Keystone Symposium on Bacterial Chromosomes
6th to 12th February 1998

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I am a final year PhD student at the Institute of Cell and Molecular Biology, the University of Edinburgh, studying the SbcCD protein of *Escherichia coli.* The SbcCD complex mediates inviability of long palindromes in *E. coli.* This is of general interest because palindrome inviability has prevented cloning of palindromic sequences in many organisms. SbcC shares regions of homology with the conserved family of SMC proteins, particularly those involved in recombination, and SbcD is a phosphodiesterase. SbcCD is also interesting because homologues of SbcCD are known to exist in several bacteriophage, prokaryotes, and eukaryotes including human. The functions of the homologues are not well understood, but involve generating or processing DNA double-strand breaks, important in DNA damage repair. Mammalian homologues of SbcCD may have roles in lymphoid DNA rearrangement and prevention of the onset of cancer.

I have contributed to group work which has resulted in the partial characterisation of the nuclease activity of SbcCD. We have shown that it cleaves hairpin DNA structures (the form adopted by long palindromes *in vivo*) to generate products with 5' phosphate and 3' hydroxyl moieties, and DNA ends are not required for this activity. I am also attempting to characterise an unknown property, probably of the hairpin cleavage products, and to demonstrate protein-DNA binding, with less success.

The conference was organised by Susan Gottesman, Nancy Kleckner and John Roth, all renowned for their work on bacterial chromosomes. It was interesting to meet them and hear their reports of their latest results. Nancy Kleckner leads the work on the yeast homologue of SbcCD, Rad50Mre11, but her talk on the hairpin intermediate involved in Tn10/IS10 excision was relevant to me. The other lectures were also useful: Talks about work with which I was already familiar (*eg* Kiyoshi Mizuuchi on Mu transposition and its requirement for IAS) were useful in bringing

me up to date, and those on subjects I had not studied were useful in providing me with background and context for my work.

Outside lectures: I also took the many opportunities to meet and speak with several other renowned scientists. This was both useful to my work and inspiring. On 8th February I presented a poster of my results. This enabled me to publicise my work, and to obtain advice from renowned scientists which might help me solve some of the problems I have been having with certain projects, *eg* Alan Grossman gave me a new protocol which I might be able to use to demonstrate binding. The poster presentation also provided a forum in which I was able to defend my work, consider criticisms, and discuss ideas with scientists of international repute, *eg* Frederic Boccard suggested that SbcCD might also act on BIMES, and with other postgraduate students, *eg* I discussed with Alex Alexandrov the likelihood that SbcCD was a helicase.

The conference was very useful, informing me of new work, encouraging me to think about my work in new contexts and teaching me new and important skills. In addition I enjoyed it, some of it very much indeed.