



# SGM Council and other companion animals

**Robin Weiss** looks back with affection to his term as SGM President.

In his first book, *My Family and Other Animals*, the zoologist Gerald Durrell included many amusing stories from his boyhood in Greece about the live animals he collected and about his older brother Lawrence who became a renowned author. David Attenborough is the younger brother of actor-director Richard and he continues to entertain and educate us about the natural world. Well, I am the youngest of four siblings and, like these illustrious biologists, I was fascinated by natural history as a child, and eventually graduated in zoology at university. My first research post, before

enrolling for a PhD that eventually led me into virology, involved population genetics of *Rattus rattus*, the black rat. I was drawn to the project because it offered a free trip to the backwaters of Kerala in India where certain regions had high levels of radioactivity owing to thorium deposits in the sand.

Regarding rats, shouldn't we regard these nimble creatures as companion animals? They seldom live far from human habitation, and Kerala has one of the highest human population densities in the world. Rats carry the plague, Weil's disease, typhus, *Leishmania*, and a host of virus infections.

▲ A black rat (*Rattus rattus*). Tom McHugh/  
Science Photo Library

But space alone would preclude the inclusion of infections of rats from this issue of *Microbiology Today*.

Like Durrell, I am tempted to look back on my 3 years as President of the SGM to view my fellow Council members with the baleful eye of an ethologist noting the behaviour of his companions. I must desist of course, other than to remark that my colleagues on Council really were most companionable indeed. While they maintained a healthy scepticism

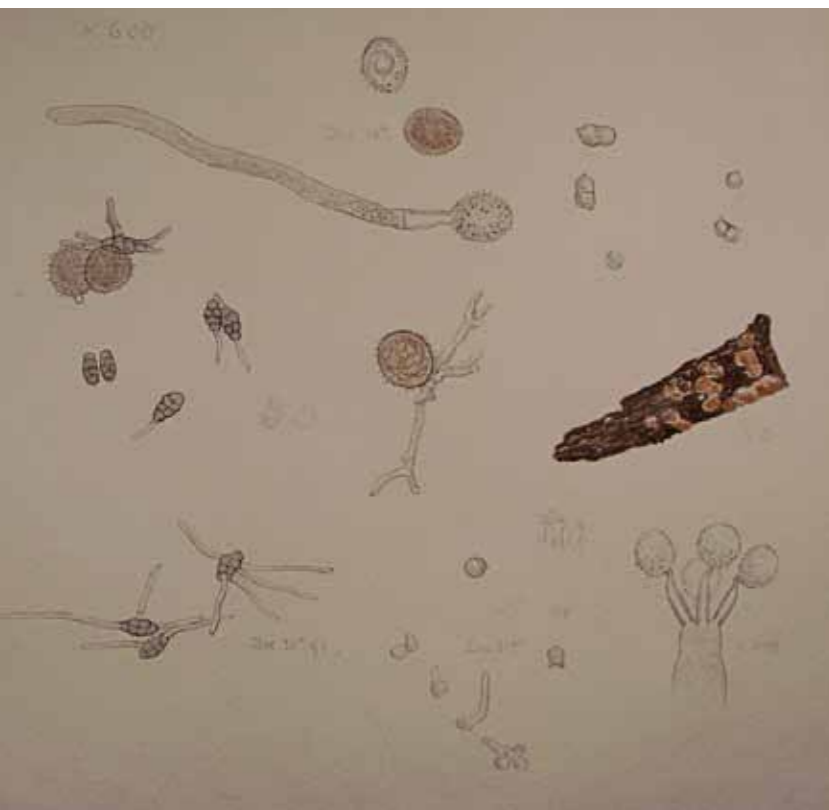
against following the lead of the alpha-animal, supposedly the President, they unfailingly considered the good of the Society as a whole rather than their special interests. Debate was vigorous, but never personal or ill-tempered. The occasional nudge by our zoo keeper, Ron Fraser and our trainer, Janet Hurst, ensured that common sense prevailed. In retrospect, I think we achieved some useful reforms, of the format of the Society's meetings, our journals, management of our financial reserves, and the structure of the Council itself. Perhaps the most important investment for the future is the support SGM offers to young microbiologists, and the best infection that we can transmit is enthusiasm.

### Due acknowledgement

I am most grateful to the three groups of people who have ensured and continue to promote the success of the Society.

First, there are the staff at our headquarters, Marlborough House, who provide the day-to-day running of the Society's affairs with quiet and competent professionalism. Conferences don't just happen, neither do journal issues automatically appear, company regulations have to be noted, and best charitable practice needs to be monitored. The Society offers advice nationally and internationally on all matters microbiological and seeks good relations with sister organizations, such as the student exchanges recently instituted with the Australian and American Societies.

Second, there is the important contribution of the members of Council that I have mentioned already. Last but not least, a much wider body of microbiologists give their time and wisdom to Society activities. One must thank all those who are willing to organize the various symposia and sessions that comprise our meetings, suggesting topics and speakers.



