Chapter 1

Introduction

The quite remarkable feature of eyes across vertebrate species from the axolotl to the zebra is their similarity. The basic design of the eye, the cornea, the iris, the lens, the retina all enclosed in a tough collagenous sclera, is duplicated throughout vertebrate species, as are the similar functions across the animal kingdom with light refracted to form an image on the retina where the photoreceptors transform the incident photon's energy into an electrical signal.

And yet these eyes have many differences in both their anatomy and their pathology: their appearance when normal and abnormal. Let's face it, if this were not the case there would honestly be no need for this book! From the differences in conjunctival responses to infectious organisms to the variation in vascular anatomy of the orbit in the rabbit as compared to that of the dog and cat we are more used to enucleating, it is vital to understand the variation in anatomy and physiology, in pharmacology and pathology between the eyes of fish, amphibians, reptiles, birds and mammals.

Indeed this could be replicated across body systems but not perhaps quite so dramatically as in the eye. There is a dichotomy in exotic animal veterinary medicine. On the one hand quite a substantial proportion of what we understand about the diseases of cats and dogs, their aetiopathology and their management can be extrapolated to help us deal with disease in less familiar species, be they raptors or rabbits. But on the other hand there are differences between hounds, hamsters and horned toads that make extrapolation without due care and attention potentially ineffective or even dangerous.

Hopefully this volume will aid in identifying where extrapolation from canine and feline ophthalmology can be made and where new information is necessary. We start with areas where extrapolation is possible, the first of these being the straightforward techniques of ocular examination, which may, in many cases, be transferred from conventional companion animal species. Even here though, differences exist.

Before we continue, however, it may be that this is an appropriate point to make two confessions. First some might complain that there are several areas of duplication in the text. The book is designed with the assumption that many will not read it through from cover to cover, but rather use it as a reference dipping in to specific ocular diseases in particular species. Thus several areas are necessarily somewhat duplicated to ensure that

Ophthalmology of Exotic Pets, First Edition. David L. Williams.

the information needed is presented in a readily accessible form. Second it might be necessary to give an apology to some for the wording of the title of this book 'Ophthalmology of Exotic Pets'. For some, it must be noted, rabbits and guinea pigs are hardly exotic species; recent evidence suggests that rabbits are the third most common species seen in small animal veterinary practice, certainly here in the United Kingdom and quite possibly elsewhere also. Nevertheless in many ways, from their teeth to their retinas, rabbits and guinea pigs are very different from cats and dogs and so they deserve inclusion in a volume detailing ophthalmic disease in what we might term non-dog-and-cat species. But that would hardly make an appropriate title for a book like this would it?! My first reason for producing a volume on this subject came when seeing how useful Sue Paterson's volume 'Skin Diseases of Exotic Pets' was [1]. Sue cleverly gathered a group of other dermatologists with special interests in different exotic species to write her book with her, but somehow I failed to galvanise others in the field of veterinary ophthalmology to produce a similar volume. I hope that those with greater expertise and experience in the fields of reptile, avian and laboratory animal ophthalmology will forgive any resulting failings in this book. Perhaps a second edition can include their contributions to the subject.

Reference

1. Paterson S. *Skin Diseases of Exotic Pets*. Oxford: Blackwell Publishing, 2006.