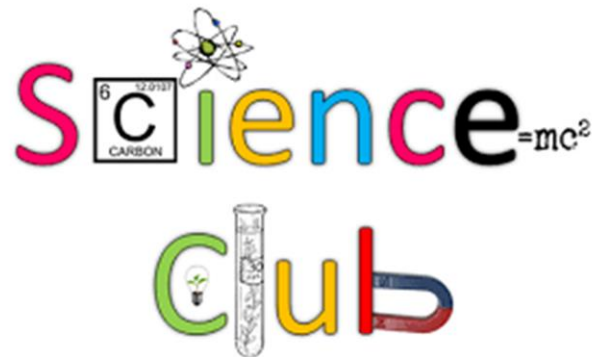


SCIENCE

SESSIONS



Dr. Jen Wymant
Cell Biology Researcher
Cardiff University



@JennyWymant



@ScienceSessions

What does a scientist look like?



Turn to the first page
of your lab books &
BEE creative!



What is science?



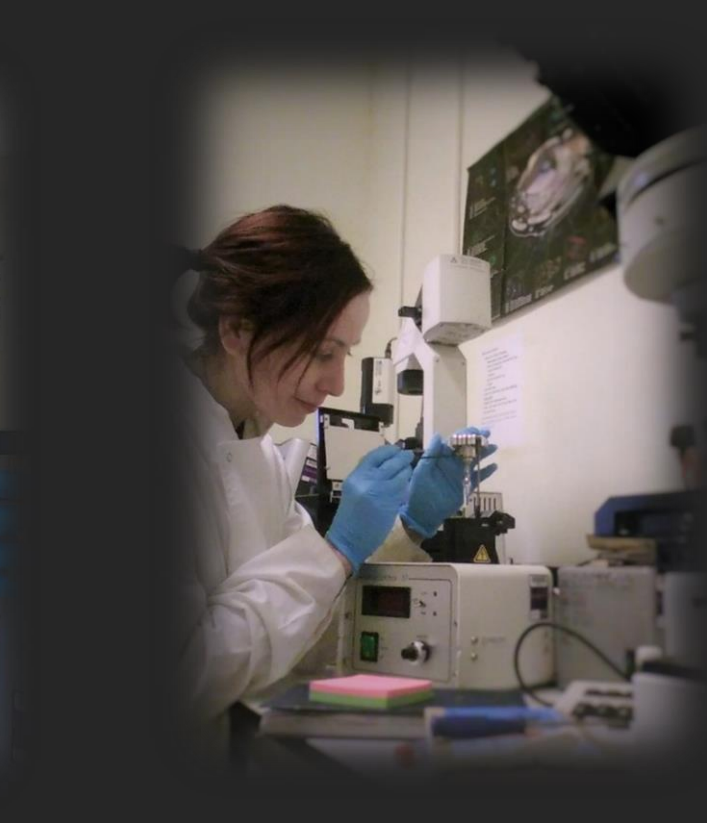
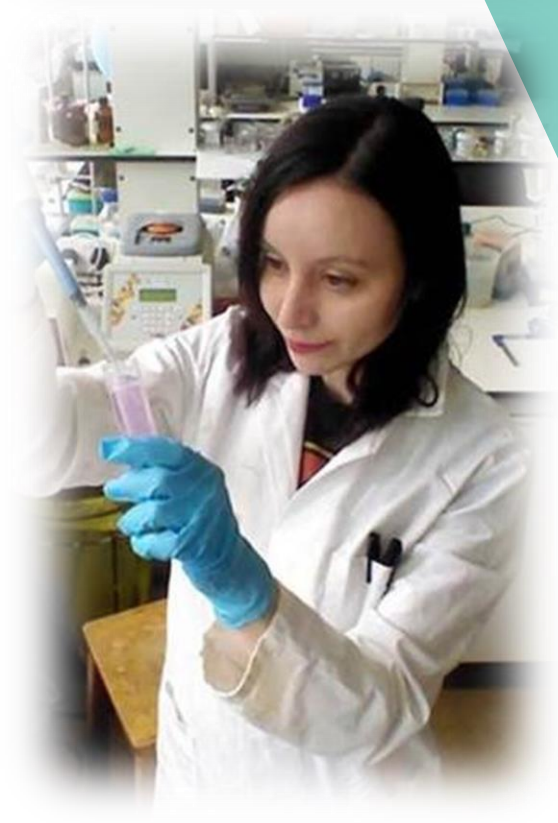
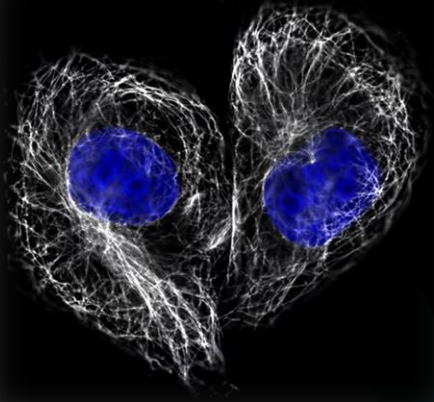
Now we'll watch a
short video together





Who am I?

- Cell biology researcher at Cardiff University
- Interested in understanding cells and making new medicines










Where do I work?

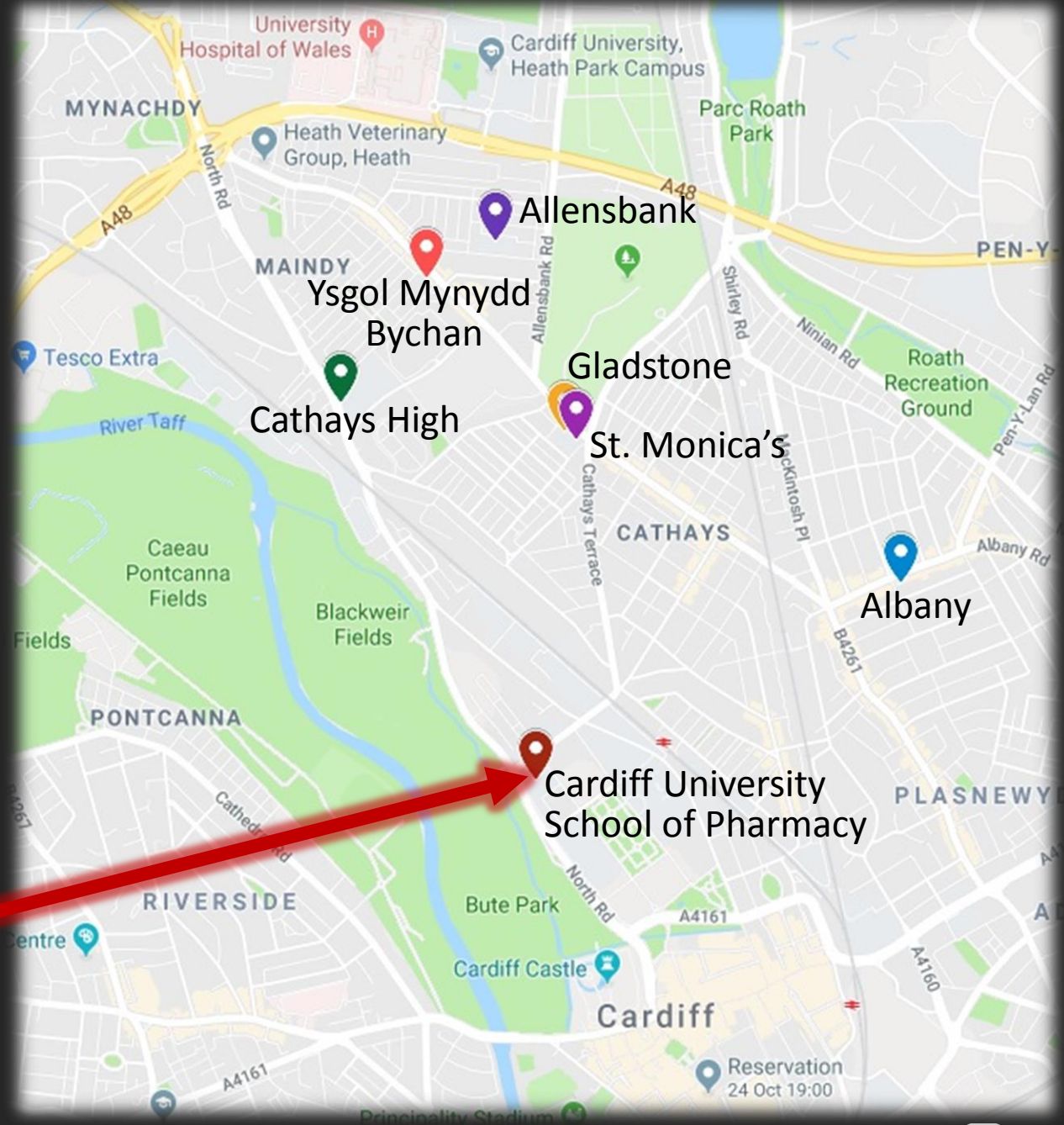
- At Cardiff University's School of Pharmacy and Pharmaceutical Sciences!
- Students usually start when they are 17/18 but can be older.
- We have 30,000 Students and 6000 staff!
- There are over 300 different courses!



