

EASTER BUSH SCIENCE OUTREACH CENTRE



**Get hands-on
with real-life
science**



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 www.ebsoc.ed.ac.uk
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Dolly, DNA & Me

Primary Workshop



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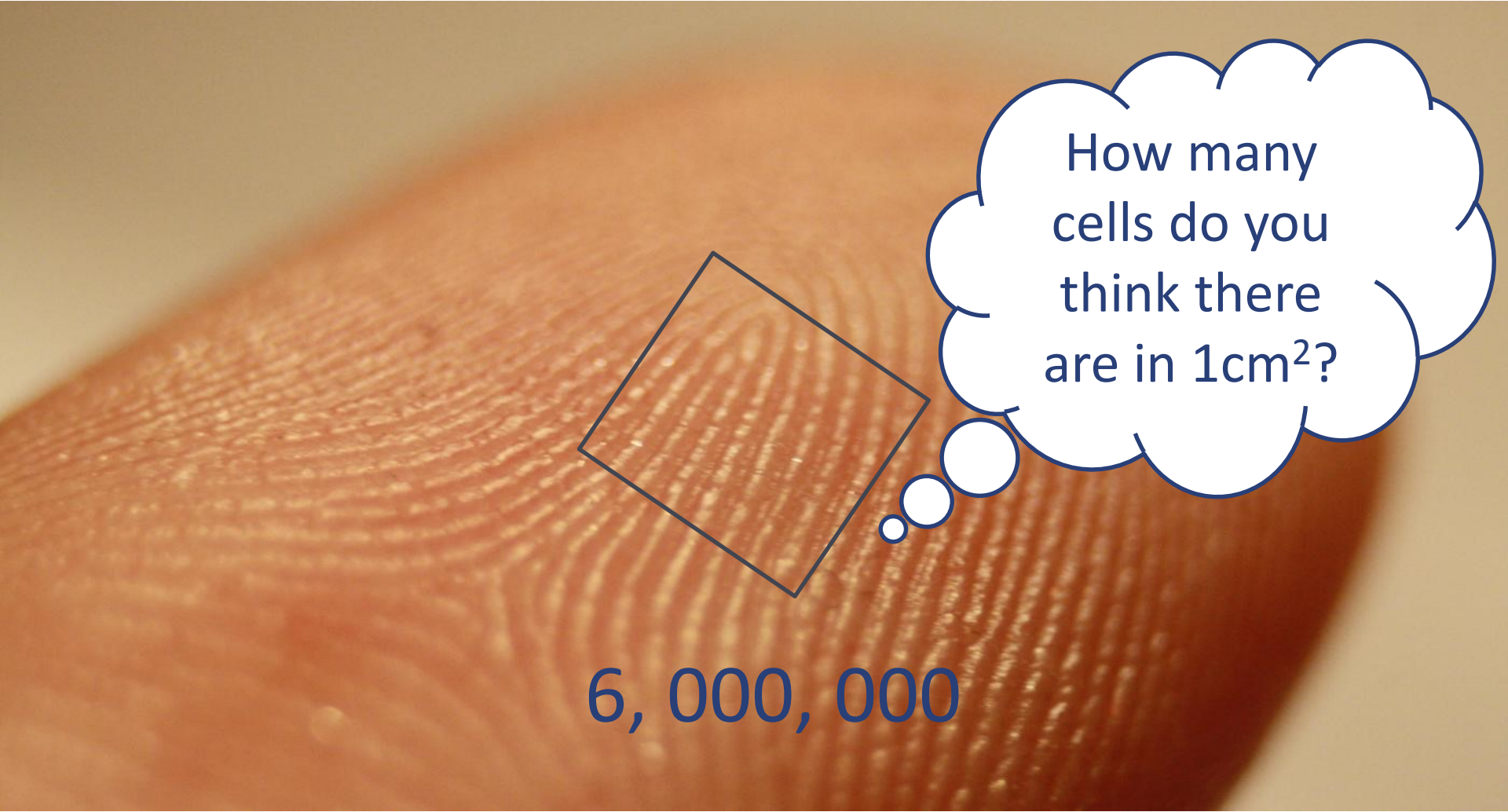
What all living things made of?



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Cells are tiny!



How many
cells do you
think there
are in 1cm^2 ?

6, 000, 000



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What tool do you need to see cells?

Click for a clue!



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What is this?

These are cells!



This is one cell

Let's take a closer look!



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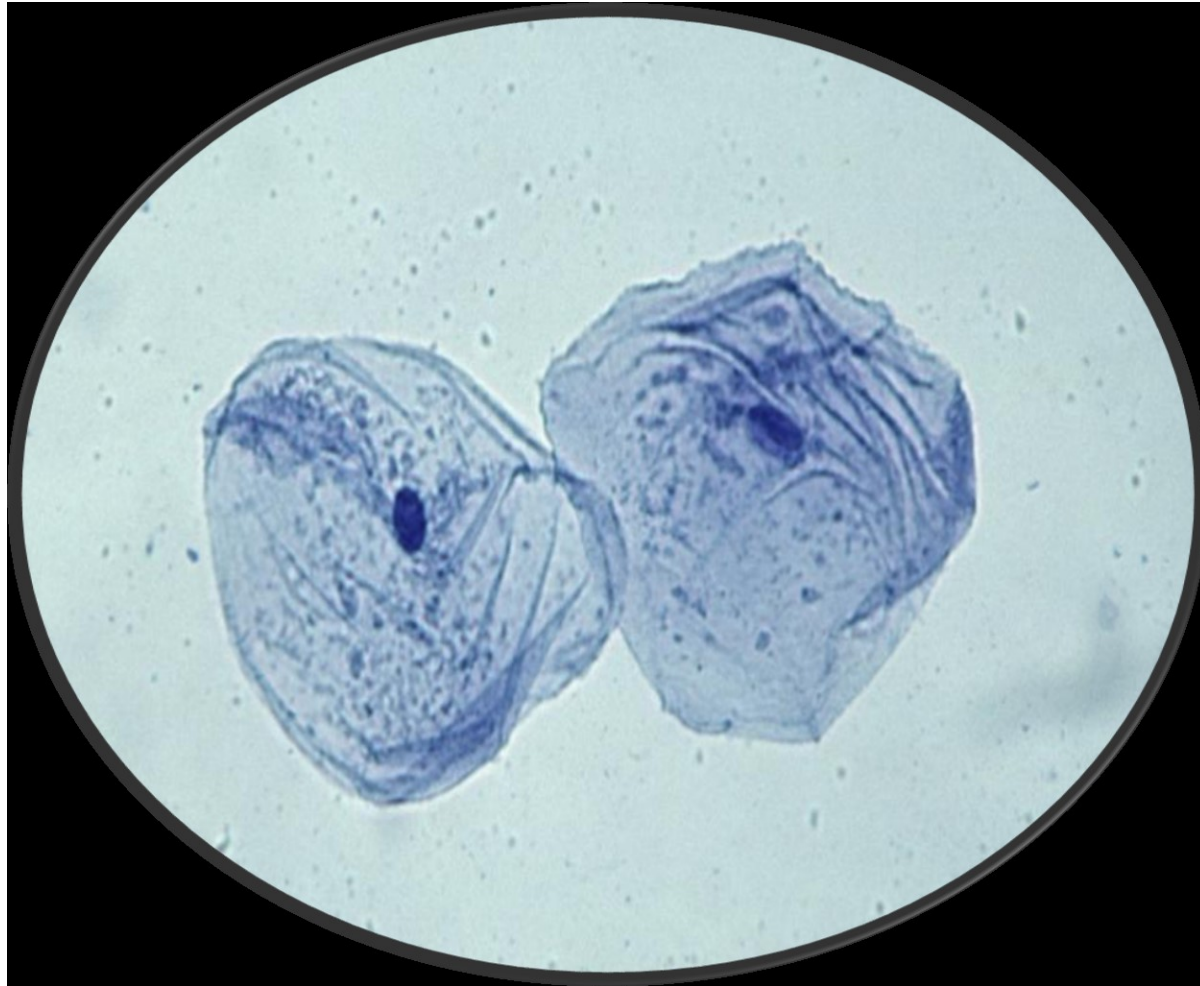




