

MISAC 2003 Schools Competition

Schools Membership costs only £10 a year. For this, a named teacher representative will receive *Microbiology Today* each quarter, advance notification and copies of new microbiology teaching resources, and discounted fees for attendance on SGM training courses and workshops. Application forms are available at www.sgm.ac.uk

Enquiries: education@sgm.ac.uk

Website: www.microbiologyonline.org.uk

Your body is a fortress: a barrier to microbial invaders

This year's secondary schools competition was sponsored by the SGM. It invited students to produce an eye-catching A3 annotated diagram of the human body highlighting non-specific barriers to infection by micro-organisms. The poster was required to serve as a visual aid to support a talk given to a peer group. Students needed to cover both physical barriers, e.g. skin and mucus and chemical barriers, e.g. gastric juices and lysozyme.

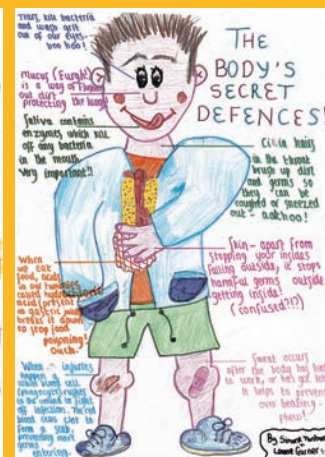
Once again the competition proved to be extremely popular, attracting over 1,000 entries and involving more than 1,600 students from 130 schools. There were two age groups, 11–14 and GCSE. Feedback from teachers shows that the competition's success is due to it being specification-led, allowing teachers to incorporate it into their lesson plans as either a piece of course work or an assessment opportunity.

A panel of microbiology education experts comprised of MISAC members and SGM staff, including SGM Executive Secretary Dr Ron Fraser, carried out the judging. They were overwhelmed, by not only the quantity, but also the high quality of the entries in both age groups and it was extremely

difficult to select the winning entries. Adjudication took account of originality, scientific content and accuracy, presentation and the effectiveness of the poster as a means of communicating with the peer group. This year's competition lent itself to hand-produced entries and these featured heavily amongst the winners. However, it also gave opportunities for creative use of ICT skills.

The winner of the 11–14 age range was **Megan Clare** from St George's School, Ascot and the winner of the GCSE age range was **James Adair** from Newcastle Royal Grammar School.

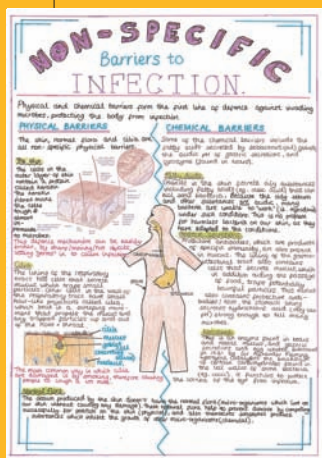
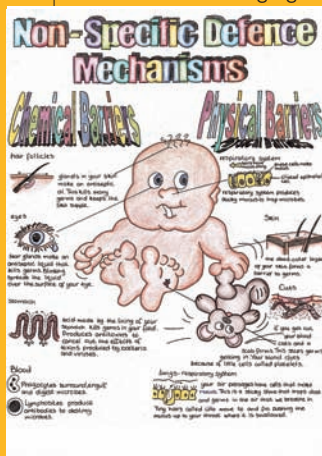
Dr John Grainger, Chairman of MISAC, has already made presentations of cash prizes and certificates to both schools. In addition every school entering the competition received a pack of microbiology



ABOVE, RIGHT & BELOW: 11–14 age group winners. 1st prize (top left), Megan Clare, St George's School, Ascot; 2nd prize (top right), Simone Tambaros & Leanne Garner, South Hunsley School; 3rd prize (lower right), Nicola Read, Kirsty Read & Lauren Bibby, Howard of Effingham School; highly commended (right), Alicia Russell, Kirkham Grammar School.

LEFT: GCSE group winners. 1st prize (top left), James Adair, Newcastle Royal Grammar School; 2nd prize (top right), Siobhan Wilde, Thornleigh Salesian College; 3rd prize (bottom left), David O'Sullivan, Brinsworth Comprehensive; highly commended (bottom right), Lauren Sparrow, Diss High School.

BOTTOM: Judging day at SGM HQ. From left to right: Sue Assinder (SGM Education Officer elect), Muriel Rhodes-Roberts (SIAM), John Grainger (MISAC Chairman), Janet Hurst (SGM), John Tranter (CLEAPSS), Faye Jones (SGM), Ron Fraser (SGM), Peter Fry (MISAC Vice-Chairman).



teaching resources and each student was sent a certificate of entry.

