom, or has efficient tools of knowledge mining, would win the race for innovative applications.

This trend of the shortening of research cycles, and the emergence of data-driven sciences, might change standard procedures taken by funding agencies for selecting research proposals and choosing topics of future research.

The second point, which was mentioned by John Holdren in his speech yesterday morning, is external conditions that influence the stability of funding for sustaining and promoting excellence and integrity of research. Those conditions include the instability of global and domestic economy, instability of political situations, and also the shortening of research cycles and global knowledge sharing as I mentioned.

Research funding agencies should be fair enough in handling procedures to give budgets to researchers, particularly fair

enough to make new, independent researchers to join in the arena with even opportunity, or unbiased evaluation.

However, practicing it under those external conditions is not quite easy. I believe that one of the important roles of Global Research Council would be to supervise merit review processes all over the world, after launching the organization and announcing the six principles.

The third point is international collaboration, of course. As Alan Leshner pointed out in his luncheon talk, more than 50% of papers published in the journal of SCIENCE are internationally collaborative. International collaboration has the merit of integrating diversified knowledge. It would give more impact on originality of research, and thus research excellence.

Thus, in GRC, we might want to think of how we can promote international collaboration for research excellence. Actually under G8HORCS we have developed G8 Research Council Initiative, in which international collaboration are much enhanced under a particular topic of research each year. This year's selection is concerned with material science, and just a few weeks ago the selection committee was held in Tokyo, inviting the chair from a country outside G8 for fairness. Also in AHORCS, which is the collaboration of China, South Korea and Japan, we have A3 Foresight Program, and in AsiaHORCS where China, India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Thailand, Viet Nam and Japan participate, we practice symposia for particular subjects for solving regional issues and for fostering young researchers in this region.

Related to this issue of international collaboration, our research funding agencies might want to pursue possibility to collaborate together towards supporting global research communities for overcoming "global issues" such as climate change, natural disasters, pandemic diseases, scarce resources for food and energy,

population issues, disparity of family income and educational opportunities, rapid fluctuation of economic markets, and even philosophical issues such as virtue, hope and responsibility.

The earthquake, tsunami and the accident at Fukushima Dai-ichi Nuclear Power Plant, all happened at the same time last year in Japan, gave us lessons of how researchers and research funding agencies should face not only disasters, but also social conditions that were drastically changed in those areas. I appreciate you again for your support at that time.

GRC must face global issues by discussing for funding internationally collaborative research to cope with global issues that may face future humankind.

The fourth point is how to communicate with various sectors, particularly with industries, governments, and universities. For example, as Subra Suresh mentioned yesterday, the merit review principles will be very helpful for universities as the standardized procedures for practicing research collaboration with other universities, including foreign ones.

On the other hand, the structures and functions of universities are very different among countries or regions. US, South Korea and Japan are similar in that there exist lots of private universities. A major portion of top-level universities in US are private, while the major portion is occupied by national universities in Japan. In Europe, most of universities are national, or almost fully government-supported, and students pay very low tuition (though it is going up). The schemes of funding agencies in each country for funding to universities seem to be influenced by these differences of structures and functions.

Furthermore, university researchers have two faces, one for curiosity-driven basic research for scientific discoveries, and the other for strategic research given its purpose from the

government and other funding sources. To make optimal the output of researchers with two faces, university researchers should be controlled by the two different kinds of goals or interests, *curiosity* and *strategy*, at the same time. It seems that heads of funding agencies are continually annoyed with this problem, and GRC might be a good place to discuss this sort of concrete and practical issues for universities. A similar argument holds for the relation of funding agencies with R&D in industries.

The last, fifth point is how to foster young researchers. Research funding agencies are concerned primarily with research excellence, and young researchers' lives are sometimes considered secondary. But it should not be so.

Many of young talents drop out every year from the race towards top-notch researchers. It gives negative affects to recruiting young students to the exciting arena of research, and in that sense fostering of young researchers is one of the critical issues for promoting research excellence. I will be very happy if we keep discuss about how we can implement research training programs that prompt young people to discover their own abilities, possibly other than research itself.

In any case, we now understand that GRC will take an essential role for keeping and increasing excellence and integrity of research all over the world, discussing important agenda and implementing their results. I bet it will be of great support not just for the research community, but also for the society and human activities that have already turned the corner of history from the 20th to 21st century.