We must be equally grateful to editors and referees for upholding the high standards of our journals. It has truly been a most rewarding privilege to preside over the Society's affairs.

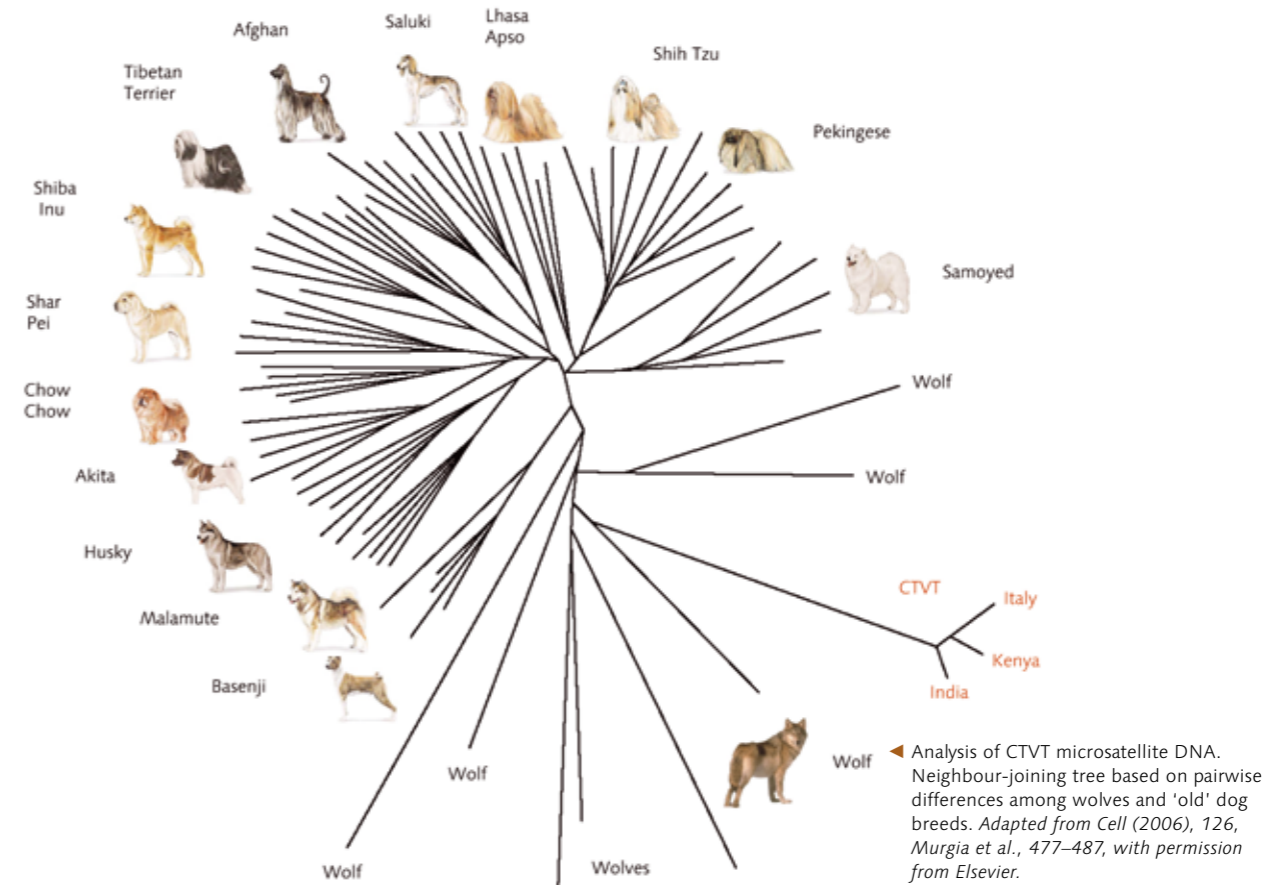
### Women and microbiology

In my first column in *Microbiology Today* as President, I commented on the peculiar and rather shameful situation that the Society has only once elected a woman as President. Marjorie Stephenson was our second President, succeeding Alexander Fleming. She was a leading microbiologist and enzymologist who was one of the first two women to be elected a Fellow of the Royal Society in 1945 (the other was the chemist Kathleen Lonsdale). The Society's biennial eponymous Lecture commemorates her name. So it is a particular pleasure that 50 years later we finally have a second woman President. Hilary Lappin-Scott is an eminent microbiologist who has pioneered research into the bacterial communities we call biofilms. Moreover, Hilary has already served the Society with dedication and distinction in a number of roles, most recently as Scientific Meetings Officer, and her leadership led to the successful re-organization of our lively conferences.

