

Preface

The vertebrate limb is one of the best models to illustrate the major advances in the field of Developmental Biology during the last century. Studying the mechanisms underlying vertebrate limb development has also become an important paradigm in the fields of embryology and evolution. For instance, the limb primordia are easily manipulated in the embryo, and when amputated and transplanted to other locations, or cultured *in vitro*, are able to continue their normal development. Experimentally induced alterations of the limb are also easy to evaluate morphologically.

For much of the last century, the development of the vertebrate limb was hardly at the forefront of the many areas of biology. However, in a relatively short period of time, it has become one of the major stepping-stones towards understanding tissue and organ morphogenesis. A key factor that led to this tremendous success was the different backgrounds of the many scientists who applied their unique vision, expertise and methodology to the study of limb development. Thus, classical embryological studies in avian and amphibian embryos, combined with ectopic expression techniques in the chick and gene knockouts in the mouse, have greatly contributed to our understanding of how growth and patterning are integrated in the limb. The evolutionary approaches used in the study of limb development have provided key insights into the variety of appendage outgrowth and patterning mechanisms present throughout the animal kingdom. In addition, the field has been a playground for theoretical biologists to formulate mathematical models of outgrowth and patterning. All of these approaches have established a positive feedback which continues to stimulate new experiments as well as the application of new technologies.

Despite all these advances, many questions still need to be answered before we will have a clear grasp on the mechanisms underlying limb development. The knowledge we have acquired provides tremendous hope for the not-so-distant future. There is little doubt that by combining the approaches mentioned above with methodologies from other disciplines like physics and mathematics, we will greatly improve our understanding of the molecular mechanisms underlying growth control and pattern formation of the vertebrate limb, and other organs and tissues, during the development of an embryo.

This current Special Issue of *The International Journal of Developmental Biology*, devoted to the developing limb, fits in very well with the traditional mission of the *Int. J. Dev. Biol.* to provide a detailed and accurate analysis of the major advances in Developmental Biology from several points of view. The articles herein constitute a clear example of the different experimental and theoretical approaches currently being used. In addition, interviews with some of the most influential researchers in the field of limb development provide a valuable historical and personal perspective.

As guest editors, it has been "an easy ride" for us to bring this issue together. We would like to express our gratitude to all the colleagues who participated, and especially to Juan Arechaga, the Editor-in-Chief of the *Int. J. Dev. Biol.*, for his vision and interest in producing an issue dedicated to the field of limb development.

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