

ophthalmic, and vascular systems. Like the 6th edition, it also includes chapters on arthropods and parasites of fish. New to this edition are very helpful one-page summaries of the common parasites of each species. These summary pages include simple but high-quality line drawings of helminth, ova, larva, and protozoan cysts. Brief informational pages for each species precede the drawings and summarize distribution, life cycle, laboratory diagnosis, and clinical significance, making this a much more valuable desktop reference.

The section on rodents and rabbits has been slightly expanded from the previous edition. For example, in the 6th edition included one figure on *Eimeria*; this edition includes three. The reader is referred to the dog and cat section for photographs of *Cryptosporidium* and *Giardia* spp. Parasites included as helminths of rodents and rabbits have changed from the previous version. Although the text includes more information about a variety of parasites in rodents and rabbits, it actually contains fewer photographs of helminths. *Syphacia obvelata* is discussed, but *S. muris*, *S. mesocricetus*, and *Denstomella translucida* are not. The most common arthropod parasites of rodents and rabbits are included in the arthropod chapter, and the chapter on parasites of the urinary, reproductive, and integumentary system now includes information on *Trichosomoides crassicauda* (rat bladder worm). Those working with reptiles will welcome the addition of information on reptile helminths.

One significant departure from the last edition is that scale bars are no longer present in the images, nor is the extent of magnification stated. This drawback is partially offset by the inclusion of average organism sizes in the text.

Overall this textbook remains most useful to clinical veterinarians and technicians who need a guide for routine diagnosis of internal and external parasites. Clinical veterinary practices will want to keep a copy near their microscope. The emphasis remains on domestic species, and thus laboratory animal professionals will likely find the information on rodents and rabbits scanty (and non-existent for nonhuman primates). However, for those who need a parasitology book with good quality color photographs, I highly recommend this book.

Invertebrate Medicine. 2006. Gregory A. Lewbart. Blackwell Publishing. 327 pages. (ISBN:0-8138-1844-3)

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Invertebrate Medicine is the first comprehensive veterinary textbook to address common terrestrial and aquatic invertebrates maintained in captivity. The editor, Gregory A. Lewbart, is a professor of Aquatic, Wildlife, and Zoologic Medicine at North Carolina State Veterinary School and is a diplomate of the ACZM. The chapter authors are veterinarians from a variety of institutions who are established in the fields of zoological and aquatic animal medicine.

This textbook is of obvious utility to zoo and aquarium veterinarians. For those laboratory animal veterinarians employed by facilities housing invertebrates, this text will serve as a valuable resource. Most veterinarians receive little to no training in invertebrate medicine in veterinary school. Previously, veterinarians treating invertebrates had to rely largely on peer-reviewed journal articles, books published for nonveterinarians, and personal communication. In addition to the medical information contained in the text, there is also

husbandry information, which is valuable because there are no guidelines for invertebrates provided by the Animal Welfare Act or the PHS *Guide for the Care and Use of Laboratory Animals*. It is important to note that there is currently no legal requirement for veterinary oversight of the care of invertebrates in laboratory animal facilities in the US; however, with the proper resources, veterinarians can make a significant contribution to the proper care and treatment of these species.

While invertebrate species are not generally considered traditional laboratory animal models, an increasing number of facilities house invertebrate species for research. Fruit flies (*Drosophila melanogaster*) and nematodes (*Caenorhabditis elegans*) are two species of small terrestrial invertebrates that are widely used in genetic and developmental studies. These species are relatively simple to maintain in laboratory environments. Examples of aquatic invertebrates employed as laboratory animal models include horseshoe crabs (*Limulus polyphemus*) and cuttlefish (*Sepia officinalis*). Horseshoe crabs are used in ophthalmology, neurology, and embryology research. Perhaps the most well known biomedical use of the horseshoe crab is the harvest of limulus amoebocyte lysate (LAL) for the detection of endotoxin, which is regulated by the Food and Drug Administration. Cuttlefish are commonly used in studies of learning and memory and, along with other cephalopod molluscs (as well as decapod crustaceans), are considered by many to be "higher" invertebrates. Consequently, these species are already protected by animal welfare laws in some other countries. For example, cephalopods are covered by the Animals (Scientific Procedures) Act in the UK and some U.S. institutions housing cephalopods already choose to require protocol review by the IACUC.

The textbook is divided into 20 chapters based on taxonomic classification. Each chapter is subdivided into sections describing the following features of each phyla or class: natural history and taxonomy, anatomy and physiology, environmental disorders, infectious diseases, and analgesia, anesthesia, and surgery. Some chapters contain additional topics such as formularies for those phyla for which there is more available information; for example, Phylum Coelenterata (which includes corals and jellyfish). Each chapter contains black-and-white photographs, including histology and transmission electron micrographs; there is also a central color plate section.

In summary, this textbook represents an impressive collection of what is currently known about invertebrate medicine. This information was drawn from a wide variety of resources and is an extremely valuable resource for those laboratory animal veterinarians who work in facilities housing invertebrates.

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