

## Summary of Academy of Science Presidents' Meeting (APM)

**Date:** 12:30 -14:00, October 7, 2019

**Venue:** Room 104, KICC

**Organizer:** Science Council of Japan (SCJ)

**Participated organizations:**

Science Academy or Scientific Organizations of Australia, Austria, Canada, Czech Republic, Finland, France, Germany, India, Indonesia, TWAS, AAS, Korea, Latvia, Poland, Senegal, Singapore, Slovakia, Taiwan, Thailand, USA and Japan (23 participants)

**Co-chairs:**

Prof. John Hildebrand, Foreign Secretary, National Academy of Sciences USA

Dr. Juichi Yamagiwa, President, Science Council of Japan

**Theme:** "The Never-Ending Excitement and Value of Discovery Research"

**Summary of discussion:**

Prof. Hildebrand gave an introduction to the theme:

- This theme is meant to focus on the importance of discovery research. It draws inspiration from the 75<sup>th</sup> anniversary of the report "Science, the Endless Frontier" authored by Vannevar Bush.

*"Basic research leads to new knowledge. It provides scientific capital. It creates the fund from which the practical applications of knowledge must be drawn. New products and new processes do not appear full-grown. They are founded on new principles and new conceptions, which in turn are painstakingly developed by research in the purest realms of science." (a quote from the report)*

- Basic research is not meant to be an alternative to translational applied discovery. We need both practical applied problem oriented research and curiosity driven discovery research.
- Basic research often generates unexpected payoffs. Discovery research ends up providing ways of the things we all enjoy.

Statements of the participated academies :

They unanimously acknowledged the importance of basic research as expressed in the statements from a variety of standpoints:

- Discovery research continues to be at the heart of scientific endeavor. It provides excitement for scientists, opens new avenues of thought, deepens our understanding of the physical universe, and provides new platforms for technologies and innovation.
- Everybody will agree that history of science is full of success stories in which disrupting innovations were by no means the result of a targeted program, but rather the unexpected outcome of some fundamental discovery that might have been made long before, with no idea of any potential application.
- Basic and applied research belong together like two sides of the same coin. Without basic research, applied research is not possible.
- The need of the hour is the concerted effort to rekindle curiosity, democratize scientific discovery and address societal challenges through directed basic research.
- It is very tragic that most of the decision maker in all countries are escorted to the very pragmatic way of thinking, all of the activities that consume money must produce more money.
- Basic sciences (broadly referred to as: biology, chemistry, mathematics and physics or their intersections) not only contribute to our fundamental understanding of the forces governing the natural phenomena; but also provide the backbone of any applied or development-oriented research.
- If all the technological breakthroughs of the recent decades did teach us anything, it is that they more often than not rely heavily on previous, basic research, which provides the great innovators of our times with building blocks necessary to make their vision true.
- It is necessary that policy makers find courage to make a breakthrough decision based on view that research support is not spending public sources, but it is an investment into the future of the country.
- The history of science is full of examples of unexpected findings that alter the course the course of human history, with DNA technology, ITC technology, and futuristic quantum computing all being key results of basic research.
- It falls to the federal government to ensure that the United States continues to be a country of exploration, scientific discovery and innovation.

Multiple academies also referenced the importance of humanities and social sciences as being an integral part of basic research.

- It is also important in the humanities, social sciences and cultural sciences, since basic research poses fundamental questions about people - in relation to their environment, in their cultural expressions and in their social and political forms of organization.
- There is also a specific problem of neglecting the role of social sciences and humanities, despite the fact of the impact of contemporary challenges (industrial and economic growth included) on our society and culture

In conclusion, Prof. Hildebrand reiterated the importance of discovery research by quoting one of the comments made in the meeting: fundamental research is our insurance policy.