This is one cell



What can you see?



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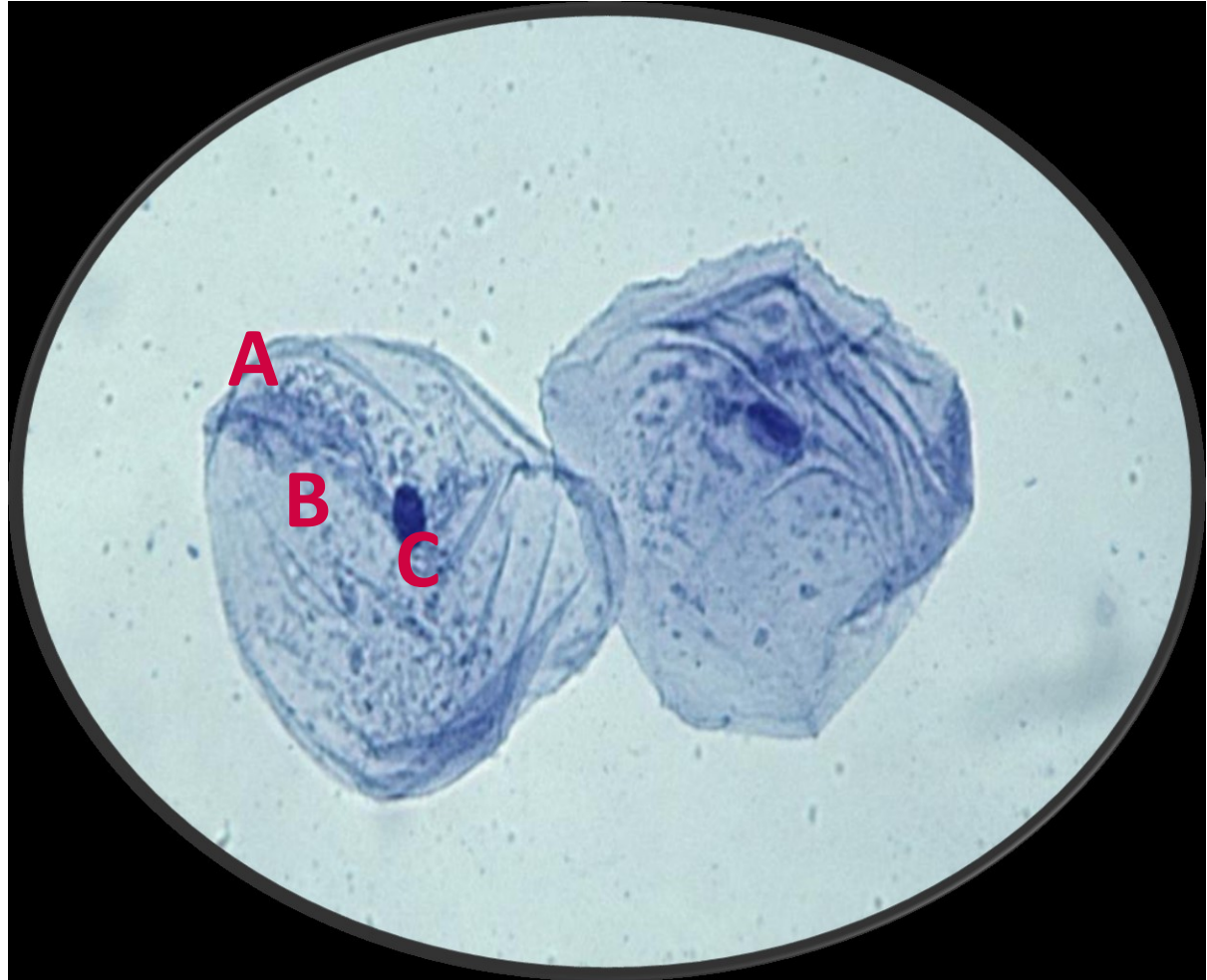


Do you know the parts of a cell?

