ANIMAL MODELS IN PARASITOLOGY

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ANIMAL MODELS IN PARASITOLOGY

A Symposium held at the Royal Zoological Society,
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Edited by

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Contents

Introduction

The symposium reported here was convened in order to examine the model systems in use for the study of those helminth and protozoan parasites which cause diseases of great medical or veterinary importance.

The most frequently used laboratory animal hosts are the rat (*Rattus norvegicus*) and mouse (*Mus musculus*). Beginning at about the turn of the century, many inbred lines have been developed and spontaneous mutations maintained. This has led to the great diversity of rodent stocks currently available. The increasing use of gnotobiotic techniques since 1950 has subsequently allowed the mass production of microbiologically defined animals, and these two factors together have resulted in a highly sophisticated product being available for the research worker.

The first session of this symposium was concerned with the genetics of inbred strains, whilst the third dealt specifically with the relevant features of two particular mutant stocks – the nude mouse and the nude rat; interest in these centres largely around the many useful features related to their athymic condition.

In the second session some less common laboratory hosts (such as primates) and rodents other than rats and mice were discussed and in the final session the application of techniques *in vitro* to immunological and chemotherapeutic studies was considered.

The host, or culture flask, is of course only half of the system, and the choice of model parasite is also of prime importance. In many instances the species of parasite causing disease in man is not amenable to growth in a laboratory host (e.g. *Wuchereria bancrofti* or *Onchocerca volvulus*), or will only grow in a rare, threatened, or impossibly expensive host (such as the human malaria parasites in *Aotus trivirgatus,* the douroucouli monkey). Many parasites have been successfully persuaded to grow in artificial media, and some, such as the asexual forms of *Plasmodium falciparum,* will flourish in a simple culture (Trager and Jensen, 1978). If the organism is also difficult or impossible to culture then a completely artificial system is all that is available. Thus for the filariases, *Litomosoides carinii* in cotton rats (*Sigmodon hispidus*) became the favoured model, despite the taxonomic separation of both parasite and host from their principals in the disease. The establishment, then, of *Brugia malayi* in the peritoneal cavity of the Mongolian jird (*Meriones unguiculatus*) (Ash and Riley, 1970) is momentous for the future of chemotherapy and immunology of human filariasis.

Maintenance *in vitro* of parasites is very desirable for basic biochemistry; for mass production of antigens leading, one hopes, to practicable vaccines; and for many other biological purposes free from the complex immune responses of the animal host. However, the papers collected here make it clear

that many animal model systems flourish and will remain, for the foreseeable future at least, the main basis for the collection of data on the parasitology of man and animals. It is hoped that this volume conveys to the reader some of the thought-provoking atmosphere of the symposium and the vigour of the debate.

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