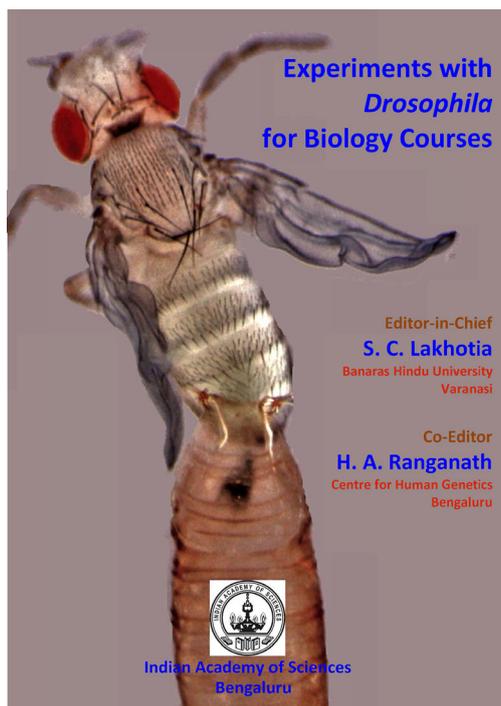




Teach, train and test: Laboratory exercises using flies



“Experiments with *Drosophila* for biology courses” (published by Indian Academy of Sciences, Bengaluru, in March, 2021; ISBN: 978-81-950664-2-1; Free Access under Creative Commons License: CC BY-NC-SA 4.0; https://www.ias.ac.in/public/Resources/Other_Publications/e-Publications/018/Experiments_with_Drosophila_for_Biology_Courses.pdf?v=1.2) is a unique effort where active Indian researchers/faculties have collated routinely employed research laboratory protocols in the form of teaching exercises for undergraduate and post-graduate students of life sciences. The overall aim is to provide essential hands-on learning and training exercises which can excite students to think rationally and to develop the art of scientific judgment and analysis. It is envisaged that this compilation will serve to catalyse a paradigm shift from the classical approach of teaching so that students can employ new methods to ask simple, pertinent scientific questions in diverse fields of biological sciences ranging from classical genetics/cytogenetics, to cell and development biology, modelling human diseases, ecology and behaviour, etc.

This e-resource is a collection of 85 easy-to-follow protocols contributed by the fly community of India and edited by two very accomplished researchers and experienced teachers. The exercises take into account the feasibility and resource availability in the majority of Indian universities. Overall, the diversity in the included laboratory exercises reflects how versatile *Drosophila* is as a model system both in academic teaching and research setup. Each chapter is organized in a ‘laboratory manual format’ with a clearly defined objective, elaborate material-and-methods section and expected outcomes of the experiment. At the end, there is a set of questions for self-study, which students can take up to expand their understanding of the given topic. Also included in each laboratory exercise is a set of references and links to webpages that the students can explore to get more background information on the subject matter.

This collection is apt for beginners. It starts with a description of flies, their life cycle and explicit narrative on chromosomes organization, balancers and genotype nomenclature and so on. It also refers to standard conventions that developed in the 'fly room' of the Morgan laboratory at the Columbia University and are still being followed by the fly community across the world. In addition, this chapter also includes an outline for the culturing and upkeep of flies in a healthy condition. Chapter 2 is an excellent set of hand drawings that provide a good foundation of different stages of *Drosophila* development and an elaborate understanding of the anatomy of organs and organ systems. Chapter 3 entails a description of common visible mutation and their phenotypic presentation. Chapters 4 to 87 include exercises related to genetics, cytogenetics, biochemistry, physiology, cell and molecular biology, microscopy, embryology, neurobiology, behaviour biology, anatomy, ecology, evolutionary biology, genomics and bioinformatics. Chapter 88 gives a very nice reflection of *Drosophila* research in India since 1960, how it grew and the advent of Indian fly meetings. Chapter 89 contains a partial list of the Indian *Drosophila* research community.

Overall, this is a rare compilation with generous contribution from the Indian fly community with the objective to teach, train and develop scientific temper among undergraduate and post-graduate students. The quality of the images, schematics and illustrations is high. Inclusion of sections in each exercise such as potential sources of error, troubleshooting, critical steps and time duration required for the completion of exercises would benefit students. Finally, this book/e-resource will be an invaluable tool for life science students and instructors associated with teaching the practical courses in *Drosophila* biology.

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Keywords. *Drosophila* protocols; undergraduate; postgraduate studies