

2010 UK-JAPAN YOUNG SCIENTIST WORKSHOP

1st to 7th August 2010 hosted at the University of Cambridge
in association with the Babraham Institute and the Kaetsu Centre

Patron The Rt Hon the Lord Jenkin of Roding

A REPORT

Eric Albone, Clifton Scientific Trust



with students and teachers from

Camborne Science and Community College, Colchester County High School for Girls, County Upper School, Bury St Edmunds, Dartford Grammar School, Hinchley Wood School, Esher, Watford Grammar School for Girls, Momoyama Senior High School, Kyoto, The Rikkyo School in England, Rakuoku Senior High School, Kyoto, Ritsumeikan Moriyama Senior High School, Shiga, Kyoto University of Education attached Senior High School and Yokohama Science Frontier High School

The 2010 UK-Japan Young Scientist Workshop was supported by grants and charitable donations from the Department for Education, the Great Britain Sasakawa Foundation, Mitsubishi Electric Europe, Toshiba Research Europe and in Japan from the Japan Science and Technology Agency. The Workshop was also supported in kind by the Hitachi Cambridge Laboratory, the University of Cambridge, and the Kaetsu Centre.

The Workshop in Action



Ms Mihoko Fukutani, Kyoto Univ of Edn attached SHS, Mr Hans-Jeorg Hinkel, Mitsubishi Electric Europe, Lord Rees of Ludlow, President The Royal Society, Dr Eric Albone, Clifton Scientific Trust, with Japanese students following the Student Team Presentations Event

I think it was a good opportunity that students from England and Japan worked together through science. I learned that even though we do not speak the same language, we can share a lot of things. Also I learned that no matter how difficult it is to solve problems, we can get some result by helping each other.

Keiko Shiozaki from Ritsumeikan Moriyama Senior High School.

I suppose the most important thing that I took from this workshop is that ... science is becoming more and more international, so being able to work with Japanese students has set us up well for the future. I can say I have taken a lot from this week. I have made new friends, seen new science, made new memories and had an absolutely wonderful time.

Louise Deer, Colchester County High School for Girls

Context & Objectives

1 In 2010 the UK-Japan Young Scientist Workshop was held for the first time at the University of Cambridge during the week of 1st – 7th August 2010. As in previous years, the Workshop brought together post-16/Senior High School students from schools across Britain and Japan to live together for a week and to work in small UK-Japanese teams with professional scientists and engineers on projects which challenged them to think for themselves.

2 As well as “toe-dipping” cutting edge science and its application, by living and working closely together the students also came to learn about each other and to experience their science in both a personal as well as a global perspective.

3 The objectives of the Workshop were thus to provide an experience of science

- as a real life challenge where answers are not known, where classroom knowledge is put to use, and where questioning is valued.
- as a cultural bridge where, by working together, students from both countries learn to value and understand each other and form lasting friendships
- as a science-based context for debate, discussion, questioning and collaboration where they enhance their interpersonal skills and grow in confidence and international awareness.

4 In this the UK-Japan Young Scientist Workshop addresses key issues facing science education in both countries, namely the urgent need to ensure much greater relevance in science education in schools and also to motivate more able young people and particularly young women to consider science as a career.

The Science Programme

5 **Project Teams.** Students were assigned to the following projects on the basis of their preferences. Each project team was led by a scientist or engineer and assisted by a facilitator to help the project teams “gel” and provide invaluable support for the Japanese students. These were volunteer Japanese graduate students on this occasion in engineering, physics and the social sciences from the University of Cambridge.

- **Synthesis and Manipulation of Gold Nanoparticles** with Dr Oren Scherman, Dr RogerCoulston, Sam Jones, John Lee, University of Cambridge Department of Chemistry
- **Nanotechnology for Future Electronics** with Dr Gareth Podd, Dr Elisa de Ranieri, Hitachi Cambridge Laboratory, Cavendish Laboratory
- **Ladybirds and Their Parasites** with Dr Remy Poland, University of Cambridge Evolutionary Genetics Laboratory, Madingley
- **Alien Moth Invasion (the Horse-chestnut Leaf Borer)** with Dr Remy Poland, University of Cambridge Evolutionary Genetics Laboratory, Madingley
- **Heliconius Butterflies Colour Selection & Learned Feeding Behaviour**, with Dr Margarita Beltran, University of Cambridge Evolutionary Genetics Laboratory, Madingley
- **Bioinformatics Team**, with Mr John Coadwell, The Babraham Institute
- **Cognitive Neuroscience Team** (How the brain processes information in faces) with Prof Keith Kendrick The Babraham Institute
- **Molecular Signalling Team**, with Dr Martin Bootman, The Babraham Institute
- **Neuron Degeneration Team**, , with Dr Michael Coleman, The Babraham Institute

6 Student Team Presentations. At the end of the week each student team gave a students gave fifteen minute team presentations of their achievements and answered questions before an invited audience, which included the Lord Rees of Ludlow, President of the Royal Society, Dr Richard Pike, Chief Executive of the Royal Society of Chemistry, and Mr Hans-Jeorg Hinkel, Manager, Strategic Planning, Mitsubishi Electric Europe, all of whom were invited to comment on the students, presentations. Other distinguished guests included Prof Kozo Hiramatsu and Mr Takeshi Sekiguchi, Director and Deputy Director respectively of JSPS London and Mr Tomohiko Arai, First Secretary (Science and Technology), Embassy of Japan.

