



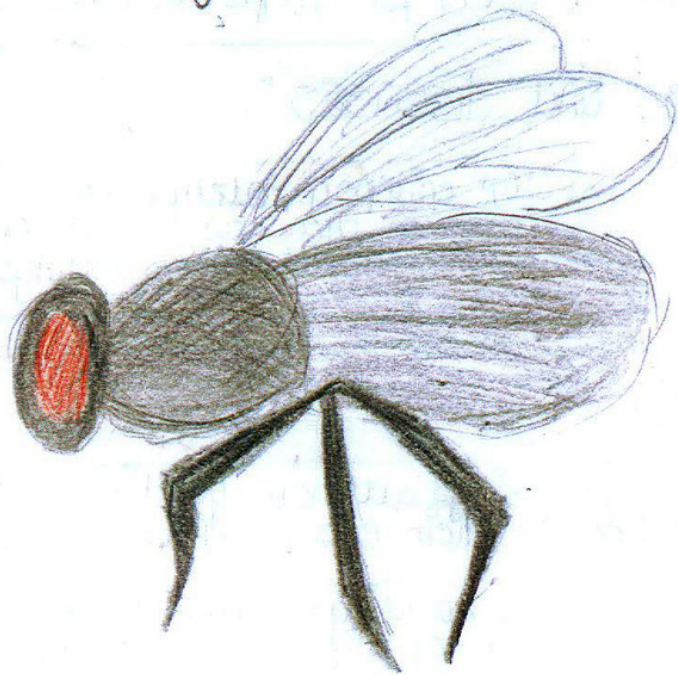
The following reports were written by year 9 pupils from [St. Christopher's CE High School](#) in Accrington following an extracurricular experience day arranged by the [Manchester Fly Facility](#). On this day, 200 pupils attended three 20 minute teaching/practical sessions:

- They learned about genetic markers used in *Drosophila* research including practical tasks to identify markers under the microscope
- They carried out motor skill experiments plotting the performance of young *versus* aged flies
- They learned about state-of-the-art genetic tools to study nervous system function and disease, including strategies for drug discovery

As the following reports illustrate, the day was successful in that it was well received by the pupils and that it achieved its key learning objective – to appreciate the importance of using simple model organisms, such as *Drosophila*, for scientific research.

Drosophila Research

Manchester
University



Research: Why fruit flies?

Manchester University do this research on flies because flies have nearly 60% of their genes shared with humans. 75% of known human disease genes match the genome of fruit flies.

Fruit flies can become addicted to drugs, they have a wake-sleep cycle like humans do. They also use very similar genes to develop into adults as humans.

Also there is a very large supply of fruit flies so lots of them can be used for experiments.

Cures and diseases

Fruit flies can develop epilepsy, alzheimer and Parkinsons disease so they can be used to find cures and help find better understandings of other genetic diseases.

Mutations

The flies in the drawings all have genetic mutations either to their eyes or their wings.

Some of the flies have no wings, some have no eyes. There are lots of different mutations.