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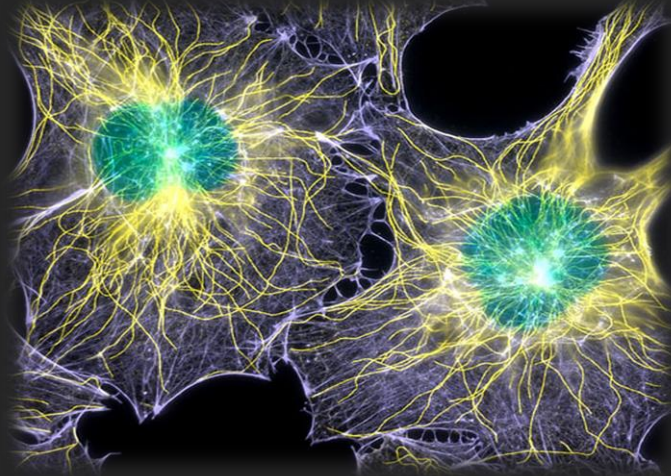
Where is that?

-  Redwood Building
-  Allensbank Primary School
-  Albany Primary School
-  Gladstone Primary School
-  St Monica's Church in Wales Primary School
-  Ysgol Mynydd Bychan
-  Cathays High School

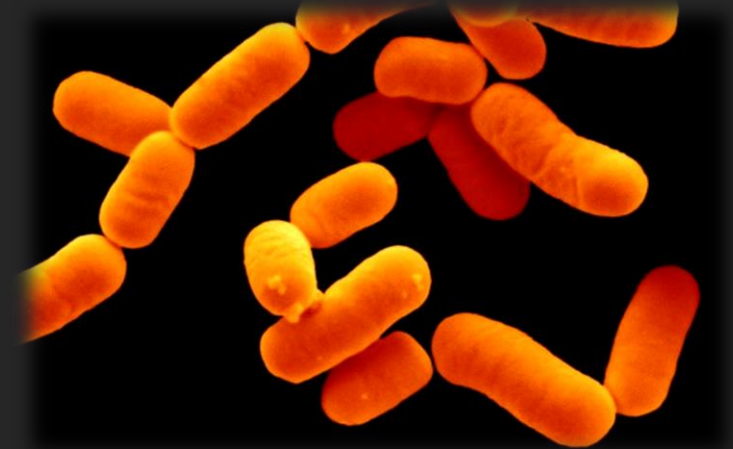


So what does a cell biologist study?

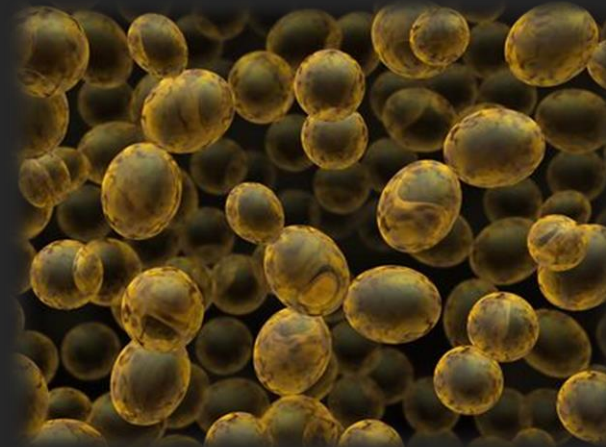
Animal cells



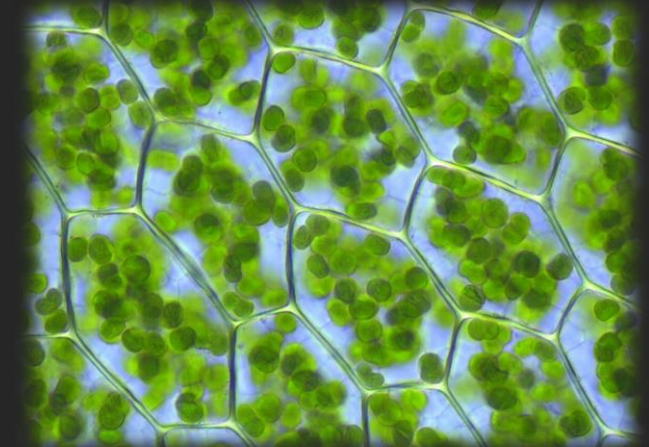
Bacteria cells



Fungi cells



Plant cells



Cells:

the building
blocks
of life

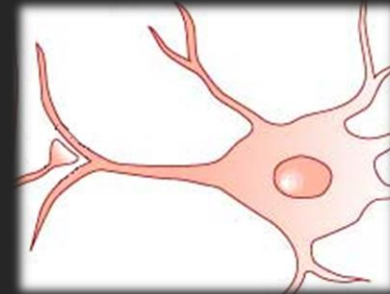
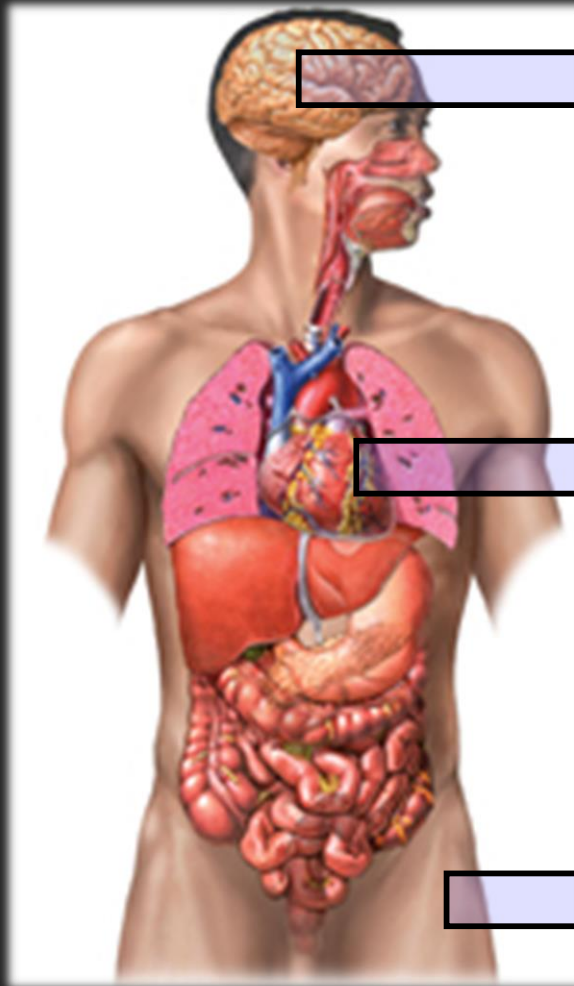


Which cells do I study?

