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Editorial

Easter holidays may be over but it is Golden Week in Japan! Prime Minister Abe is visiting the UK as part of his European tour, dropping in on UCL for the UK-Japan Universities Conference for collaboration in Research and Education. He is accompanied by 14 Japanese University leaders, to discuss how to promote collaborative research at faculty level with UK counterparts.



Participants aim to establish a new framework to significantly increase the numbers of foreign exchange students and young researchers exchanged between Japanese and UK Universities. The event provided a great chance to showcase UK science, research and innovation more broadly. UCL was the first UK university to open its doors to students of any race or religion and has a long historical relationship with Japan. Over 150 years ago, five Japanese young noblemen from *Choshu*, now Yamaguchi Prefecture in Japan, studied at UCL. They returned home to form the core of a new government which took Japan from an isolated state to one of the world’s foremost technological powers. PM Abe, who is from *Choshu* hopes to visit the *Choshu* Five Memorial Monument located in the UCL garden.

Yumiko Myoken

Senior Science and Innovation Officer, British Embassy Tokyo

Analysis: Quantum Technologies – the situation in Japan

Those working in the field of physics will be well aware of the Autumn Statement (Dec 2013) included an announcement of a £270m investment into quantum technologies, over five years. Given the substantial scale of this investment, some even refer to it as the '9th GREAT Technology' – SIN Japan has been looking into the implications of this and potential to involve Japanese quantum experts.

In Japan, the UK is regarded highly as the world's pioneer of quantum technologies. In 2009, SIN Japan hosted the "UK-Japan Quantum Information Workshop", led by Nobel laureate Sir Anthony Leggett. The workshop covered a wide range of applications for quantum technology, from cryptography to biophysics. Ongoing links exist and the UK is a familiar face for Japanese quantum experts.

Japan has traditionally invested heavily into quantum technologies – mainly in the civil research realm. Although not quite as much as the recent UK announcement, Japanese government investment into major quantum research projects add up to around £115m over the past decade. Most notably, the Funding Program for World-Leading Innovative R&D on Science and Technology, or simply abbreviated as FIRST, had chosen one of its research topics to be in the area of quantum computing. The FIRST Programme is administered by the Japanese Cabinet Office and topics are chosen on the basis of national strategic importance. Only the 30 top researchers of Japan are able to receive this prestigious fund.

However, there is a backdrop. Many of the major Japanese quantum research projects have now ended. This includes the five-year quantum FIRST project which ended in March 2014. Although the Ministry of Internal Affairs and Communications (MIC) and its own research institute, the National Institute for Information Communication Technology (NICT), continue investing into quantum research, hope is for the industry to pick up on the work for commercialisation. Although some fear that the field is entering the so-called "valley of death", Japan does have top-tier ICT vendors including NEC, Toshiba, Hitachi and others that have the capability to do exactly that. The NICT is now also working to roll-out one of the world's best metropolitan secure quantum communications systems across Tokyo in time for the 2020 Olympics. NICT will also be launching a satellite to experiment on effective quantum communications and quantum key distribution (QKD).

It is likely that top-class researchers in the Japanese quantum field will be bidding into the successor of the FIRST Programme – also with a catchy acronym for its name: ImPACT. SIN Japan is closely monitoring the progress of such projects. If major projects in the area are confirmed, UK centres of excellence may find a natural partner for collaboration in quantum research and technology development. For more information, please contact: yuki.chamberlain@fco.gov.uk

SIN Japan Activities

UK-Japan Collaboration in 2014-2015: Forthcoming Projects

The Science and Innovation team in Tokyo and the Consulate General in Osaka aim to strengthen collaboration between the UK and Japan. To facilitate the 'bottom-up' researcher-driven activities, we work closely with UK and Japanese researchers and other experts to define the best opportunities for R&D collaboration based on their priorities and support their work through the British Government's Global Partnership Fund (GPF). We encourage science collaboration in key UK priority areas and help establish long-term sustainable relationships in science and innovation (R&D) with partners in UK and Japan. The following list including our major projects funded by GPF throughout this year (all).

