Etiology and Morphogenesis of Congenital Heart Disease: Twenty Years of Progress in Genetics and Developmental Biology
E.B. Clark, M. Nakazawa, A. Takao, eds.

As frequently happens in scientific disciplines, developmental biology (or embryology, as this field was formerly known) has generated its own world that is characterized by its own specialized language. As this field has adopted more sophisticated techniques and a more arcane vocabulary, communication of its concepts has gradually become more problematic. Originally, embryology was mainly a morphological discipline whose story was told in terms of form, as observed microscopically. In more recent years, embryology has increasingly turned to molecular biology and, necessarily, to genetics. Today, its primary interest is in identifying the nature, local concentration, and temporal dispersion of critically important proteins and their controlling genes, thereby providing an unprecedentedly detailed and sophisticated understanding of embryonic development. Now embryology aims to interpret the morphogenesis of the embryo as a consequence of cellular (and extracellular) differentiation, growth, and migration caused by the progressive expression of families of regulatory genes.

By publishing the proceedings of periodic developmental biology conferences held in Japan since 1978, the Takao book series has monitored the progress of this field for 2 decades. During that time, the focus has shifted from pathologists (Richard Van Praagh, Anton Becker, and Robert Anderson) to traditional embryologists (Maria Victoria De La Cruz, Francis Manasek, Tomas Pexieder, and Reiji Hirakow) and, more recently, to molecular biologists (Kersti Linask, Roger Markwald, Margaret Kirby, and Adriana Gittenberger-de Groot).

Although the current (2000) volume of the Takao series bears the same title as the first (1980) volume, Etiology and Morphogenesis of Congenital Heart Disease, the emphasis has changed from clinical genetics studies in animals (Donald Patterson) and humans (James Nora) to molecular biology and experimental genetics. To accommodate the 67 chapters and subchapters, which represent some 235 authors in <400 pages, the book’s format is syncopated and abstract. Clearly, the result is not a comprehensive, well-crafted textbook but rather a collection of essays, which more resembles an impressionistic (or sometimes even a cubist) sketch than a fully finished traditional painting. Nevertheless, a substantial amount of valuable information is presented within a brief framework. For nonexpert readers, such as clinicians or pathologists with an interest in congenital heart diseases, this collection of timely updates conveys a general sense of where developmental biology is headed. For experts in this field, the book offers a rich mine of authoritative statements concerning specific issues.

As this volume reaffirms, Atsuyoshi Takao’s group is basically concerned with the cause, prevention, and treatment of congenital heart diseases. Like past volumes in the Takao series, this one focuses mainly on etiopathogenetic mechanisms and morphogenetic descriptions without presenting any clinically relevant directives aimed at disease prevention or treatment. But such is the discipline of science! As the editors humbly conclude in the preface: “[A]t the turn of the century, we feel that we have just opened the door.” Now that the door is open, readers can better see the long road ahead and feel inspired to continue the journey. It is only by clarifying the concepts of genetic and molecular regulation that normal and abnormal morphogenesis can be better understood, hopefully leading, in the end, to the long-awaited goal of gene therapy as a practical treatment for congenital heart disease.

Unfortunately, this book illustrates a major dilemma in the timely publication of scientific breakthroughs: hurried production has the potential for undermining overall quality. Although the book is relatively expensive ($150), my copy is frequently marred by “fastidiously shoddy” printing. Now that digital files have become the standard for manuscript submission, one would expect such production errors to be easily avoidable. Despite these formal faults, the book has much to offer, both to clinically oriented readers and to those trained in the basic sciences.

Paolo Angelini, MD
Texas Heart Institute
Houston, Texas
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