

Summary of the Expert Meeting on 6 February 2020

EU Delegation to Japan, Europa House, Tokyo

How do elite programmes for early career researchers work?

The EU Delegation to Japan, the Molecular Biology Society in Japan (MBSJ) and EMBO jointly organized a half-day expert meeting to discuss ways of boosting the careers of young researchers. 32 high-profile experts from the European and Japanese government and research institutions participated at the event, which included input presentations and a discussion session.

Key findings of the input presentations and a lively exchange during the discussion session on how elite programmes for early career researchers work in Europe and Japan include:

- › Both Japan and Europe run initiatives to foster young research talents, and well-functioning elite programmes share characteristics such as international networking opportunities, community building, mentoring and training.
- › These initiatives could benefit from additional cooperation, interaction, mutual learning, and exchange of expertise between European and Japanese research institutes, funding agencies, and societies.
- › Research systems should enable the independence and productivity of young scientists. While systemic change is necessary to achieve this, it is also highly complex. Therefore, elite programmes for young researchers could stimulate a transition from within the system.
- › Further exchanges are in high demand and the next expert meeting could focus on how to recruit the best scientists and retain them in research.

Detailed summary

Especially for young scientists, international mobility has a direct and beneficial impact on scientific discovery and career development. Japan's high scientific standards as well as its unique and varied multitude of universities and research organizations can be very attractive for early career researchers from Europe. On the other hand, Japanese scientists can benefit from interactions with their European counterparts, as European countries are among the most research-intensive in the world. Both Europe and Japan have been developing and implementing a variety of support programmes for outstanding early career researchers over the past decades, and in recent years efforts have accelerated. For example, the number of targeted research funding schemes, training courses for lab management and leadership, and support for community building activities on an international level has increased.

The EU Delegation to Japan, MBSJ and EMBO jointly organized a half-day expert meeting at the Europa House to discuss ways of boosting the careers of young researchers and to exchange experiences on how elite programmes for this target group work in Europe and Japan. MBSJ and EMBO – organizations of leading researchers in the life sciences in Japan and Europe – initiated this meeting to explore common ground for cooperation to foster excellent

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science. The EU Delegation to Japan, the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan's funding agencies JST and AMED, and other high-profile experts from Japanese research institutions supported this effort and contributed with first-hand insights. The 32 participating experts represented diverse career stages and gender perspectives.

Welcoming words from Minister Francesco Fini of the EU Delegation, Mr. Hideshi Semba of MEXT, Prof. Maria Leptin of EMBO and Prof. Kiyokazu Agata of MBSJ and NIBB, were followed by 10 brief input presentations by European and Japanese government representatives as well as from research institutions (programme of the meeting).

Dr. Ramanauskas of the EU Delegation introduced the Marie Skłodowska-Curie Actions (MSCA) and noted that in Horizon Europe the focus of MSCA is on mobility and training of researchers, strengthening human capital across the ERA, facilitating synergies and promoting public outreach. Prof. Leptin introduced EMBO's activities to help young scientists to advance their careers, promote their international reputations and ensure their mobility. Moreover, she referred to several challenges young talents face today by citing the results of a recent EMBO survey: the current system is often not conducive to the independence of early career researchers, because many of them struggle with a high workload (e.g. writing several funding applications per year), which prevents them from following their research interests in a creative and independent way.

Mr. Semba of MEXT stated in his presentation that Japan's research capability has been stagnating since 2005 and even declined in recent years. He introduced the "Comprehensive Package for Strengthening Research Capability and Supporting Young Researchers", an initiative recently approved by the Council for Science, Technology and Innovation (CSTI) of the Japanese Cabinet Office. This package has four components in order to counteract the downward trend: 1) significant improvement of the research environment for young researchers, 2) ensuring sufficient time for research and educational activities, 3) ensuring diverse career paths for researchers, and 4) creating more attractive doctoral programmes for students. Prof. Hiroshi Kimura of the Tokyo Institute of Technology and Member of the

MBSJ Career Development Committee introduced MBSJ's activities for promoting young talent, and focused on the following challenges by citing results of a survey among excellent young researchers: 1) in order to foster creativity and curiosity-driven research projects, a flexible (hiring) system as well as more tenure track positions are needed, 2) a good mentoring system is essential, 3) doctoral students in Japan need more financial support, as is the rule in many European countries.