Life Science	
Plant Science for Global Food Security	July-Sep 2014 UK
Antimicrobial Resistance Workshop	Nov-Dec 2014 Tokyo
Neuroscience and Technology	Dec 2014 Osaka
Stem Cell Conference	w/c 12 Jan 2015 Osaka
Cancer Research for Personalised Medicine	Jan-Feb 2015 UK
Industrial Biotechnology Workshop	Feb-March 2015 Tokyo
ICT and Advanced Technologies	
Cyber Security Securing the Cyber Pathway to Tokyo 2020	w/c 26 May 2014 Tokyo/UK
Sustainable Manufacturing	w/c 16 June 2014 Tokyo
Innovation Showcase	w/c 6 Oct 2014 Tokyo
Big Data	Nov 2014 UK
Frontier Materials	Jan 2015 Osaka/Tokyo
Quantum Technologies	TBC Tokyo
Rehabilitation and Sports Science	TBC Tokyo
Robotics	TBC Tokyo
Innovative Ballasted Track	TBC Tokyo
Solar Cells	TBC Tokyo

For more information about any of these areas, contact details for the team are on the back page of the newsletter. If you have ideas for future projects, please let us know!

Recent News

Recognition for women scientists in Japan

Professor Emi Hifumi of Oita University Advanced Medical Engineering Research Centre has been awarded the 2014 Saruhashi prize, awarded every year to a female scientist who serves as a role model for younger female scientists. Prof Hifumi started her career at the chemical and pharmaceutical company *Ube Kozan*, then took a research position at Hiroshima University and finally took up her current job at Oita University in 2007. Her recent research interests include the development of super antibiotic enzyme capable of measuring and excluding influenza virus. She is working on a promising functional molecule, a super catalytic antibody, which could destroy target molecules.

The prize is named after Prof Katsuko Saruhashi who was the first woman to be elected to the Science Council of Japan (in 1980). Women researchers in Japan make up just 14% of the total number of researchers. The Government's goal is to boost this to 30%. To achieve this the Government has established a number of policies, including extra funding for women researchers so that they can continue their research work during maternity and child-rearing periods, establishing childcare on university campuses, and providing outreach to high school female students.

Next generation imaging: new projects announced

Based on an agreement made at the 8th UK-Japan Joint Committee on Scientific and Technological Cooperation Meeting held in London in November 2011, "Advanced Health Research" was identified as priority area of collaborative research between UK and Japan. Based on the MoU concluded between the Medical Research Council (MRC) and the Japan Science and Technology Agency (JST) in March 2012, MRC and JST agreed to implement a programme for joint funding of UK-Japan cooperative research projects. 'The Use of Next Generation Optical Microscopy for Neuroscience Disease Challenges' was selected as priority area of UK-Japan collaboration for the joint call. The period of research will be 3 years, starting in May 2014.

Selected projects:

1. Single molecule imaging of synaptic protein dynamics in neurodegeneration

PI (UK): Giovanna Mallucci, Professor, Programme Leader, Toxicology Unit, MRC

PI (Japan): Akihiro Kusumi, Professor, Institute for Integrated Cell-Material Sciences, Kyoto University

2. Investigation of cortical memory circuits in normal and disease model mice using synaptic optogenetics

PI (UK): Kevin Fox, Professor, Neuroscience, Cardiff University

PI (Japan): Haruo Kasai, Professor, Structural Physiology, The University of Tokyo

For more details, please see: http://www.jst.go.jp/pr/info/info1024/index_e.html

Brain imaging advances

On 18 April the RIKEN released that their Quantitative Biology Center in Japan demonstrate an easy and fast way to achieve whole brain imaging for 3D analysis of gene expression profiles and neural circuits at the systems level. A new high-throughput method, CUBIC (Clear, Unobstructed Brain Imaging Cocktails and Computational Analysis), published in Cell, is a great leap forward, as it offers unprecedented rapid whole-brain imaging at single cell resolution and a simple protocol to clear and transparentize the brain sample based on the use of aminoalcohols.