Cell membrane

nucleus

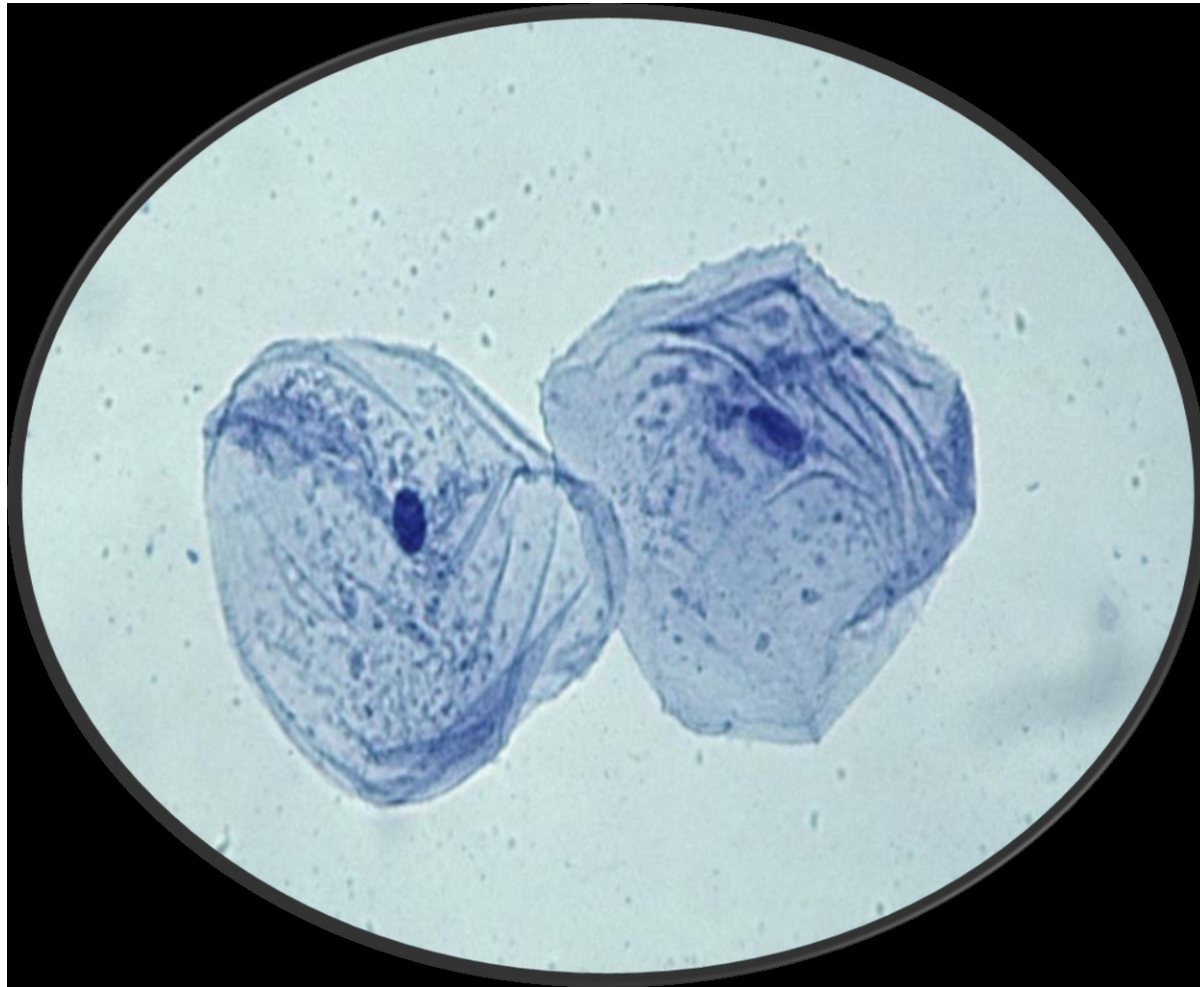
cytoplasm



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Let's dissect our giant



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How long is the DNA in the model cell?

2m

If we stretched out the 2m of DNA from all of your cells it would.....



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...reach the Sun and back ...

... 610 times...



Match the words and descriptions with the correct part of the cell



Look at your own cells



1 cotton swab



1 glass slide



1 coverslip



blue dye



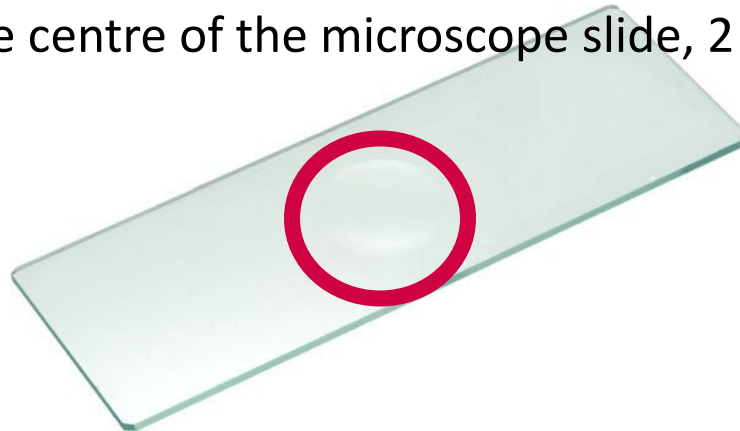
1 tissue

- 1) Put your lab number on the slide (pencil).
- 2) Take a swab and gently scrape the inside of your mouth.



he slides and coverslips are made of glass.

- 3) Roll the swab on the centre of the microscope slide, 2 or three times.

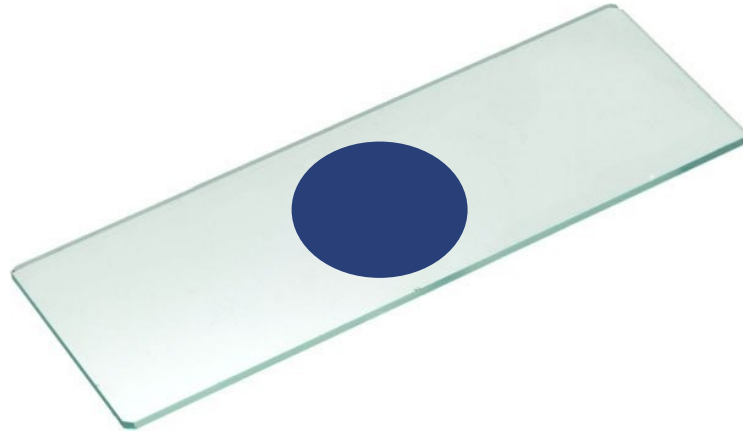


Look at your own cells

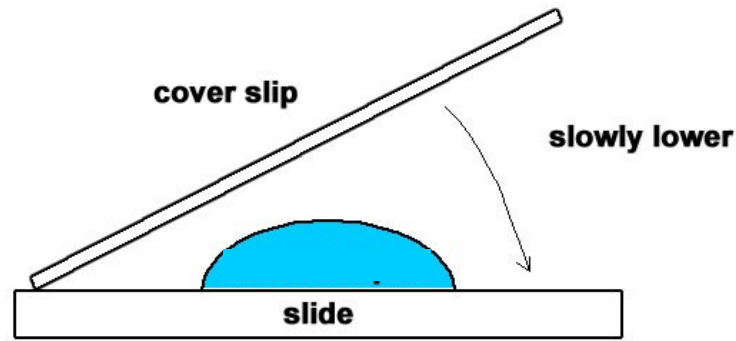


Coverslips are very fragile, be gentle and work slowly.