Excellent

ü ü ü



normal/
wildtype



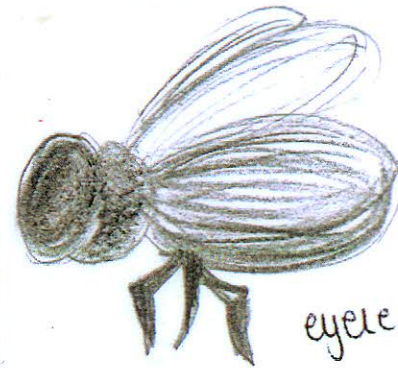
white



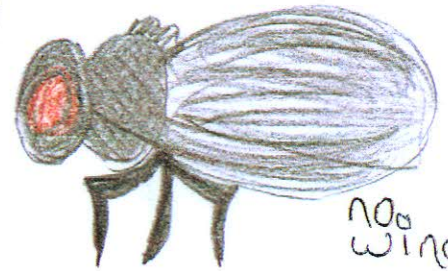
mini
white



early



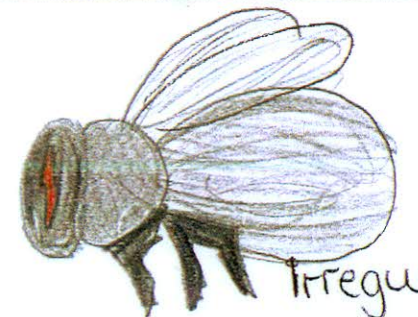
eyeless



no
wing



Serrate



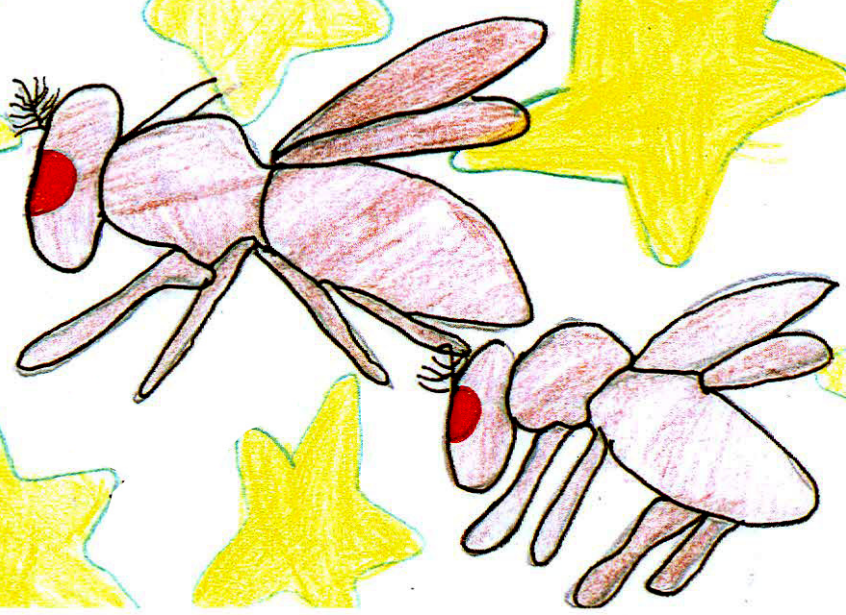
Irregular
Facet's

wow!

Why

FLIES?

- A booklet all about the use
of flies for research.

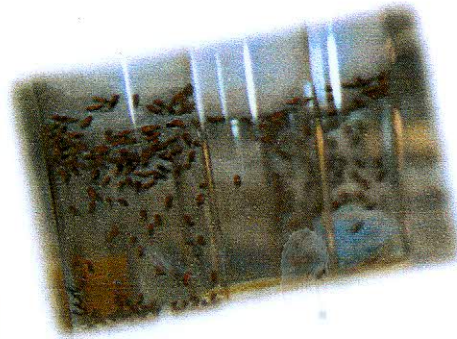


On the 28th November, we went to do some experiments using flies at sixth form. The purpose of this, was to observe flies and find things about them, which can be used in science.

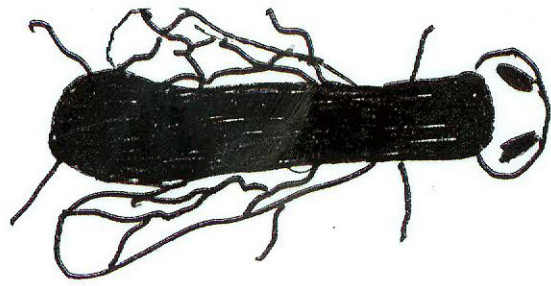
In the first experiment, we looked at two test tubes. In the first test tube there were old flies and in the second test tube there were young flies. We monitored their behaviour and noticed that some flies moved. The purpose of this was to try and create cures for diseases like Parkinson's and Alzheimer's, based on the fact that old and young flies have similar genes as old and young humans. Therefore this experiment is useful at looking at future treatments which could improve or indeed **save lives**. In the second experiment we looked at flies, which were dead, under microscopes. As we zoomed into the flies we could get a close up look at the wings and the eyes. Certain type of wings and eyes are inherited by flies depending on whether the chromosomes of the parents are recessive or dominant.

Flies can have white eyes, they can be eyeless, have vestigial (tiny) wings, they have curly wings, they have serrated wings, they have mini white eyes, they have irregular facets or they are a wild type.

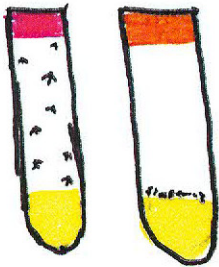
In the last experiment, we looked at two groups of flies. One group had mutations which made them epileptic. By shaking the epileptic flies, they began to fit and their muscles were paralysed, which made them sedated. When we shook the other flies, they remained the same. As well as this, increasing the temperature of each tube which the flies were in, their epilepsy was also activated and created the same effect.



Flies



Experiment 1



We had an orange test tube of flies and a purple test tube of flies. Then we were told to vigorously shake both tubes of flies. We found that the flies in the purple tube carried on as normal, but the orange tube had a layer of flies at the bottom. This

was because the flies had had an epileptic shock and gone into a coma. This is because the flies had the gene that meant the neutrons went into override and travelled along the nerves to the muscles and stopped the muscles functioning.



Experiment 2



D/d

Serrated wings



D/d

Irregular Facets



D/d

Curly wings



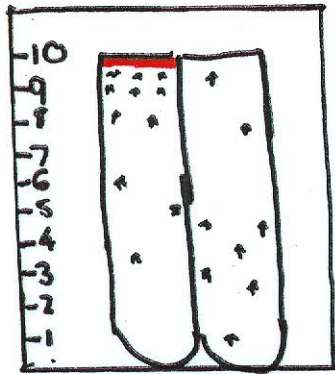
d/d

Eyeless

We looked down a microscope at 7 different flies that had different mutations. Some mutations need a dominant and recessive gene and some take place due to just recessive genes.