Human
cells

Cells:

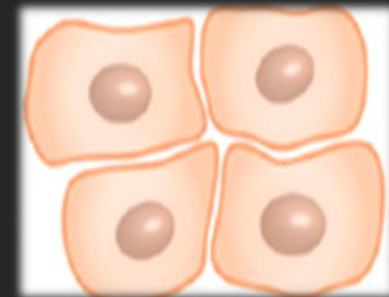
the building
blocks
of life



Neuron



Heart
muscle



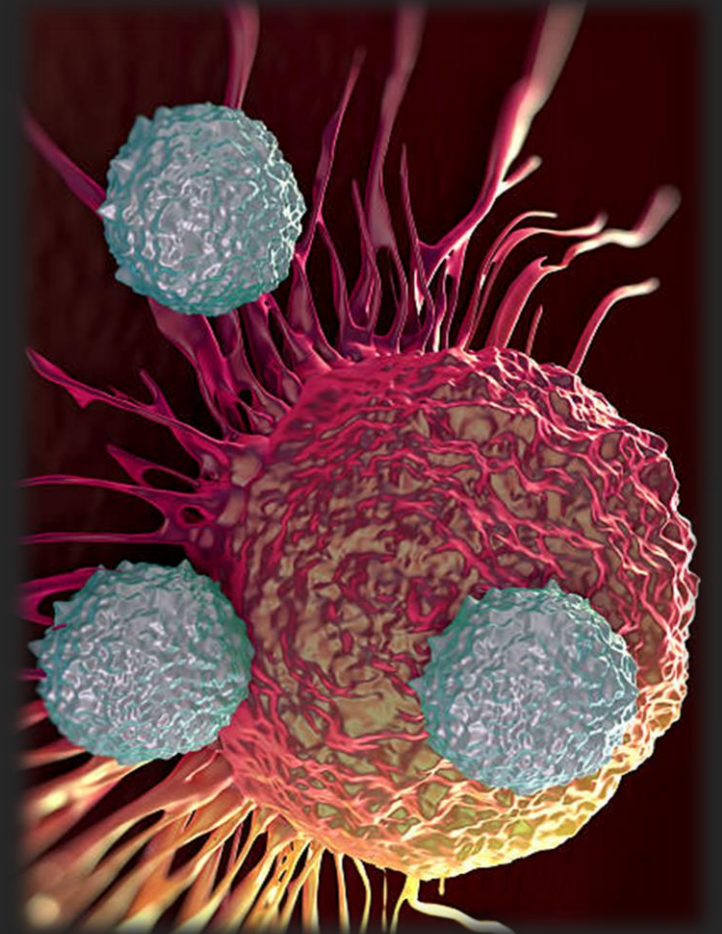
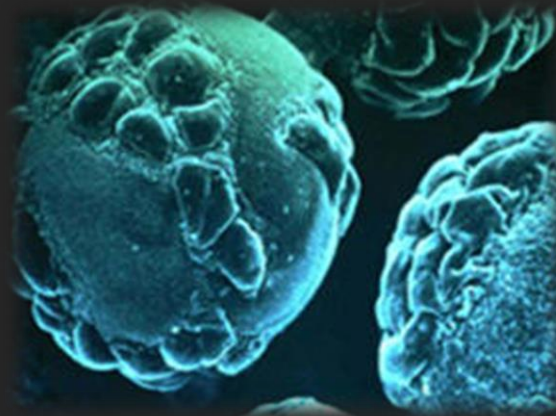
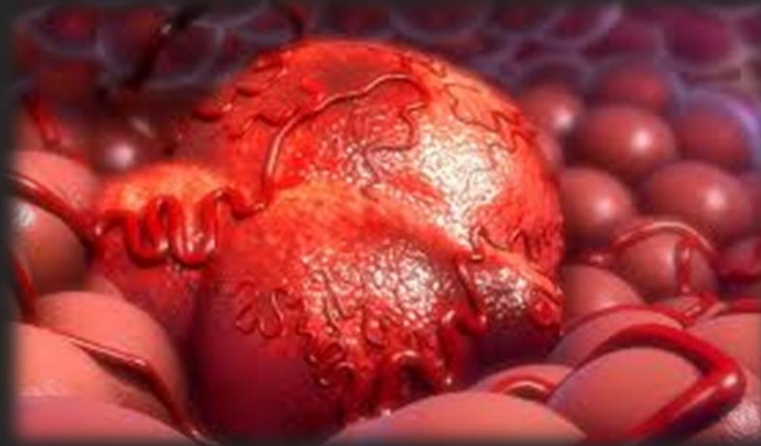
Skin



Which cells do I study?

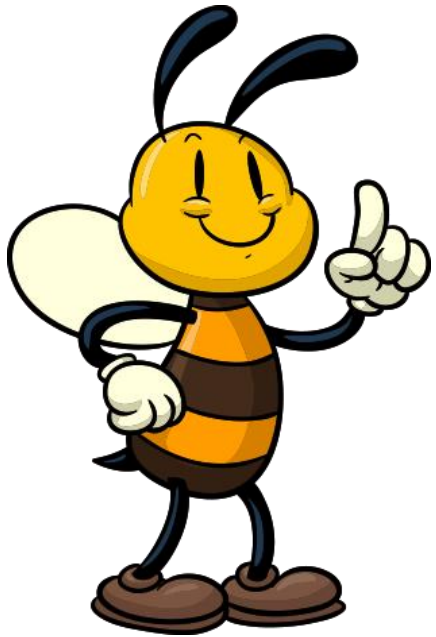
Poorly human cells

Study of
disease is
called
pathology

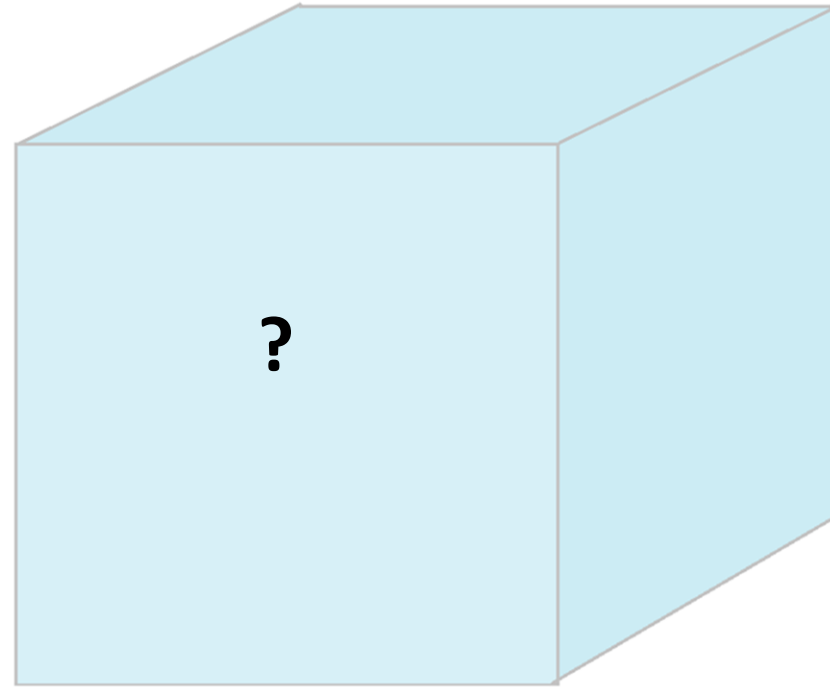


How big is a cell?

Raise your hand if you know the answer or have a hypothesis

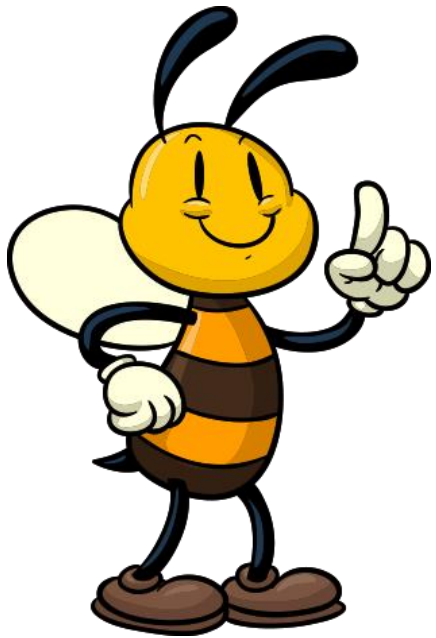


Cell



How big is a cell?

