EUROBIC 4
Seville, Spain, July 20-25, 1998.

The fourth European biological inorganic chemistry conference was held in Seville during July 1998. The conference brought together a wide range of specialists in subjects ranging from electron and proton transfer to metal-DNA interactions, biomineralisation, and biosensors.

The six-day conference began with a series of plenary lectures, the first of which investigated the "talents" of ATP^4, a metal ion-binding nucleotide, presented by Helmut Sigel from the Netherlands. ATP participates in more chemical reactions than any other compound on the earths surface, other than water. ATP undergoes self-association and, on binding with a metal, such as phosphate, forms a macrochelate. Macrochelates such as these have been investigated as part of a study into anti-cancer agents. Further medical applications of ATP-metal complexes involve their possible use as antiviral nucleotide analogues.
The second lecture in the series, by Gerald Canters also from the Netherlands, explored paramagnetic centres. Magnetic resonance spectroscopy was used to probe the structure of paramagnetic copper proteins. Site-directed mutagenesis was also used to probe further the active sites of these proteins.

Amongst the plenary lectures a series of parallel session lectures were organised to create small workshop-sized groups for talks on more specific subject areas. Several sessions on metalloproteins appeared particularly relevant to my own research; this session introduced a number of speakers I had encountered in literature searches, including Robert Crichton and members of Antonio Xaviers Portuguese group. Particularily interesting was a talk by Gomes on rubredoxins from *Desulphovibrio sp.*. *Desulphovibrio* exhibit an extremely versatile metabolism which is reflected in the number of metalloproteins isolated from these bacteria. In particular, the ROO operon from *D. gigas* was described.

Further parallel sessions during the conference covered topics such as electron and proton transfer, and metal-DNA interactions. During these sessions two groups of speakers from the UK and Portugal gave talks on various aspects of cytochrome c_3,

the subject of much of my PhD research. A recent solution structure for *Desulphovibrio vulgaris* ferrocytochrome c_3 was presented by Dave Turner from Southampton, whereas structure-function investigations through extensive NMR and potentiometry experiments on the same cytochrome were described by a number of Antonio Xaviers group. The results of structure-function investigations for cytochrome c_3 presented during these lectures have formed the basis for discussion within the introduction of my PhD thesis. These results are not due for publication for several months.

A second series of lectures of particular interest was based on biosensors. One of the talks in this series, by Claire Kennedy from Milwaulkie, focused on redox proteins as sensors for cell signalling molecules. An up-to-date account of FNR, a protein which senses oxygen and regulates anaerobic gene activation/ repression. A model for FNR regulation, based on Fe^{57} tracing studies, was presented which again has proved useful for discussion in my PhD thesis. Notes taken during this session were used as the basis for a literature report presented to our lab group on returning from Seville.

During the week, several sessions were set aside for poster browsing. The majority of presentations were based on structural and physico-chemical studies of metal containing proteins. A number of posters contained structural information on cytochromes, and also spectroscopic studies which highlight the mechanism of proton and electron transfer in these proteins. The subject of my research is to determine the function of two cytochromes, cytochrome c_3 and cytochrome c_5, using a genetic approach. Several participants showed a great deal of interest in the results presented in my poster, in particular to cytochrome c_3. It was interesting to find that the results obtained using molecular biology techniques tie-in with results obtained through physico-chemical analysis of this cytochrome.

The conference concluded with a medal award lecture by Fraser Armstrong from Oxford. His work is based on protein-film voltammetry of a number of proteins, including cytochrome c_3. Fraser works in collaboration with our group on cytochrome c_3 and his lecture included several interesting results obtained in recent potentiometry experiments.

In all, the week proved extremely profitable in terms of the information obtained which will be useful in completing my thesis. Many thanks to the James Rennie Bequest for your generous contribution.

Anne E. Hill
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