Experiment 3

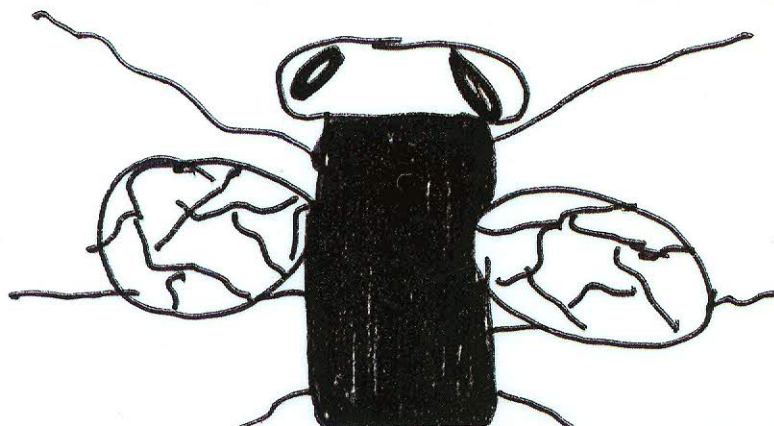
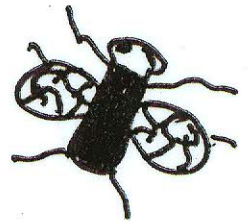


as they get older

We had two tubes of flies, one with young flies, one with older flies. We had to see how many flies could reach the top in each tube in 15 seconds. We put all the flies to the bottom and found more young flies (the red tube) reached the top than the older flies. This shows us that flies motor skills decrease

Facts

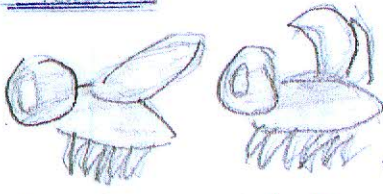
- ◆ Flies have 6 legs
- ◆ Flies have DNA and genes
- ◆ Flies live for around 6 weeks
- ◆ 75% of flies' DNA is identical to ours.
- ◆ Flies can be grandparents in 28 days!



Excellent
VVVV

Animal Research

Mutants



In laboratories all around the world, mutants are made by cross breeding normal animals with mutated animals. This is done to see which genes are dominant or recessive. This gene is then analysed to see if it exists in humans and if it does the data is saved until a disease is found out to be caused by that gene. Mutations in flies can include misformed wings and different coloured eyes.

Finding a cure

Drugs are then tested out on animals with the disease until a cure is found. However, this is not always effective as the same mutated gene can show different effects in different animals.

Benefits of the fly

- Breeds quickly
- Small
- Vast quantity
- Short life cycle

Right

It saves lives.

or

Wrong?

We're making them suffer
They're capable of emotion too.
We're hurting them

Is this what we want
future generations to
remember us for?

Animals use each other
so why can't we use them?
Without it we
would be putting
dangerous medicine
into pharmacies

Excellent
summary



Fly Research

I really enjoyed the fly day and I feel like it was a memorable experience and would like to do more things like this in school.

I learnt that there are different types of fly and they have different eye colour either red, white or yellow. They can have different wing types that can affect their flight or even make them unable to fly at all. Fruit flies used to just be all the same to me and now I know they aren't all the same. There are 9 different types of fruit fly like wildtype and curly.

The first activity I went in to was the 'Fly Climbing Wall' where we compared the movement of old and young flies. The experiment that we did had two tubes of flies, one with old and one with young flies in. There was a scale held up behind. We shoot them up so they were all at the bottom, we then put them down and waited 15 seconds before counting how many flies we in each section. We saw that

the old flies had hardly or hadn't moved at all, but the younger flies were very active and moved to the top or near to the top. We then plotted our results on multiple graph types.

Once we had finished that practical we moved on to looking at the different types of fly under the micro-scope. I found this very interesting as they are more complex than you think they would be. You could clearly see the deformities in the flies and what type they were, by looking at a chart. We had lots of fun looking at the different types of flies and I enjoyed seeing them in more detail.

We then moved on to the final area of our ~~fly~~ lesson and we were looking at how flies react in different situations e.g. being heated up. We had two tubes of flies in front of us, one blue, one orange. We got told to shake them violently for about 10 seconds. We saw that the orange tube of flies appeared to be dead while the blue were up and about!

We were then told that the ~~the~~ orange tube had had an epileptic fit as they had the Epilepsy gene in there chromosomes. We were all shocked about this and wondered if they were ok. They were and were told that it shouldn't of harmed them and they would be fine. We then were told to put the blue tube under one corn and to leave them there for a while. While we were leaving them under one corn we watched a short clip showing us other corns having epileptic fits and how it was caused.

We then took the flies out from under one corn and saw they were all ~~on~~ on the bottom of the tube. The man then told us that when you heat them up at 30°C they can't fly so they lay on the bottom. It then takes them about 20-30 mins to get back up and active again. We watched a video to ~~see~~ show this.

I really enjoyed the day and I learnt lots of stuff and I would accept to do some thing similar in the future. It was a

fantastic day and I went home
and told every one at home
about it. Thank you for a great
day! :)

Excellent report
— thank you