Very small!



Cell



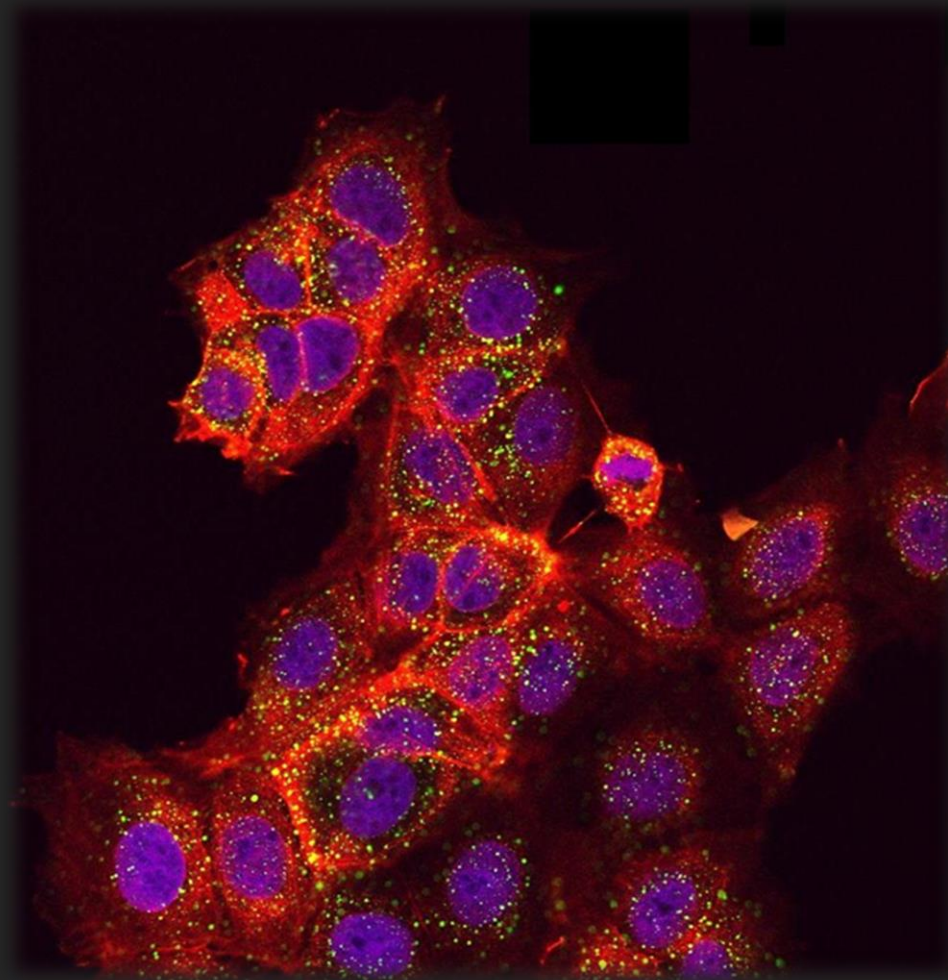
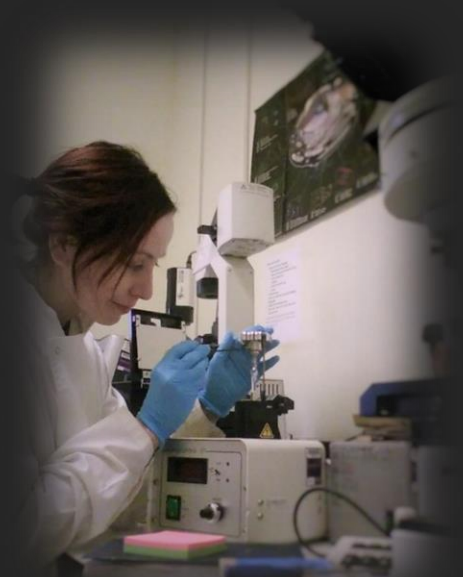
0.03mm

Grain of salt

0.5mm



To study them we need special dyes and microscopes





Let's have a go at treating some cells!





So what experiments are we going to?

Cardiff University Needs your help!

Our scientists are so busy that we cannot complete all of our experiments so we need your help!

We need to investigate:

1. The bacteria around you and on your skin!
2. Your reaction times and nerves
3. What can affect our reactions?



A photograph of a village entrance. In the foreground, a brick wall has a white sign with black lettering that reads 'CORONATION ST.'. Above the wall, a green signpost holds two signs: the top one says 'EMMERDALE' in large black letters, and the bottom one says 'Please drive carefully through our village' in smaller black letters. The background shows a paved road, a white metal gate, a stone building with a chimney, and a blue sky with white clouds.

First we need to
test the soaps!

Cardiff University Scientists have made
their own soap, but we need you to
make sure it works well!



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Soap Testing experiment!

- You will receive a sample of either Cardiff soap or the rubbish soap...

We need a control group of four:

- **2** with the Amazing Cardiff University Soap
- **2** With the rubbish soap.
- This group won't wash their hands at all.



Welcome back! Its time to look at the results!

- I may have fibbed a bit (yes that was naughty!)
- Just to make sure your all safe to be scientists we needed to check that you can wash your hands adequately.
- The soap is actually a pretend bacteria I made this morning...



RESULTS!!!

Which group has the dirtiest hands?

The
'Cardiff University Soap'
Team

The
'Rubbish soap'
Team

We can tell
because we have
a control group

Is this because
you were biased?



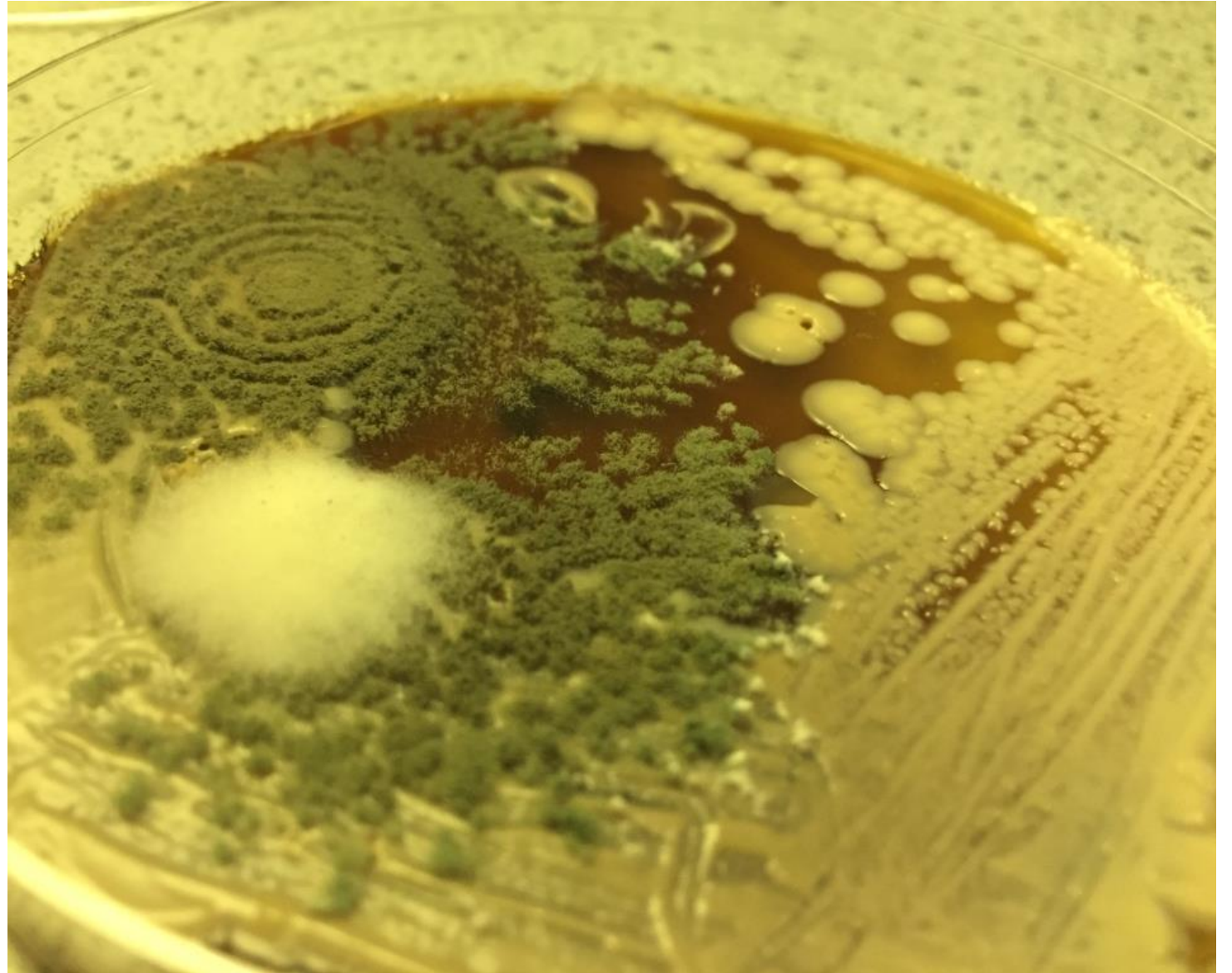
If I didn't make any mistakes in the lab this morning your hands are covered with just a gel....

