

Preface

Johannis A. Duine, 20 Years of Enzymology in Delft

Cofactors, coenzymes, and prosthetic groups form a central theme in enzymological research. The pioneering work of Eykman and Grijns on vitamin B1 at the turn of the century can be considered to have set the scene for much of the classical work on the determination of their structure and function in the biochemistry of life. From a historical perspective, this era of intense research culminated in the elucidation of the structure of vitamin B12 by the groups of Smith and Crowfoot-Hodgkin in 1955. Since that time novel factors were occasionally isolated from various sources; however, their role was either restricted to specific bacteria or they lacked well-defined vitamin character. With the detection and identification of pyrroloquinoline quinone, PQQ, as the cofactor of methanol dehydrogenases from methylotrophic bacteria in the early 1980s, a new challenge was set.

Johannis A. Duine, holding the Enzymology chair at the Biotechnology Department of the Delft University of Technology, was among the first to realise the prospects of this latter finding. With a keen eye for enzymes containing unidentified organic factors, he set out for a comprehensive search. In quick succession a number of candidate 'quinoprotein' enzymes were investigated using dedicated analytical tools. Early successes stimulated interest all over the world to enter this new field. As a result, in 1988 the 'First International Symposium on PQQ and Quinoproteins' was organized by Duine and coworkers in Delft which brought

together an impressive cast of research groups covering a wide range of topics. In the following years, these groups were able to settle long-standing issues of cofactor identity by revealing the presence of topaquinone, TPQ, in copper-containing amine oxidases, tryptophyl tryptophan quinone, TTQ, in amine dehydrogenases, as well as related quinone-type cofactors in other enzymes of interest.

As a prominent member of the 'quinoprotein' community, Johannis Duine remained tightly involved with the field. However, other interests were pursued as well. His valuable contributions to the field of nicotinoproteins, enzymes containing tightly bound non-exchangeable nicotinamide cofactors, must be mentioned. In addition biotechnological applications of both quinoproteins and nicotinoproteins in the fields of biosensors and enantioselective biocatalysis have been established resulting in patents and applications in practice. As the organiser of meetings of the Dutch/Japanese working party on Biocatalysis, valuable contributions to this field have been realised. During his scientific career he stimulated and supervised a score of students. The results of his work have been laid down in several hundreds of publications.

To commemorate Johannis A. Duine's retirement from the Enzymology chair in April 1999 it is a great pleasure to present papers from his colleagues and coworkers as a memento for the inspiration received over the years.

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Delft, April 1999