4) Add a drop of blue dye to the cells.

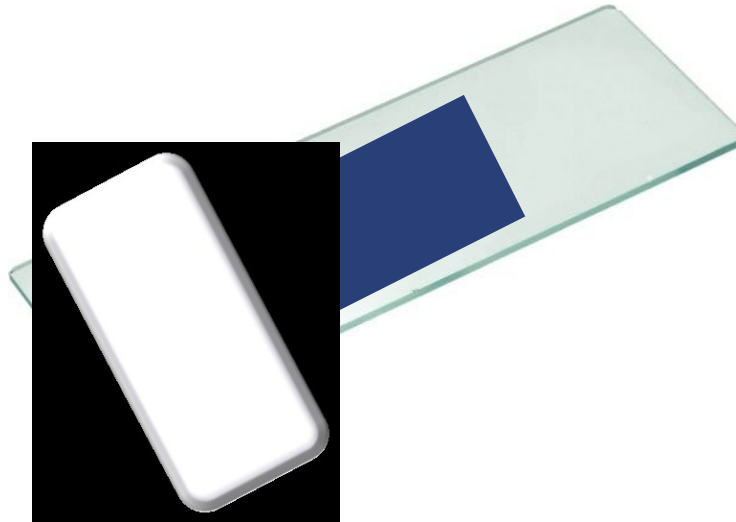


5) Lower a coverslip on top.



Look at your own cells

6) Place the tissue at the edge of the coverslip to soak up some of the dye.



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Split into two groups

Microscopes

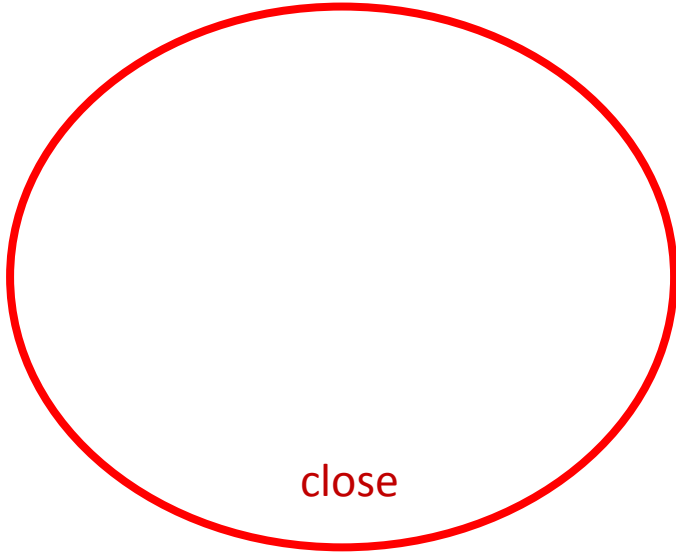


Cell Model

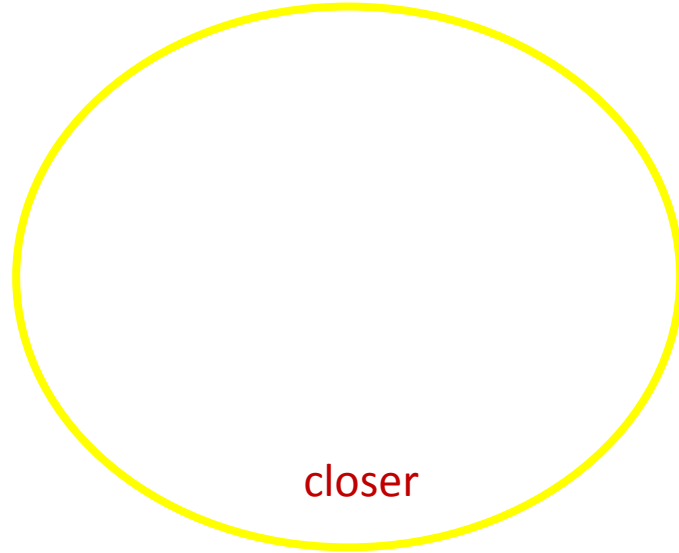




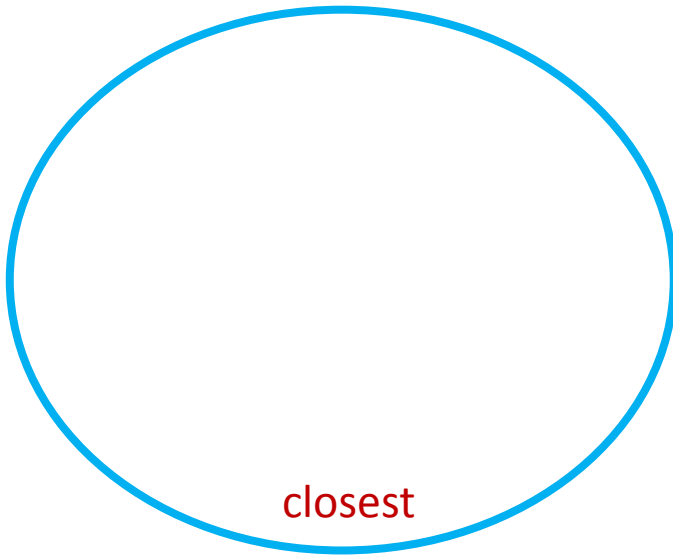
Draw what you see at each magnification



close



closer



closest

Did you see ... ?

