D.W. Halton, J.M. Behnke, I. Marshall (Eds.): Practical Exercises in Parasitology. *Cambridge University Press, 2001. ISBN 0-521-79104-9, hardback, 461 pp., 2 halftones, 87 drawings, 87 diagrams, 4 tables. Price £30.00 (US$ 49.95).*

As soon as I saw this textbook, I felt that it would be an extremely useful aid for my classes in Medical Parasitology and Diagnostics Methods. Later, after more detailed study, I realised that I would use it much more often than I had expected, because this student manual presents easy-to-follow exercises that range from relatively simple observational ones, using local materials and requiring little in the way of equipment, to more technically demanding experiments in physiology and molecular parasitology. Each of the fifty chapters represents a detailed guide that can be used immediately as a protocol for the procedure. Moreover, each exercise includes a list of necessary equipment, consumables and sources of parasite material, instructions for staff and students, including aspects of safety and expected results. In addition, the text also includes ideas for further exploration and information on similar exercises, as well as lists of selected further reading.

The first section, "Observational Exercises on Parasites" is divided according to sources of material, i.e. "Local wild and domestic hosts" and "Laboratory maintained species". Of course, the term local is relative; however, hosts can be easily substituted by other species available in a country. For example, marine snails of the genus *Littorina* can be replaced by fresh-water species of the genus *Radix* and a successful result (obtaining of several types of cercariae and metacercariae) is highly probable, too. The first exercise is the dissection of an earthworm and demonstration of *Monocystis* gregarines and larval stages of nematodes. The is complemented by demonstration of the morphology of free-living *Rhabditis* originated from laboratory culture. The second exercise is based on the study of a range of digenean parasites of water molluscs (*Littorina*) and on the demonstration of their general morphology. In my experience, this exercise is among the most popular ones, especially with beginners in parasitology. The following part is devoted to the monogenean parasites of fish. In the next exercise, parasitic copepods of the family Caligidae are demon-strated. *Ascaris suum* has been chosen as a parasite of domestic livestock but this exercise can be used for demonstration of the human *A. lumbricoides* as well. In the following exercises, commercially available stained sections are recommended for demonstration of *Fasciola hepatica*.

The dissection of a cockroach, another "classical" object, makes possible demonstration of amoebae, ciliates and flagellates. Other parasitic protozoans are shown in the intestine of laboratory mice. Laboratory rodents are recommended for teaching basic parasitological methods and demonstration of the pathology of malaria caused by *Plasmodium yoelii* or *P. berghei.* The same species serve for the study of the life cycle in laboratory maintained mosquitoes.

Flukes of the family Echinostomatidae are used as a model for life-cycle studies of trematodes. Schistosomia-sis, as usual, is demonstrated using laboratory maintained *Schistosoma mansoni*–rodent model. The first section is finished by two easy exercises: observation of *Hymenolepis diminuta* in rats and beetles and observation of rodent intestinal nematodes.

The second section, "Ecology", is focused on the host-parasite relationships. The niche segregation of parasites within the host is demonstrated on the model of pinworms in the cockroach. Two exercises are devoted to the Monogenea: their distribution and microhabitat on the gills of mackerel and population dynamics of *Gyrodactylus* on stickleback. Another two exercises use again the tapeworm *H. diminuta*: one shows its intraspecific competition in the host and the second its transmission dynamics and the pattern of dispersion in the intermediate host population.

In the third section, "Physiology and Biochemistry", the same model parasites are chosen: *H. diminuta*, *A. suum* and *F. hepatica*. However, the tasks are more complicated than in the previous sets of exercises: the evaluation of enzyme effect to hatching of the oncosphere and to cysticercoid activation, demonstration of radio-labelled amino acids through tapeworm membrane, measurement of glycogen utilisation, observation of effects of classical transmitters on the motility of parasitic roundworms and flatworms, demonstration of electrophysiological properties, and localisation of neuroactive substances in these helminths.

Very useful are the exercises in the section "Pathology and Immunology" in which encapsulation of foreign matter by earthworms, opsonisation of trypanosomes and its effect to phagocytosis, as well as the production of monoclonal antibodies against *Leishmania* promastigotes are observed and pathological effects of *Mesocestoides corti* and *S. mansoni* compared. The ELISA method is recommended for quantification of antibodies in immunised host and the same hyperimmune serum is used in the last exercise of this section, SDS-PAGE separation and Western blotting detection of antigens.

In section "Chemotherapy", simple *in vitro* methods are used for the observation of the effect of common chemotherapeutics. The last exercise is proposed for *in vivo* study of the influence of levamisole on mice infected with *Heligmosomoides polygyrus*.

The section "Molecular Parasitology" is unique, since similar protocols can be hardly found in other textbooks. The exercises start with DNA isolation, continue with DNA digestions and electrophoresis, and lead to more sophisticated methods: restriction enzyme mapping and construction of genomic library. Two exercises show a practical use of molecular methods in diagnostics: detection and differentiation of *Entamoeba histolytica* and *E. dispar*, using PCR, and differentiation between parasite species using lectins. In the next exercise, lectins are also used for the detection of carbohydrates in trypanosome membranes and for observation of differences of surface carbohydrates in salivary glands of *Glossina* and *Anopheles*.

The last section "Behaviour" is devoted both to parasites (hatching and behaviour of *F. hepatica* miracidia, swimming behaviour of *Cryptocotyle lingua* cercariae) and to hosts. Parasite-induced changes of host behaviour are convincingly demonstrated on several host-parasite systems

As recommend in the blurb, this book should be an essential purchase for all teachers of parasitology at the university undergraduate level and for students taking laboratory practical classes in the subject. I fullheartedly back up this recommendation.

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