- I was quite tired though.. So please go wash them anyway to make sure....



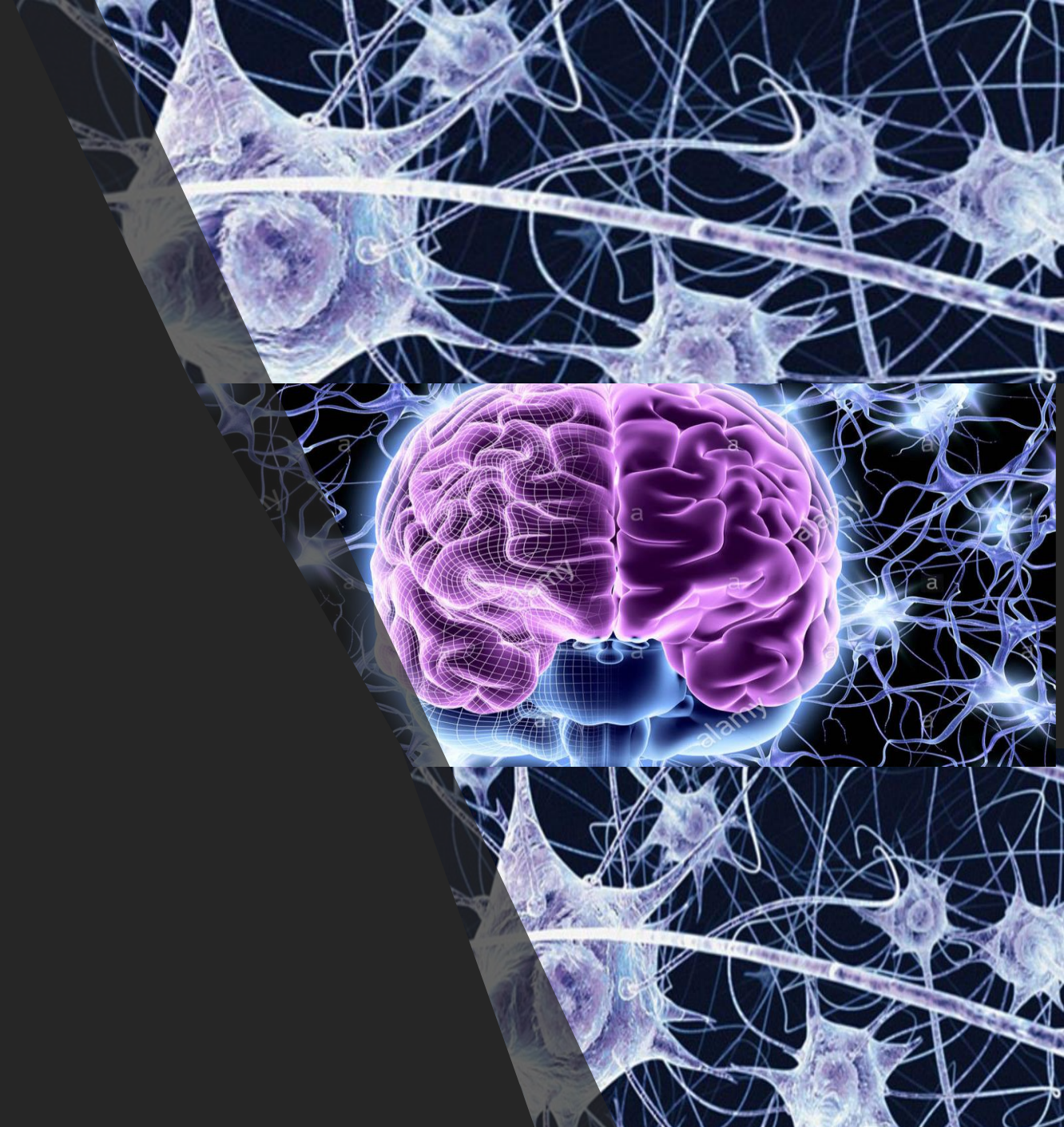
Sneak preview: Session 2!

- I will be back later in the year to investigate some of the dirty areas in your school...
- Have a think where you might find the dirtiest spots..
- Maybe the toilets? Maybe outside? Maybe somewhere else.....



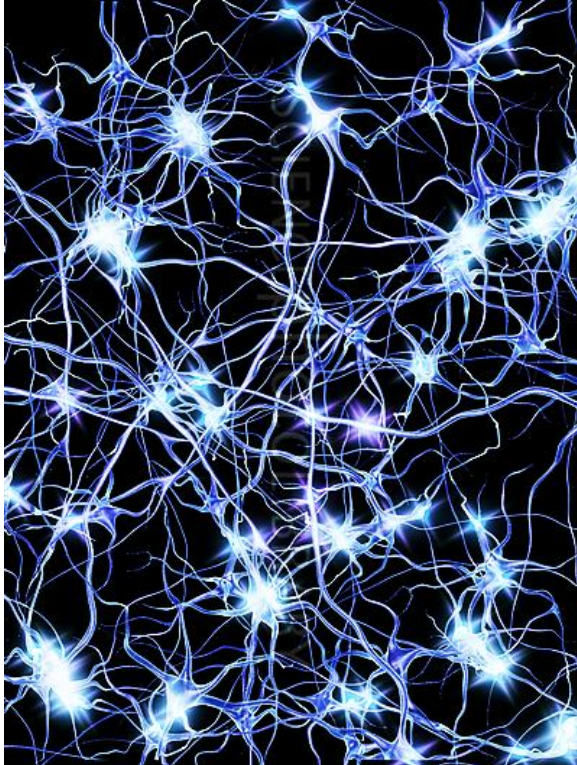
INVESTIGATION 2

- Next we need to check that your nerves are working correctly
- Do you have what it takes????

