

SGM PRIZE MEDAL LECTURE

PROFESSOR SIR DAVID HOPWOOD is the recipient of the SGM Medal, awarded annually to a microbiologist whose work has led to a far-reaching impact beyond microbiology. He will deliver his talk, *Streptomyces genomics: new routes to antibiotic discovery*, on Monday 11 April at the Spring Conference, Harrogate International Centre.

David studied botany at the University of Cambridge, with a particular interest in genetics. When he graduated in 1954, it was suggested that the streptomycetes, often thought to be intermediate between bacteria and fungi, would make an interesting subject for genetic analysis. During his doctoral studies at Cambridge, he discovered and harnessed natural gene exchange to make the first chromosome map of a streptomycete. With Audrey Glauert, he showed that the streptomycetes are true bacteria in their cellular organization and that their resemblance to fungi must have arisen independently. Nevertheless, the streptomycetes revealed many genetic novelties compared with other bacteria. More than 50 years later, after posts as Assistant Lecturer at Cambridge, Lecturer in Glasgow, and finally head of the Genetics Department at the John Innes Centre and Professor at the University of East Anglia, Norwich (now Emeritus), he is still interested in the same microbe – *Streptomyces coelicolor* – as on day one of his PhD studies! However, much water has flowed under the bridge in the meantime. Through the efforts of many scientists, this organism became the genetic model for the actinomycetes, with versatile *in vivo* and *in vitro* genetics. David's interest in antibiotics

developed largely by accident, spurred on by studying the genetics of actinorhodin, the blue polyketide antibiotic pigment that gives *S. coelicolor* its name. After the complete gene cluster was cloned, segments of it were used to produce the first hybrid antibiotics by inter-species cloning. This was a catalyst for the development, again through a widespread effort, of the field of 'combinatorial biosynthesis of unnatural natural products'. Later, he coordinated the project to sequence the large linear chromosome of *S. coelicolor*. The *S. coelicolor* genome and those of other actinomycetes currently under study reveal a huge metabolic potential waiting to be unlocked. The lecture will touch on some of the special features of *Streptomyces* genetics, including a unique chromosome structure and mechanism of DNA transfer between strains, and will then focus on current efforts to 'wake up' the many 'sleeping' gene clusters for potentially valuable antibiotics, sorely needed in these days of increasing antibiotic resistance in dangerous pathogens.



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