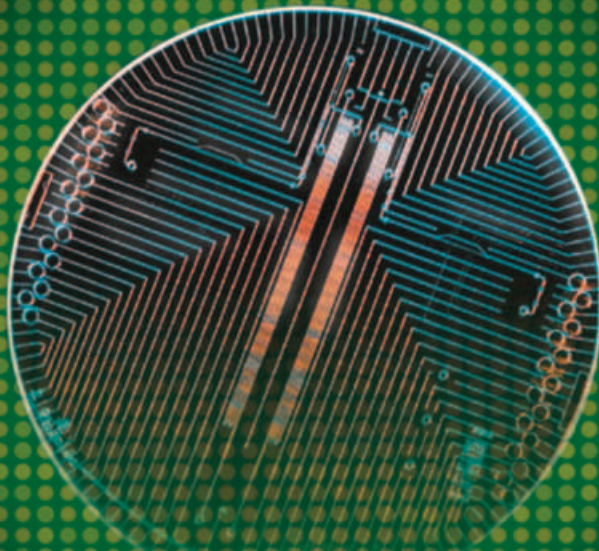


# Microbiologist

The magazine of the Society for Applied Microbiology ■ September 2009 ■ Vol 10 No 3

ISSN 1479-2699



FEATURE

THE NEW

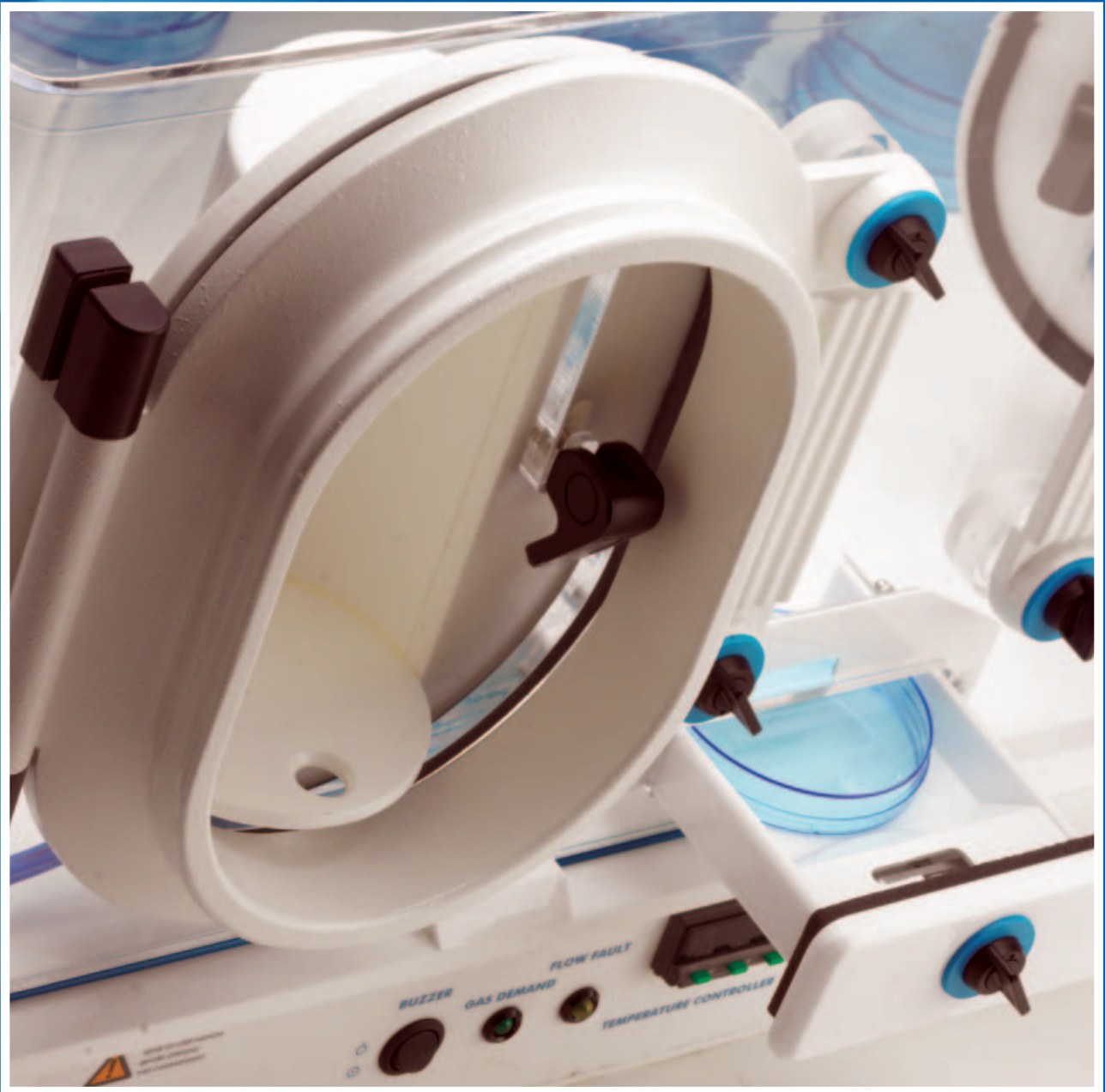
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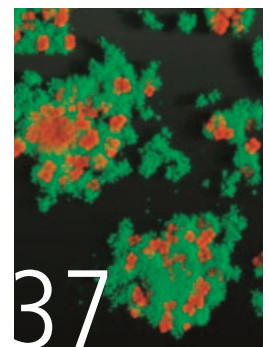
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Winter meeting 2010



Bacterial sociology in a biofilm world

## information

*Microbiologist* is published quarterly by the Society for Applied Microbiology. ISSN 1479-2699. Registered in the UK as a charity and Company limited by guarantee. Registered in England and Wales: 6462427. Registered Charity: 1123044

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In the last issue of *Microbiologist* I wrote about the reporting of Influenza A (H1N1) in the media and the importance of accurate communication of science. As we all know, the situation has developed somewhat since then with this outbreak reaching pandemic status on 11 June 2009 and treatment with antiviral drugs/prevention through vaccine development and availability being foremost on the minds of most people.

I'm sure most of you will know somebody who has suffered from infection, though as I write this editorial I am happy to report that there has been a drop in the number of new cases of Influenza A(H1N1) in the UK\*.

For this Editorial I will continue on the theme of communication — this time concentrating on communication via the internet. There has been

much discussion regarding the success of the government pandemic flu website which was launched recently\*. I know that on the day it was launched the website went 'down' for a time due to system overload. There has also been mention of people abusing the system in order to take illegitimate time off work — not something that is likely to be favoured at this time of economic uncertainty.

Some might say this is an illustration of the fragility of such online facilities as a means of

information dissemination. However, my view is that online tools and new technologies are to be embraced. Online facilities — in particular interactive ones through Web 2.0 — enable instant communication across the globe and the implications of this are too many to mention in this Editorial. My enthusiasm for new technologies is probably evident from this issue of *Microbiologist* which has the theme: "New Technologies".

The feature articles for this issue are on a common theme — microarrays. A relatively new technology which, although not a brand new technique, has developed from a tool which measures gene expression, to one which is now being used to diagnose and inform treatment decisions (see page 30).

The second feature article remains on the subject of microarrays, but this time looking at one particular application of this adaptable technique (see page 34).

We discuss new technologies from the point of view of social networking with an article explaining how to join the new SfAM organisation page on the social networking website Facebook. This will enable users of Facebook to remain up to date with all SfAM activity and news (page 15). We also explain to those who like to tweet, how to follow "sfamtweets" — the new SfAM presence on the microblogging website, Twitter (page 14). Here we will be updating twitter users with real time news from SfAM as well as relevant news from across the twitter community.

Do you have particular views on new technologies, the internet, web 2.0 or social networking, or perhaps you have views on our reliance on the internet for global communication? Perhaps you use social networking sites regularly and don't know how you communicated without them. Perhaps you loathe even the mention of Facebook and you think Twitter is for twits. Either way, I'd be delighted to hear from you so do get in touch and let us know your views.

\*Accurate at time of going to press.



## editorial

Lucy Harper talks about communication and new technologies

### contribute

We are always looking for enthusiastic writers who wish to contribute articles to the magazine on their chosen microbiological subject.

For further information please email the editor, Lucy Harper at: [lucy@sfam.org.uk](mailto:lucy@sfam.org.uk)



Lucy Harper

**Microbiologist** is published quarterly by the Society for Applied Microbiology, a registered charity. ISSN 1479-2699

#### Copy Dates:

Vol 10 No.4 Dec 2009  
Friday 25 Sept 2009

Vol 11 No.1 March 2010  
Friday 18 Dec 2009

Vol 11 No. 2 June 2010  
Friday 26 March 2010

Vol 11 No.3 Sept 2010  
Friday 25 June 2010

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A subscription to *Microbiologist* is included in the annual SfAM membership fee. For further information about the many benefits of membership please see page 6.

#### Advertising:

Information about advertising in *Microbiologist* and how to submit advertisements can be found on the Society website.

**Website:** our website ([www.sfam.org.uk](http://www.sfam.org.uk)) is a timely source of up-to-date information on all Society matters and maintains a comprehensive archive of articles and reports on a variety of microbiological topics.

# contact point



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# benefits

The Society for Applied Microbiology is the voice of applied microbiology within the UK and was founded in 1931. Society members play a leading role in shaping the future of applied microbiology, and enjoy many benefits, including:

- The opportunity to apply for one of our many grants or funds
- Eligibility to win any of our awards or nominate a candidate for the SfAM Communications Award
- Access to our five peer-reviewed Journals: *Journal of Applied Microbiology*, *Letters in Applied Microbiology*, *Environmental Microbiology*, *Environmental Microbiology Reports* and *Microbial Biotechnology*
- Free access to the entire collection of digitised back files for *JAM* and *LAM* dating back to 1938
- A topical quarterly magazine, *Microbiologist*
- Substantially reduced rates for attendance at SfAM meetings and conferences
- Networking with worldwide professionals in over 80 countries
- Access to private members area of the SfAM website
- Monthly email bulletins with the latest news from SfAM
- Invitation to the annual *Environmental Microbiology* lecture
- Fostering cross disciplinary research
- A 25% discount on the extensive Wiley-Blackwell collection of titles

Detailed information about all these benefits and more can be found on the Society website at: [www.sfam.org.uk](http://www.sfam.org.uk)

**GRANTS & AWARDS:** Many grants, awards and prizes are available to members including the W H Pierce Memorial Prize and prizes for student oral presentations and posters at the Summer conference. In addition to these substantial awards, the Society has funds to assist members in their careers as microbiologists. These include the President's Fund, Conference Studentships, Sponsored Lecture Grants and the popular Students into Work Scheme.

