

2018 UK-JAPAN YOUNG SCIENTIST WORKSHOP PROGRAMME SUMMARY REPORT

- **2018 Cambridge University Workshop, 22 July - 28 July 2018**
with **Pre-Workshop** for Japanese students and teachers hosted at Rikkyo School in England **18 July - 21 July**.
- **2018 Tohoku University Workshop, 28 July - 7 August 2018**
with **Pre-Workshop Briefing Weekend** for UK students and teachers travelling to Japan hosted at the Rikkyo School in England **13-15 July**

1.1 Participants; a total of **100** senior high school students (age 16-18 years, **58** female, **42** male; **50** British, **50** Japanese) from the **26** schools listed below participated in the two UK-Japan Young Scientist 2018 UK-Japan Young Scientist Workshops, the numbers split approximately evenly between the two workshops. Students were accompanied by 36 teachers who observed but did not take part in the science, The three schools marked * took part in both Workshops but with different students.

City of London School for Girls	Newham Collegiate 6th Form Centre, East Ham *
Comberton Village College, Cambridge	Rikkyo Ikebukuro High School, Tokyo
County Upper School, Bury St Edmunds	Rikkyo School in England *
Digitech Studio School, Bristol	Ritsumeikan Moriyama SHS
Fukushima High School, Fukushima	Ritsumeikan Uji SHS
Hinchley Wood School, Esher	School 21, Stratford, London
Iwaki High School, Fukushima	Soma High School, Fukushima
Kagakusha no Tamago	St Mary Redcliffe & Temple School, Bristol
Kyoto Prefectural Rakuhoku SHS	The Sele School, Hertford
Kyoto Seibogakuin SHS	Thomas Hardye School, Dorchester *
Kyoto University ELCAS	Tsuruoka Minami High School, Yamagata
Kyoto University of Education attached SHS	UCL Academy, Camden, London
Nagoya University School of Education affiliated SHS	Wycombe Abbey School

The Japanese schools represented in the Cambridge Workshop were from the Kansai area.

1.2 Programme: The projects followed the successful format developed by Clifton Scientific Trust in partnership with Japanese colleagues in previous years. The students - a small number selected by each school- lived closely together, British and Japanese students sharing rooms in both Workshops - in Cambridge in Murray Edwards College/the Kaetsu Centre. In each Workshop, the students worked for three days in small international student teams with scientists and engineers across the university on specially devised research projects and at the end of the week gave formal team presentations of their achievements and answered questions in front of an audience including invited guests. An equally important of the student experience was the interaction through their student-centred evening social programme and by living as well as working together. The teachers also shared good science education practice both informally, and also formally through the Teachers' Forum which was an integral part of each Workshop.

1.3 Projects; The students worked in a total of 17 project teams led by British and Japanese scientists/engineers. See Appendices 8, 9 for further details. As in previous years, many research groups in both universities were delighted to be involved again in 2018.

Cambridge University Projects

- Hydrogel platform for loading and release of cargo (hydrogels as vehicles for drug delivery) Chemistry
- Bacterial phenotypes in the local environment Biochemistry and Cancer Research UK
- Aerodynamics in jet engines (3 teams) Whittle Laboratory, Engineering
- Climate signals in coastal clays Earth Sciences
- Radiation all around us Earth Sciences
- Energy risks and balances Imperial College
- Science communication- producing a workshop podcast Naked Scientists

(<https://www.thenakedscientists.com/podcasts/short/uk-japan-young-scientists-workshop-2018>
<https://www.thenakedscientists.com/podcasts/short/uk-japan-workshop-young-scientists-2018>)

