



A gut reaction at the Royal Society

This year, as **Bob Rastall** describes, he and his colleagues from the University of Reading were selected to put on a display at the Royal Society Summer Science Exhibition in London. Not content with that, the show moved on to the World Scout Jamboree in Essex where SGM's **Lucy Goodchild** lent a hand on the stand.



◀ The team of volunteers and visitors to the stand experiencing a microbial journey through digestion.

Each year the Royal Society holds a summer science exhibition to showcase the best of British science (www.summerscience.org.uk). The range of topics covered is very wide and this year we were selected to put on an exhibit on our research in the Department of Food Biosciences in Reading.

Our topic, *A Microbial Journey Through Digestion*, was one of a very few microbiological exhibits ever selected by the Royal Society. The display started with a microbiology shopping trolley and a look at how micro-organisms are involved in the manufacture of many of our everyday foods. This then led onto discussion

of micro-organisms in the human gut and featured an *in vitro* model of the human colon (inoculated with a simulated faecal mixture!) and finished with some thoughts on how the gut microbiota might influence health and disease. The exhibit was accompanied by a PC game on probiotics in the gut, kindly provided by the Alimentary Pharmabiotic Centre in Cork (<http://microbemagic.ucc.ie>) and a Powerpoint presentation featuring a pillcam journey through the gut (kindly provided by David Barlow in association with the BBC). The display was illustrated with images from Reading's Centre for Advanced Microscopy (www.rdg.ac.uk/cfam). We had a dedicated exhibition team

composed largely of postdocs from our research groups, with Janet Hurst and Jane Westwell from SGM also putting in time on the stand. Yakult also helped us to man the stand and field questions on probiotics.

The exhibition ran from Monday evening through to Thursday evening. From start to finish we were kept busy with 4,906 post-16 science students, members of the public, the press and invited guests through the doors. The immense level of interest in the stand was greater than our team was expecting. We had a simple quiz to get people engaged in the display and this proved to be a huge success and sparked off some very good

discussions. The PC game was also very popular, particularly with younger visitors who rapidly populated the high scores list with some impressive numbers. Generally visitors approached the exhibit with an open mind and asked intelligent and pertinent questions.

Wednesday and Thursday evenings were given over to two black tie soirees with invited guest lists including Fellows of the Royal Society, press and other VIPs. These were certainly interesting occasions with a very different kind of visitor.

Mounting an exhibition of this nature is no trivial task – we had a pair of excellent designers in the form of Nicola Shenton and Stephen Hardy, both students on Reading's Design for Graphic Communication degree in the Department of Typography & Graphic Communication and we had professionally printed display panels. We were very fortunate to have a team of postdocs who really took ownership of the project and they worked very hard to pull everything together – from deciding which give-away items

to have (the furry 'poos' were very popular!) to ensuring the logistics came together and assembling the stand. We had generous sponsorship with an SGM PUS grant and from Yakult and Clasado. The Royal Society exhibition staff were immensely helpful and the Society provided a comprehensive briefing in January and a training day in science communication.

The exhibit has now taken on a life of its own – it has subsequently travelled to the World Scout Jamboree, with SGM's Lucy Goodchild (see p. 190), a team from Reading and Yakult in attendance, and is getting invitations to science fairs. It also makes guest appearances at our open days. Overall the exhibition was an immensely satisfying if very tiring experience and one I would recommend to anyone!

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Scouting out microbes

Researchers at the Department of Food Biosciences, Reading University have been looking at the microbes that manufacture our food, and the ones that help us digest it. By using a laboratory model of the human gut, our internal flora can be analysed and the effect of certain substances on its populations tested. As described by Bob Rastall on p. 188, we took the department's stand for the Royal Society exhibition to the 2007 World Scout Jamboree, and a very different audience.

The 21st Jamboree, entitled *One World*, marked the 100th anniversary of the Scouts and was an event to remember. Close to 40,000 participants enjoyed the celebrations at Hylands Park, Essex. The park was split into sections and the scouts were guided to each section in large groups. The microbiology stand was placed in the 'Elements' zone of the camp, in the main tent for 'Earth'. Of course, microbiology is notoriously difficult to classify in this sense, so the placing seemed as appropriate as any other.

In the morning, the first group was shown an introductory film to the

section. The 10 minute presentation showcased the history of the universe and man's impact on climate change – a tall order, but skilfully done. The music was loud and graphics exciting; the presentation managed to hold the attention of 200 scouts eager to get out and explore. The crowd dispersed and broke into small groups, challenged to complete as many activities, including volcano making and walking on custard, as they could.

The first group approached us with caution. 'What's that?' A puzzled scout pointed at the gut model. Following a brief but graphic explanation, they were hooked. The group picked up a quiz and began to search for clues: where do most microbes in the human body live? What does probiotic yoghurt look like under a microscope? The final question asked participants to identify the lone product in a shopping trolley that neither contained nor involved microbes in its production. The trolley was quickly emptied. 'It's coffee' pronounced one of the group, with some certainty. The quizzers were intrigued as we explained the microbial fermentation process that gives coffee its drinkable qualities. *Shredded Wheat*, we showed them, just contains baked wheat, and nothing else.