Full details of all the Society's grants and awards can be found on the website together with PDF downloadable application forms.

**JOURNALS:** The Society publishes two monthly journals: *Journal of Applied Microbiology* and *Letters in Applied Microbiology*. We also produce this quarterly colour magazine, *Microbiologist*, which contains features, topical news stories and full details of our meetings. The Society is also a partner with Wiley-Blackwell in the monthly journals *Environmental Microbiology*, *Environmental Microbiology Reports* and *Microbial Biotechnology*.

All Full and Student members receive free access to the online versions of the Society's journals, and can also submit papers to our journals via an online submission service.

**MEETINGS:** We hold three annual meetings; the winter meeting is a one-day meeting with parallel sessions on topical subjects. The spring meeting is a one-day meeting tailored for personnel in clinical microbiology. The summer conference is held every July and comprises a main symposium, a poster session, the AGM and a lively social programme. All members are invited to our prestigious annual lecture held to commemorate the success of our *Environmental Microbiology* journal. We also hold joint ventures with other organisations on topics of mutual interest.

**WEBSITE:** The website is the best source of detailed information on the Society and its many activities. It has fully interactive membership areas where you can find archive issues of *Microbiologist*, exclusive SfAM documentation and much more.

# membership options

■ **Full ordinary membership** gives access to our many grants and awards, online access to the *Journal of Applied Microbiology*, *Letters in Applied Microbiology*, *Environmental Microbiology*, *Environmental Microbiology Reports* and *Microbial Biotechnology*, copies of *Microbiologist*, preferential registration rates at Society meetings and access to the members areas of the website.

■ **Full student membership** confers the same benefits as Full membership at a specially reduced rate for full time students not in receipt of a taxable salary.

■ **Associate membership** is only open to those with an interest in applied microbiology without it being a prime aspect of their job. For example, school teachers and those taking a career break; on maternity leave, or working temporarily in other areas. It does not provide access to any journals or Society grants and awards.

■ **Honorary membership** of the Society is by election only and this honour is conferred on persons of distinction in the field of applied microbiology. Honorary members have access to our online journals.

■ **Retirement membership** is available to Full members once they have retired from their employment. Retired members are entitled to all the benefits of Full membership except grants and access to the Society's journals.

■ **Corporate membership** is open to all companies with an interest in microbiology. Corporate members benefits include:

- Quarter page advertisement in each issue of *Microbiologist* (which can be upgraded to a larger size at discounted rates)
- the opportunity to publish press releases, company news, etc., in each issue of *Microbiologist*
- FREE banner advert on the Society Website with a direct link to your company site.
- Up to three members of company staff attending Society meetings at members' rate (this means a 50% discount on non member registration rate).

## JOIN US!

You can apply for membership on, or offline. To apply offline, please contact the Membership Co-ordinator, Julie Wright on +44 (0)1234 326846, or email [julie@sfam.org.uk](mailto:julie@sfam.org.uk). Alternatively, write to her at:

The Society for Applied Microbiology, Bedford Heights, Brickhill Drive, Bedford MK41 7PH, UK

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# microbreak

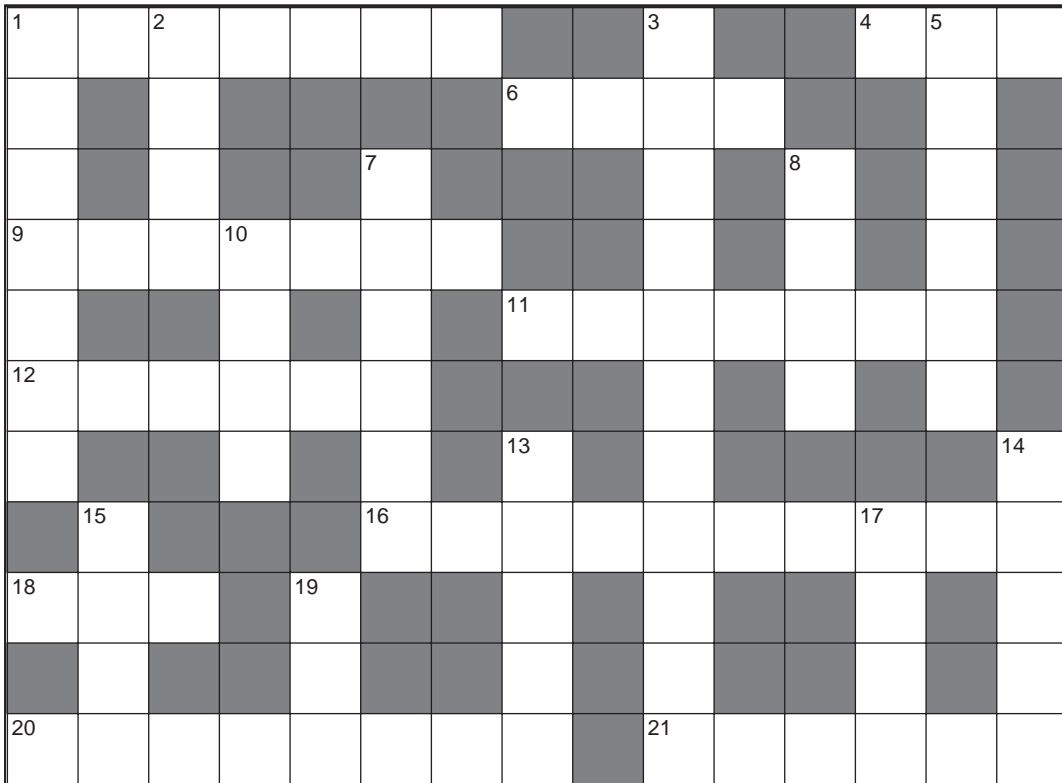
Test your microbiological knowledge by completing the crossword below and you could win an **Amazon voucher**. Get your winning entries to the Society Office by Friday 23 October 2009 to be in with a chance!

## ACROSS

1. Former European Union right followed the Frenchman (7).
4. Ovoid favoured by Nagler (3).
6. Antibiotic carrier that could be compact (4).
9. Sounds like French head and tail end are suffering from clostridia (7).
11. Add up after negative response to erythema (7).
12. Enzyme sounds like you are simplicity (6).
16. Food poisoning culprit gives girl's name to fish (10).
18. Vigorous beta-lactamase (3)?
20. Quality mark to mend arrange endless time for antibiotic (8).
21. Child in front of a German reassortment produces enteric pathogen (6).

## DOWN

1. Swarmer in favour of Latin you and us (7).
2. Some bugs alter media constituent (4).
3. False moans are confused in water-lover (11).
5. Garden character has point to reveal set of chromosomes (6).
7. Little Susan goes back to an upstairs room initially for *Staphylococcus* sp. (6).
8. Married lady acquires a superbug (4).
10. Right after the range is semi-solid medium (4).
13. Put silver back in beer to get bloomers (5).
14. I follow a carrier for *Lactobacillus* sp. (5).
15. Minimum inhibitory concentration with ecstasy provides testing model (4).
17. Carpet of growth from a rule in the North (4).
19. Quiet beast of burden yields virus (3).



Crossword compiled by Louise Hill-King

An Amazon voucher is waiting for the person whose entry is picked first from the Editor's in-tray! The closing date for entries is **Friday 23 October 2009**. The answers will appear in the December 2009 issue of *Microbiologist*.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Simply photocopy this page and send it to: 'Microbreak Crossword', Society for Applied Microbiology, Bedford Heights, Brickhill Drive, Bedford MK41 7PH, UK.

Leaving our current financial problems aside it has been apparent for some time that the world is facing a number of pressing global issues including health, climate change, sustainable development and poverty. What has emerged more recently, however, is an understanding that the solutions to many of these issues are also global and do not lie solely with the developed nations. In attempting to address these problems, the participation of scientists and technologists throughout the world is now recognised as being pivotal. However, in many developing countries it is necessary first to build up local scientific capacity to enable them to address their specific local issues and ultimately to develop sustainable economies.

In 2000 the Heads of State from Governments across the world came together at the UN Millennium Development Summit and agreed to work together to achieve a more prosperous international community. From this summit a number of Millennium Development Goals were drawn up and led to multi-million pound capacity-building initiatives co-ordinated by among others the World Bank and in the UK by the Department for International Development (DFID).

There is no doubt that these large, centrally driven initiatives do have a major role to play in delivering the global development agenda.

However, they are often very inflexible and can frequently miss their target. We should not lose sight of the fact that in many cases the most significant impact can be made by individuals carrying out small scale interactions on a personal level. This therefore begs the

question as to whether societies like ours can embark on capacity building projects in developing countries on a smaller scale and make a real difference to individuals in those areas. Those of us who have been involved with learned societies for many years will say that our remit has always been to build capacity in our particular discipline and as we grow bigger we naturally extend this to an international scale. Learned societies such as SfAM are therefore ideally suited to contribute to this agenda since we are essentially clubs of scientists with extended networks and with strong links at grass roots level.

In early June this year Phil Wheat and I attended a meeting on "International Capacity Building by UK Learned Societies", held at the Royal Astronomical Society headquarters in London. The objectives of this meeting were to

exchange experiences of capacity building programmes for developing countries and to explore whether there may be benefits in some co-ordinated action in this area.

Listening to contributions from various societies it became apparent that SfAM is already indirectly quite active in this area. For instance, we are an international society with members in over 80 different countries and unlike some societies we make no distinction between UK and overseas members. All have the same benefits and can apply for the same grants. A number of our grants are specifically directed towards developing countries such as the Endangered Culture Collection Fund and the Overseas Development Award. However, all grants including the President's Fund and the Students into Work grant are accessible to members from developing countries although applications from these regions are sparse. Under the auspices of Wiley-Blackwell, the Society's journals are available online for free (or at very low cost) to libraries in developing countries through philanthropic licensing deals such as the Health InterNetwork Access to Research Initiative (HINARI) and Access to Global Online Research in Agriculture (AGORA). I am also aware that many members undertake individual collaborative projects with fellow scientists from developing countries and that these ventures are highly successful.