Among the best known fictional companion animals are Beatrix Potter's Peter Rabbit, Jemima Puddle-Duck and friends who have been in print for more than 100 years. However, I didn't realize until Marilyn Roosinck told me at September's SGM Meeting that Beatrix Potter (1866–1943) was a distinguished microbiologist before she published her *Tales of Peter Rabbit*. She studied germination of fungal spores, and over 450 of her beautiful watercolour illustrations of lichens, fungi, and other natural history and archaeology subjects are now housed in the Armit Collection, based in Ambleside, Cumbria. Until recently, it was thought that Potter supported Simon Schwendener's theory that lichens were symbiotic forms of fungi and algae, but she actually rejected dualism. Her uncle, the chemist Sir Henry Roscoe, encouraged her mycological investigations and helped her to obtain a student pass at the Royal Botanic Gardens at Kew where William Masee was the Keeper of Fungi. In 1897, Potter's paper on spore germination was read to the Linnean Society by Masee because women were refused attendance. But it is worth recalling that papers were often communicated by non-authors, including the papers in 1858 postulating evolution by natural selection by Charles Darwin and by Alfred Russel Wallace.

Beatrix Potter continued microbial illustration until 1902 when the success of her books preoccupied her. I suppose that while the world was deprived of the benefit of her further mycological studies, as few women became professional scientists at the time, we gained the wonderful tales of

◀ Examples of Beatrix Potter's illustrations of lichens. **Top.** Classified as a crust fungus or Corticiaceae. **Bottom.** Classified as *Cladonia filiformis* or *pixidata*. These pencil and watercolour images date from December 1896. Reproduced with permission of the Armit Gallery, Museum and Library, Ambleside ([www.thearmittcollection.com](http://www.thearmittcollection.com))



◀ Analysis of CTVT microsatellite DNA. Neighbour-joining tree based on pairwise differences among wolves and 'old' dog breeds. Adapted from *Cell* (2006), 126, Murgia et al., 477–487, with permission from Elsevier.

Peter Rabbit and companions. Yet even in the field of publishing children's stories, Beatrix Potter faced a struggle. Like J. K. Rowling's *Harry Potter* nearly a century later, she had to tout her tales to nine publishers before Frederick Warne accepted them. I might reflect upon this next time a journal rejects one of my papers! Beatrix Potter stopped writing animal stories in 1918 and turned to sheep farming and environmental conservation in the Lake District. She managed large tracts for the National Trust in the 1930s and bequeathed all her farms and land to the Trust, which constituted the largest ever gift at that time. Clearly, she was a far-sighted and resourceful woman.

### A shaggy dog story

I shall end with an anecdote about a most extraordinary 'microbe' causing a disease of companion animals. It was unravelled by Claudio Murgia when he was a research student in my laboratory. The disease is canine transmissible venereal tumour (CTVT) which was first described by the Russian veterinarian, Mstislav A. Novinsky, in 1876. For many years in the late 19th and early 20th centuries, CTVT was a model tumour in cancer research because it was transplantable from dog to dog, and even to other canine species. Experimental transfer of this tumour was a unique phenomenon before the

establishment of inbred strains of rats and mice in the 1920s. Suspicion grew from chromosome studies in the 1970s and the discovery of a unique LINE-1 insertion in 1987 that the transmissible agent was not an oncogenic virus or bacterium, but was none other than the tumour cell itself. We decided to check out this notion using modern forensic DNA markers. We collected CTVT specimens from dogs in five continents and demonstrated that all tumours represent a single cell clone. The most recent common ancestor of the extant tumours appears to date from about 1,000 years ago. We analysed the relationship of CTVT's microsatellites to 85 breeds of dog and found that it probably originated from a grey wolf rather than its domesticated, companionable host in which it now spreads.

Our findings on CTVT raise a number of intriguing questions. This tumour represents the oldest known somatic cell lineage in mammals. How can a host cell emerge as a transmissible eukaryotic microbe which parasitizes its own host species? How does it cross the major histocompatibility barrier to spread among outbred dogs throughout the world? Has the tumour lost non-essential genes during its evolution to become a parasite, for example, the thousands of 7-transmembrane receptor genes that a

whole dog needs to maintain its sense of smell? And why haven't somatic cells of other species evolved to become transmissible parasites? In fact, another example has recently emerged, a tumour of the marsupial carnivore, the Tasmanian devil. This tumour is spread via biting rather than sexually, and it now threatens the survival of an already endangered species, for the devil is certainly not a companion animal.

### Robin Weiss

Outgoing President of the SGM, Division of Infection and Immunity, University College London, 46 Cleveland Street, London W1T 4JF (t 0207 679 9554; e r.weiss@ucl.ac.uk)

### Acknowledgement

I am grateful to the biographer Dr Linda Lear for information about Beatrix Potter.

### Further reading

- Murgia, C., Pritchard, J.K., Kim, S.Y., Fassati, A. & Weiss, R.A. (2006). Clonal origin and evolution of a transmissible cancer. *Cell*, 126, 477–487.
- Lear, L. (2007). *Beatrix Potter: A Life in Nature*. Allen Lane.
- Money, N.P. (2009). Beatrix Potter: Victorian mycologist. *Fungi* 2, 63–64.