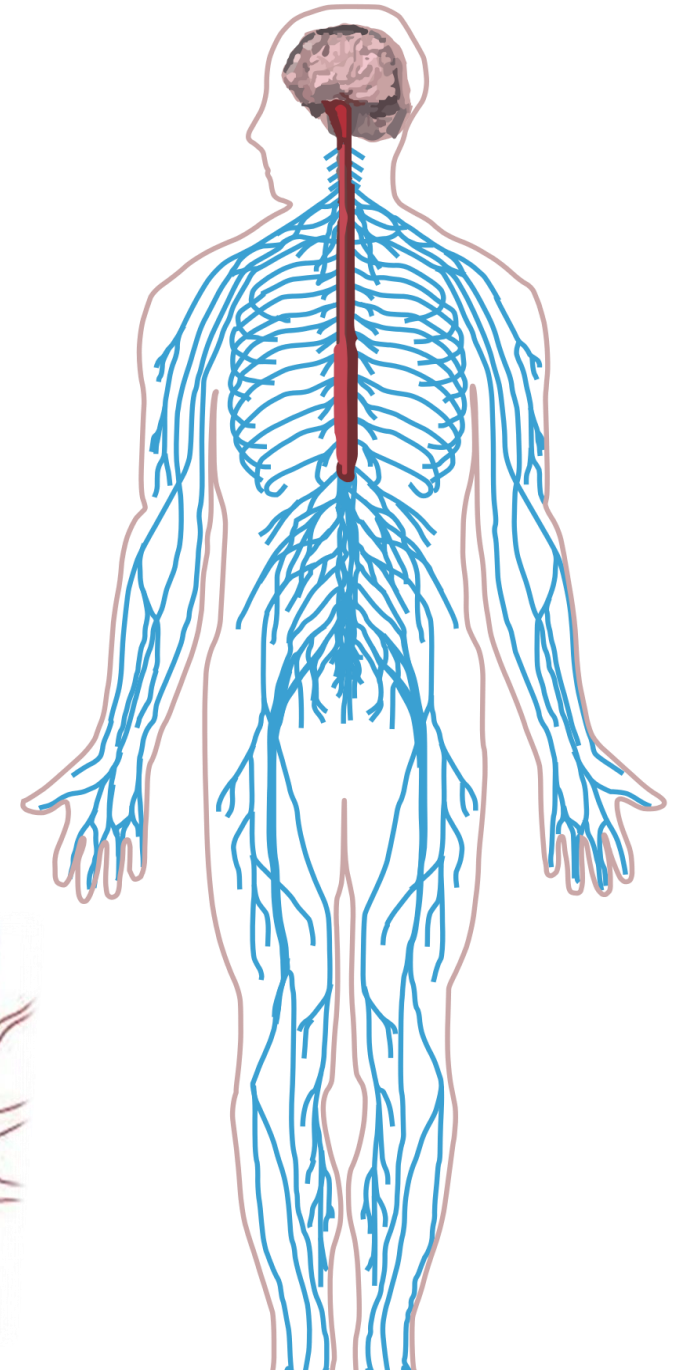
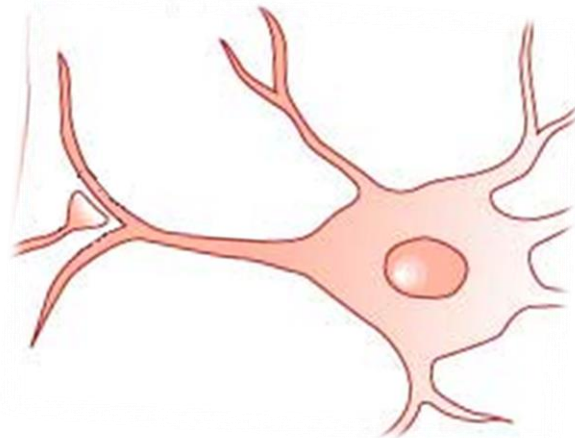


What are nerves?

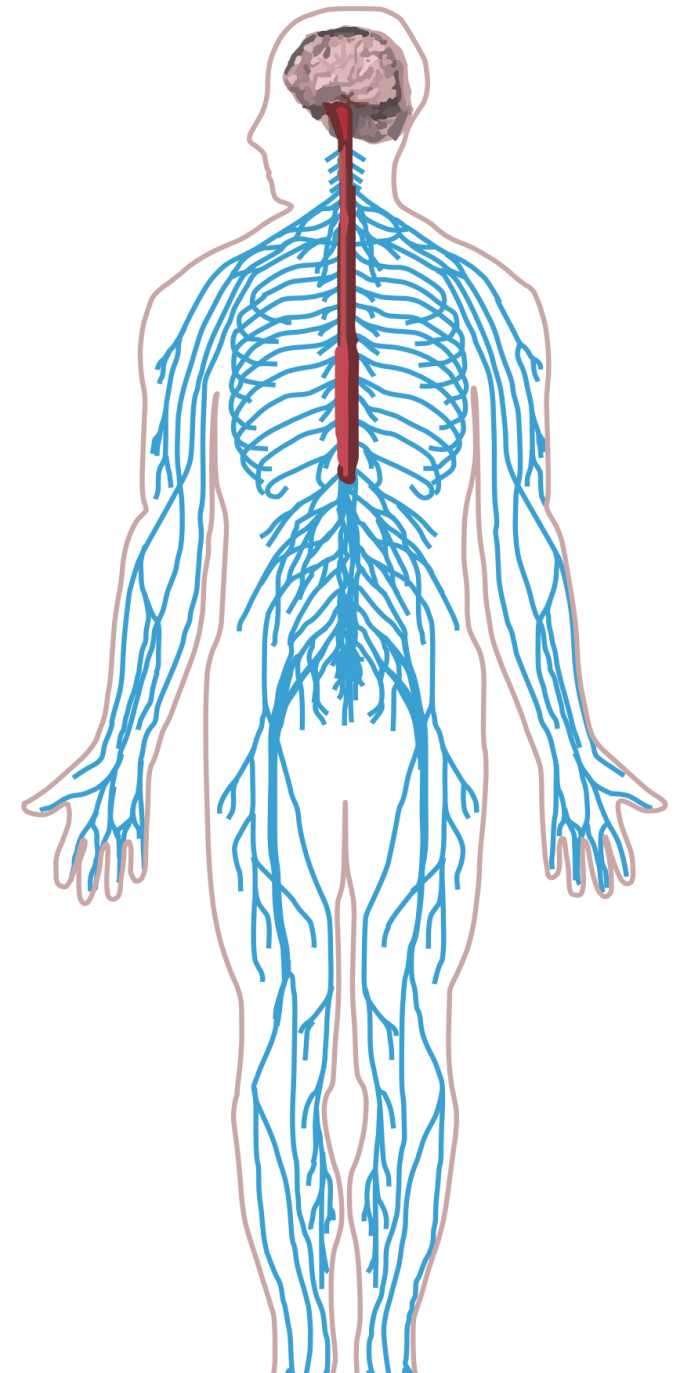
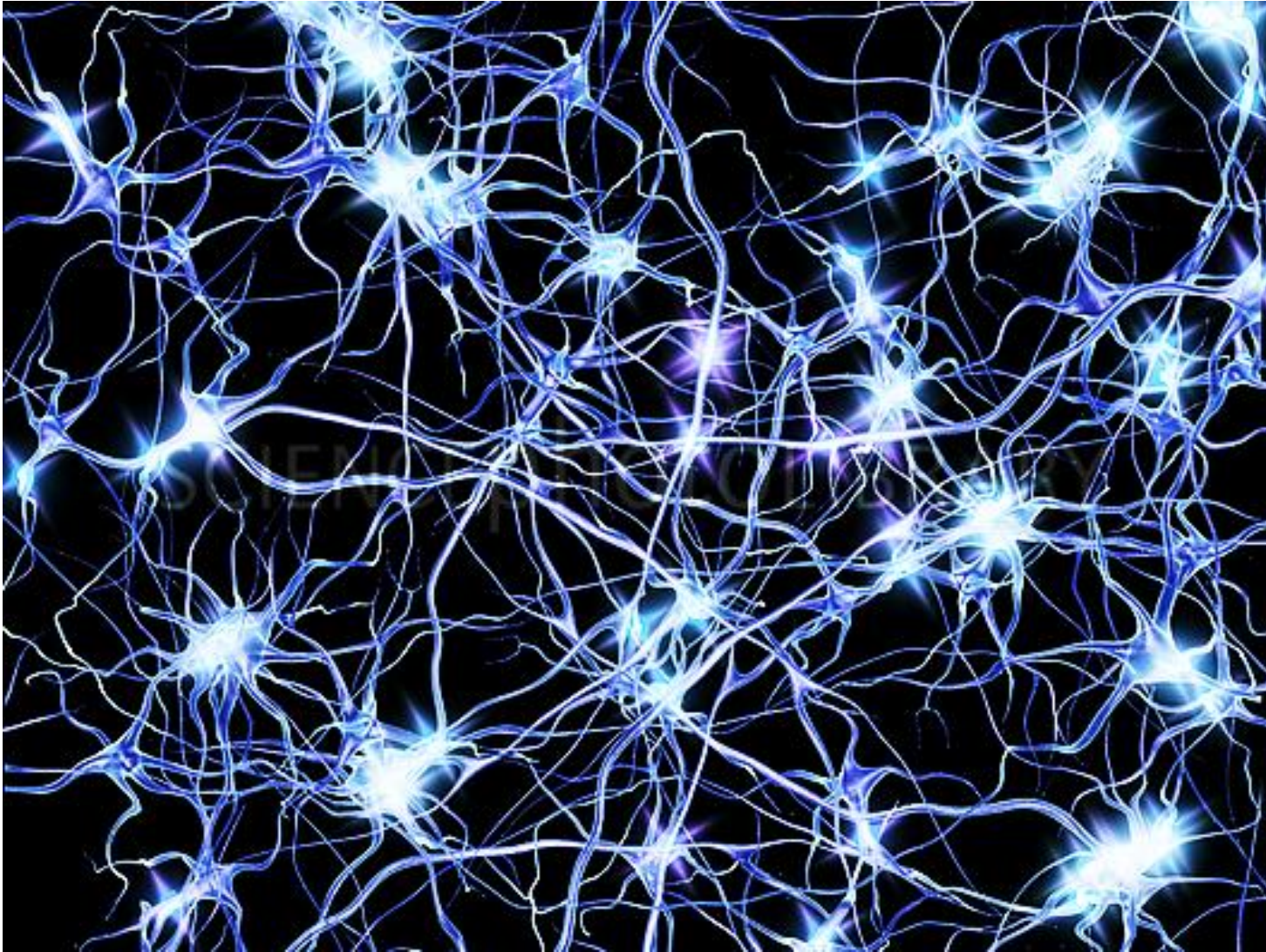
Nerves join together like wires all round the body and send messages to the brain.