Despite this, we left the meeting feeling that we, as a Society, could and should do more. A number of people including Gandhi and Churchill have been credited with saying that you measure the degree of civilisation of a society by how it treats its weakest members. There are a number of ways in which we may get involved in capacity building and below are just a few examples coming from the meeting, which I put forward without any suggestion of being prescriptive:

- Setting up collaborative research projects.
- Donation of equipment, journals or textbooks.
- Laboratory training in the UK for overseas young scientists.
- Lecturer/student exchange.
- Organising meetings/training workshops in developing countries.
- Assisting schools/universities with accreditation or curriculum design.
- Expert advice on local problems.
- Assistance with grant applications or paper writing.
- Help with forming "sister" learned societies.

I would like to set up an international sub-committee to explore ways in which SfAM might engage more in capacity building in developing countries. The success of these sorts of ventures

## president's column

**Geoff Hanlon** reviews the Society's long association with awards and prizes



is dependent on the enthusiasm of individual members and I am conscious that any initiatives should be driven by the people on the ground in the developing areas and not formulated by those in the developed countries. The suggestion here is not to embark on a “grand plan” but simply that the Society might be able to assist members engaged in the process at grass roots level. One way in which the Society can do this is to make some limited funds available to facilitate these projects. At present we have a number of grants for which there is very little take-up. The grants sub-committee is currently undertaking a review of our grants and some of these could be re-structured to assist in the ventures outlined above. Such an international strategy can only enhance the Society’s profile and reputation whilst at the same time meeting part of our objectives as a charitable organisation.

I would be very keen to hear your views on this subject particularly if you are a member from a developing country. Is it the sort of thing we should be doing? What level of activity is already being undertaken by individual members? Have you been involved in this sort of activity in the past — what were your experiences? Do you think SfAM would be able to assist you in what you are doing? What ideas do you have for potential capacity building projects? Please feel free to email me at [g.w.hanlon@brighton.ac.uk](mailto:g.w.hanlon@brighton.ac.uk) or contact the SfAM office and we will pass on your views.



**Professor Geoff Hanlon**  
President of the Society

**F**irstly I would like to thank all members who took the time to complete the SfAM membership questionnaire which was recently circulated. We have been overwhelmed by the response, with nearly 40% of members taking the trouble to complete the questionnaire. We are currently collating and analysing the data and once we have, I am sure it will prove extremely useful in helping to enhance the provision of services we offer to our membership.

In this issue of *Microbiologist* you will find the report on another successful Spring meeting. As with previous Spring meetings, the average scores from delegate evaluation feedback forms indicated that most aspects of the event were scored very highly. The one aspect which was poorly scored was the quality, quantity and provision of the lunch. At the event I also found this aspect of the meeting totally unacceptable. Our views were strongly expressed to representatives of the catering provision during the meeting and we have subsequently expressed our displeasure to the facility providers. I would like to make a personal apology to all delegates who attended the Spring meeting for the poor quality of the lunch which was provided by the caterer. In particular it is disappointing that the quality had significantly deteriorated since the 2008 meeting held at the same venue. I can give an assurance that we will not be using the venue for any future society-organised meetings. Also, I can confirm that we have already identified another venue at which to hold the 2010 spring meeting and full details will be announced shortly.

I have been fortunate enough to attend two meetings (ASM and IFT) in the US this year. I greatly enjoyed meeting new and existing members. You may also have met the Editor, Lucy Harper who assisted with exhibition at a third US conference (IAFP). Record numbers were enrolled at all three meetings. September and October are also busy months for exhibitions and the Society will be exhibiting at the following: Veterinary Laboratories Agency Annual Meeting, Royal Holloway, University of London, 2-4 September; European Federation of Biotechnology, Barcelona 14-16 September; Institute of Biomedical Science Meeting, Birmingham 28-30 September, and finally, the International Association of Food Protection European meeting, Berlin 7-9 October. If you are attending any of these meetings please do call by the Society stand.



**Philp Wheat**  
Chief Executive Officer

## ceo's column

**Philp Wheat** reports on the latest developments within the Society



## Don Whitley Awarded Honorary D.Sc

account of Don's great achievements. He described his early interest in medical science and the efforts that eventually saw him become a technician at The Women's Hospital in Leeds.

Soon the world of commerce beckoned and he joined Oxoid of which he became Sales Director. Later he founded a company to supply materials to laboratories and, after buying out his business partner in 1976, he founded Don Whitley Scientific Limited. Three generations of the family have been involved in the business. As the company developed and expanded Don became Chair of the University's Advisory Board in Biomedical Sciences and sponsored students at the University of Bradford in their industrial placements.

Don was also responsible for many benefactions, including several to this Society. Professor Gardner described how Don fostered a productive interaction between industry and academia. Paul Walton, Don's eldest son, MD of Don Whitley Scientific, commented, "*There can be few microbiologists in the world who have not used something in which Don has not had a hand.*"

Max Sussman

On a beautiful summer's day on 15 July 2009, the Chancellor of the University of Bradford, Imran Khan of cricketing fame, conferred the Honorary Degree of Doctor of Science on **Don Whitley**. It was a colourful occasion in which the academic staff, fully robed and to suitable organ music, processed into the hall in which many undergraduates were already assembled to be admitted to their degrees.

Don was presented to the Chancellor by Professor Michael Gardner, who gave a full

## SfAM ex-committee member recognised in Queen's Birthday Honours

SfAM ex-committee member, **Professor Diane Newell** has been awarded an OBE at the Queen's Birthday Honours for services to science. Whilst serving on Main Committee, Professor Newell was

instrumental in developing and implementing Med-Vet-Net, the EU Framework Programme 6 project investigating zoonotic disease across Europe. Professor Newell was the Project Manager of Med-Vet-Net from 2004 until 2008 and SfAM as one of the partner institutes of Med-Vet-Net, would like to extend congratulations to her for this achievement.

## membership matters

### SfAM Photo Competition

Have you taken an outstanding photograph of your beloved bugs? Do you know someone who has and you'd like to see their work in print? Perhaps you've taken a photograph while attending a SfAM conference which you think is worthy of reproduction?



## Membership Changes

### NEW MEMBERS

We would like to warmly welcome the following new members and hope that you will participate fully in the activities of the Society.

#### Brazil

M. Hanna Vance-Harrop

#### Canada

E. Beckett; M. Skulnick; S. Zenteno

#### China

C. Wu

#### Greece

N. Soultos

#### India

S. Bhal; R. Gaur; S. Goal; D. Gupta; D. Kaushik;  
S. Ramachandran; G.P. Rao

#### Iran

S. Shekarforoush

#### Ireland

S. Broderick; S. Horgan; N. O'leary; P. Rojas

#### Japan

N. Murayama

#### Korea

K. Seo

#### Mexico

M. Marquez-Gonzalez

#### Namibia

P. Chimwamurombe

### New Zealand

T. Blackmore

### Nigeria

B. Adebayo-Tayo; P. Anozie; O. Buraimoh; O. Duyilemi;  
E. Garuba; R. Ishola; T. Obuotor; G. Okwu; R. Osagie

### Puerto Rico

J. Perez-Jimenez

### Serbia

I. Moric

### Switzerland

Y. Motarjemi

### UK

A. Al Yousef; H. Alhadrami; H. Allison; N. Andrews;  
S. Bagchi; C. Bastille; M. Baylis; M. Bibi; J. Calvert;  
T. Carlton; R. Chattaway; D. Cooper; C. Corbett;  
J. Dallow; P. Dean; D. Doehren; K. Gough; S. Hassam;  
H. Kadhim; M. Kennedy; A. Khalifa; L. Lacharme-Lora;  
K. Laming; K. McIntyre; C. Miller; A. Millson;  
S. Mollasalehi; R. Murphy; M. Navarro; J. Newman;  
R. Nisr; R. Nova; O. Nwaiwu; J. O'Neil; A. Oniku;  
T. Paget; R. Phaiser; C. Price; E. Rathnayaka; P. Richards;  
M. Ryan; F. Sajjan; M. Seton; D. Sewell; R. Smith;  
D. Smith; J. Taylor; I. Unigwe; C. Vaughan; S-H. Wei;  
E. Williams; L. Yon; N. Zakira

### USA

C. Bacon; S. Beckman; T. Belay; L. Branham; K. Butela;  
J. Connaghan; A. Draughon; D. Eblen; P. Elzer;  
M. Gomez; L. Goodridge; B. Houston; J. Kerr; S. Lowe;  
W. Mahaffey; K. Marano Briggs; K. McElhany; R. Miller;  
J. Mott; C. Nair; J. Narciso; K. Payne; C. Rambo;  
Y. Ramirez; P. Ranglin; S. Srinivasan; M. Tidd;  
S. Wagner; K. Willburn; M. Willburn; D. Yow

### West Indies

S. Singh

Due to popular demand, SfAM are running the photography competition again this year. We are looking for twelve eye-catching images to use for our 2010 calendar which we will be giving to all our members as a Christmas gift.

To enter this competition, please send your photographs to the Editor in the form of JPEG files which must be a minimum size of 7 x 7cm at 300dpi (800 x 800 pixels). Alternatively, you can send the original photographs in hard copy to the

Society Office and we will return them to you once they have been scanned.

**Photographs will appear in one of two categories:**

1. Scientific — e.g., a colourful image using bacteria
2. Non-scientific but with a SfAM theme e.g., taken at a SfAM event

**The closing date for entries for this competition is Friday 9 October 2009**



# OBITUARY

## Dr R M Keddie

(3 February 1928 - 24 January 2009)



Dr Ronald Keddie — Ron to fellow microbiologists — was a member of the Society for all his professional life. He was born in the coal-mining community of Cardenden, Fife, Scotland, educated at Beath High School and at the Department of Agriculture, University of Edinburgh and the East of Scotland College of Agriculture — the Department and College were constituent parts of the school of Agriculture. He specialised in agricultural bacteriology and did a final year project on *Kurthia zopfii* under the supervision of Dr. T. Gibson of the College. Ron was awarded the BSc. Degree with First Class Honours in 1949 — the University records note that he completed the practical in agriculture.

