

# Harold M. Frost Memorial

## Foreword

On the 3<sup>rd</sup> of May 2005, a year after Harold M. Frost had passed away, we held a meeting in memory of him in Alsager, a small town in Cheshire, U.K. Organizing that meeting turned out to be easier than anticipated. Everybody I approached happily accepted the invitation and contributed readily. Actually, most of the participants even brought their own travel funds. Manchester Metropolitan University (i.e., the Faculty and the IRM, our Research Institute) bridged the financial gap and provided the profane rest (lecture theatre, a laser pointer, meals and a good drink). Many thanks!

Why did it go so easily? I feel that it is because we owe a lot to Harold, and that discussing his ideas during one short day (and two long nights) was the least that we could do for him.

This special issue of the JMNI is a reflection of that meeting. The articles it contains have been influenced by Harold Frost's scientific contributions and achievements. Therefore, this JMNI issue could be regarded as a snapshot of his scientific work and its ongoing perception in the scientific community. Of course that snapshot is incomplete.

Most people would associate the name 'Frost' with the mechanostat theory – which is reviewed and expanded in an article by **Tim Skerry** (p. 122). More often, however, the Frostian terminology comes up when the terms modeling and remodeling are used. Unfortunately, these terms are frequently used without understanding their exact meaning, not to speak of the difference between them. In his contribution, **Jürg Gasser** points out another common misconception about the biology of remodeling (p. 128). I concur with the peer reviewer of that paper: it should be put on the reading list for all postgraduate students in the bone field (and JMNI readers)!

**Keith Winwood et al.** have contributed original data related to a topic of paramount importance, namely material fatigue of bone (p. 134). This is to acknowledge that Harold Frost was the first to describe microdamage within bone. Staying on the 'material' bit, **Frank Rauch** gives a beautiful example of how material properties affect the mechanostat's operational characteristics (p. 142).

The articles by **Bonny Specker** (p. 147) and by **Kate Ward et al.** (p. 154) discuss the extremes of modeling during childhood, namely during the growth spurt and in the virtual absence of mechanical strains. Conversely, there are three articles that discuss the changes related to ageing. The contribution by **Hans Schiessl et al.** (p. 160) discusses longitudinal data on bone loss in the elderly. I (**Jörn Rittweger**) have picked up Harold Frost's 'alternative' definition of osteoporosis and applied it to exercise science (p. 162), and **Runge and Hunter** (p. 167) discuss the risk of falls and how to assess them – an issue of great importance that has been traditionally neglected in bone research.

Finally, Harold Frost's interest was in soft connective tissue quite as much as in bone. He talked and wrote of it using the same terminology as for bone. This interest of his shall be reflected by the contributions of **Neil Reeves** (p. 174), and by **Pankaj Sharma and Nicola Maffulli** (p. 181).

The articles are ordered in a way that facilitates the reading from A to Z. **Webster Jee's** article at the very beginning gives the historical perspective, which will further enhance the reading. I therefore hope that this special issue will offer quite as much to the newcomer in Frostian 'philosophy' as to the trained disciple. More than anything it attempts to 'stir the pot' and 'connect the dots' – and that is what Harold is about.

**Jörn Rittweger, MD, PhD**  
Institute for Biophysical and Clinical Research  
into Human Movement  
Manchester Metropolitan University