A cell

Its cell membrane

Its cytoplasm

Its nucleus



Make a Cell Model



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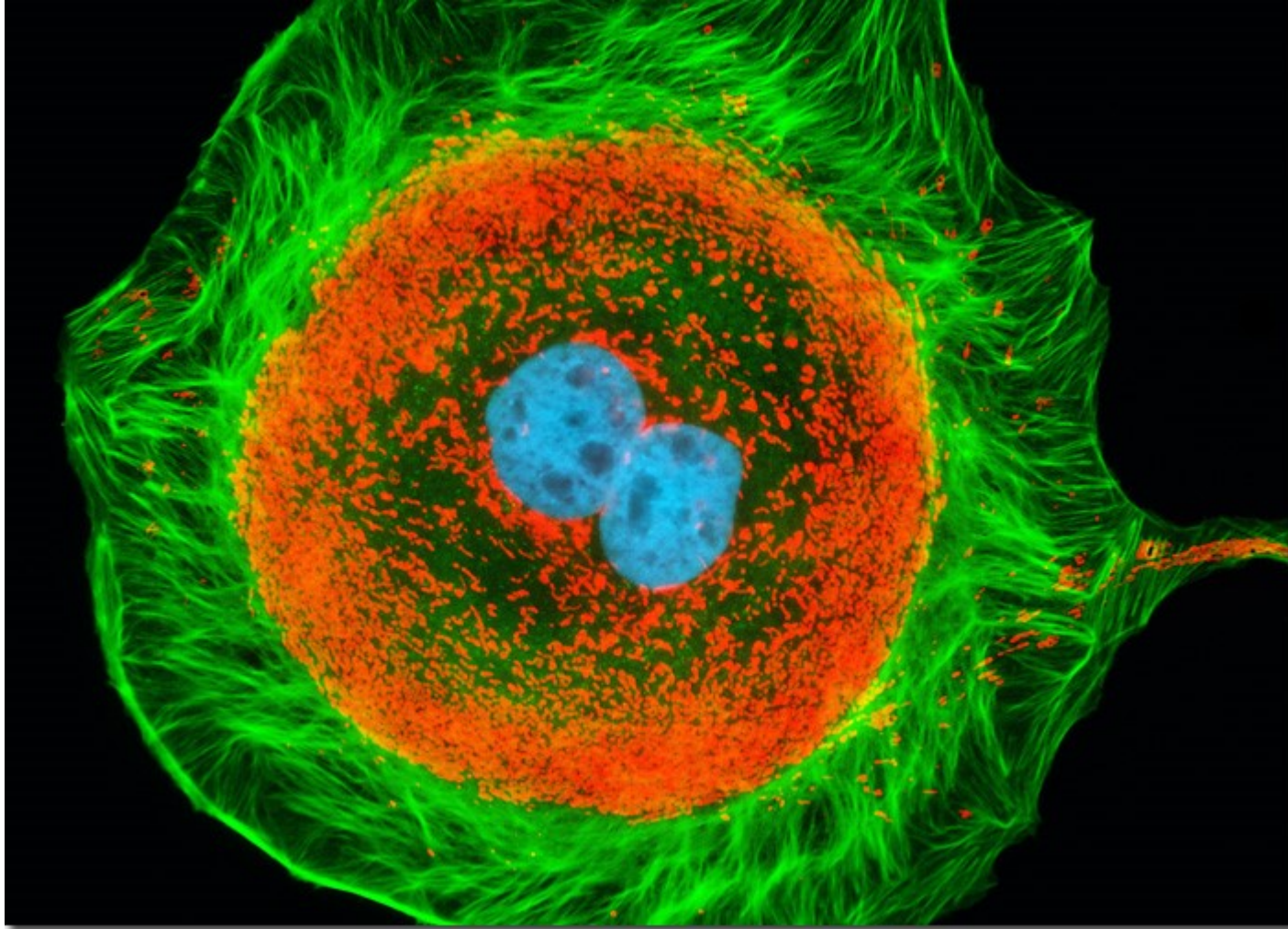
Some examples



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Some real cells up very close!



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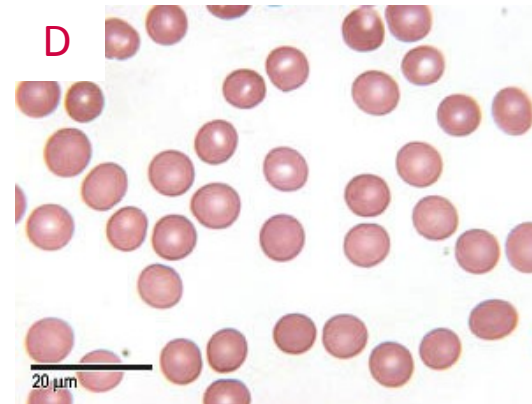
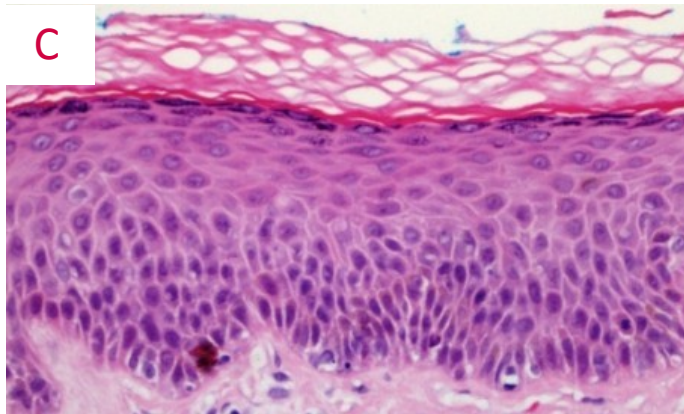
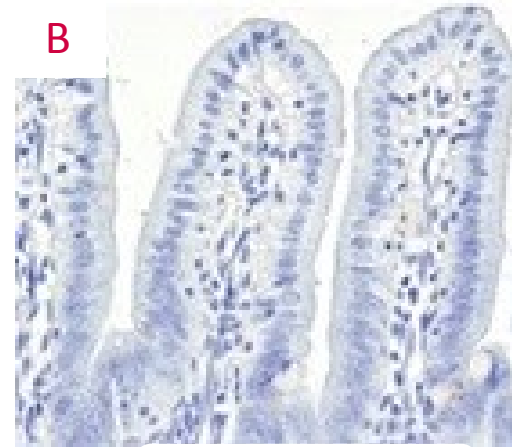
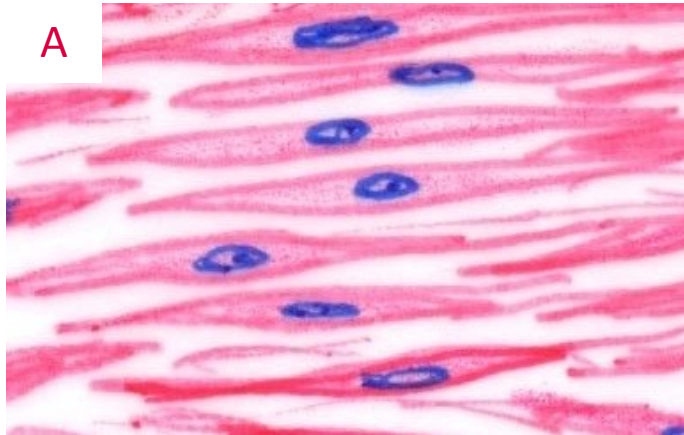
BREAK



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Where do you find these cells in your body?



