

Vertebrate embryogenesis**Embryological, cellular and genetic methods****Francisco J. Pelegri (ed)****Methods in molecular biology; vol. 770, 2011****Humana Press – Springer Verlag, Heidelberg****ISBN: 978-1-61779-209-0****Pages: 616; Figures: 92; € 124,95**

It is likely that more than half of the current bio-medical researches are dealing with developmental biology topics (generally speaking): I tried several PubMed searches (changing the queries in other metric's providers do not change the overall features I got) and what I figured out is the impressive datum that in between 50-60% of the results can be fully categorized under the umbrella term of developmental biology. A great contribution to this approximate statistic is due to the already well established discipline of ecological developmental biology. It is therefore wellcome this volume devoted to the embryological, cellular and genetic methods (*i.e.*, detailed protocols) to study the embryogenesis of a panoplia of animal models (zebrafish, frogs, chick, mouse) that shaped the history of, or that recently contributed (medaka, ascidians, marsupials to mention a few) to, developmental biology. Prof. Francisco J. Pelegrini (Department of Genetics, University of Wisconsin, Madison, USA) deserves the great merit of assembling a twenty-four chapters volume that will surely help researchers and educators thanks to both the choice of the topics covered (which includes even a chapter dealing with the laboratory guidelines for animal care) and to the easy-to-follow protocols that highlight each chapter.

Embryogenesis is based on informations, processes, mechanisms, gene expression networks and epigenetics phenomena all of which are basically evolutionary conserved. Thus, what is learned in one specific animal model is likely to be active even in other species; in addition, some of these phenomena are much easier to study in one animal than in others (due to intrinsic features, for instance, of the germ cells and the embryos, just thinking to the size or the easy way to manipulate a specific embryo in respect to another specie's embryo) and thus it descends that the volume is presenting protocols that better suit with an

animal model to dissect the role of a specific mechanism or a gene network but this do not mean that the protocol used in that species cannot be tailored to another animal species to verify if the phenomenon analyzed it is a conserved phenomenon or if it is acting in a different manner (either in a different time-window, eterochronic, or in a different location, in a eterotopic manner). Based on all of these premises, it becomes understandable that the protocols illustrated are necessarily of embryological, cellular and of genetic nature, covering all the levels of the living organisms organization (molecular, cellular, tissues and organs), and related to specific animal models with the aim that the reader will find out the way to cross technical and conceptual boundaries among all of the animal models (which are, as said before, spanning the whole vertebrate taxa and some of the invertebrate chordates, urochordates and cephalochordates) used in order to intermingle the protocols. A clear example of this creative technical effort is the illustration of a powerful methods like that of the reverse genetic procedure of TILLING (Targeting Induced Local Lesions IN Genomes) to study a whole range of point mutations in only one screening round in species as different as *Arabidopsis*, *Drosophila*, zebrafish, medaka (*Oryzias latipes*), rat. Frameworking all the chapter's content are the historical view given in chapter one (with very nice illustration reproduced from eighteen century wall-charts) and the laboratory guidelines for animal care in chapter twenty-four. Several chapters are dealing with the genetic, cellular and embryological manipulation exemplified in *Xenopus*, chick, zebrafish, medaka and mouse.

A special mention goes to the chapters devoted to the nonhuman Primates and to marsupials (the tammar wallaby *Macropus eugenii*) detailing protocols useful for assisted reproductive technology and developmental manipulation. The surgical isolation of gametes, the nuclear transfer techniques, the cloning and the isolation of embryonic stem cells are disseminated throughout several chapters to complete the view on vertebrate embryogenesis.

CarloAlberto Redi
University of Pavia