Can you remember
What nerve cells were
called?



How fast do nerves send messages?



What do we mean by “fast?”



12.4 m/s or 27.73 mph



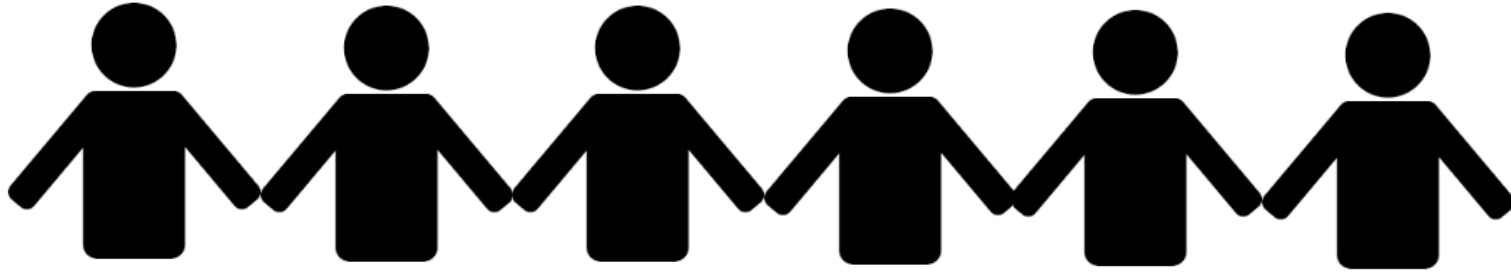
103 m/s or 231.5 mph

Speed is always a distance covered in a certain time in other words....

SPEED = DISTANCE ÷ TIME



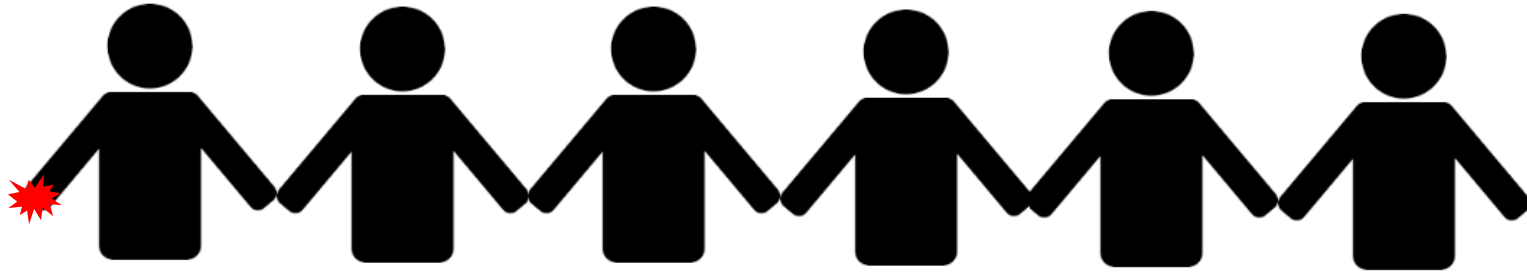
How can we measure how fast our nerves are?



To find out the **speed** of our nerves we need to know how long (**time**) it takes for a nerve signal to travel a known **distance**.



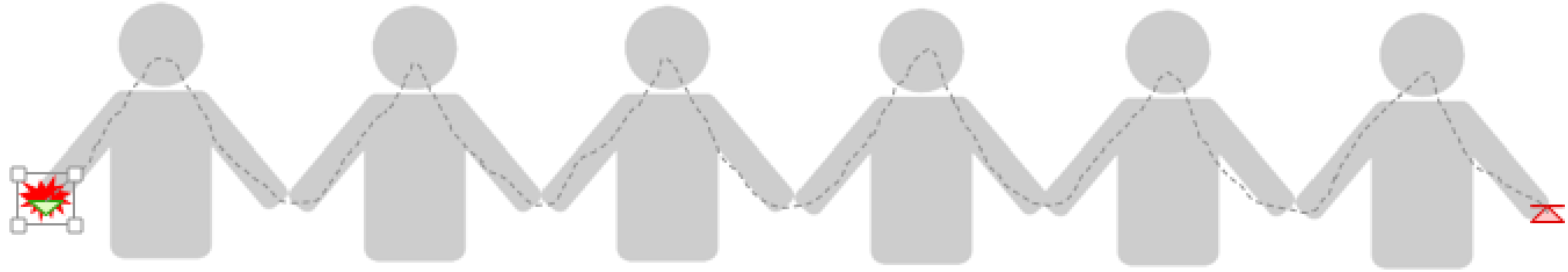
How can we measure how fast our nerves are?



Time: How long it takes for a hand-squeeze signal to pass along the line



How can we measure how fast our nerves are?

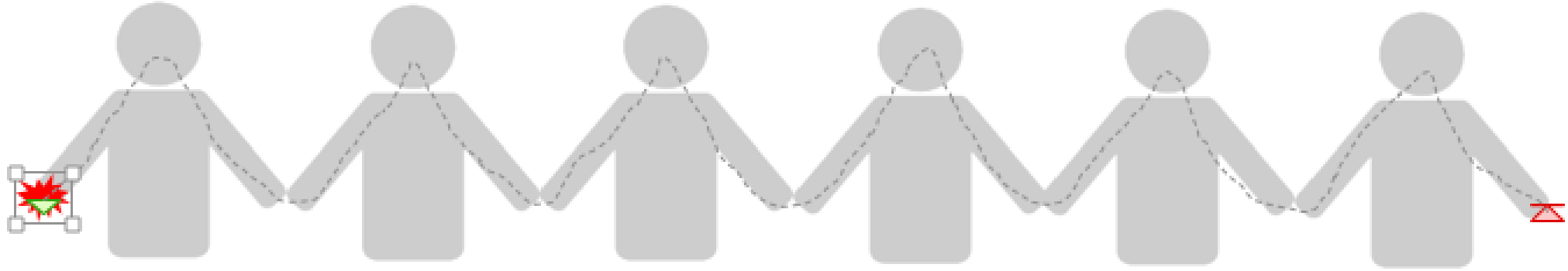


Distance: add up arm spans

LET'S GO!!!