Three presentations providing insights from Japan's funding agencies followed. Dr. Yoshimasa Goto of JST introduced the elite programme PRESTO, established in 1991 and supporting young researchers. The programme is designed to aid early independence, provides a multidisciplinary network to inspire each research project, and offers a mentoring system run by Programme Officers and experienced scientists. Dr. Goto presented statistics showing that PRESTO researchers publish 4 times more papers in the top 1% of articles than the Japanese average. Mr. Masahiko Noda of AMED introduced the "Interstellar Initiative", which started in 2018 and aims to create an international community of young researchers in the life sciences. Currently, AMED is collaborating with the New York Academy of Science here, holding two networking workshops per year. The underlying dynamic is that investing "a small amount of money" to support the establishment of multidisciplinary and international teams will enable them to apply for "a large amount of money" from multilateral funding schemes. The mentoring system of the "Interstellar Initiative" is expected to foster "a great transition" in Japan. Prof. Fumitoshi Ishino of Tokyo Medical and Dental University discussed – from the viewpoint of the JSPS grant funding system – effective support mechanisms for Japanese young scientists. He referred to the "crisis of Japanese science" and gave an overview of JSPS support schemes for young talent. He pointed out that global community building and establishing close relations are essential for young researchers to build up their careers successfully.

The final three presentations focused on how universities and research institutes nurture their young talents. Prof. Noriko Osumi of Tohoku University introduced an Incubator Programme for young research group leaders at the Frontier Research Institute for Interdisciplinary Science (FRIS), a tenure

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track programme for about 50 young researchers. Dr. Piero Carninci of RIKEN demonstrated in his presentation how international consortia can function as hubs for scientists and scientific careers. The FANTOM 5 consortium, for example, has been giving especially postdocs the opportunity to build good relationships with excellent scientists worldwide, and thus helped them enhance their careers. Prof. Masashi Yanagisawa of the International Institute for Integrative Sleep Medicine (WPI-IIS) at Tsukuba University introduced his concept of having two Principal Investigators (PIs) heading a research group, as well as the dojo meetings and seminar series to ensure “that everyone pretty much knows what is going on at the institute”.

The input presentations set the stage for the subsequent discussion session. Several notable points were discussed, including:

- › Scientific research is a global endeavour and the way it is run and organised has changed over the past years. Many countries need to adapt their funding systems and support mechanisms accordingly, especially when it comes to supporting young talent.
- › The input presentations showed that success factors for promising career paths of early career researchers include multidisciplinary networks and community building, mentoring and training, and a research environment where young scientists can achieve their best work.
- › Both in Japan and in Europe, systems that hinder the independence and productivity of young PIs must be changed. If the best students are to be attracted, they have to be paid so that they can focus on their research. Systematic training of PhD students and PIs in research management skills can also boost scientific performance. The introduction of a tenure-track system at several universities in Japan was cited as a good example to create “elite scientific career paths”, although more work is required to make this sustainable.

- › Funding is needed for sharing infrastructures, because basic research in life sciences needs expensive facilities and instruments. The US was cited as a good example where such funding schemes are in place (through the NIH).
- › The participating experts agreed that it might be difficult to change the entire system for the better, but that elite programmes for young researchers that support international community building could push a transition from within the system. In this sense, stronger interactions between the Japanese and European (life sciences) research communities would benefit both sides, and an open exchange like today which involves important stakeholders is inspiring as well as necessary.

The following topic was proposed for a next meeting: “Best practice in recruiting and retaining excellent young scientists and implications for funding programmes”.

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