The Participants

7 Workshop policy is to invite a small number of students and a teacher from each participating school so that as large a number of schools as possible can be involved. The Workshop is offered free of charge to the students although the schools are asked to make a payment.

8 The Students. Some 55 students took part, 25 male and 30 female (33 from schools in England, 14 male, 11 female, and 22 students from schools in Japan, 11 male, 11 female). The number from schools in England included 5 students from the Rikkyo School in England. Students were from the following schools.

- Camborne Science and Community College
- Colchester County High School for Girls
- County Upper School, Bury St Edmunds
- Dartford Grammar School
- Hinchley Wood School, Esher
- Watford Grammar School for Girls
- Momoyama Senior High School, Kyoto
- The Rikkyo School in England
- Rakuhoku Senior High School, Kyoto
- Ritsumeikan Moriyama Senior High School, Shiga
- Kyoto University of Education attached Senior High School
- Yokohama Science Frontier High School

9 Also included in the above are 7 students recruited separately by the Babraham Institute as part of their “Bootcamp” programme. These were from the Hills Road Form College (5), the Netherhall Sixth Form College (1) and County Upper School, Bury St Edmunds (1). They shared in the projects organized by the Babraham Institute but as they were unaccompanied by teachers they were non-resident and did not take part in the evening programme apart from on the final day.

10 The Teachers. The students were accompanied by teachers from their schools who both supported and took responsibility for their students and also observed but did not take part in the projects.

11 Eleven teachers from schools in England (including 2 from the Rikkyo School) and 8 from the schools in Japan took part in either the whole or part of the Workshop week. In addition a teacher from the Kaetsu Senior High School in Tokyo also attended the Workshop

12 A Teachers’ Forum formed an important part of the programme, further enabling the teachers

- to share experiences of teaching in Japan and in Britain
- to compare practical ways in which science can be made to “live and become real” and to motivate and engage students each country
- to consider whether and how future UK-Japan Young Scientist Workshops can make a greater contribution to this process

The Forum Programme comprised group discussion following short presentations of “What happens in my school; some personal reflections” by Ms Helen Bolton, Camborne Science & Community College, Mr Akira Muto, Ritsumeikan Moriyama Senior High School, Mrs Clare Sparke, Watford Girls’ Grammar School and Mr Yukimasa Uekusa, Yokohama Science Frontier High School.

Cultural Exchange- beyond the Science Programme

13 Cultural exchange was enhanced by students and teachers living together at Murray Edwards College. Japanese and British students purposely shared accommodation with teachers rooms interspersed between them. Further facilities including meeting rooms and an excellent lecture theatre for the Student Team Presentations and other events were provide by the Kaetsu Centre, located in the grounds of Murray Edwards College.

14 The Cultural Exchange Programme included

- “Let’s communicate in Japanese Evening” led by students from the Japanese schools
- “Gift Exchange and Cultural Evening” in which each school put on a short entertainment (serious/humorous/dance/drama/powerpoint/game) “Informal outdoor games” on campus.
- A “Visits in Cambridge” day which included a programme at the Babraham Institute and a special visit to Trinity College by special permission of the Master, Lord Rees, as well as free time.
- “Workshop Farewell Dinner” a formal occasion on the final evening following the Team Presentations at which certificates were awarded to all who had taken part by Dr Richard Pike, Chief Executive, Royal Society of Chemistry, and thanks were expressed.

- In addition we were delighted to welcome seven UK students who had taken part in the 2009 Kyoto Workshop, 2 of whom were now undergraduates at Cambridge University, who spoke to the Workshop about their own experience last year.

Outcomes

15 All students and teachers completed a detailed evaluation form at the end of the Workshop. As in previous years, students were also asked to send in their own reflections on the Workshop experience on returning home. This information is available on request.

16 A 58 minute DVD record of the Workshop has also been produced by Mr Makoto Kobayashi of the Rikkyo School in England, as has also a shortened 10 minute version. These give an excellent picture of the spirit of the Workshop and are available on request.

17 The Workshop was reported in the national press in Japan (Asahi Shimbun website at <http://www.asahi.com/edu/news/TKY201009060132.html>) and was also reported as a news item on the Cambridge University website <http://www.admin.cam.ac.uk/news/dp/2010080401> and on the Embassy of Japan web newsletter (http://www.uk.emb-japan.go.jp/en/event/webmagazine/young_scientist.html); also a full report in Japanese on the Rikkyo School in England website, www.rikkyo.co.uk. There was also coverage in the local press.

Pre-Workshop Programme for the part from Japan in London

18 The Japanese party arrived in England on 29 July with a programme organized by the Rikkyo School in England. The Japanese party were accommodated at the Rikkyo School in England which is near Horsham with a programme of visits in London, including special visits on 30 July to the Royal Society and the Royal Institution organized by Clifton Scientific Trust. The Pre-Workshop Programme was funded by the Japanese party themselves and was separate from the Workshop budget.

19 Other Items The Following are also available on request

1. DVD Record of the Workshop
2. Outline Programme Sheet for the Week
3. Programme for the Student Team Presentations
4. Agenda and other items related to Teacher's Forum
5. Evaluation and Reflections of Students and Teachers