How can we measure how fast our nerves are?



Distance: add up arm spans

LET'S GO!!!



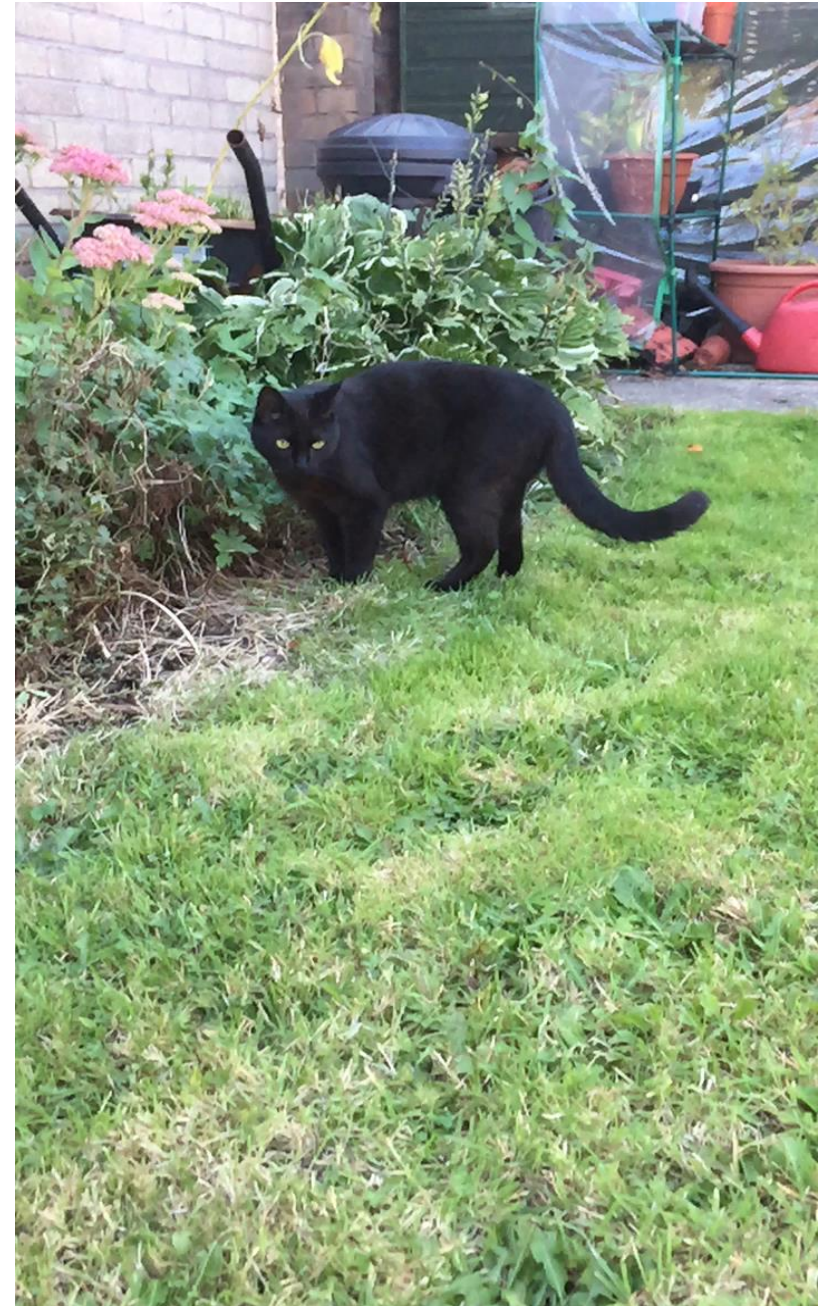
Lets talk about the results!

- Actual speeds are different for different types of nerves
- Average touch signal nerve speed = 76 m/s
- Why do you THINK your results might have been different from the real speed?

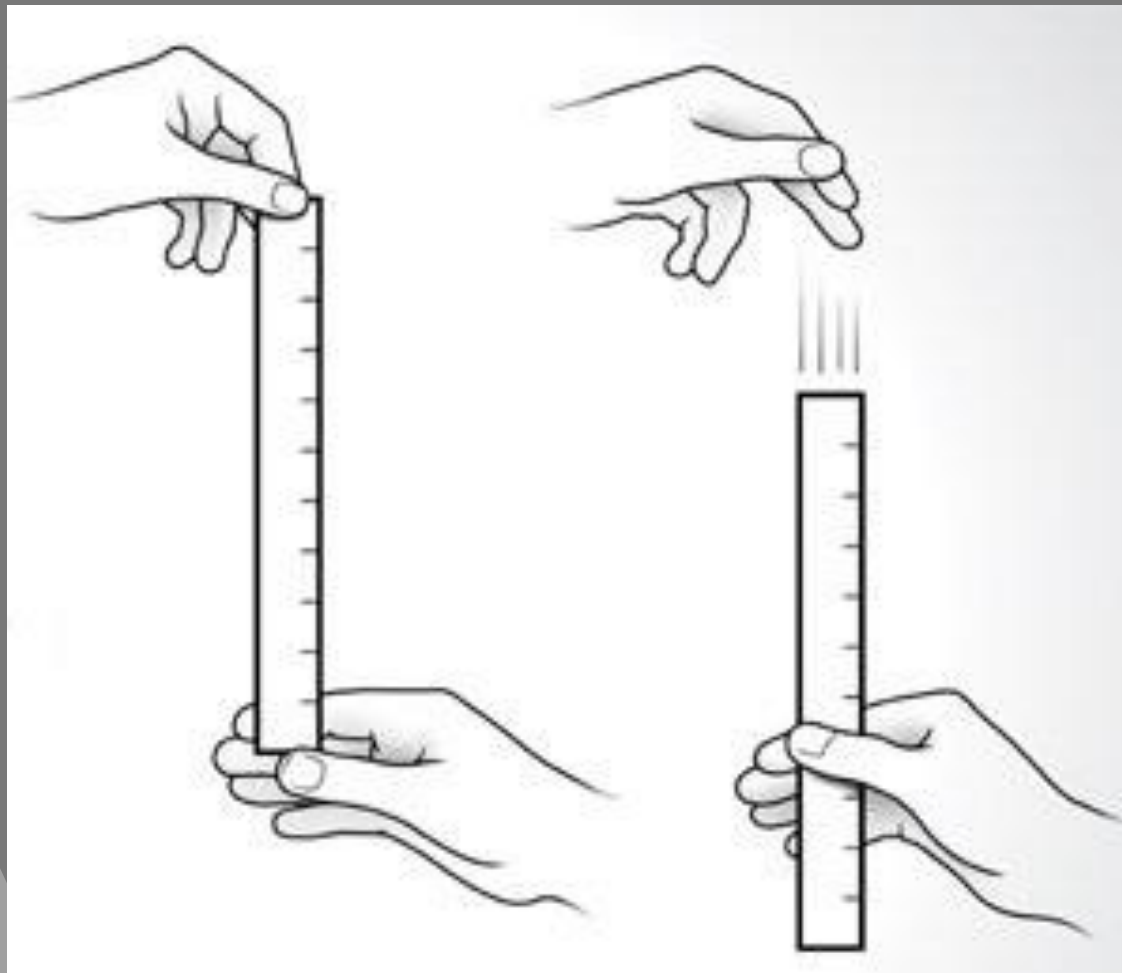


Investigations to finish while I am away

- Now its time for you to do some independent investigations....
- We need to check your reaction times....
- Why are they important?
- How would you do this?



The ruler drop test of reaction times





Investigation three!

- We need to look what things 'Variables' might effect your reaction time..
- What things do you think these are?
- How would we test these?
- Why would these have an effect?



And Finally!

As a thank you, a visit to Cardiff University!

- There will be a trip to The Cardiff University School of Pharmacy In December.
- You will need to prepare a poster for University professors before then so they can see your results. - your teacher will help you.
- Your posters will be judged the same as university students and there will prizes for the winners.
- You will also have a chance to have a look at some of the experiments we do in the university!





Thank you all for listening and Good Luck!



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