

## PREFACE

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We begin volume 4 on a note of sadness. Roy Smith, who was the inspiration behind this journal, its originator and driving force, died as this volume began to take shape. An appreciation of Roy and his achievements is set out in the obituary on page 1. To use a well-worn phrase: 'he will be a hard act to follow'.

It is unfortunate that this volume is also rather slim, as several authors were unable to complete their papers in time for publication, which is in any case later than scheduled. We have every expectation, however, that these reviews will appear in volume 5.

As did its predecessors, this volume amply illustrates the debt that nutrition owes to related and more fundamental sciences as well as its importance in clinical issues of great public health significance and in social science.

Nutrition has an increasingly high profile in relation to public health. Nutrient intakes can be assessed with varying degrees of precision and overt effects of nutritional intakes, such as anthropometric changes, and changes in composition and appearance of readily accessible body fluids and tissues can be measured. Such measurements are usually a 'snapshot' of a person's nutritional status at any moment. All-important changes and adaptations in metabolic processes over a period of time remain largely in a 'black box'. *Elia* describes with great clarity techniques that allow us to look deeper into the black box and begin to understand the intricate and continuous exchange of nutrients between tissues. The way in which substrates are processed during feeding, fasting, physical activity and disease is more complex than previously thought. It is possible for the metabolic function of one tissue to be influenced by the supply of substrates and hormones from a variety of other tissues. The factors that orchestrate these interactions remain an important problem in metabolic regulation.

*Schorah and Smithells'* review *Maternal vitamin nutrition and malformations of the neural tube* is particularly topical, following closely on the publication of the long-awaited results of the UK Medical Research Council's important study on the effectiveness of periconceptual supplementation with vitamins. These findings support and underline the authors' conclusion that periconceptual supplementation with folic acid but not other vitamins can reduce the recurrence and probably the prevalence of neural tube defects. Since this distressing condition is not all that uncommon this news will bring comfort to professionals and many women who are 'at risk'.

Cystic fibrosis is also a widespread problem with nutritional implications and is indeed the most frequently seen lethal or semi-lethal disease of caucasians. It is an hereditary idiopathic disease of exocrine gland secretions, the consequences of which are a wide range of nutritional deficits resulting from malabsorption: growth retardation with delayed puberty; specific deficiencies of protein, essential fatty acids, vitamins and minerals. Nutritional status is also affected by pulmonary infections, which in turn are exacerbated by the malnutrition. *Shepherd and his co-authors* conclude that there is a need for aggressive

nutritional management, requiring detailed assessment and advice from nutritional support teams. Promotion of growth and the improvement of nutritional status are possible by careful dietary manipulation and the judicious use of additional supplements, and for some patients enteral or parenteral feeding may be required. Further advances in patient care will depend in particular on greater fundamental understanding of underlying pancreatic pathophysiology.

*Intra-household food allocation* (IHFA) is a subject of considerable interest to social scientists and those who study the dynamics of families and their practical outcomes. *Erica Wheeler's* paper clearly indicates the whole range of nutrition's boundaries and encourages us not to ignore the social dimensions of the subject. While individuals eat food, it is mostly purchased and prepared at household level. Between preparation and eating comes IHFA, where individuals get their share of the household's food. The author considers the analysis of IHFA from the simplest level – in which most adults are given more to eat than most small children – to three models that may be designated 'functional', 'cultural' and 'resource control'. She discusses definitions of nomenclature and methods of data collection and suggests indices of IHFA. Most of the data reviewed come from tropical countries, in particular South Asia. Review of the allocation of more or less preferred foods helps to explain the nutritional shares, men being better supplied with nutrients derived from animal foods and women with carotenes and vitamin C from plant foods. Children tend to follow the patterns of their mothers.

*Chandra* discusses nutrition and immunity in the elderly, beginning with a clear and helpful discussion of the components of the immune system and the ways in which they may be influenced by nutrition. The effects of protein-energy malnutrition and specific deficiencies of micronutrients are described. In relation to old age, four key questions are discussed. Is immunological decline an inevitable part of ageing? What are the prevalence, patterns and determinants of nutritional deficiencies in the elderly? What are the effects of dietary nutritional intervention on the immunity of individuals over 65 and, finally, what are the practical applications of the interactions between nutrition and immunity in old age? The author concludes that correction of nutritional deficiencies is likely to result in improved health, mainly as a result of fewer and shorter episodes of respiratory illnesses. Moreover, response to immunization (e.g. influenza virus vaccine) is improved by nutritional support in those with well-documented deficiencies, and postoperative complications occur more frequently and are more severe in elderly subjects who are malnourished. There is a case for preventative dietary counselling and perhaps, in specific cases, for daily nutritional supplements.

Raised concentrations of plasma low-density and very low-density lipoproteins are now thought to be widespread in developed countries and increasing in developing ones. In so far as diet is one contributor, the emphasis has hitherto been on the influence of dietary fats. *Susan Kingman's* paper gives a concise insight into the influence of legume seeds and of the different components of these seeds on human plasma lipid concentrations. The review is prefaced by a clear summary of the basics of lipoprotein metabolism, which provides a sound framework for understanding the subsequent arguments. Whereas most legume seeds are shown to be able to reduce the concentration of circulating LDL-cholesterol in plasma, there is considerable variation between plant species and a lack of understanding of the precise mechanisms involved. The author makes a plea for further careful studies on specific effects of leguminous diets on sterol balance, lipoprotein kinetics and hormone secretion.

In recent years, the nutritional and metabolic aspects of calcium have been discussed at

great length, particularly in relation to the problem, ever more common in developed countries, of osteoporosis. *Phosphorus* has had a much lower profile and it is refreshing to read the comprehensive review of phosphorus metabolism by *Breves and Schroeder* in which they compare and contrast the considerable differences in the metabolism of this element between ruminant and simple-stomach species. Thus, it is still to be discovered whether the two mechanisms, one of passive non-saturable intestinal transport, the other a secondary active mechanism coupled to Na<sup>+</sup> transport and controlled by 1,25-dihydroxy-vitamin D, clearly demonstrated in simple-stomach animals, operate in ruminants.

The comparative approach, this time from a methodology standpoint, is also highlighted by the paper of *Boisen and Eggum*. These authors take us on a thoroughgoing tour of the methodology of protein quality evaluation. This meticulous evaluation of the advantages and limitations of the many available methods will be invaluable to all research workers in this field of study.