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Medicines from fungi

Wednesday 9 April saw the judging of the ever-popular annual competition run by the Microbiology in Schools Advisory Committee (MiSAC). This year it was sponsored by the British Mycological Society with the theme of 'medicines from fungi'. It aimed to increase awareness of the wide range of pharmaceutical products that are derived from fungi.

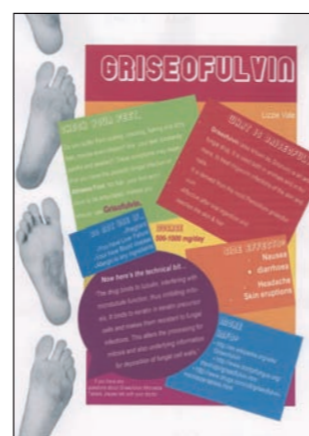
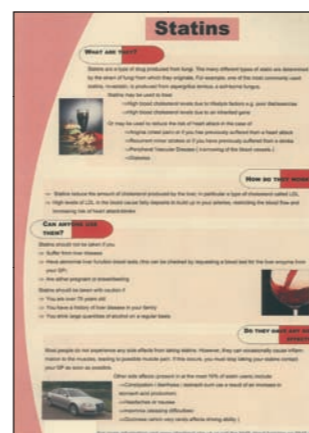
The brief was to design a patient factsheet about a drug of fungal origin and the breadth of drugs researched was impressive (even some of the judges learned a thing or two!). Penicillin was a popular choice and many students showed high levels of understanding of key concepts, including penicillin's mode of action, antibiotic resistance and the ineffectiveness of antibiotics against viral infections.

77 schools took part with a total of 584 entries (412 at Key Stage 3 and 173 at Key Stage 4). A special mention goes to the Vasile Alecsandri High School which submitted students' work all the way from Romania. The overall standard of entries was pleasing, with work that was informative, imaginative and beautifully illustrated (although some entries featured gruesome images of fungal infections!). There are certainly some budding science communicators and medical writers in our midst.

Judging of the Key Stage 3 category was difficult and the first prize was chosen due to its clarity of information combined with creative presentation. This winning entry, a 'Quiz the Doctor' factsheet about the use of ergot alkaloids to treat migraines, was created by Sian Deasy of Hounslow

School in Southampton. Second prize went to Nadia Fernandes of Sheffield High School whose fact file on statins was professionally presented. Robyn Lawrence of Diss High School was awarded third prize for his detailed work on penicillin. Entries from Dawn Buchanan of Edgbaston High School, Jack Linley of Kirkham Grammar school and Alice Elliot of The Mount School, York were all highly commended.

The short listed Key Stage 4 entries were extremely good and choosing between them was demanding. First prize was eventually awarded to Holly Emms of the King's School Ely for her fact sheet on statins that was so concise, accurate and well presented that it could easily have passed for a real NHS patient leaflet! Lizzie Vale of St Nicholas' School was awarded



second prize for her eye-catching work on the role of griseofulvin in treating athlete's foot. Third prize went to Ushna Qureshi of Rugby High School for her well organized work on statins. The judges were all impressed by the work of Bea Xu and Sandra Fahmy whose excellent cartoon strip was awarded a commendation for creative design. The work of Tessa Gwart and Kirsten Wilkinson of George Heriot's School, Edinburgh and Vivek Murthy of King Henry VIII School, Coventry was also highly commended.

The competition continues to be a great success, not only with themes that remain relevant to the science curricula, but with tasks that help students develop valuable skills, for example the ability to carry out independent research, select and explain appropriate scientific information and present it in a style appropriate for a target audience. We look forward to next year's competition which will be sponsored by SGM and focus on the role of microbes in the topical issue of climate change.

l Gemma Sims, SGM

▲ Some of this year's judges inspecting the entries. From left to right: Martin Adams (SfAM), Maurice Moss (BMS), Anthony Whalley (BMS), Margaret Whalley (BMS), Lucy Goodchild (SGM) and Gemma Sims (SGM).

◀ Opposite page KS3 winners (from left to right, 1st, 2nd and 3rd) and the KS4 creative design award winner.

◀ This page KS4 winners (from top to bottom, 1st, 2nd and 3rd).

Science education in flux

www.qca.org.uk/qca_13575.aspx

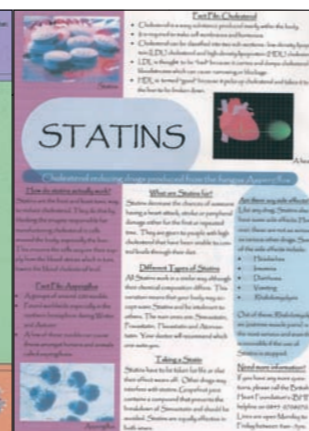
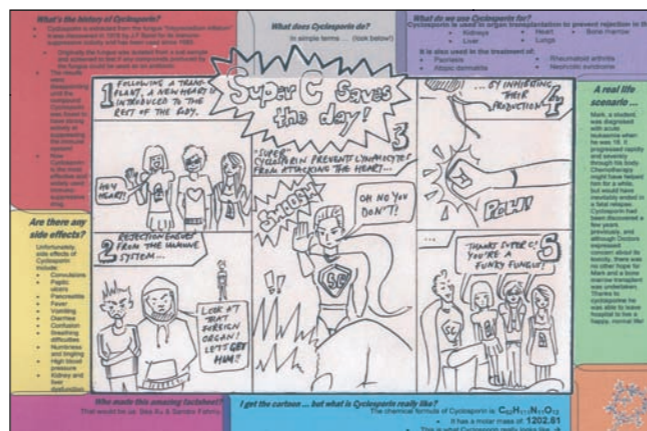
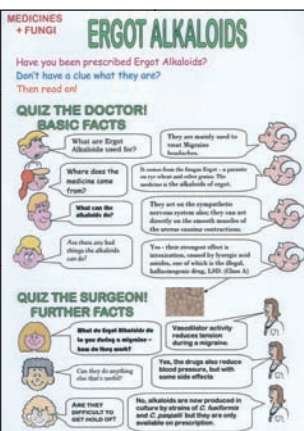
www.ltscotland.org.uk/5to14/about5to14/curriculumforexcellence/introduction.asp