Further details of the winners are available on the SGM education website at www.microbiologyonline.org.uk. A selection of the posters will be on display at SGM's 153rd Meeting at UMIST, Manchester, from 8 to 11 September 2003 and also at the ASE annual meeting at University of Reading, from 8 to 10 January 2004 on the MISAC stand.

MISAC wishes to express its sincere thanks to the SGM for sponsoring the 15th competition.

Next year's competition, *Composting: not just a load of old rot but a way to save the planet*, sponsored by the Society for Applied Microbiology, asks pupils to create an illustrated information leaflet suitable for distribution by a local authority to the general public to encourage the use of composting as an important contribution to the recycling of waste materials. It is hoped that once again this competition will attract a large number of entries from both Key Stage 3 and GCSE students. A competition entry form can be downloaded from www.microbiologyonline.org.uk

Dariel Burdass, SGM Education Projects Administrator

New Resource

■ Tuberculosis – can the spread of this killer disease be halted?

This is the first in an exciting new series of factfiles on the theme of *Microbes and Disease*. Aimed at post-16 students, the 8-page A4 size resource looks at many aspects of a disease which, once thought to be conquered, is now making a big comeback in many parts of the world. Starting with a history of TB, which has been around since at least the Iron Age, before moving on to its modern epidemiology and descriptions of the causative bacteria and how the infection is spread, compiler Dariel Burdass (SGM Education Projects Administrator) then tackles the immune response to TB, diagnosis, prevention, control and treatment before concluding with some of the latest research and speculating what may lie in the future. Background information on topics such as cell-mediated immunity, the emergence of drug-resistant TB and the synergy between TB and HIV is also provided. The resource concludes with a list of Key Points, a glossary, a list of further reading and some useful websites. It is illustrated throughout with high quality colour photographs. The text was checked by two SGM members who are distinguished experts on TB.



Catherine MacMahon, a teacher at Our Lady's School, Dublin was delighted with this resource which she described as 'A fantastically readable and attractive factfile on TB.'

Copies of the Tuberculosis factfile were distributed to all school members of SGM in May, but are freely available from the External Relations Office. Email education@sgm.ac.uk if you would like one or use the online order form at www.microbiologyonline.org.uk

Microbial Menu Items

In response to our request for microbial recipes in the last *SchoolZone*, two have been submitted, both for fermented drinks (sadly neither is for beer or wine!).

■ Ginger Beer

Libby Riley from Sutton Coldfield has sent us a recipe which can be downloaded from www.microbiologyonline.org.uk

Ginger beer originated in England, in the mid-1700s, where it became the favourite drink for over 150 years. The forerunners of ginger beer were mead and metheglin, which is mead flavoured with herbs or spices. Mead is a yeast-fermented honey and water drink and has been around for a very long time. Records show that the Celts were drinking it as long ago as 500 AD. It is reputed to be one of the oldest recorded fermented beverages. Ginger beer also uses yeast for fermentation and is sweetened with honey, molasses or cane sugar. The yeast converts the sugar into ethanol (alcohol) and carbon dioxide (gas). Other ingredients include fresh whole ginger although in Libby's recipe this has been replaced with ground ginger and lemons or lemon juice. The yeast is also said to add a special flavour to the beer, which is similar to that of home-baked bread.

In England and Canada, the popularity of ginger beer peaked in 1935. The USA had 300 breweries, Canada had over 1,000 and England had 3,000!

■ Kombucha Tea

Many thanks to Roy Moore, Editor of *The Mycologist*, who sent in an article called 'The Kombucha consortia of yeasts and bacteria' which appeared in that journal (2000, 14, 166–170).

Kombucha is the name given to a jelly-like mix of yeasts and bacteria that is cultivated in a solution of tea and sugar. The yeasts and the bacteria in the culture, while not dependent on one another for survival as in a symbiotic relationship, do grow in close association, forming a microbial community. Acetic acid bacteria, in particular *Acetobacter xylinum*, excrete a special gelatinous adhesive consisting of extracellular polymeric substances that provide a matrix in which yeasts are embedded in distinct clusters. During the incubation period a rubbery microbial mat is formed on top of the culture, consisting of micro-organisms embedded in a mesh of cellulose fibres. The micro-organisms ferment the tea and sugar producing a wide range of organic acids, vitamins and enzymes that accumulate in the liquid medium. This variety of metabolites accounts for the claims that Kombucha is beneficial to human health and can be used to cure many conditions, including asthma, insomnia, skin disorders and herpes.

While the SGM is not advocating the preparation of Kombucha tea for human consumption, as the sharing of 'starter cultures' is not regulated and they might contain potentially harmful contaminants, it is a potentially interesting investigation for exploring microbial communities, subject to the usual safety constraints and preparation of a risk assessment.

For further information on Kombucha Tea see helios.bto.ed.ac.uk/bto/microbes/biofilms.htm

Dariel Burdass, SGM