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Foreword

Meeting report on membrane transport and metabolism

4th International Congress on Amino Acids
Vienna, Austria, August 7–11, 1995

Summary. The session on Membrane Transport was a lively, interactive one with substantial audience participation in the discussion periods. Progress in this area of amino acid science is rapid as the genes encoding the transporter proteins are being cloned and characterized. The contributors to the platform session represented institutions from several countries giving the meeting a truly international flavor. Most of the participants contributed articles to this volume. The platform speakers were Dr. John McGivan (United Kingdom), Dr. Marçal Pastor-Anglada (Spain), Dr. Bruce Stephens (USA), Dr. G. Gazzola and Dr. V. Dall'Asta (Italy), Dr. Carol MacLeod (USA), Miss Maria Rivera-Correa (Puerto Rico), Dr. Ellen Closs (Germany), Dr. Manuel Palacín (Spain), Dr. Ovidio Bussolati (Italy), Dr. Suresh Tate (USA), Dr. S. Nakamura (Japan).

Contributions to the membrane transport session

Drs. Marçal Pastor-Anglada and Dr. John McGivan and Dr. Carol MacLeod each chaired a portion of the meeting. We chose to organize the meeting and this volume by first presenting General Transport papers followed by those focusing on individual transport systems.

In the morning session, chaired by Dr. MacLeod, Dr. McGivan presented his most recent results on the unexpectedly complex regulation of amino acid transport in a renal epithelial cell line following amino deprivation-related stress. Dr. Pastor-Anglada presented a new view of the regulatory mechanism of transport system A activity in mammalian cells that supports the concept that amino acids can be used as organic osmolytes in mammalian cells. Dr. Giancarlo Gazzola reviewed the role of amino acids as osmolytes in cell proliferation. Each of these talks generated lively discussion.

Two afternoon sessions were held. Dr. MacLeod presented a summary of the mechanism by which the CAT2 gene is transcriptionally regulated from 5 distinct promoters in response to several physiological stressors. Miss Rivera-Correa presented data indicating that Angiotensin II regulations L-arginine transport in vascular smooth muscle cells. The final talk of this session was

presented by Dr. Closs in which she described the transport properties of three CAT genes. Using domain swapping she presented data showing that the transport properties are largely contained in a 40 amino acid stretch. Some discussion ensued regarding the extra- or intra-cellular location of this region of the protein. Further discussion centered on the nomenclature of the CAT proteins which is further explored in the accompanying articles in this volume.

The second afternoon session was opened with an exciting talk given by Dr. Palacin in which he presented evidence that mutations in the rBAT gene are likely to be responsible for one form of the human disease, cystinuria. Dr. Rotoli presented intriguing evidence for the involvement of the CFTR protein in the efflux of neutral amino acids. Dr. Tate discussed some of his work on the topological arrangement of the rBAT gene in the plasma membrane using specific monoclonal antibodies. Some discussion ensued regarding the number of transmembrane domains present in the rBAT protein. The last talk of the session was presented by Dr. Nakamura describing the localization of human glutamate transporters to specific organs.

The speakers met separately to discuss some of the most pressing questions facing amino acid transport research. There was general agreement that little is known regarding the topological arrangement of these transporters or the mechanism by which they accomplish their transport. It was noted that some of the most important transporters, those responsible for the flux of dipolar amino acids has yet to be accomplished in spite of vigorous efforts by several laboratories.

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