

Epithelial Ion Transport – A tribute to Hans H. Ussing

This special issue of the BBA is derived from a symposium held by the Society for Experimental Biology (SEB) at their annual meeting, in Swansea on 8-9th April 2002. This special session, organised by myself and Martin Grosell for the Osmoregulation group of the society, was conceived in the autumn of 2000. Our original idea was to propose a session on sodium transport to celebrate the 50 years since the classic frog skin experiments devised by Ussing and co-workers in the late 1940's and early 1950's. However, it was clear that Ussing had contributed to other areas of solute transfer across epithelia and so the theme was broadened to "Epithelial Ion Transport". Tragically, Hans Ussing passed away in December 2000, and so the symposium also became a memorial to his important contribution to the comparative physiology of ion transport. The symposium included colleagues who had the privilege of working with Hans Ussing, some of whom did early post-doctoral work in Ussing's laboratory at the August Krogh Institute in Copenhagen. I would like to thank the contributors for giving their time so readily to the symposium. The scientific sessions started with a review of Hans Ussing's contribution to ion transport (and other areas of biology) by Erik Hviid Larsen,

followed by a series of papers addressing aspects of chloride transport, bicarbonate secretion, sodium transport, and the controversial topic of water transfer across membranes. The session also included discussion of the control mechanisms for these processes with papers overviewing the activation/deactivation of transporters and the intimate relation of cell volume in these control mechanisms. Examples of molecular sensing of the cellular environment were also included (e.g. pH sensing by TASK 1), as well as the hormonal control systems that regulate epithelial ion transport. This volume of the BBA reflects the scientific contributions to the SEB meeting. However there was more than just scientific debate at the meeting, with colleagues giving personal accounts of Ussing the man, his humour, kindness, great intellect- and the spirit of discovery. Hans Ussing has not only shaped the scientific agenda of modern epithelial ion transport, but has also demonstrated the spirit in which epitheliology should be conducted, and for that we owe Ussing a great deal.

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