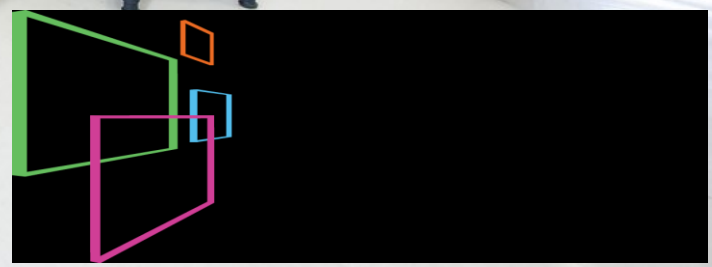
LUNCH



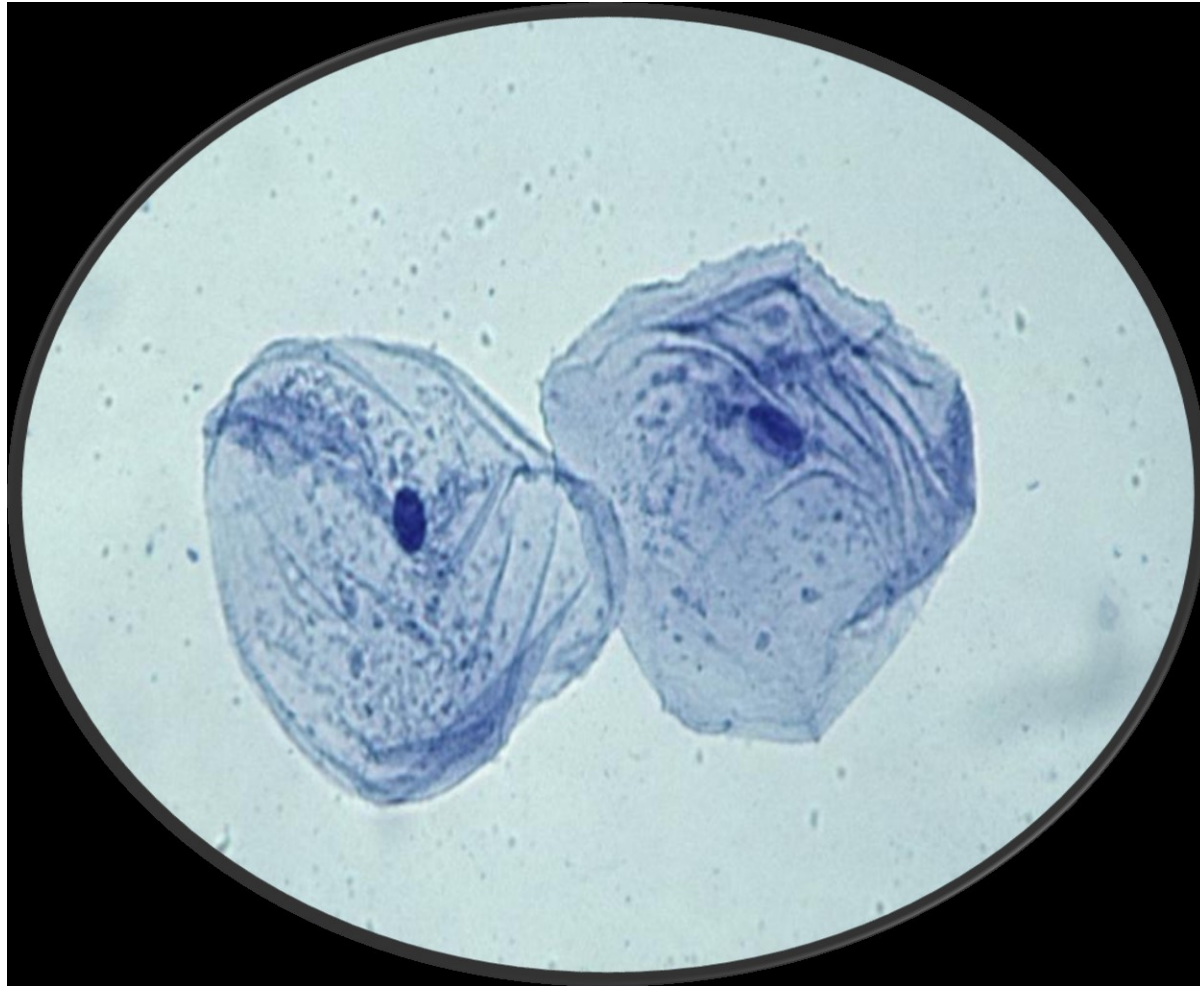
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Meet the Scientists



Where is the DNA?



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What does DNA do?



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Why are we all different?

Different DNA



Different characteristics



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How are you different?



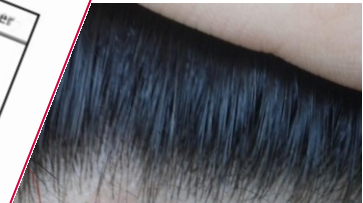
Hitchhiker's Thumb



Can tongue roll



Right hairline



Widow's peak hairline



Left thumb on-top



Right thumb on-top

DNA, Dolly & Me
Your Traits

Name _____
Lab Number _____

Characteristic	Yes	No	Other
Hitchhiker's thumb			
Can tongue roll			
Widow's peak hairline			
Hand-Clasping With left thumb on-top			
Red-green colour blindness			
PTC taste			

