

Introduction to *Drosophila* for biomedical research

Campinas, 16-20th January 2023

Course objectives: This training program is designed to prepare researchers to:

- (1) understand the capacity and limitations of *Drosophila melanogaster* for biomedical studies,
- (2) have the skills to establish a basic *Drosophila* research facility, and
- (3) plan and execute experiments using this system.

Course structure: The course will combine theoretical lectures, practical sessions, scientific talks, and workshops for literature discussion and mock project planning.

Target students: The course is aimed primarily at postgraduate students and perhaps to research staff interested in *Drosophila*. Some content (lectures, scientific talks) may be appropriate for undergraduate students of the life sciences.

Student enrolment should be ~30 (for practical/interactive sessions), but lectures and scientific talks could in principle be attended by up to 50-100? – depending on the venue.

Planned Schedule:

Monday 16th January

9:00-9:50	Presentation (PVW). Introduction to <i>Drosophila</i> biology I (JdN) Brief historical perspective and scientific credentials – Life cycle and husbandry – Life history traits life history and ecological constraints – Development and external morphology – Internal anatomy – Basic physiology
10:00-10:50	Introduction to <i>Drosophila</i> biology II (JdN) Basic genetics – Anatomical genetic markers – Lab culturing and requirements – Husbandry – Equipment and resources
11:00-11:50	Scientific talk (fly immunity – Dominique Ferrandon?)
12:00-13:00	Lunch break
13:00-16:00	Practical session Overview of a fly facility – Anaesthesia – Sexing and recognising morphological genetic markers – Sorting flies – Passaging cultures – Oral and systemic infection assay – Egg collection?
16:00-17:00	Social

Tuesday 17th January

9:00-9:50	Introduction to <i>Drosophila</i> genetics and genomics I (JdN) Mutagenesis and genetic screens – Transgenesis – Misexpression systems – Transgenesis for functional genomics
10:00-10:50	Introduction to <i>Drosophila</i> genetics and genomics II (JdN) Conditional genetic manipulation – Lineage tracing and mosaic analysis – Genome engineering with CRISPR/Cas9
11:00-11:50	Scientific talk (adult stem cells – JdN)
12:00-13:00	Lunch break
13:00-16:00	Practical session Staging larvae and pupae – Dissection of larvae and adults – Immunohistochemistry of embryos
16:00-17:00	Social

Wednesday 18th January – Scientific Symposium (Brazilian speakers)

9:00-9:45 Scientific talk
9:45-10:30 Scientific talk
10:30-11:00 Coffee break
11:00-11:45 Scientific talk
12:00-14:00 Lunch break
14:00-14:45 Scientific talk
14:45-15:30 Scientific talk
15:30-16:15 Scientific talk
16:15-17:15 Concluding remarks, social

Thursday 19th January

9:00-9:50 Literature discussion: disease modelling in *Drosophila*
10:00-12:00 Guided work on a *Drosophila* project proposal (session I)
12:00-13:00 Lunch break
13:00-16:00 Guided work on a *Drosophila* project proposal (session II)
16:00-17:00 Social

Friday 20th January

9:00-12:00 Project pitches with discussion & feedback (with a break)
12:00-14:00 Lunch break
14:00 Concluding remarks and farewell

Material requirements

IT:

It would be helpful if the students had computers to work on their project plan.