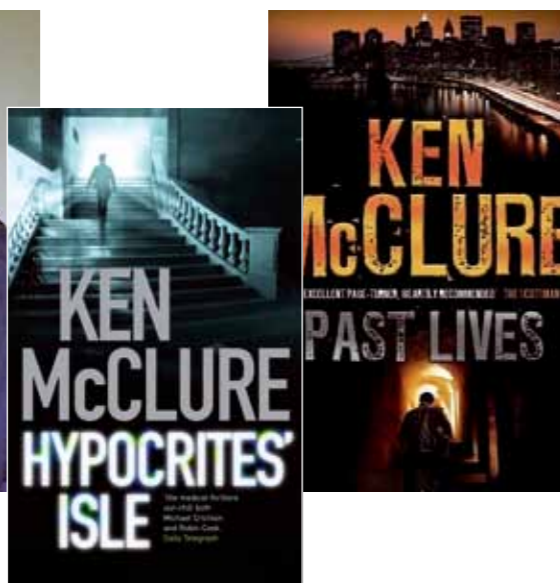




SGM aims to promote microbiology to a wide range of audiences and to encourage members to do the same. In this issue we explore some new avenues for science communication, including animated film and novels, as well as covering some more conventional outreach activities.



Courtesy Birlinn Ltd



How does a microbiologist turn into a successful thriller writer? **Ken McClure** tells us how he did it.

It is now over 40 years since I first walked through the doors of the bacteriology laboratory at the Edinburgh City Hospital for Infectious Diseases to begin a lifelong association with microbiology.

Since leaving school, I'd had a brief flirtation with the idea of becoming an engineering officer in the navy followed by some time as a professional guitarist before settling down to a 'proper job' – I became a student medical lab technician. Unlike the large, anonymous hospitals of today where the pressures of meeting targets and ticking boxes take precedence over all else, the 'City' was a pleasant, relaxed place to work where patients were people rather than numbers. The handling of high-risk pathogens in the open lab,

however, would have horrified present day Health and Safety inspectors, perhaps causing them to suspect we were operating a process of natural selection for those who could handle dangerous organisms.

I followed the in-service and night-school training of the time for the minimum 7 years it took to become a Fellow of the Institute of Medical Laboratory Sciences (Bacteriology

and Virology) before moving onto pastures new and becoming a research assistant in a new MRC unit being set up at Edinburgh University to study the genetics of bacteria. Happily, the job allowed me to continue study: I became a Member of the Institute of Biology and finally did a PhD in molecular genetics.

As time went by and the reputation of our group studying cell division and led by Professor Willie Donachie grew, we became involved in extensive international collaboration, something that led to me personally travelling to labs all over the world as a visiting researcher. It was after one of these trips – an adventure-strewn visit to Tel Aviv University – that I discovered a new passion in life – writing. I sat down and wrote an adventure story set in Israel and involving medical science, the first of some 20 'medical thrillers' I've now written since the mid-1980s.

People wonder if doing research and writing fiction might be incompatible, but I've always found that the demands of science for truth and accuracy and its insistence for references to back up any claims made can be beautifully offset by fiction writing where I can make the whole lot up!

## From facts to fiction

I managed to combine both careers (at only the cost of an entire social life) for nearly 15 years before the MRC decided to end funding for our group at Edinburgh. If I'd wanted to stay in research, it would have meant a move to Cambridge or London – something I had little heart for – so I became a full-time writer in 2000. This, you will appreciate, was not an easy decision for a Scotsman to make, involving the giving up of a regular salary cheque. I can still feel the anxiety.

Some 9 years have passed, but I still read the scientific journals to keep up with what's going on and, of course, to look for new ideas. In the beginning the stories were pure flights of fancy, but as time has gone on, a pattern has developed. I come across some little known medical or scientific fact and use this as the factual basis for a fictional

story. This leads to a mixture of fact and fiction in which I deliberately blur the edges, something that not only encourages the reader to believe that 'this could actually happen', but also enables me to pursue a hidden agenda. My prime intention is always to provide a thrilling read but I also do my very best to ensure that at the end of a Ken McClure book, the lay reader knows a little bit more about science than they did at the beginning.

When young people suggest that being a thriller writer must be exciting, I point out to them that it wasn't writing that took me to live and work in Paris and Madrid; it wasn't writing that took me to Tel Aviv and Kansas City; it wasn't writing that allowed me to see the Taj Mahal or watch the sun rise over Mount Fuji. It was microbiology.

