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Preface

This is the third occasion on which selected studies, presented as oral communications or posters at a meeting of the European Association for Red Cell Research (EARCR) have been featured in a special issue of this journal.

The work that you find outlined in the pages that follow was reported at the 16th meeting of the EARCR that took place in Oxford in April 2007. Among the topics discussed at the three-day meeting were red cell morphology and membrane structure, membrane transporters function in health and disease, oxidative stress and the genetic bases of red cell diseases.

In addition, the meeting honoured the important contributions of Hans Lutz to the field of red cell science, and the pioneering work of Gheorghe Benga in the elucidation of water permeation pathways. The meeting closed with a personal reminiscence by Ingolf Bernhardt of the work of Clive Ellory.

The meeting, and the contributions derived from it that are presented here, emphasise the diversity of current research in the red cell field and the exciting advances that are being made in this area. Historically, the red blood cell has been employed as a simple paradigm for the study of cellular function in health and disease. The ready availability of these cells, their facility for experimental manoeuvres, and the absence of intracellular organelles, all mean that they continue to offer models for research that is of fundamental importance.

However, until recently, two mainstays of cellular physiology research — electrophysiological studies and fluorescence measurements — have proved problematic in red cells. Their small size, flexible membranes and high intracellular haemoglobin content have hindered the successful application of these techniques. These techniques have the potential to advance the study of red cells in a way that has not been seen since the advent of red cell ghost methodology in the 1960's. It is, therefore, very pleasing that the present issue of this journal contains a number of reports that have successfully exploited these approaches to further our understanding of red cell function.

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