PřF:Bi5614en Genetics in animal model organisms 2024

**Lecture 1 *Drosophila* genetics**

* [**Genetics**on the **Fly**: A Primer on the *Drosophila* Model System](https://academic.oup.com/genetics/article-abstract/201/3/815/5930114)
* KG Hales, [CA Korey](https://scholar.google.com/citations?user=9mqSNGcAAAAJ&hl=cs&oi=sra), [AM Larracuente](https://scholar.google.com/citations?user=DNXBaAUAAAAJ&hl=cs&oi=sra), DM Roberts - **Genetics**, 2015 - academic.oup.com
* Read first half of this. Also history and glossary at the end
* [The **joy**of **balancers**](https://journals.plos.org/plosgenetics/article?id=10.1371/journal.pgen.1008421)
* [DE Miller](https://scholar.google.com/citations?user=hGhNlhMAAAAJ&hl=cs&oi=sra), [KR Cook](https://scholar.google.com/citations?user=t8QQ-5AAAAAJ&hl=cs&oi=sra), RS Hawley - PLoS genetics, 2019 - journals.plos.org
* Short. Read all of it
* How to Design a Genetic Mating Scheme: A Basic Training Package for [*Drosophila* Genetics](https://academic.oup.com/g3journal/article-abstract/3/2/353/6025717)
* St Johnston, Daniel. "The art and design of genetic screens: Drosophila melanogaster." *Nature reviews genetics* 3.3 (2002): 176-188.

**Lecture 2. *Drosophila* genetic screens for mutants affecting embryonic pattern formation**

* St Johnston, Daniel. "The art and design of genetic screens: Drosophila melanogaster." *Nature reviews genetics* 3.3 (2002): 176-188.Heidelberg screen, Wieschaus and Nusslein Vollhard
* Wieschaus, Eric, and Christiane Nüsslein-Volhard. "The Heidelberg screen for pattern mutants of Drosophila: a personal account." *Annual Review of Cell and Developmental Biology* 32.1 (2016): 1-46.
* Scott Gilbert textbook chapter of Drosophila

**Lecture 3. *Drosophila* maternal effect mutants; formation of eggs, AP and DV axis, homeotic mutants and vertebrate conservations,**

* St Johnston, Daniel. "The art and design of genetic screens: Drosophila melanogaster." *Nature reviews genetics* 3.3 (2002): 176-188.
* Wieschaus, Eric, and Christiane Nüsslein-Volhard. "The Heidelberg screen for pattern mutants of Drosophila: a personal account." *Annual Review of Cell and Developmental Biology* 32.1 (2016): 1-46.
* Kimble, Judith, and Christiane Nüsslein-Volhard. "The great small organisms of developmental genetics: Caenorhabditis elegans and Drosophila melanogaster." *Developmental biology* 485 (2022): 93-122.

**Lecture 4. *Drosophila* transgenesis, GAL4/UAS and somatic recombination to generate clones of mutant cells, germline clones and germline development**

* [The **art**and **design**of genetic screens: ***Drosophila****melanogaster*](https://www.nature.com/articles/nrg751)
* [D St Johnston](https://scholar.google.com/citations?user=SXAM65cAAAAJ&hl=cs&oi=sra) - Nature reviews genetics, 2002 - nature.com
* **[PDF]** [Creating mosaics in **Drosophila**](https://genepath.med.harvard.edu/~perrimon/papers/Perrimon.mosaics.pdf)
* N Perrimon - International Journal of Developmental …, 1998 - genepath.med.harvard.edu
* **[PDF]** [GAL4 system in ***drosophila***: A fly geneticist's **swiss army knife**](https://fenix.ciencias.ulisboa.pt/downloadFile/281612415672051/UAS-GAL4.pdf)
* JB Duffy - genesis, 2002 - fenix.ciencias.ulisboa.pt

**Lecture 5 *Drosophila* nervous system development, embryonic and larval neurogenesis**

* [The **art**and **design**of genetic screens: ***Drosophila****melanogaster*](https://www.nature.com/articles/nrg751)
* [D St Johnston](https://scholar.google.com/citations?user=SXAM65cAAAAJ&hl=cs&oi=sra) - Nature reviews genetics, 2002 - nature.com
* [***Drosophila*** Embryonic CNS Development: **Neurogenesis**, Gliogenesis, Cell Fate, and Differentiation](https://academic.oup.com/genetics/article-abstract/213/4/1111/5930636)
* [ST **Crews**](https://scholar.google.com/citations?user=ZZP5fCIAAAAJ&hl=cs&oi=sra) - Genetics, 2019 - academic.oup.com

**Lecture 6. *Drosophila* temporal specification in neurogenesis, larval CNS development, ecdysone**

Doe, Chris Q. "Temporal patterning in the Drosophila CNS." *Annual review of cell and developmental biology* 33.1 (2017): 219-240.

Truman, James W., and Lynn M. Riddiford. "Drosophila postembryonic nervous system development: a model for the endocrine control of development." *Genetics* 223.3 (2023): iyac184.

**Lecture 8 *Drosophila* vision and movement**

**(Lecture 7 Powerpoint file is missing and was never prepared. The file uploaded as Lect 7 is actually Lect 6 with audio)**

Currier, Timothy A., Michelle M. Pang, and Thomas R. Clandinin. "Visual processing in the fly, from photoreceptors to behavior." *Genetics* 224.2 (2023): iyad064.

**Lecture 9 *Drosophila* Olfaction, learning and memory**

Montell, Craig. "Drosophila sensory receptors—a set of molecular Swiss Army Knives." *Genetics* 217.1 (2021): 1-34.

Davis, Ronald L. "Learning and memory using Drosophila melanogaster: a focus on advances made in the fifth decade of research." *Genetics* 224.4 (2023): iyad085.

**Lecture 10 *Drosophila* Learning and memory, Internal states, Circadian rythms and sleep**

Modi, Mehrab N., Yichun Shuai, and Glenn C. Turner. "The Drosophila mushroom body: from architecture to algorithm in a learning circuit." *Annual review of neuroscience* 43.1 (2020): 465-484.

Dubowy, Christine, and Amita Sehgal. "Circadian rhythms and sleep in Drosophila melanogaster." *Genetics* 205.4 (2017): 1373-1397.

**Lecture 11 *C. elegans* genetic screens, microRNAs, RNAi and**

Corsi, Ann K., Bruce Wightman, and Martin Chalfie. "A transparent window into biology: a primer on Caenorhabditis elegans." *Genetics* 200.2 (2015): 387-407.

Kimble, Judith, and Christiane Nüsslein-Volhard. "The great small organisms of developmental genetics: Caenorhabditis elegans and Drosophila melanogaster." *Developmental biology* 485 (2022): 93-122.

Jorgensen, Erik M., and Susan E. Mango. "The art and design of genetic screens: Caenorhabditis elegans." *Nature Reviews Genetics* 3.5 (2002): 356-369.

**Lecture 12 Vertebrate genetic screens. Zebrafish and mice.**

Holtzman, Nathalia G., et al. "Learning to fish with genetics: a primer on the vertebrate model Danio rerio." *Genetics* 203.3 (2016): 1069-1089.

Patton, E. Elizabeth, and Leonard I. Zon. "The art and design of genetic screens: zebrafish." *Nature Reviews Genetics* 2.12 (2001): 956-966.