## White Death

Ken McClure's latest novel is one in a series featuring Dr Steven Dunbar, a qualified doctor and former soldier who now works as a Medical Investigator for a Home Office department called the Sci-Med Inspectorate. This hush-hush unit looks into crimes in areas where the police lack expertise. Our hero, a widower in his 30s with a teenage daughter, is called up to Scotland to investigate the apparent suicide of a GP in Edinburgh whose wife believes he was murdered ...

A tale unfolds of children at a school outdoor centre who were vaccinated, allegedly to protect them against TB following exposure to an infected immigrant child, but who one after another develop a mystery skin disease which seems to lead eventually to death. Bioterrorism, underhand government activities, a rogue genomics company, the Russian mafia, guns and exploding cars all add up to a

page-turning thriller spiced with lots of real microbial science. And along the way, romance awaits our hero.

*White Death* is not high literature, but it certainly makes an entertaining read. Microbiologists might well work out the dénouement before they reach the nail-biting conclusion. The general reader is unlikely to do so, but they will certainly have learnt some science en route.

**Janet Hurst, SGM**

*White Death* by Ken McClure is published by Polygon (2009)

246 pp. ISBN 978-1-84697-125-9

See [www.birlinn.co.uk](http://www.birlinn.co.uk) for further information.

Ken has written 20 novels to date, six of which feature Dr Steven Dunbar.



## The Bad Bugs Book Club

If you are interested in books, specifically novels, which have infectious disease as a key part of the story, then why not join the Bad Bugs Book Club? It's run by SGM Education and Public Affairs Officer Professor Jo Verran as part of her outreach activities. It's based in Manchester, but can be accessed on the web via Jo's site – [www.sci-eng.mmu.ac.uk/intheloop](http://www.sci-eng.mmu.ac.uk/intheloop)

The first meeting took place in July, where the title under discussion was *Hot Zone* by Richard Preston. This describes, graphically, the outbreaks of Ebola that occurred in the 1980s. It is very much a thriller, with plenty of scientific detail. The book was compared with the film *Outbreak* which describes, rather less scientifically, similar incidents.

The second meeting was held in September and took the form of a trip to Eyam, the plague village, followed by a meeting to discuss *Year of Wonders* by Geraldine Brooks.

Reading guides for the books studied are being posted on the website, in the hope that the comments and suggestions are helpful to others. Online book club members are welcome!

**Kelvin Boot** shows how an important environmental issue is being publicized through the medium of cartoon film

Derek the Diatom, Britney Star and Doctorpus are just some of the cast of marine creatures starring in an animated film highlighting ocean acidification and the threats it poses to the marine environment. The film was made by students from Ridgeway School in Plymouth, after learning of the phenomenon from Plymouth Marine Laboratory scientist and SGM member Dr Carol Turley.



## Derek the Diatom and Doctorpus take on the terrestrials

The chemistry of ocean acidification is quite simple: the ocean is a huge sink for atmospheric CO<sub>2</sub> and has been doing a great job for millions of years, playing its part in the global carbon cycle by maintaining the balance. Recently, however, its capacity has become stretched. Estimates vary but between 25 and 30% of additional CO<sub>2</sub>, produced by humans from industrial processes such as cement manufacture and the burning of fossil fuels in vehicles and factories has been absorbed by the ocean. As CO<sub>2</sub> and seawater mix a weak acid is formed. Organisms living in the oceans have evolved in naturally alkaline seawater but as more CO<sub>2</sub> continues to be taken up, the seas have become 30% more acidic than before the industrial revolution. By the end of the century ocean acidity will increase by 100–150% if we keep on emitting CO<sub>2</sub> at the same rate. Experimental evidence shows that many calcifying organisms, such as corals, molluscs and even coralline seaweeds are negatively affected by this expected change in pH that restricts their ability to build the shells and skeletons that provide support and protection. Our seas have had a pretty constant pH for possibly as long as 20 million years. It is this extent of change over just a few centuries that is of most concern. It is predicted that many organisms may not have the capacity to adapt to the new ocean chemistry they face, or have the flexibility to move away from

▲ Students in Plymouth working on *The Other CO<sub>2</sub> Problem*. Plymouth Marine Laboratory

◀ The group of students involved in making the film. Plymouth Marine Laboratory

the threat or change their behaviour to combat it: the prognosis is not encouraging.

Carol Turley, who spends much of her time advising policy makers about the potential consequences of ocean acidification is always looking for new ways to 'spread the word'. Recalling an award winning film about climate change that was made by Plymouth school students, she approached Karen Findlay, a teacher with an eye for an engaging educational opportunity. Karen contacted Sundog Media, a professional company, to help out with the technicalities of film-making, but it was the students who developed the ideas, invented the characters, wrote the script and provided the voice-overs. The result is a film that is short and to the point. The cast of characters bemoan the state of their oceans and look for evidence of the ocean's changing chemistry and how it may affect the food web from microbes upwards.