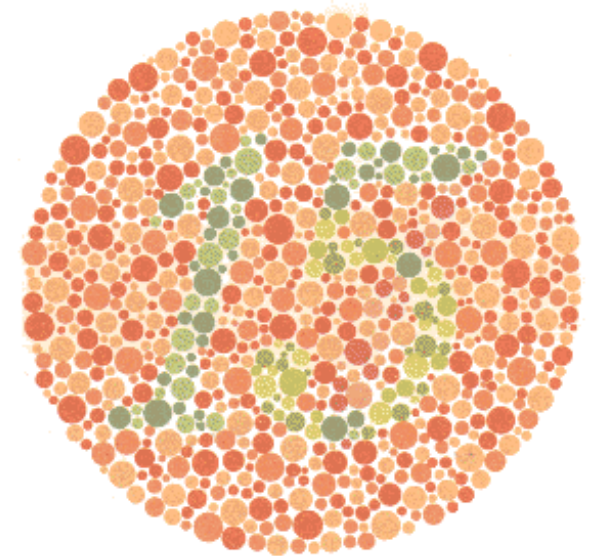
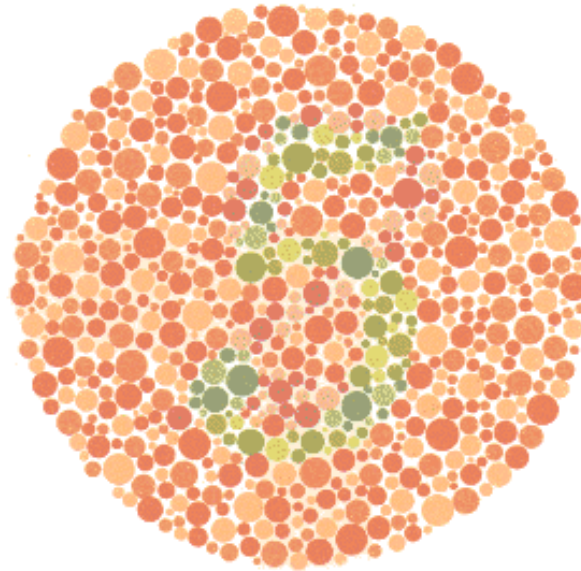
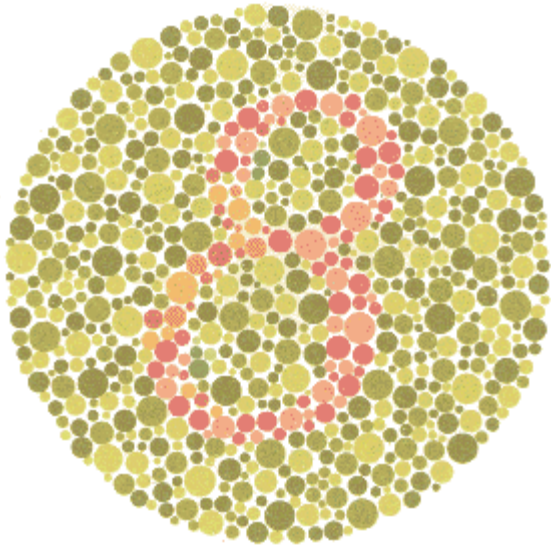
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What hidden differences do you have?



Are you red-green colour blind?



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What hidden differences do you have?

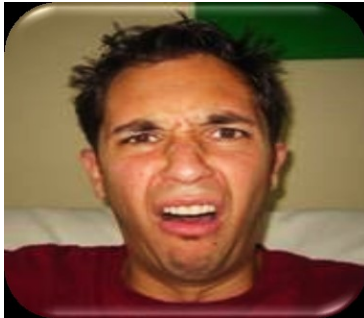


Can you taste it?



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Strong taster



Weak taster



Non-taster

Write your result on your sheet

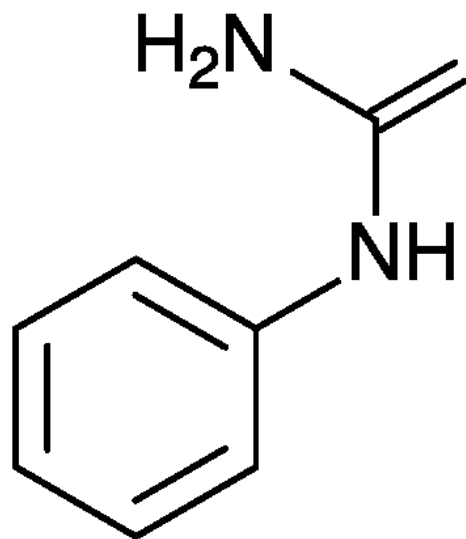


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What are you tasting?

PTC



Phenylthiocarbamide



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Why can only some of you taste it?



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Where did Dolly's DNA come from?



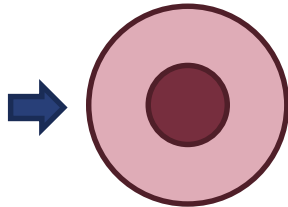
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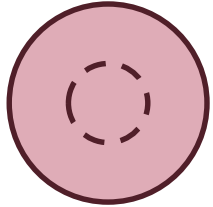
How to make a clone



The egg cell came from this sheep



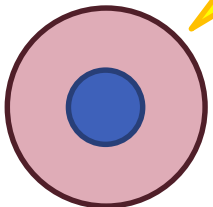
Egg cell



Remove egg cell DNA



Fuse egg cell and adult DNA together



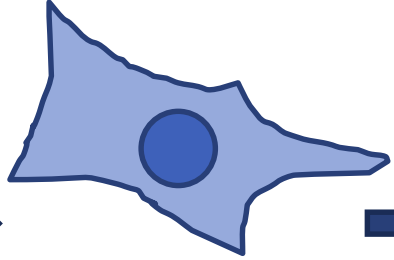
Pregnant sheep "surrogate mother"



Dolly!



DNA came from this sheep



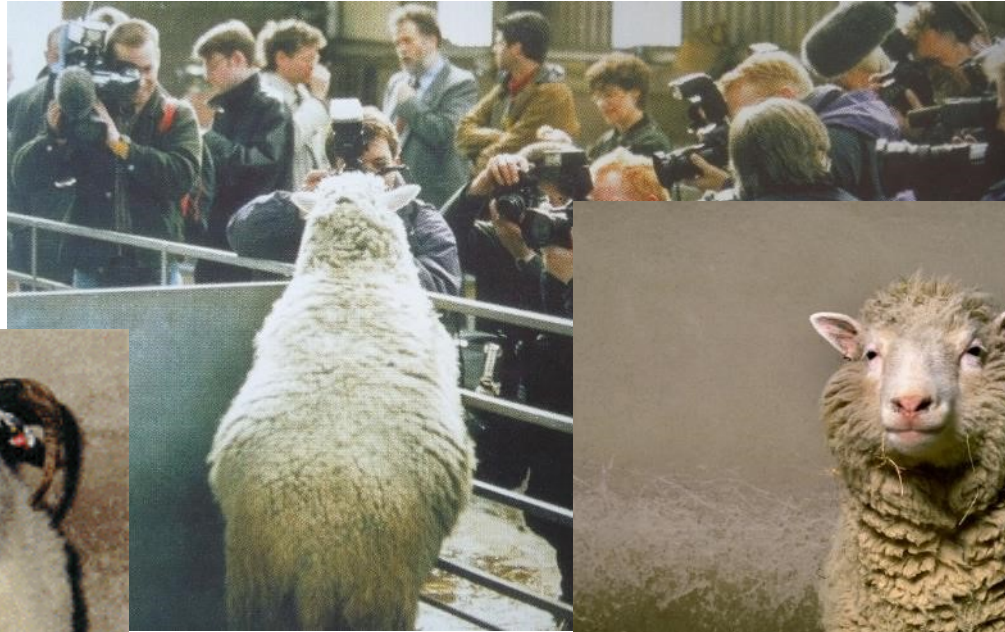
Adult cell



Remove DNA from adult cell



Dolly the Sheep



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Team Dolly



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Dolly's characteristics: Are these characteristics inherited or not?





