Our present understanding of endocrinology owes an enormous amount to the careful scientific study of vertebrate and invertebrate models over the past century. In recent decades there has been increasing exploitation of cell lines derived from such models, and this has coincided with an explosion in our understanding of the molecular and genetic basis of endocrine function.

As this molecular understanding has developed it has become essential to try to integrate this with the whole organism, and there is now increased recognition of the need for high quality physiology in endocrine and other fields of research. The physiological complexity of mammalian models and the difficulties in manipulating their genomes often makes this task lengthy, expensive, ethically challenging and frequently inconclusive.

A solution that is sometimes appropriate is to exploit recent developments in the use of small model organisms. The use of such models has clearly benefited enormously from their genome sequencing projects on one hand, which has revealed the degree of conservation between these organisms and the higher vertebrates, and from the development of relatively simple and efficient methods of genetic manipulation on the other hand.

The Journal of Endocrinology firmly embraces the three Rs in relation to animal research – i.e. the Replacement of animals by non-animal methods where possible, the Reduction of animal numbers, and the Refinement of procedures to minimise adverse events, stress or suffering. In keeping with this philosophy we feel it is important to highlight the potential (and some pitfalls) offered by recent developments in the use of small model organisms as replacements for certain areas of animal research in endocrinology. We are therefore publishing a series of reviews over the coming months that focus on the endocrinology and endocrine applications of specific models. The series begins this month with a consideration of the endocrinology of the Zebrafish (Danio rerio) by McGonnell and Fowkes, and continues in the August and September issues with reviews on Caenorhabditis elegans and Drosophila melanogaster. Furthermore, the Journal is naturally interested in publishing research articles that exploit such models, which we believe will come to assume a significantly greater role in modern endocrine research in the coming years.

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