Tohoku University Projects

- Visualisation of cellular viability Graduate School of Environmental Studies
- Decision making in disaster situations International Research Institute of Disaster Science
- Water disinfection and sustainable development goals Graduate School Environmental Studies
- Quantitative measurement of radioactivity in soils Graduate School of Science, Physics Dept
- Tsunami disaster mitigation International Research Institute of Disaster Science
- Protein production in rice under dark conditions Graduate School of Agricultural Science
- Analysis of the difference in speech emotion between English and Japanese Graduate School of Engineering
- Nitrogen cycle in symbiotic microorganisms Graduate School of Life Sciences
- Visualisation and analysis of hidden nanotechnologies Advanced Institute for Materials Research
- Nanoscale electrochemical imaging by nanoSECCM Advanced Institute for Materials Research

2 PRINCIPAL OUTCOMES

- The profound impact of the two workshops on the 100 students (see #1.1) who took part is evidenced by the quality of their presentations of the achievements of their international project teams in just a few days, working in areas well beyond anything they could encounter in school. In this they were required to question, to think for themselves- to work as an international team. Impact was evident not only from the quality of the powerpoint presentations they had prepared (available on request), but also from presentation skills even the most reticent demonstrated, which they had acquired preparing for their presentations. We were delighted that Brendan Griggs was able to be with us on this occasion-
- The 26 teachers who accompanied their students gained not only in broadening their knowledge of science and engineering by observing their students in their projects but also from sharing good teaching practice with teachers from the other nation through informal conversation and also through the formal Teachers' Forum which is part of each Workshop. These insights and understandings the teachers could then bring back to their schools. One teacher said that this was the best CPD experience she had ever had.
- In addition, through living closely together, sharing rooms and taking part in the evening student-led social programme, as well as by working within the science teams to produce their best final presentation together in their science teams, students grew in mutual understanding of each other's way of life and formed continuing UK-Japanese friendships. The impact of the Workshops extend beyond science and it is notable that in Japan it is often the teachers of English who are our strongest advocates.
- On their return to the UK, students commonly give whole school presentations to their schools and also sometimes produce articles in the local press (see attached)
- Trust Director Dr Eric Albone and a participating teacher, Mr Simon Lewis, gave an hour's presentation "UK-Japan Young Scientists Researching Together; Science and a Cultural Bridge" at the 2019 Association for Science Education Annual Conference in Birmingham in January, and will be invited back again next year.

3 BREAKING NEW GROUND

The UK-Japan Young Scientist Workshop programme remains to our knowledge unique in engaging British and Japanese together in scientific exploration at the highest level in a way which enables them to grow as persons and as international citizens in ways which transcend the science itself. Each workshop breaks new ground in that each science project is new even if in some cases based on a previous workshop project, with new students and with (new as well as returning) scientists and engineers. The students are also new to the programme, selected by their schools as those who would gain most from the experience- some schools have an internal formal application procedure where students seek to justify why they should be selected.

4 FUTURE PLANS

In 2019 we are planning two further Workshops hosted in Cambridge and Kyoto Universities respectively, and are very grateful to Barclays Bank who have committed to continuing their support another year. Clifton Scientific Trust is working hard to build on this its achievements to broaden its financial support and achieve long term financial sustainability to enable it to expand its outreach, and for others to share our vision.

5 ACKNOWLEDGEMENTS Clifton Scientific Trust wishes to thank Barclays Bank, the Great Britain Sasakawa Foundation, Mitsubishi Electric Europe, Toshiba Research Europe and The Japan Women's Association in Great Britain for their invaluable support for this programme, and in Japan the Japan Science and Technology Agency.

6 ATTACHMENTS: Appendix 1- UK-Japan Young Scientist Workshop Overview;

Appx 2- 2018 Cambridge Student Team Presentation Programme; **Appx 3-** 2018 Cambridge Workshop Photograph

Appx 4- 2018 Cambridge Workshop Schedule; **Appx 5-** 2018 Cambridge Pre-Workshop Schedule

Appx 6- Tohoku Workshop Programme; **Appx 7-** Tohoku Workshop Project Descriptions

Appx 8- Examples of articles published in UK Local Press; **Appx 9-** Selected Feedback from UK Participants



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