On graduation, Ron joined the staff of the College and became a member of a large team funded by the Agricultural Research Council that was investigating many aspects of silage production. His task was to identify the species of *Lactobacillus* that fermented plant sugars during the initial phase of the ensilaging process. First he had to devise a selective medium to enumerate organisms on grass and silage. Following the promptings of his PhD supervisor, Dr. Gibson, he established the critical concentration of acetate buffer and the relevant pH that allowed the growth of *Lactobacillus* sp. but not that of other organisms, particularly enterococci. He found that the growth of lactobacilli was enhanced by the addition of Tween 80 and manganese to an already rich basal medium. Details of this medium were published (*Proc. Soc. Appl. Bact.*) in 1951. In that year also M. Rogosa *et al* gave details of an almost identical medium in *The Journal of Bacteriology* a derivative of which is still in

**Welcome to new  
member of the  
SfAM team**



common use. Ron was awarded a PhD degree in 1954.

In 1956 Ron was appointed to a lectureship in the Department of Microbiology at Reading University. This department, the first of its kind at a British university, had developed from a small unit that taught bacteriology to students in the Faculty of Agriculture. Ron was promoted to Senior Lecturer in 1964 and retired in 1985.

Ron was highly involved in the development of the BSc. degree course in microbiology and his serious and demanding approach to teaching drew respect from colleagues and students alike. He also had a lighter side, well exemplified by his utter disbelief and long-lasting amusement in retelling an occasion when a student made a streak plate from a culture of a *Lactobacillus* sp. on the inside of the Petri dish lid yet achieved reasonably acceptable single colonies!

At Reading, his research interest was centred on little known genera — *Caryophanon* and *Kurthia* (he defined a new species, *K. Gibsonii*) and particularly the poorly characterised coryneform bacteria. He linked newer methods for the characterisation of micro-organisms — *viz* cell wall analysis and numerical taxonomy — with traditional ones such as critical studies of nutritional requirements and age-induced changes in cell morphology. The latter drew on his skills in microscopy and photomicrography. Whatever method was adopted, whether ancient or modern, its application was rigorously controlled. Although not inclined to rush into print, the stature of his achievements, often in collaboration with his graduate students, can be gauged by reflecting on the prestige of the publications to which he was invited to contribute.

Ron authored or co-authored the definitive descriptions of five bacterial genera in the prestigious, internationally recognised publications — *Bergey's Manual of Systematic Bacteriology* and *The Prokaryotes*. He also co-authored the description of a new coryneform genus, *Aureobacterium*. More recently, a coryneform-like bacterium isolated from veterinary material, was named *Sanguibacterium keddieii* in his honour.

Apart from teaching and research, Ron spent much of his time overseeing the technical services of the Department at Reading and in the detailed planning of its expansion at the London Road campus and eventual transfer to Whiteknights.

On retirement, Ron and his wife, Isobel, returned to Scotland – and by this time their two daughters, Anne and Lynn were pursuing demanding careers in England. There they planned in detail and supervised with a critical eye the building of their new house at Fortrose on the Black Isle. On completion, they spent many happy years creating a beautiful home and garden.

In the eulogy given at Ron's funeral service on 30 January, 2009 the orator, a long standing friend and former Professor of Biochemistry, noted that his old friend "had a continuous, unwavering quest for meticulous accuracy in all aspects of his life". Those who knew Ron as a friend or colleague are unlikely to challenge this opinion.

**Ron G. Board, John Grainger  
and Dorothy Jones**

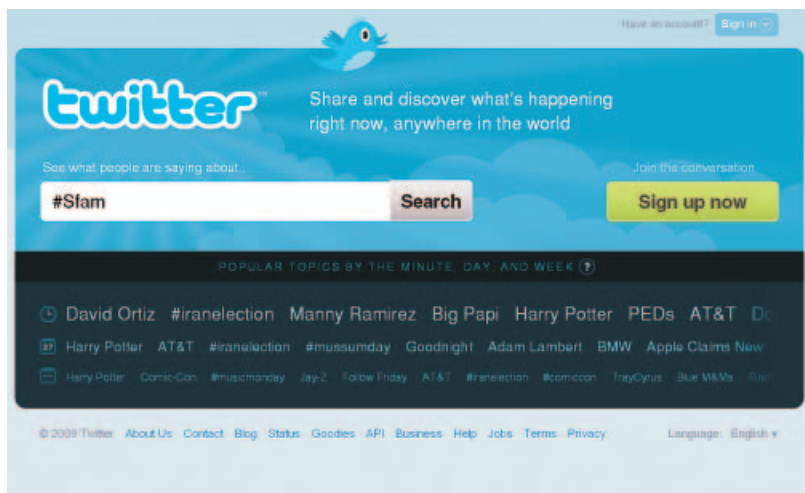
At the beginning of June, our new Communications Officer, **Clare Doggett** joined the SfAM team. Clare will be working on all aspects of communications for the Society including assisting Lucy Harper with compilation and editing of the *Microbiologist*. Here she introduces herself to those of you who didn't get the chance to meet her at the recent summer conference.

I came to SfAM from the Royal Society of Chemistry where I had been working as a graduate trainee in communications and member services. My training with the RSC was varied and I gained a lot of experience in different areas from

writing for the members' magazine through to helping to organise a conference overseas as part of the International Development team. My background is in Natural Sciences which I studied at the University of Reading. Through my time at university I studied modules in science communication as well as microbiology and virology. Even though I've only been with SfAM for a relatively short time, I am already thoroughly enjoying my time working at such a friendly organisation, and it has been a real delight to meet so many interesting people at the summer conference. I am very much looking forward to learning more about the Society and meeting many more members.

**Clare Doggett**  
Communications Officer

# Tweeting applied microbiology



SfAM now has a presence on the popular social networking website, **Twitter**. This is a website which allows users to send short messages with a summary of recent events in real time. It is described as a micro-blogging website where people provide a short description (maximum 140 characters) of what they're doing as they're doing it — but this is just one aspect of the site. Twitter is also used by many organisations to direct people to relevant websites or their own websites, or to update people with the latest news or goings-on at their events.

For those of you who are not familiar with Twitter, this is a quick guide to signing up, creating a profile and following all those people or organisations you'd like to learn more about.

Firstly, I'll explain what Twitter is: it's a website within which you can create a profile and 'follow' anybody else with a profile. This profile is relatively simple and consists of your name, your location, a photograph (if you'd like to add one — this isn't compulsory) and a short biographical description which can be 160 characters long at most. These descriptions tend to be a brief explanation of who you are, where you're working (if applicable) and a link to a URL of your own website or that of your organisation. To create a profile, simply visit <http://twitter.com>, click on 'sign up now' and follow the on-screen instructions.

Once you've created a profile, you can start to follow the organisations and people of your choice. To find people, use the 'find people' link which allows you to search for others with a Twitter account by name. A good tip here is to follow somebody who has similar interests to you and see who they're following. You may find out that your favourite organisation is on Twitter and you can start to follow them. They, in turn, may be following other relevant people or organisations.

Once you have found a number of people you would like to follow, then you'll start to generate 'followers'. These are people who have searched for you, or noticed that you're following them, or found you indirectly and have decided they'd like to follow you. But don't worry if you find that you're being followed by someone who you don't wish to follow you, you can block them from your profile which means that they won't be able to follow you any more and won't receive any of your tweets.

Now you're ready to start tweeting. A tweet is the name for an update on Twitter and is limited to 140 characters of information about what you're doing, where you're going, the topic of a relevant blog post, a meeting you're attending or anything you'd like to exclaim to the Twitter community.

You can also search Twitter for relevant keywords. If you enter a word or search term into the 'search' box on your Twitter homepage, then all the tweets containing that word will appear. From this you can find others who are on Twitter with similar interests to your own and create a Twitter community based around that topic.

If you're organising an event, it's a good idea to use a 'hashtag' when referring to that event. So, you tell everyone attending the event that you're going to be 'tweeting' about it, and you give the event a short name which is preceded by a hash symbol. For example, SfAM's summer conference this year was tweeted as: #sfamsc. During the event, if you had searched for #sfamsc you would have found all the tweets about the summer conference, no matter who they were from (tweets containing the hash tag can be from anyone, they don't have to be from the conference organisers). This is a good measure of the level of Twitter activity associated with your event as, if enough people are tweeting about it, your events hashtag will appear in the list of 'trending topics' on the right hand side of your homepage.

Finally, you can add links to a tweet, which will direct interested followers to relevant websites, blogs or any other online information. This is simple and merely involves pasting the URL into a tweet. You may wish to limit the number of character spaces taken up by the URL, in which case you can shorten it using one of the many online tools that are available to do this, such as tiny URL (<http://www.tiny.cc/>).

So, now you're ready to start using Twitter, you can follow SfAM by signing up and following 'sfamtweets' — we look forward to seeing you there.

**Lucy Harper**  
Communications Manager

# Facebook fans

For those of you familiar with the social networking site, Facebook (see *Microbiologist*, vol. 8 No.4, December 2007, p4), you may be interested to hear that SfAM is expanding our Facebook presence. Read on to find out more

The SfAM Facebook presence has evolved. Group pages on Facebook are being upgraded to organisation pages by many organisations, SfAM included. These organisation pages are similar to personal profiles and allow a much greater level of interaction than the traditional group page. Rather than group members an organisation page has 'fans', similar to having friends on a personal profile page. Fans can post on the wall, add pictures to albums, comment on pictures and status updates and tag themselves (associate their name with a picture). Also when the page or status is updated it will appear in every fan's regular news feed keeping them up-to-date with any developments as they happen.

Anyone who has a Facebook account can become a fan of SfAM: just by searching for 'SfAM' you can find the Society's page and then all you have to do is click on the 'become a fan' button at the top. We would like to encourage people to interact with the page by posting on the



wall, tagging photos and even adding photos or videos. You can also start a discussion and share your thoughts and opinions with fellow 'fans.' The page will regularly be updated with events and meetings together with links to webpages with more information.

Whilst the Society for Applied Microbiology group does still exist, we hope to gradually phase it out and eventually replace it with the SfAM fans page. We would, therefore, encourage all the current SfAM facebook group members to become fans instead so SfAM can continue to stay in touch and keep you updated.



**Clare Doggett**  
Communications Officer

## Infectious Disease: Pathogenesis, Prevention, and Case Studies

By N. Shetty, J. W. Tang and J. Andrews  
Chichester: Wiley-Blackwell 2009. pp 674 + xiii  
ISBN 978-1-4051-3543-6

**Reviewed by Max Sussman**

Encouraged by lurid newspaper coverage, the current significance of infectious, or rather communicable, diseases is now in the minds and fears of the general public. This textbook, directed at intermediate to senior university students is likely to attract a large readership on account of its large format and generous presentation. Though a wide range of students may find this book of value, it is in reality really addressed primarily to medical students.

