

Preface

The present atlas is designed to aid basic and translational scientists who require a fundamental understanding of zebrafish macro- and micro-anatomy. Many investigators with interests in the molecular features of oncogenesis or molecular genetics and organ development have found zebrafish to be a valuable animal model for their studies. However, these investigators often lack basic training in the fundamentals of fish histology and anatomy. This book is intended to address that gap.

The present atlas makes use of H&E stained longitudinal and cross sections to demonstrate the macro- and micro-anatomy of the zebrafish. Unlike many other atlases, all the photographs in the present book are obtained from zebrafish. This is important because many species of bony fishes show considerable anatomic variation. While some bony fishes possess a tongue and a true stomach, these are absent in zebrafish resulting in significant anatomic differences. The text concentrates on elucidating the actual microscopic appearance of zebrafish. An initial chapter uses longitudinal and cross sections photographed at low or no magnification to illustrate the relationships of zebrafish anatomy. Later chapters follow an organ systems approach in which the histology at both low and high power is addressed in detail. It is hoped that this combined approach will allow investigators to quickly and accurately identify specific organs and tissues involved by neoplasms or developmental abnormalities induced by molecular genetic changes. To this end, the text accompanying the photomicrographs has been made relatively brief while a large number of photomicrographs have been included. The photomicrographs have been generously labeled for easy identification of structures within the tissue sections. Correlation of photomicrographs present in the organ-based chapters with those present in the orientation chapter should allow rapid identification of tissue structures observed in study preparations.

Interpretation of histologic slides requires the recognition of forms, organization, and location from where the tissue section was taken within the fish's body. Although color is less important in the identification of tissue type than structure, the present atlas has been photographed entirely in color to facilitate rapid identification of tissue structures. Color photographs facilitate comparison of the findings on glass slides with the photomicrographs within the atlas. It should be borne in mind that specific color hues may vary between glass slides produced by different laboratories of identical tissues and between a given laboratory and the photomicrographs present in the atlas. However, it should be remembered that differences in color between tissues within a given slide are more important than modest variations between the glass slide and the histology atlas.

The atlas is intended to be used in the laboratory as a quick reference for identification of tissues seen in H&E stained preparations of zebrafish specimens. The atlas uses photomicrographs rather than composite illustrations because the former present more practical information allowing direct comparison between illustrations within the atlas and the slide under study.