Yakult, co-sponsors of the project, kindly provided drinks and the scouts were more than happy to partake. Empty bottles were soon discarded (and recycled as volcanoes in the next tent) in favour of the T-cell computer game that was also on offer. The player is a lymphocyte and the aim of the game is to look after the host by protecting it from infection. The group caught on quickly, and soon surpassed our best efforts. Probiotic bacteria, such as *Lactobacillus* and *Bifidobacterium* species must be collected for ammunition before the pathogens, *Helicobacter pylori* and *Salmonella*, can be attacked. The game was a wonderful way of illustrating the role of probiotics. It was also very successful at overcoming language barriers – only three countries were not represented at the Jamboree. For those who spoke little or no English, the interactive nature of the display was invaluable and the participants engaged with the subject and each other. Teams that had never met before were joining forces to find answers to the quiz, and to master the game. By the end of the second day, some scouts had set up a 'high scores' table and were very proud of their achievements.

The overriding benefit of the exhibit was the interest it sparked with the teenagers. After being amazed that the average weight of faecal bacteria a human excretes in a lifetime is equal to that of 12 elephants, the scouts began to give each other pieces of information they had assimilated from the stand. Observing this same thirst for knowledge in so many different people was very exciting. Each visitor took something away with them: an interesting fact, a new idea for a future career, or even that probiotics serve as ammunition to kill disease.

Lucy Goodchild
SGM External Relations Office

The aims of the *MicrobiologyBytes* project were to promote:

- understanding and awareness of current issues in microbiology to the general public, potential students of microbiology and the media;
- awareness of SGM, benefits of membership, and resources available on the Society's website;
- awareness of career possibilities in microbiology and microbiology-related fields.

After one year of operation (August 06–July 07), 50 podcasts have been produced, and they have received over 78,000 downloads. There are about 1,200 regular subscribers to the podcasts, although the number of files accessed through direct downloads via the Wordpress blog (microbiologybytes.wordpress.com) exceeds those delivered via podcast subscriptions by ~7:1.

It was always intended that the blog would form a front end to the podcasts, allowing search engine discovery and direct file downloads to complement the subscription model.

MicrobiologyBytes podcasts: one year on

In the event, the *MicrobiologyBytes* blog has proved to be an extremely attractive platform in its own right, attracting 82,000 visits over the year. According to recent Google results this site has grown to become the number one microbiology blog (tinyurl.com/2t9mrh). Approximately 5–10 % of visitors to the website (and presumably of podcast listeners) are UK-based, 20–30 % from North America and the remainder from elsewhere (over 100 countries). Since the *MicrobiologyBytes* blog and podcasts are 'branded' with an SGM identity, this increases the Society's online presence worldwide. The blog publicizes SGM events such as meetings, and delivers a significant number of visitors to the main SGM website and to www.biocareers.org.uk

In addition to complementing the podcasts, the blog has utilized the interactivity ethos of web 2.0 technologies (en.wikipedia.org/wiki/Web_2.0), with each post attracting an average of at least one comment from visitors to the site (226 posts, 230 comments), and building a community of users. The latest development has been to invite contributions from guest bloggers, a feature which I hope will continue.

I have begun to investigate the interactive potential of social network sites such as MySpace and Facebook.

Alan Cann has been raising the profile of microbiology through the web, assisted by a Public Understanding of Science grant from SGM.

MicrobiologyBytes already has a presence on MySpace (www.myspace.com/microbiologybytes), but with the rapid increase in the popularity of Facebook in the last few months and the more professional community this network attracts (tinyurl.com/36nxcq), this resource is worthy of further development. I already input the contents of the blog and podcast into my personal Facebook profile (tinyurl.com/yodckx) by importing the RSS feed.

I have also experimented with video formats in the podcast and blog, and these seem to have been popular. I would be eager to explore the possibility of regular video podcasts to allow *MicrobiologyBytes* to harness the rapid growth in

popularity of sites such as YouTube, e.g. youtube.com/watch?v=9v1cCEuSjZg

The widespread availability of broadband internet makes it highly feasible to distribute short video clips online. Although the penetration of this technology into the student demographic is very high, teachers and academic staff are lagging seriously behind in the take-up of this new form of communication. Online video has a high acceptability to young learners and can be accessed via computers, game consoles and mobile devices such as phones and video players. However, since the production of video is more time-demanding than that of an audio podcast and blog, development of this channel would require further funding.

In summary, the *MicrobiologyBytes* project has been very successful over the last year and continues to attract a growing number of listeners and readers. I am confident that this trend will continue in the foreseeable future.

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SGM PUS grants offer up to £1,000 for projects to promote the public understanding of microbiology. See www.sgm.ac.uk/grants for full details and an application form.

▼ Scouts enjoying the exhibits at the Reading University display at the 2007 Scout Jamboree. Lucy Goodchild