The subject matter is presented in five parts, beginning with general principles and the approach is anatomical systems-based. The third part deals with infections in special groups, such as those related to pregnancy and immunocompromised hosts. The difficulties presented by this kind of arrangement come into sharp focus in Chapter 15, which is entitled, "*The fever and rash conundrum, rashes of childhood*". It is not made clear to which of the many possible conundrums the authors are referring.

The global significance of communicable diseases is brought into sharp focus in part four. This considers tuberculosis, malaria,

HIV/AIDS, viral hepatitis, influenza and the fascinating puzzle of infection in the returning traveller.

Finally, part five considers emerging and resurgent infections. While three of the chapters — all dealing with viral causes — are not unexpected, the chapter on diphtheria is something of a surprise in this part of the text.

The writing is mainly in prose paragraphs that do homage to the style of short notes; in this mode, 'good writing' is the victim. An excellent counterbalance are the boxes detailing case histories, which bring the science into a realistic focus.

It is made clear by the authors that they intend the illustrations to be central to their project. It is, therefore, an immense pity that they are often so poor. Thus, while Figure 1.3 is excellent, Figure 1.4 is very poor and similar criticism can be made of many photomicrographs. Clinical illustrations always present special problems of colour balance, because they determine the expectations of the inexperienced clinical student observer. What is the point of reproducing Figures 7.17(c) and 15.2(a) in which the overall purplish tinge obscures the characteristic measles rash, which is much better seen in Figure 15.2(b)? Otherwise the illustrations, particularly the line drawings, are very good.

This is a good book that students will appreciate and use. The criticisms are made to encourage the printer and publisher — with whom the main onus lies — to do better in a second edition.

## Book review

# journalWatch

News about the Society's journals



## Journal of Applied Microbiology

The following articles published in 2009 were the most downloaded articles from Journal of Applied Microbiology between January – May 2009:

Abed, R.M.M., Dobretsov, S., and Sudesh, K. (2009). Applications of cyanobacteria in biotechnology. **Vol. 106**, No. 1, January 2009

Thuku, R.N., Brady, D., Benedik, M.J., and Sewell, B.T. (2009). Microbial nitrilases: versatile, spiral forming, industrial enzymes. **Vol. 106**, No. 3, March 2009

Jofre, J. (2009) Is the replication of somatic coliphages in water environments significant? **Vol. 106**, No. 4, April 2009

Gale, P., Drew, T., Phipps, L.P., David, G., and Wooldridge, M. (2009). The effect of climate change on the occurrence and prevalence of livestock diseases in Great Britain: a review. **Vol. 106**, No. 5, May 2009

Plumed-Ferrer, C., and von Wright, A. (2009). Fermented pig liquid feed: nutritional, safety and regulatory aspects. **Vol. 106**, No. 2, February 2009



## Letters in Applied Microbiology

The following articles published in 2009 were the most downloaded articles from Letters in Applied Microbiology between January – May 2009:

Bartowsky, E.J. (2009). Bacterial spoilage of wine and approaches to minimize it. **Vol. 48**, No. 2, February 2009

Enwall, K., and Hallin, S. (2009). Comparison of T-RFLP and DGGE techniques to assess denitrifier community composition in soil. **Vol. 48**, No. 1, January 2009

Martinez, R.C.R., Franceschini, S.A., Patta, M.C., Quintana, S.M., Candido, R.C., Ferreira, J.C., De Martinis, E.C.P., and Reid, G. (2009). Improved treatment of vulvovaginal candidiasis with fluconazole plus probiotic *Lactobacillus rhamnosus* GR-1 and *Lactobacillus reuteri* RC-14. **Vol. 48**, No. 3, March 2009

Tang, J.-C., Taniguchi, H., Chu, H., Zhou, Q., and Nagata, S. (2009) Isolation and characterization of alginate-degrading bacteria for disposal of seaweed wastes. **Vol. 48**, No. 1, January 2009

Collado, M.C., Delgado, S. Maldonado, A., Rodríguez, J.M. (2009). Assessment of the bacterial diversity of breast milk of healthy women by quantitative real-time PCR. **Vol. 48**, No. 5, May 2009



## Environmental Microbiology

The following articles published in 2009 were the most downloaded articles from Environmental Microbiology between January – May 2009:

de Kievit, T. R. (2009). Quorum sensing in *Pseudomonas aeruginosa* biofilms. **Vol. 11**, No. 2, February 2009

Wood, Thomas K. (2009) Insights on *Escherichia coli* biofilm formation and inhibition from whole-transcriptome profiling. **Vol. 11**, No. 1, January 2009

Ishii, Satoshi, and Sadowsky, Michael J. (2009). Applications of the rep-PCR DNA fingerprinting technique to study microbial diversity, ecology and evolution. **Vol. 11**, No. 4, April 2009

Ochman, Howard (2009) Radical views of the Tree of Life. **Vol. 11**, No. 4, April 2009

Hugenholtz, Philip, and Kyrpides, Nikos C. (2009). A changing of the guard. **Vol. 11**, No. 3, March 2009



## Microbial Biotechnology

The following articles published in 2009 were the most downloaded articles from Microbial Biotechnology between January – May 2009:

Ueda, Akihiro, Attila, Can, Whiteley, Marvin, and Wood, Thomas K. (2009). Uracil influences quorum sensing and



biofilm formation in *Pseudomonas aeruginosa* and fluorouracil is an antagonist. **Vol. 2**, No. 1, January 2009

Daniels, Craig, and Ramos, Juan-Luis (2009). A broad range of themes in microbial biotechnology. **Vol. 2**, No. 1, January 2009

Wackett, Lawrence P. (2009). Microbial biotechnology for producing high volume chemicals. **Vol. 2**, No. 1, January 2009

Brautaset, Trygve, Lale, Rahmi, and Valla, Svein. (2009). Positively regulated bacterial expression systems **Vol. 2**, No. 1, January 2009

Editorial. The Editors, **Vol. 2**, No. 1, January 2009



### **Environmental Microbiology Reports**

#### **Highlights of the third issue of Environmental Microbiology Reports**

Krell, Tino, Busch, Andreas, Lacal, Jesús, Silva-Jiménez, Hortencia, and Ramos, Juan-Luis (2009). The enigma of cytosolic two-component systems: a hypothesis. **Vol. 1**, No. 3, June 2009

Pignatelli, Miguel, Moya, Andrés, and Tamames, Javier (2009). EnvDB, a database for describing the environmental distribution of prokaryotic taxa. **Vol. 1**, No. 3, June 2009

Hoton, Florence M., Fornelos, Nadine, N'Guessan, Elise, Hu, Xiaomin, Swiecicka, Izabela, Dierick, Katelijne, Jääskeläinen, Elina, Salkinoja-Salonen, Mirja, and Mahillon, Jacques (2009). Family portrait of *Bacillus cereus* and *Bacillus weihenstephanensis* cereulide-producing strains. **Vol. 1**, No. 3, June 2009



**Sam Holford**  
Wiley-Blackwell

There is excellent progress towards the integration of the IoB and BSF. The formation of the Society of Biology has been approved by Privy Council, and the Society will take on the integrated roles of the IoB and BSF from 1 October 2009. Before this date the assets of the BSF will be transferred, and shortly afterwards the BSF will cease any active existence. All members of the BSF and IoB will be members of the Society of Biology.

This important realignment, that I am confident will benefit biology enormously, has only occurred because of the strength and influence that the BSF acquired in recent years. This position, of course, derived entirely from the strength of the Member Organisations and these Member Organisations will have a central role to play in building the Society of Biology.

The President, Honorary Treasurer and Honorary Secretary positions are appointments of Council: Prof Dame Nancy Rothwell will be the first President, Dr William Marshall has been appointed as the Honorary Treasurer and Prof David Coates as Honorary Secretary.

The current Interim Council (IC) will form the basis of the new Council, with a managed transition of the current members

to the new profile of elected and appointed members from the two Colleges (Organisational and Individual). Council members will be elected by the Society of Biology membership.

The CEO of the Society of Biology has been appointed and should be announced very soon. Competition for the post was very strong: all interviewed were excited by the vision that has to be delivered.

Personally, my work with the BSF has now come to an end. I leave, at the end of this week (31 July 2009), with some sadness because

the BSF has introduced me to many new organisations and interesting people - which I have very much enjoyed. For me it has been an enjoyable and stimulating forty three months. Dr Emma Southern is now Chief Operations Officer (COO) for the BSF. Many of you will have discovered already that she is more efficient than I am: our organisation will be in excellent hands for the next couple of months.

It is important that you, our members, contribute your views, ideas and questions about the Society of Biology. You can find out more at the temporary website: [www.newbio.info](http://www.newbio.info). Please send any comments and thoughts by email or by adding to the blog.

## BIOSCIENCES FEDERATION

# bio focus

**Richard Dyer** discusses the progress towards integration of the IOB and BSF



The Biosciences Federation is a single authority representing the UK's biological expertise, providing independent opinion to inform public policy and promoting the advancement of the biosciences.

For further information visit:  
<http://www.bsf.ac.uk/default.htm>



**Richard Dyer**  
Chief Executive  
Biosciences Federation

# The voice of applied microbiology



## mediawatch

microbiology and the media

If you have any views on science in the media which you think should feature in this column, please send them to the Editor at:

**lucy@sfam.org.uk**

SfAM continues to support the Sense About Science "Standing up for science" media workshops. A chance for young scientists to find out how to promote their research through the media and to understand that journalists want to report good science as much as scientists want them to. Here, one of our delegates, **Danielle McEwan** tells us about this eye-opening experience

**W**hen I was given the opportunity by the Society for Applied Microbiology (SfAM) to attend the "Standing up for science" media workshop at The British Institute of Radiology in London, I was extremely excited. The workshop was aimed at early career scientists, PhD students and postgraduates. As a recent graduate, I did not know much about science in the media and this was the perfect opportunity for me to learn more.

The workshop was organised by *Sense About Science*; a charitable trust founded in 2002 to promote good science and evidence for the public. *Sense About Science* responds to the misinterpretations of science on important issues and has established the *Voice of Young Science* (VoYS) programme. This programme helps early career researchers who want to stand up for science in the public, finding evidence behind product claims and correcting misinformation in the media. These are important issues as bad science in the public domain affects the reputation of all scientists and can undermine scientists' work. Products should have appropriate evidence to support manufacturer's claims and VoYS encourage people to challenge these claims, if necessary, to ensure the correct message is being communicated to the public.

