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## Genetics: gene to disease

Use of animal models to understand endemic genetic diseases.

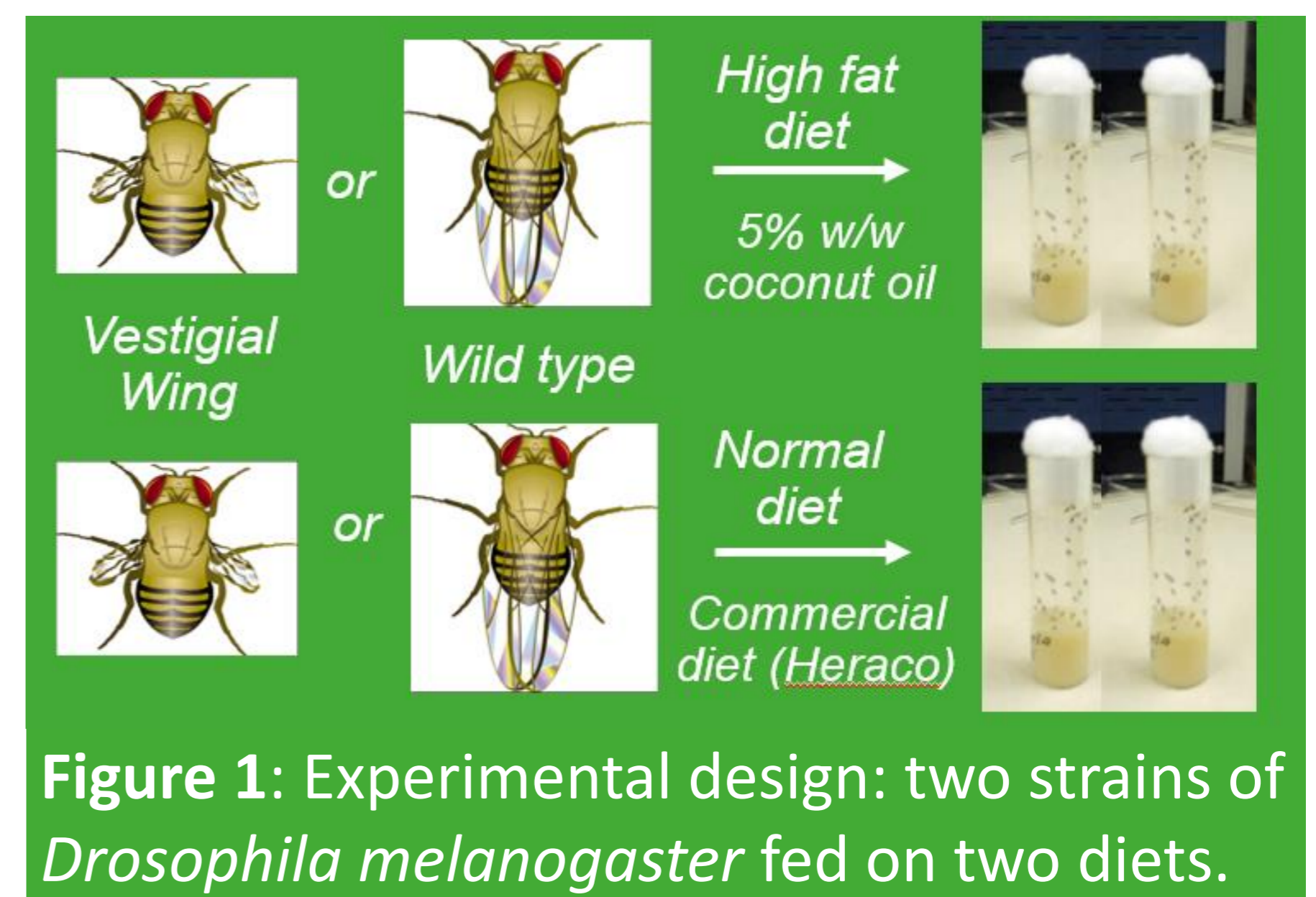
### Project design:

This project spanned over a period of four weeks within the senior high school course “Scientific specialisation” (100 points).

Pupils compared two strains of *Drosophila melanogaster* (fruit fly): wild type and vestigial (mutated) winged. The flies were subjected to either a high-fat diet or a normal diet (figure 1).

Students separated the flies by sex and placed 10 of each sex into culture jars containing the respective diets. After one week, they counted the surviving flies, euthanized them, and extracted the fat. The fat was then separated by placing it on silica-TLC plates (figure 2).

