

Part 3 – Models

This section covers a wide variety of animal models, including neurological, behavioural, pain, fetal development, biodefence, metabolic, cardiovascular, oncology, pharmacology, hearing and infection studies. An omission is that no ageing models (and relatively little discussion of neurodegenerative models) are included here, although they are becoming more commonly studied conditions. The specialist authors from the fields consider in detail the principles and problems of the various models within each of the disciplines, providing a large number of references for further reading. Both large and small animal species' models are included, although there is relatively little consideration of the range of zebrafish models in this context.

Besides using laboratory species to study induced disease, some of the chapters also point to the possible study of naturally occurring conditions in domestic animals, particularly where they may be related to genetics and breeding. The ethical controls and permissions needed for such studies are considered, together with the potential direct advantages to the animal of new treatments.

There is perhaps some conflation of the 'ARRIVE Guidelines' (for reporting studies) with the regulations required for conduct of animal studies (which set out the requirement for conduct of a study). Much of this toxicology chapter refers to the various Regulatory guidelines, including OECD series 19 and its inclusion of defined humane endpoints. A suggestion is that this section would benefit from more detail about pros and cons of the currently available non-animal alternatives to some of the current tests, reflecting the huge efforts that have been applied to find non-animal methods in safety and other types of study.

Part 4 – Structures and legislation

Research is a global business, with collaborations and contracts extending across borders, but the permissive legislation varies according to country and culture, so the animal user must be familiar with local laws and requirements. In the first chapter of this section, the authors succinctly explain the main points of legislation in regions including the EU, USA, Far East, Latin and South America, providing details of the history of the legislation and its requirements in various countries. The essential role of properly defined regulations as a means of promoting public confidence in animal research, as well as for proper control of practices, is highlighted.

Besides National legislation, three main external quality systems may be applied to animal research, including ISO (International Organisation for Standardisation), AAALAC International (Association for the Assessment and Accreditation of Lab Animal Care facilities) and GLP (Good Laboratory Practice) and these are highlighted in their role as ensuring a recognised standard, complementary to National government inspections.

This handbook is very helpful in signposting sources of information, education and further support for those working in *in vivo* research — the brief but useful section on service

organisations gives details of a number of national and international organisations, including those with primarily professional, scientific and animal welfare aims. The role of ICLAS (International Council for Lab Animal Science) is highlighted as an umbrella organisation, as well as organisations which accredit training and competence.

The legal requirements for education and training of those working with animals in research are set out in Chapter 37, pointing out that all national legislations agree that individuals must have appropriate skills and qualifications in their research roles. The chapter sets out neatly the main requirements of legislation in the EU and USA, again signposting the reader to training resource organisations where they can obtain further information.

This well thought out handbook concludes with a short chapter on Refinement and Reduction of animals in research: pointing out that the vast majority of animals experience very little suffering or distress, the authors suggest that particular focus should be on those animals who may experience pain or suffering and that the overall aim should be that all animals used in research should be provided with as high a quality of life as possible.

Overall, this is an excellent, authoritative book, updated to reflect current good practice and full of practical details and information. I would highly recommend it to anyone involved in any research-related role, including PIs, junior researchers, animal technicians, facility managers, welfare scientists and veterinarians.

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Understanding the Bird of Prey

N Fox (2022). Published by Cambria Publishing, Llandeilo, UK. 554 pages Hardback (ISBN: 9780957679139). Price £120.00.

As a budding falconer and, later, a specialist avian vet, the first edition of Dr Nick Fox's *Understanding the Bird of Prey* has always held a prominent position in my library of falconry texts. The book was unique in breaking from the traditions of many other 'how to' falconry guides which proposed rigid 'training systems' that fail to address the individuality of raptors and the variations that occur in their training and management. Many technological, medical, husbandry and training advancements have been made since publication of the first edition, many of which have contributed to improved welfare.

Dr Fox's updated text aims to provide the basic principles that can be applied flexibly to a wide range of scenarios encountered by a falconer. Advances in technology have enabled the book to be published in both electronic and paper forms. In addition, links are provided to a series of ten films that accompany the text and provide a very helpful visual aid to learning.

The author himself needs little introduction to those with an interest in raptors. As a practising falconer and biologist, Dr Nick Fox has been involved in conservation since 1975. He has been instrumental in several significant advancements

in falconry training and welfare; most recently the development of robotic prey for falcons. He earned his PhD with work on the New Zealand falcon and has been widely published in the scientific literature.

In the first chapter, Dr Fox addresses the anatomy and physiology of raptors. His comprehensive descriptions provide a solid foundation for assisting in the detection of abnormalities. For example, without a detailed understanding of feather growth and the order of feather development, it may not be possible to identify a potential problem during the moult.

With a clear practical focus, Chapter 2 covers captive breeding programmes and the current issues surrounding modern raptor propagation. Discussing the selection of appropriate birds, Dr Fox addresses the prevention of inbreeding by looking at relatedness and how to ensure the health of birds, whether being kept in natural pairs or through artificial insemination.

Appropriate accommodation and equipment are vital to ensure a captive bird has its welfare requirements met and these areas are addressed in detail. Other sections cover recent advancements in GPS telemetry and harnessing which have improved success rates in tracking lost birds and have also been a useful tool in assessing fitness and flight performance.

The section on imprinting and its practical use in falconry is welcomed. Imprinting is a controversial topic in the management of captive birds — with potential welfare considerations. The author highlights the benefits of dual imprinting. Imprinting and artificial insemination are important tools in conservation breeding and have been extended into producing birds (particularly hybrid falcons) for falconry. The author's description of birds' behaviour and methods of learning provides a sound basis for ensuring that training is conducted with due consideration for the birds' welfare. The basic training methods covered in Chapter 5 are developed in Chapter 9 to cover some of the latest advancements in falconry: the use of drone, planes, and ropery (robotic models of birds that are radio-controlled and simulate prey). These methods have been used in veterinary practice to build the fitness of several wild, injured raptors prior to release, undoubtedly improving the chances of wild survival.

Dr Fox has made significant revisions to his original text and has covered every aspect of the topic in impressive detail. While the comprehensive nature of the text might not suit those requiring a quick reference guide, the book is a thorough and erudite contribution to the topic that deserves a place on every falconer's bookshelf.

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