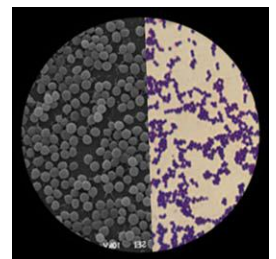
Research into new antibiotics

Thiopeptides are a growing class of antibiotics exciting clinical interest as many show potent activity against drug-resistant pathogens. The Research Group in Graduate School of Agricultural and Life Sciences, the University of Tokyo has been exploring talents of the microorganisms and applying them to industrial production of thiopeptides. On 25 April they announced a new approach capable of facilitating the production of a more diverse set of thiopeptides. They use genome mining to identify a silent thiopeptide biosynthetic gene cluster responsible for biosynthesis of lactazoles. Lactazoles are structurally unique thiopeptides with a 32-membered macrocycle and a 2-oxazolyl-6-thiazolyl pyridine core. It is demonstrated that that lactazoles originate from the simplest cluster, containing only six unidirectional genes (lazA to lazF).

On policy activity

Antimicrobial Resistance: Sharing expertise for international action

On 14-16 April, UK Chief Medical Officer Dame Sally Davies chaired a two-day meeting at WHO in Geneva with an aim to engage a broad range of stakeholders in a discussion to set out the key elements of a proposed Global Action Plan (GAP) for AMR and also the process of further development of the GAP to maximize stakeholder engagement and commitment. Attendees include Dr Haruo Watanabe, Director General of National Infectious Disease Control (NIID) as a representative from Japan, who had a fruitful discussion with the CMO last November. Japan is working alongside the UK and other countries to ensure urgent action and a shared global agenda. SIN Japan are working with NIID to develop a project later this year on regional action on AMR. For more information, please contact: yumiko.myoken@fco.gov.uk



Research Funding Opportunities

International Research in Security (IRIS)

Issue date: 11 March 2014. Closing date: 28 August 2014.

EPSRC is inviting proposals from UK academics for projects which will support visiting Fellows from India, Israel or Japan to carry out cyber security research in, and build collaborative links with, the UK. Proposals are welcome in any area of research directly relevant to cyber security, including less well-represented domains such as the social, economic and mathematical sciences.

More information here: <http://www.epsrc.ac.uk/funding/calls/2014/Pages/iris.aspx>

JSPS Postdoctoral Fellowships for Foreign Researchers

The Japan Society for the Promotion of Science (JSPS) encourages highly qualified foreign researchers to come to Japan and conduct joint research activities with colleagues at Japanese universities and research institutes. Various kind of fellowships are open to foreign researcher who wish to work as full-time position at Japanese institutes or universities for future and/or to conduct cooperative research with leading research groups in Japanese universities. More information here:

<https://www.jspso.go.jp/english/e-fellow/postdoctoral.html>

Visiting Professorships by Leverhulme Trust

Visiting Professorships are awarded to UK institutions that wish to invite an eminent researcher from overseas to enhance the knowledge and skills of academic staff or the student body within the host institution.

Deadline: 16 pm on 8 May

More information: <http://www.leverhulme.ac.uk/funding/VP/VP.cfm>

Forthcoming Events

Dementia Legacy Event

On 19 June, the Dementia Legacy Event will take place, building on the momentum generated by last December's G8 dementia summit. The Rt Hon Jeremy Hunt MP, Secretary of State for Health will host this opportunity to explore how finance can support efforts to prevent, delay and support people to live well with dementia. The British Embassy in Japan have been working to secure Japanese participants from higher research education, industry and government ministries.



The main agenda to be focused at the event:

- 1) Introduce the work of the World Dementia Envoy who will draw together international experts to stimulate innovation and to co-ordinate international efforts to attract new sources of finance, including exploring the possibility of developing a private and philanthropic fund to support global dementia innovation
- 2) Understand which new financial models and social impact investment opportunities can be harnessed to invest in all different aspects of dementia prevention, research, care and technology
- 3) Share current models, knowledge and experience and consider how to encourage better data sharing to spread innovation

More information on legacy events is available on gov.uk website [here](#)

SIN Japan Contacts

This month Patrick Bannister joined as our new Deputy Head of Science and Innovation Team. He leads on Western Japan and is Deputy Consul-General at the British Consulate-General in Osaka. As well as working with colleagues to deliver the events above, he'll be scanning the horizon for future prospects for UK-Japan collaboration, from Okinawa to Nagoya and beyond, and reviewing our communications activity. He'll be getting out and about to meet people in the coming weeks. If you have any feedback on this newsletter or ideas for collaboration with research institutes in Western Japan, please do feel free to email him at patrick.bannister@fco.gov.uk



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Visit our **web site** <https://www.gov.uk/government/priority/uk-science-and-innovation-network-working-with-japan>

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