Finally, the culture jars were left for an additional week to determine the reproductive rate by counting emerged pupae.



### Experimental result:

Flies with mutated (vestigial) wings survived better with greater reproduction rate.

### Pupil discussion topics:

- Need for quantitative results.
- Obesity: a genetic or environmental disease.
- Health care sustainability
- Difficulties in separating disease causation from association.

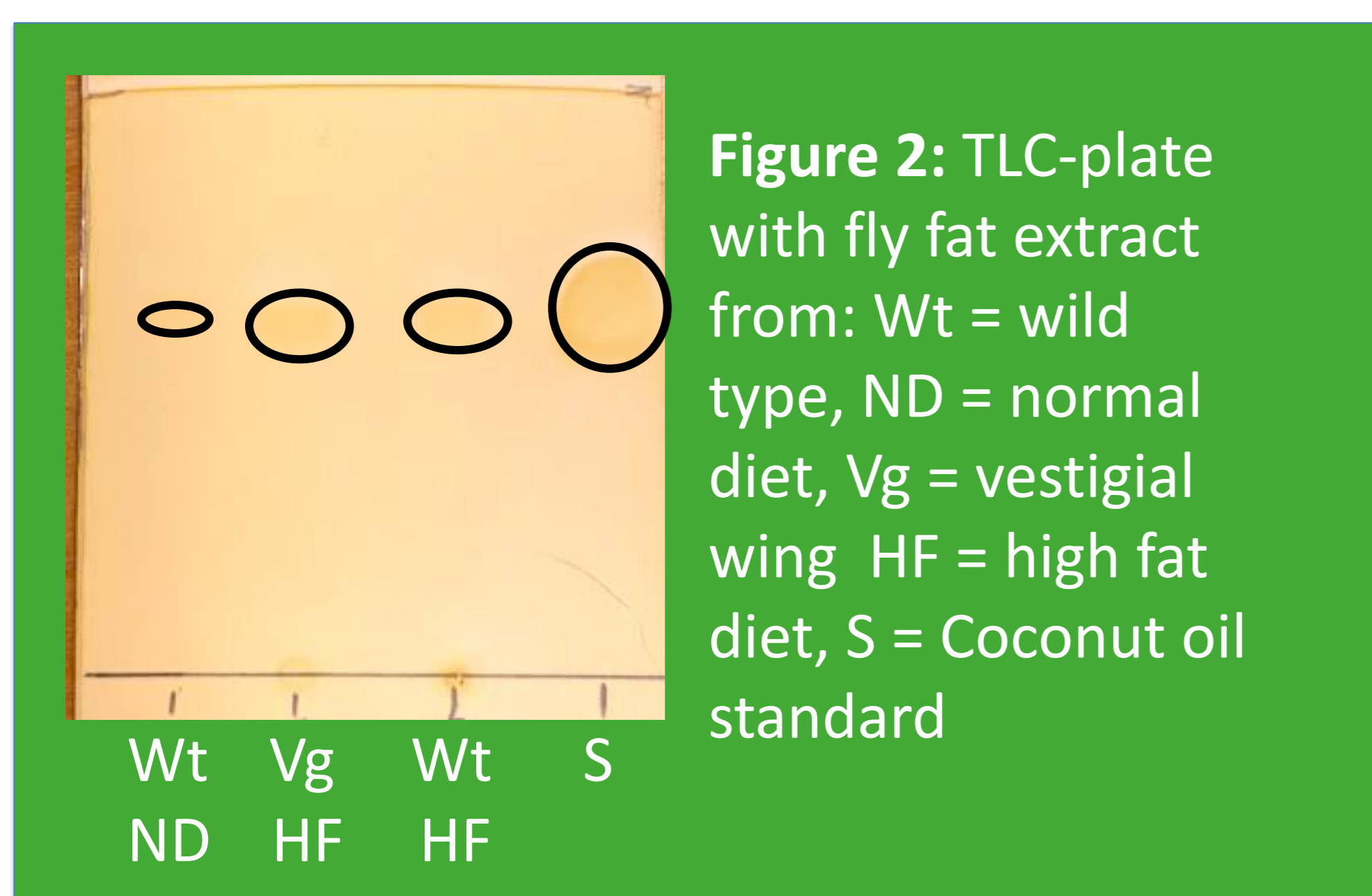
### In collaboration with:



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Contributing teachers: B. Sandèn, S. Johansson and J. Bäcklund.



**Conclusion:** This practical project aims to improve students' comprehension of distinguishing between disease association and causation, particularly concerning endemic diseases such as obesity, while also integrating the concept of health care sustainability.