The day began with registration and the chance to introduce ourselves to other scientists. The first part of the workshop took place shortly

# meets the Voice of Young Science



afterwards where the changing image and role of science and scientists in the public domain were discussed. There were three panellists, Dr Robin Lovell-Badge, Head of the Division of Developmental Genetics at the Medical Research Council's National Institute for Medical Research; Catherine Collins, Chief Dietitian at St. George's Hospital and Professor Mark Enright, Professor of Molecular Epidemiology in the Division of Epidemiology, Imperial College London, who all spoke about their good and bad experiences with the media. I found it useful to learn that when talking to the media we should beware of flippant remarks that the journalist or reporter may manipulate to sound different from the way it was intended. It is useful to request a copy of the transcript that the reporter has produced (although this is often not feasible), and important that we talk with confidence — we are the experts after all. There was plenty of time to ask questions of the panellists about their experiences and this, I found, was an invaluable opportunity, allowing us to get involved in the discussion.

After breaking for lunch, the next session of the workshop began with 'What are journalists looking for?' I thought this was a great idea as it allowed us to learn the journalists' point of view, what they are looking for and how we can work together to communicate accurate messages to the public. The panellists were Jason Palmer,

BBC online; Kate Wighton, *The Sun* and Richard Van Noorden, *Nature*. Britain has a large community of science correspondents, with science stories being printed in most broadsheet and tabloid newspapers. The journalists explained how they approach stories, how they balance the need for news and entertainment with reporting science, and how they deal with accusations of polarising debates and misrepresenting the facts. Many people may just read the headline of an article and it is important that this does not portray incorrect information that could alarm the reader. It was clear that journalists also feel passionately that it is important that messages are correctly portrayed to the public and again, there was plenty of time for an interesting discussion.

The final session of the day was about how we, as early career scientists, can encourage good science and the sharing of evidence in the public domain when we are not necessarily the leaders in the field. We were offered practical guidance on how to get our voices heard in debates about science, how to respond to bad science when we see it and top tips for coming face-to-face with a journalist. The panellists for this session were Lucy Goodchild, Press Officer at Imperial College London; Harriet Teare from *Voice of Young Science* and Dr Leonor Sierra, also from *Sense About Science*. Being involved with VoYS is a great way to learn about the media in preparation for dealing with them later on in our careers. It also promotes our development into responsible scientists.

This workshop has helped to improve my confidence by encouraging involvement in the discussions at the end of each session. I found the day extremely helpful and informative and would certainly recommend it to my peers. In fact, I enjoyed it so much that I have joined the VoYS network and have agreed to encourage students at my own university to get involved. This workshop also made me realise that even as young scientists we have the right to challenge misconstrued information and to "stand up for science".

To get involved or find out more about VoYS workshops and projects, please contact Julia Wilson, VoYS Co-ordinator, at [voys@senseaboutscience.org](mailto:voys@senseaboutscience.org). The next Standing up for Science media workshop will be taking place in Edinburgh on 6th November. For further information please visit the website [www.senseaboutscience.org](http://www.senseaboutscience.org).

**Danielle McEwan**

## our policy on the media

We will:

- always do our best to provide facts, information and explanation.
- if speculation is required, explain the rationale behind that speculation.
- desist from hyping a story—whether it is the journalist or the scientist doing the hyping.



## MED • VET • NET

The fifth Med-Vet-Net Annual Scientific Meeting took place in the Spanish town of San Lorenzo de El Escorial between 3 and 6 June 2009

Over 210 delegates met for four days at the Euroforum Infantes conference centre located next to the UNESCO World Heritage site of the El Escorial Monastery. Scientists from all Med-Vet-Net institutes were represented, and many external delegates joined us to share knowledge about controlling and preventing zoonotic diseases and to develop greater external collaborations worldwide. In total there were seven keynote lectures, 54 oral presentations, and over 172 posters. A representative from each of the 14 Workpackages also presented their results and achievements.

*"After nearly five years of joint activities we are clearly seeing the benefits of our collaborative efforts,"* said Med-Vet-Net's Project Director, Professor John Threlfall. *"We were presented with highly topical presentations that reflect the current concerns in relation to the health of both humans and animals."*

This meeting was locally organised by the Med-Vet-Net partner institute in Spain, the Complutense University Madrid (UCM) and Instituto de Salud Carlos III (ISCIII).

*"Thanks to all who participated and contributed, and also to our generous sponsors BioRad, Fort Dodge, Merial, Anaporc, Biomérieux Industry and the Spanish Ministry of Environmental, Rural and Marine Affairs, for their support of this conference,"* added Prof. Threlfall.

Med-Vet-Net once again, attracted a number of high-calibre, international keynote speakers who presented at the conference.

A number of SfAM members were funded by Med-Vet-Net to attend the meeting: Peter Silley, Steve Davies, Sally Cutler, Mark Fielder and Christine Dodd. In addition, the Med-Vet-Net Communications Unit were involved in the administration and communication aspects of the meeting.

The SfAM delegates kindly offered to provide a summary of each of the keynote sessions, which are presented here.

**Teresa Belcher**



### 1. Pathogenic *Escherichia coli*: contribution of the pathogen, host and microbiota — Brett Finlay

Brett introduced the idea of 'the Unholy Trinity' of infectious disease: the pathogen and its mechanisms for causing disease have been the first priority and is the aspect that has received most attention; the host and its immune response to the pathogen has been the second area of consideration and the newest area is the role of the microbiota of the normal body flora. Brett used the example of *E. coli* and focussed on Enteropathogenic and Enterohaemorrhagic (EPEC and EHEC respectively) *E. coli*. Their common mechanism of disease is the production of pedestals and attaching and effacing lesions. A key stage once the pathogen binds to the host erythrocyte is the secretion of a transmembrane receptor protein, *tir* (translocated intimin receptor) which inserts into the host cell membrane and acts as a binding site for intimin, a protein located on the surface of the pathogen. The pathogen goes on to subvert the host cell's biochemistry causing the accumulation of actin to produce the pedestal on which the bacterial cell sits. Brett's research into host response uses a mouse model infected with *Citrobacter rodentium* (the *E. coli* O157 of mice). This has suggested that the response of the host is critical in mediating disease, as an adaptive immune response is seen 14 days after infection and the organism is excluded. The role of the intestinal

### med-vet-net

**Med-Vet-Net** is a European Network of Excellence that aims to improve research on the prevention and control of zoonoses by integrating veterinary, medical and food science research. Comprising 15 European partners and over 300 scientists, Med-Vet-Net will enable these scientists to share and enhance their knowledge and skills, and develop collaborative research projects.

▼ Delegates at the Euroforum Infantes conference centre during the tea/coffee break



microbiota in diarrhoeal disease is also studied relatively little. Using the mouse model, significant changes occur in the composition of the intestine three days after infection but very few *Citrobacter* are evident and *E. coli* becomes a major component. Brett's conclusion is that *Citrobacter* may be setting up an hospitable environment to allow *E. coli* to grow, however, this does eventually revert to a normal flora after 28 days. One practical application of the work is a vaccine against *E. coli* O157 for cattle now used in Canada which is based on Tir. This demonstrates how a fundamental understanding of mechanism of pathogenicity can be applied at the agricultural level to prevent human disease.

Christine Dodd

## 2. Ecogenetical dynamics of bacterial pathogens — Fernando Baquero

Fernando began his talk by explaining that mutants provide microorganisms with the ability to cope with new conditions presented by variable environments and as such they can aide dispersal. An unfit biological entity in a changing environment will struggle to thrive and survive, whilst a higher density of mutations assures fitness. This could be termed as the tolerance gradient and may allow an organism to cope with new conditions. This then leads to what was

termed phenotypic diversification and the development of potentially new strains. It was suggested that organisms have a core of fairly stable genes in what was termed the basic reproductive environment. However, as the reproductive environment changes and perhaps becomes less favourable, then the less stable peripheral genes are likely to show mutations, giving rise to phenotypic variation or diversification. The success of this mutation in terms of pathogen 'fitness', is determined by the continued nature of the environment. If the environment/ecology reverts or alters further then the mutation might actually have a negative effect as it competes against the tolerance gradient. Fernando then went on to explain that variability can occur through recombination and transformation and concluded with the surprising concept that movement of chromosomal genes between bacteria appears to be coincidental!

## 3. Epidemiology and risk assessment: an unsettled union? — Peter Teunis

Qualitative risk assessment can predict risks from observations, but cannot predict illness. Peter explained that epidemiology is a top down approach, whereas risk assessment works from a bottom-up perspective. Risk assessment is often used in the food industry and is based upon conditional dependencies such as infection probability and dose of infective agent. So this method is good at predicting infection but not illness. Epidemiological methods rely more on case observation and are good at looking at numbers infected, but poor at estimating infection so this approach essentially measures prevalence of illness. To reconcile these two sets of outputs we need to reconsider the definition of infections. Peter explained that epidemiology and risk assessment do dwell in different realms and they can be reconciled. With the use of novel and very powerful statistical methods we can predict seroconversion rates and even start to estimate levels of asymptomatic cases in the population, allowing risk assessment and epidemiology to become a more settled union.

Mark Fielder

## 4. The emergence and spread of the Bluetongue virus (BTV) across Europe: the impact of climate change, insect vectors and vaccination — Peter Mertens

Peter began his talk with an apology as only one case of human infection with Bluetongue has been documented in the last 30 years, so technically it is not zoonotic. Bluetongue is the second most important disease of livestock after foot and mouth. Eradication is problematic as the infection localises in the microvascular

endothelium, probably the best place to be to ensure successful infection of new arthropod vectors.

The strain BTV-8 has recently swept through Europe, with devastating effects in The Netherlands during 2007, and is now in the UK. Greatest severity is seen among sheep; however, it can also infect cattle resulting in vertical transmission with a third of calves being viraemic. This *in-utero* infection could facilitate a means for over-winter survival when biting midges are no longer prevalent.

Peter then asked the question: why globally do we fail to control Bluetongue? The answer

northwards into Italy and Greece. In these regions overlap with indigenous species, also competent for BTV, has enabled northern spread. Furthermore, BTV polymerase is non-functional below 10°C, bringing viral replication to a halt. Progressively milder winters extend the replicative season for this virus and it is likely that much of Europe is now compatible with BTV.