The whole UK education system has been experiencing a vast amount of change. In England and Wales the Key Stage 3 National Curriculum has been under review and changes to it will be implemented from September. Current Year 11 students, who will be sitting their GCSEs imminently, are the first cohort to complete the new GCSE science courses launched in September 2006, such as OCR's *Science in the 21st Century* and Edexcel's *360° Science*.

This academic year science teachers have been furiously attending courses to help them get up to speed with the changes to the new GCE AS and A2 science specifications, due for launch in September 2008. In addition, Ed Balls, the Secretary of State for Education, announced in October 2007 that a new Science Diploma would be introduced in 2011 (a decision originally rejected by his predecessor, Alan Johnson). Diplomas in other subjects, such as IT and Engineering, will be launched in September 2008 and are expected to be available alongside GCSEs and A levels. It is claimed that these new qualifications will allow students to develop functional skills (for example in ICT and numeracy), thinking skills and enhance personal learning, as well as acquire subject-specific knowledge. Diplomas will also contain compulsory work experience and project work. It is not known what the content of the new Science Diploma will be and at the time of writing the government has no plans to replace GCSEs and A levels with diplomas, although some education commentators are predicting the opposite.

In Scotland the 3–18 curriculum is also under a review called a *Curriculum for Excellence*. The Scottish Government regards science education as important and is putting a lot of money into developing new resources.

Whatever happens, these changes will have an impact on the transition from school to university and admissions tutors could find it hard going to stay up-to-date in the rapidly evolving scene.



Projecting microbiology

www.nuffieldfoundation.org/go/grants/nsb/page_390.html

The Nuffield Foundation offers 1,450 funded places a year, in two separate schemes, for aspiring young scientists. The schemes provide summer project opportunities in leading scientific industries, research institutes and UK universities. The SGM has its own vacation studentship grants for microbiology undergraduates, but we are very pleased to fund 10 Nuffield Schools and Colleges Bursaries each year, which are aimed at students in the first year of an advanced or higher level STEM course. They are able to join a real research project with practising scientists. Projects run for 4–6 weeks in the summer vacation and students receive a £75 a week bursary. In our case, once Nuffield has received our sponsorship they contact the Regional Co-ordinators who organize the placements and ask if they have any students specifically seeking a microbiology project. The SGM money then goes towards these placements.

After completing their projects, students attend local events where they display them to an invited audience of teachers, other students and representatives from industry, universities and research institutes. Many receive prestigious BA CREST Awards as a result and some go forward to compete in the BA CREST National Science Fair.

Listed below are examples of some of the microbiology projects that students carried out in 2007:

Project provider	Project title
GlaxoSmithKline	Cloning and characterization of a fungal gene
John Innes Centre	Crystallization of DNA gyrase from <i>Mycobacterium tuberculosis</i>
John Innes Centre	Bionanoscience: exploring the virus-chemistry interface
Scottish Association for Marine Science	The vitamin requirements of two microalgal species
Division of Infection & Immunity, University of Glasgow	Producing inactive kinase enzymes to aid the study of cytokinesis in <i>Trypanosoma brucei</i>
Agri-Food and Biosciences Institute, Belfast	Detection of DNA from harmful bacteria in foodstuffs
Queens University, Belfast	Food microbiology
Mourne Country Meats Limited	Cooking/cooling against microbiological levels in cooked ham
Dept of Civil & Environmental Engineering, UCL	Sources and flux of microbiological pollutants in air in urban environments
BPL	Developing a method for the examination of microbiological bio-burden of detergent solutions
NIMR	How mouse malaria affects the stem cell progenitors of blood cells
Health Protection Agency	Stabilization of recombinant anthrax vaccine

The Nuffield Foundation is always seeking project supervisors, so if you are interested in offering a placement, do contact the National Co-ordinator, Sharmila Banerjee (s.banerjee@nuffieldfoundation.org).

A website to support practical biology

www.practicalbiology.org

The SGM is providing sponsorship for a project being initiated by the BioSciences Federation (BSF) in partnership with the Nuffield Curriculum Centre (NCC).

The new website will support teachers in delivering practical work in schools, along the lines of the already well-established sites the NCC runs with the Institute of Physics (www.practicalphysics.org) and the Royal Society of Chemistry (www.practicalchemistry.org). The site will list practical ideas to support biology teaching by topic, and it will be easily searchable. The activities will be presented in a standard format, to include health and safety considerations as well as suggested teaching approaches and questions for the students.

The website is currently in development, but member organizations of the BSF will be invited to contribute practical investigations, which will be moderated by the NCC and put into the standard format if approved. SGM will, of course, be submitting some tried and tested microbiology experiments for consideration.

Further information will be provided in Schoolzone once the site is live.