Already *The Other CO<sub>2</sub> Problem* has been featured on national and local TV news programmes, it has been translated into French and German and is being shown on TV in Brazil. It was premiered at the Copenhagen Climate Change Congress earlier this year and has been shown at the Royal Institution, and gathering of EPOCA (European Project on Ocean Acidification).

Original funding for producing DVDs of the film came from EPOCA, but such has been the response to the clear and strong message, that funding for further pressings of the



▲ Students working on the animation process. Plymouth Marine Laboratory

DVD has been received from the Oak Foundation and the European Geological Union. It has been awarded the Royal Society of Chemistry Bill Bryson Award for Science Communication.

Merryn Hunt, one the students is convinced the film will have an impact: 'We were shocked; we hadn't heard of this [ocean acidification] before and we felt we had to do something. We had heard of climate change, but now there are two threats and we have a chance to make a difference.' Carol Turley is thrilled with the result and the difference it has already made: 'We knew the film would be good and we hoped it would make an impact, but even we were surprised, it obviously strikes a chord with everyone who watches it. It makes people, people who make decisions, realize that the upcoming generation is concerned. The children have made it clear through this short film that they want something done. This year is going to be very important for new climate change negotiations and this little film is going to be crucial in bringing the other CO<sub>2</sub> problem to the forefront of the minds of policy makers.'

The film *The Other CO<sub>2</sub> Problem* can be seen at:

[www.pml.ac.uk](http://www.pml.ac.uk)

[www.epoca-project.eu](http://www.epoca-project.eu)

[www.youtube.com/watch?v=55D8TGRs14k](http://www.youtube.com/watch?v=55D8TGRs14k)

*Kelvin Boot* is a Science Communicator at Plymouth Marine Laboratory (e [kelota@pml.ac.uk](mailto:kelota@pml.ac.uk))

An exciting interactive event took place at the SGM autumn meeting. The public were invited to find out the latest facts on 'flu and the importance of hand hygiene in stopping the spread of infections.

## 'Flu and you

Swine 'flu is currently a disease of major concern worldwide and seasonal 'flu an ever-present infection each winter. What are the real facts about influenza? How can it be prevented? And what can we do to stop spreading it from person to person?

These questions were all answered by international expert Wendy Barclay, Professor of Influenza Virology at Imperial College London, in a fascinating talk delivered to an audience drawn from the general public, university staff and interested delegates to the conference. Wendy explained about the different strains of the virus, how they are constantly mutating, how the WHO tracks the different strains each year around the globe and why new vaccines are required annually. She stressed how important it is for at-risk people to have the injection and reassured the audience that it is impossible to catch 'flu from the jab. Wendy also described the effects of 'flu virus on the body and suggested ways of preventing its spread.

The last point was reinforced by a workshop on hand hygiene delivered by SGM Education Manager Dariel Burdass, who, helped by colleagues and a spray only visible under UV light

to mimic the virus, showed how easily a bug is spread by aerosols, and by touching objects and other people. A member of the audience, Thomasina aged 8, 'sneezed' in a crowded bus made of a roll of paper. Passengers were marked by large paper circles. The sneeze was really a generous squirt of the UV spray. The lights were dimmed, the paper was held up and Dariel shined the UV lamp on to the 'passengers'. The droplets were seen to have spread a considerable distance along the 'bus'. In a real situation, quite a few people could have inhaled the 'flu virus and caught the infection, for mucus droplets from a sneeze travel at an amazing 100 miles an hour and spread up to 10 metres in a widening arc.

Several brave volunteers also had their hand-washing technique tested, by seeing how much they glowed before and after a scrub at the sink. The lesson clearly went home among some delegates, who were overheard talking about the importance of handwashing later in the week, something that microbiologists might be expected to know already!

Plans are in place to hold a public outreach event at future SGM conferences, to which, of course, delegates are invited. So watch this space for details.

## Breaking the mould

A television play featuring microbiology is an unusual event, but 29 July saw a dramatized portrayal of the work of Howard Florey's group in wartime Oxford to develop penicillin as a life-saving treatment of infectious diseases. It starred Dominic West (better known for his role in *The Wire*) as Florey and the characters of Ernst Chain and Norman Heatley, other key players in the story, were faithfully reproduced. Certain SGM members were consulted about the script, to ensure that both the science and the language of the protagonists was appropriate for the time. The play, shown on BBC4, was well-received by critics and will no doubt be repeated for the benefit of those who missed it first time round.