In terms of prevention and treatment, vaccines are useful, but only against an individual serotype. Live vaccines have been associated with adverse effects and sub-unit vaccines are not yet available. In the UK there has been significant use of killed vaccine (90% coverage in some areas). However, imported animals from Europe have been introduced and moved to different locations around the country, thus we are now awaiting the outcome of a national vaccine challenge study.

Sally Cutler

## 5. Biodiversity and evolution of pathogenic *Listeria*: a genomics view — Carmen Buchrieser

Carmen explained how the European consortium of 10 groups had been one of the first to sequence the *Listeria* genome and then went on to describe the six current (soon to be seven) species of *Listeria*. The current list includes *Listeria monocytogenes*, *L. ivanovii*, *L. innocua*, *L. seeligeri*, *L. welshimeri* and *L. grayi*. Of these only *L. monocytogenes* and *L. ivanovii* are thought to be pathogenic. Transmission of infection is mainly via dairy products, meat, vegetables and fish. As a rule *Listeria* is an opportunistic pathogen of the elderly, newborns, immunocompromised and pregnant women, with mortality rates as high as 30%. Carmen went on to explain the intracellular life cycle of *Listeria* and stated that it has the capability to cross three barriers within the body, namely intestinal, blood-brain and placental. *L. monocytogenes* serovar 4b is responsible for all major food-borne outbreaks of listeriosis and the majority of sporadic cases. The main focus of the talk was to determine whether this phenomenon could be explained genomically. It appears that listeria have an extensive regulatory repertoire, large numbers of transporters and an expansive range of surface proteins accounting for 7.3%, 11.6% and 5.1% of the coding cycle of *L. monocytogenes* respectively. Further work demonstrated that the genome region in listeria is much conserved. Carmen also demonstrated how several virulence genes are present in both *L. monocytogenes* and *L. ivanovii* and how *L. innocua* and *L. welshimeri* have many gene deletions in common, suggesting a common ancestor. Next using DNA arrays, Carmen went on to show that there have been three lineages of



▲ Over 172 posters were submitted for viewing at the poster sessions

resides in the heterogeneity among infecting viruses. There are 25 different serotypes of which nine are seen in Europe. The problem is the lack of cross-protection between these as vaccination against one serotype offers no protection against the others.

Remarkably, only 1-2% of midges feeding upon a viraemic host become infected. However, once infected they show highly efficient transmission to susceptible hosts with a single bite facilitating successful infection. Another major concern is the potential for global warming to facilitate spread of Bluetongue. It is probable that global warming has permitted *Culicoides imicola* to extend its range from Africa through to Spain and Turkey, then

*L. monocytogenes* that have different gene content but all contain the known virulence genes. Additionally, three unique marker genes for the 4b serovar were identified. She also discussed the phylogenetic tree of *Listeria* suggesting that the different species may all have originated from *L. grayi* and the importance of truncated internalins. Carmen suggested that 35% of *L. monocytogenes* isolated from food express a truncated internalin, due to a point mutation, and it is only the full length internalins that are able to promote entry into cells. Finally Carmen demonstrated that the listeria virulence locus is 9kb in length and listeria appear to easily lose pathogenicity, if not required, but can switch it back on when necessary. One could argue that *L. monocytogenes* is a human pathogen aiming to get back to its environmental roots.

## 6. Evolution & dissemination of glycopeptide resistance operons — Patrice Courvalin

Patrice began by explaining how, to become multi-resistant, bacteria have combined a large number of defence mechanisms at both a genetic and biochemical level. He also explained that in enterococci, glycopeptide resistance can only be achieved by a combination target modification associated with target elimination. Patrice explained how glycopeptides inhibit cell wall synthesis and how resistance has developed due to the *van A* and *van B* genes. The *van A* gene encodes for both vancomycin and teicoplanin resistance, whereas *van B* gene only encodes for vancomycin resistance. However the biological cost of resistance for enterococci is extremely high and consequently to lower this cost, these genes are only expressed when needed (i.e. in the presence of a glycopeptide). As such the *van S* (sensor) and *van R* (regulator) genes work in combination to keep the organism biologically sound. Patrice and his colleagues did a lot of their work on mutant enterococci, one of which had lost its *van S* gene and therefore its resistance mechanisms are always switched on, even in the absence of vancomycin. Occasionally these strains can become glycopeptide-dependant and only grow in the presence of vancomycin.

Patrice described how resistance dissemination in enterococci and from *Enterococcus* into methicillin-resistant *Staphylococcus aureus* (MRSA), is achieved by a two-step mechanism that combines suicidal conjugation with replicative transposition, resulting in efficient transfer, stabilisation and expression of incoming resistance genes into the new host. He explained that in the US, 40% of enterococci are resistant to vancomycin and the first proven vancomycin resistant MRSA (VMRSA) was found in a renal patient in

Michigan in the year 2000, due to the transfer of a *van A* gene from an *Enterococcus* into a MRSA. The number of VMRSAs isolated from patients is currently 10 and with the majority isolated in the Michigan area. Surprisingly the MICs of the Michigan strains to vancomycin are much higher than those of the New York and Pennsylvania strains. Patrice went on to explain that this was genetically driven and in the Michigan strains the *van A* gene has conjugated to the plasmid within the new MRSA host and this has led to an exponential dissemination of the resistance gene. These VMRSA also have a biological price to pay and are often slow growing which can lead to false-susceptible results on automated systems which are usually read at eight hours. Surprisingly, although these VMRSA are individually resistant to both vancomycin and oxacillin, work *in-vitro* suggests that a combination of these two agents does inhibit the organism. Further work is required but it would be a brave person that would risk such a combination on a patient.

Steve Davies

## 7. Epidemiological tools for surveillance and control of emerging diseases — J M Sanchez-Vizcaino

Professor Sanchez-Vizcaino began his talk with a reminder that animal health issues are changing and that early detection is pivotal in our preparedness for change. We have seen an increase in new or re-emerging infections and must ask why. Important factors are likely to include climate change, travel, socio-political upheavals and globalisation of both humans and livestock (legal and illegal). Increasing demand for protein has resulted in creation of new production areas, for example in Malaysia, shortly followed by Nipah viral infections. A huge market based upon illegal animal movements has arisen accounting for a 4-6 million dollar business. Most detection tools are too slow requiring three to four months to show emerging or re-emerging disease threats. Risk assessment, particularly using social network analysis and digital simulations, can be used to analyse where diseases come from and where they might go. These models can be used to simulate the spread of diseases of both humans and livestock, thus in keeping with the “one biology one medicine” philosophy. Furthermore, they show the overlapping interactions of wild and domestic animals and human populations facilitating transmission to potentially new host species. Through these simulations we can obtain training and explore the impact of various control strategies.

Sally Cutler

## information

For more information about Met-Vet-Net, visit:  
[www.medvetnet.org](http://www.medvetnet.org)  
or contact Teresa Belcher on:  
**+44 (0)1908 698810**



## Spring Meeting 2009 Report

# 3rd broadening microbiology horizons in biomedical science

Lakeside Conference Centre, Aston University, Birmingham, UK, Wednesday 22 April 2009

The 2009 Spring meeting provided a wonderful mix of important and interesting topics devised to interest and update delegates. In the morning, we travelled from hygiene to drug resistance via bioterrorism with an update on emerging respiratory viruses — and it was a fascinating journey!

Professor Sally Bloomfield was the recipient of the SfAM/Procter & Gamble Applied Health Care Microbiology Award. Her presentation on the fall and rise of hygiene was a timely reminder of the fluctuating importance of topics associated with microbiology. After the US Surgeon General declared in 1970 that we could “close the book on infectious disease”, hygiene slid down the agenda and acquired a faintly outdated image — until recently. With the rise in food borne disease, almost all preventable (40% are linked to infection in the home, according to WHO), hygiene in the home regained importance. Hygiene was deemed the first line of defence for influenza, being clearly associated with the ‘catch it, bin it, kill it’ campaign. A need for better infection control at home would also be a consequence of earlier discharge from hospital. Sally gave an excellent overview of these current concerns, emphasising the importance of rinsing as well as cleaning and disinfection; the ability of microorganisms to survive on surfaces; and the shared role for us all in reducing risk and contamination to a level not harmful to health. The subject has of course assumed increasing importance with the current ‘swine flu’ concerns.

We were also reminded about other emerging respiratory viruses by Dr Kate Templeton. Her enthusiasm for the viruses that she deemed ‘unknown, newly discovered, unloved and underdiagnosed’ was, dare I say it, infectious! Her review of new viruses such as human metapneumovirus and bocavirus was most timely, and she raised issues associated with their clinical significance, the possible importance of mixed viral infections, and problems of diagnosis (specificity, significance, cost) and quantification.

Professor Peter Hawkey provided a sophisticated update on extended-spectrum beta lactamases (ESBLs), reminding us at the start that the acronym referred to the gene, not the germ. We were led through genetics, history and global epidemiology, ending up in plant roots and the soil, where *Kluyvera* could mark the origin of resistance for some hospital and community strains. Prof Hawkey also described the potential problems associated with environmental pressure, where quantities of quaternary ammonium compounds from industrial processes and domestic effluent (shampoos and other bathroom and domestic products), coupled with continual contact between antibiotics/animals/people/faeces/xenobiotics/water could facilitate further transmission of resistance

The key message from Professor Les Baillie was that bioterrorism should be more openly discussed and appropriate information should be widely available to the general public. This should encompass risk communication,



▼ Sally Bloomfield receiving the SfAM Procter & Gamble Applied Health Care Microbiology Award



## information

For more information about the Society's meetings please visit the website at: [www.sfam.org.uk](http://www.sfam.org.uk)

You can also find details of next year's meetings on page 29 of this issue of *Microbiologist*

improved preparedness, and general but factual text, to combat the spread of fear and panic. He proposed that terrorists, both real and potential, already had access to information (and pathogens), thus a public information site would not be helping them *per se*, but would provide a useful source of rational information for the public. He is already working on the website, which has received support funding from SfAM and others. His presentation also provided a retrospective analysis of bioterrorism, focusing on the source of the agents used.

### Joanna Verran

Manchester Metropolitan University

The afternoon session commenced with Professor Peter Lambert offering a comprehensive overview of central venous catheter related infections. These multilumen devices are commonly used and are the main cause of bacteraemia and sepsis in hospitalised patients. The main organisms responsible are linked with the skin of the patient and the hands of the healthcare worker with a smaller proportion coming from distant infection via the patient's blood. While fungal infections are less common, they tend to be more dangerous. Biofilm formation is also a major problem as these are almost impossible to treat and eradicate as the conventionally used antibiotics perform very poorly against biofilms. He also outlined the approaches that are available to prevent infections, such as the Biopatch (an American development), flushing of devices, natural products such as red algae and bacteriophage coated catheters.

Dr Tony Worthington followed with an explanation of the germination theory as it relates to *Clostridium difficile*. The concept of 'Germinate to Exterminate' was developed after it was recognised that once the spore has germinated in the small intestine, it is much more sensitive to antimicrobials. Sporicides are effective in the healthcare setting but have health and safety implications: they require wards to be

vacated and can be unpleasant to use. If the spores can be treated with a germinant, such as taurocholate or certain amino acids in thioglycolate medium, then destruction of the resulting vegetative cells, especially in air, is possible.

The changing epidemiology of viral hepatitis was outlined by Laura Ryall. There have been significant changes in recent years and as well as the traditional Hepatitis A–G viruses, other causes of viral hepatitis such as cytomegalovirus and yellow fever virus are also investigated. Orphan viruses (those that have no associated, defined clinical syndrome) have also received attention as there are a number of animal infections associated with this virus and it could jump the species barrier. Laura then went on to discuss current developments and prevalence of the hepatitis viruses in the UK population as a whole as well as in high risk groups (the ageing population, transplant patients and the injecting drug population) as well as certain ethnic populations.

The afternoon session concluded with a case study of an outbreak of Q fever in Cheltenham in 2007, presented by Dr Philippa Moore. A cluster of cases led to identification of 32 *Coxiella burnetii* infections, the probable source being an infected sheep placenta which resulted in windborne aerosols. The bacterium can survive for months in the environment and is common in rural areas. Even so, the number of cases identified in June of that year was unusual and, with a hospitalisation rate of one case in five would indicate that there were in excess of 400 cases in the community as 28 of the 32 probable cases were admitted to hospital. The outcome of the investigation was an information campaign to farmers and the production of new guidelines on husbandry practices and human infections.

### Louise Fielding

University of Wales Institute, Cardiff

■ We would like to extend our thanks to all the speakers for their excellent presentations

# Bad Bugs Book Club

During March SfAM ran a public engagement event for National Science and Engineering week in collaboration with the Manchester Beacon of Public Engagement. We showed the film 'Outbreak' to an audience of the general public with a wide range of backgrounds. Before and after the film there was a facilitated discussion around the public perception of infectious disease (see *Microbiologist*, June 2009, Vol. 10 No.2, page 31).

As a follow-up to this event, during this year's SfAM summer conference in Manchester, and to be aligned with the Manchester International Festival which was taking place at the time, a small collection of the delegates slipped off to a local eatery and spent the evening in contemplation of all things cultural. We were gathering for the first meeting of the Bad Bugs Book Club (try saying that quickly!), founded by Professor Joanna Verran of Manchester Metropolitan University.

The participants were from a variety of backgrounds — some scientific, some not — but the prerequisite of attendance was that all participants had read the book 'Hot Zone' by Richard Preston and/or seen the film 'Outbreak'. The mixed background encouraged discussion of the scientific merit of both the film and book, with the non-scientists consulting the scientists about scientific accuracy.

For those who've yet to read it, the *Hot Zone* describes the author's search for the story of the emergence of Ebola virus, as well as a recount of the story itself. The novel progresses through the authors interviews with key players. It includes several graphic descriptions of symptoms, and some detailed scientific narratives. The film 'Outbreak' was an interpretation of this book and depicts the emergence of Ebola in scenarios comparable to the book, although occasionally using rather more artistic license in some of the scientific aspects.

As an aside, readers might be interested to learn that 'Outbreak' was not the original film interpretation of the book. This was intended to be based on Preston's column in the New York Times entitled 'Crisis in the hot zone' with



Robert Redford and Jody Foster anticipated as the lead characters. However, the film was never made and a return to its production lost momentum after the release of 'Outbreak'.

The book club participants discussed the text from a number of perspectives over some food and drink. Some members of the group thought the book a little heavy right from the start. Some enjoyed the way in which the book began — leading the reader page-after-page through the various hazard classifications of infectious microorganisms — certainly the film remained true to the

book in that context. The symptoms of patients suffering an Ebola-type viral infection were considered well represented in both the film and the book — although the book could describe more effectively the horrors experienced.

Discussion sometimes digressed from the contents of the book or film, but most importantly it always centred on the topic of infectious diseases and how they're portrayed through the media. The meeting gave the non-scientists in the group an insight into the life of a scientist and the extent to which the book and film used artistic licence to grab the attention of the audience.

This was just the first of a series of similar events run in collaboration with the Manchester Beacon of Public Engagement. To find out about future events, to suggest books, or to join the book club, visit [www.sci-eng.mmu.ac.uk/intheloop](http://www.sci-eng.mmu.ac.uk/intheloop) or contact Professor Joanna Verran at [j.verran@mmu.ac.uk](mailto:j.verran@mmu.ac.uk). Overall, an enjoyable and enlightening evening was had by all — the event marked a successful start to what promises to be an interesting series of book club meetings. The next book will be 'Year of Wonders' by Geraldine Brooks, which describes the plague outbreak in the Derbyshire village of Eyam. The meeting will be part of the Manchester Science Festival in October.

**Lucy Harper**  
Communications Manager

## SfAM *Environmental Microbiology* Lecture



### **Deciphering microbial community dynamics, from genomes to biomes**

presented by **Professor Edward DeLong** of Massachusetts Institute of Technology (MIT), USA

Royal Society of Medicine, London, UK • **Monday 12 October 2009**

The *Environmental Microbiology* lecture will be presented by Professor Edward DeLong of Massachusetts Institute of Technology (MIT), USA. He will present a lecture entitled "Deciphering microbial community dynamics, from genomes to biomes".

New experimental strategies will be discussed. These new approaches aim to interrelate microbial genetic and peptide sequence data obtained from natural microbial communities, with their functional and ecological relevance and significance. The overarching goals of the strategies are to provide a better understanding of the complexity and dynamics of the microbial world, and its influence on large scale ecosystem processes.



## Winter meeting 2010

■ Including the Denver Russell Memorial Lecture

A one day meeting on:

● **Advances in biocide development**

● **Tuberculosis**

Royal Society, London  
**Monday 11 January 2010**

■ For further information please visit the Society website or contact Sally Cryer.

**Email: [sally@sfam.org.uk](mailto:sally@sfam.org.uk). Telephone: 01234 761752**

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## 2010 WINTER MEETING BOOKING FORM and INVOICE

SFAM WINTER MEETING MONDAY 11 JANUARY 2010

Only ONE person per form please. CLOSING DATE FOR REGISTRATIONS: Monday 21 December 2009  
 EARLY BIRD DISCOUNT of £30.00 is applied to all bookings made before Friday 11 December 2009

**Cancellation policy:** Up to 30 days prior to the event all cancellations will be subject to a 10% cancellation fee, up to 14 days prior to the event there will be a 50% cancellation fee, and no refunds will be given on cancellations made within 7 days of the event.

\*Non members: You can add 1 year's membership to your event booking using this form, then register at the member rate and spend the same amount of money or less!

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Please indicate which of the two afternoon parallel sessions you wish to attend

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Session B: Advances in biocide development

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# SfAM events in 2010 — save the dates!

11 January 2010

## Winter meeting

- **Advances in biocide development**

- **Tuberculosis**

- Including the Denver Russell Memorial Lecture

Royal Society, London, UK



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16 April 2010

## Spring meeting

- **4th broadening microbiology horizons in biomedical science**

- Including the Procter & Gamble Lecture

The Stratford Q Hotel, Stratford upon Avon, UK



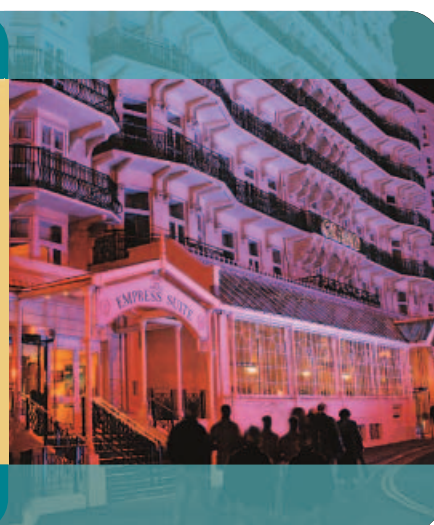
5 - 8 July 2010

## Summer conference

- **Topics to be confirmed...**

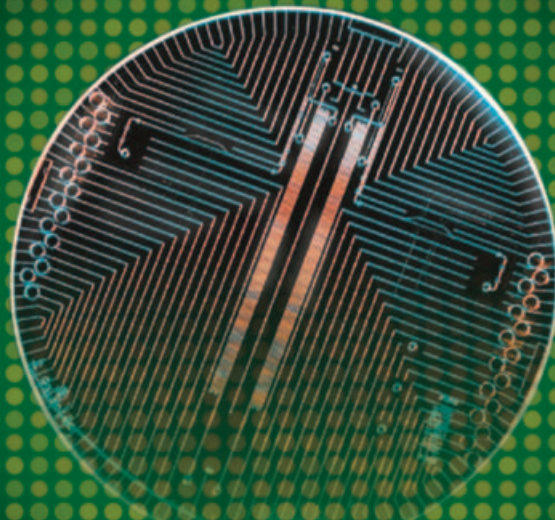
- Including the Lewis B Perry Memorial Lecture

The Grand Hotel, Brighton, UK



■ For further information on these events please visit the website or contact Sally Cryer.

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# Microarrays — closing the gap between research and diagnostics tools

**Dr Rod Card** demystifies microarrays and explains how this powerful tool can be used to inform treatment decisions, treatment and epidemiology of infectious disease

**D**NA microarrays are a powerful tool for the simultaneous and specific detection of many different nucleic acids. They were first developed for the study of gene expression, as they enable the comparison of whole transcriptomes to be undertaken in a single operation.

Such studies allow the identification of genes that have different expression levels under different conditions. This has provided considerable insight into the study of cancer, for example, where gene expression differences can be used to assist in the classification of particular cancers, and thereby inform

treatment decisions (for a review article describing microarrays see Dufva 2009).

Other applications for DNA microarrays have subsequently been developed including comparative genome hybridisation (assessing genome content in different cells or closely related organisms) and the