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Where did it all lead?



Who are these sheep?



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Where does your DNA come from?



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Where does the boy's red hair come from?



This is an example of an **inherited characteristic!**

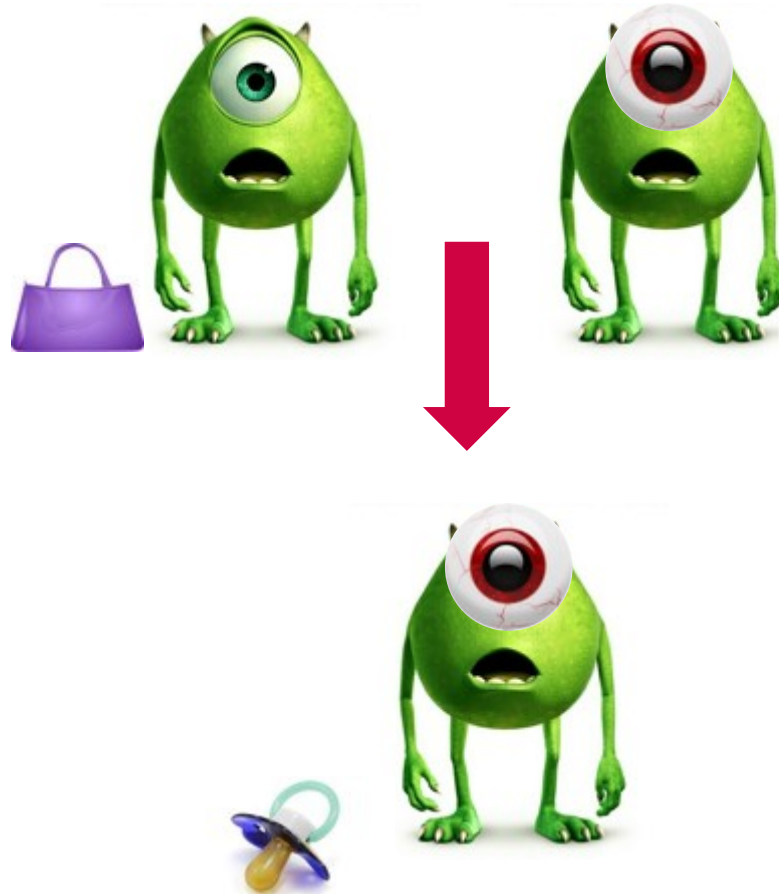


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Trait = characteristics



Where did this baby monster get his brown eye from?



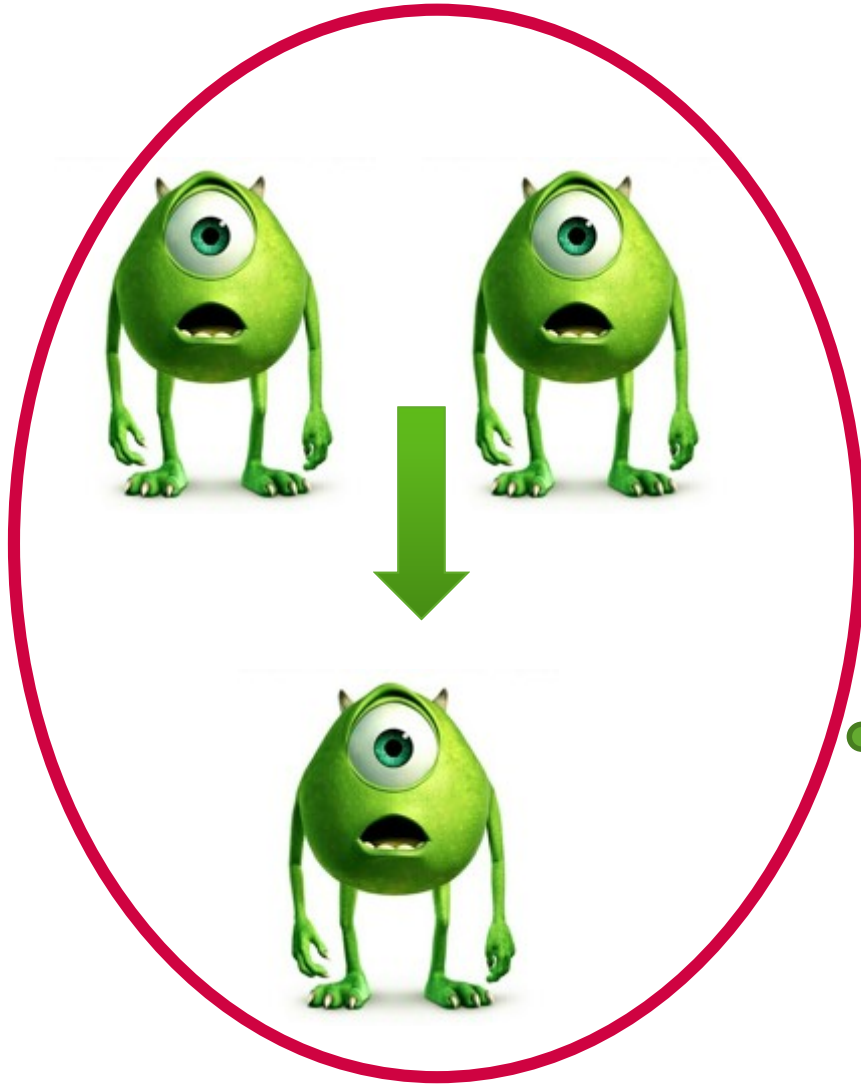
This is an example of an **inherited characteristic!**



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Which is correct?



OR

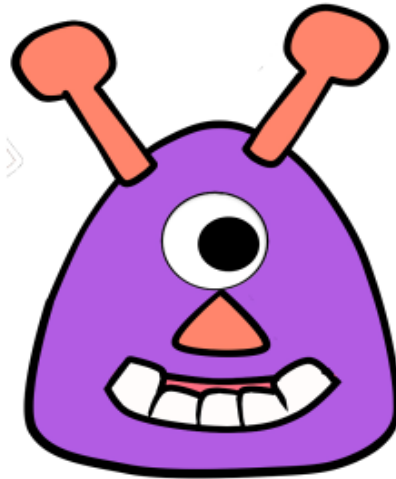


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Alien Babies



Zacron



Kharlan

Zacron and Kharlan want to have a baby together, they want to find out what their baby will look like and we're going to help them with that.





1) Flip a coin and circle the characteristics that Zarcon and Khrelan will pass to their baby.

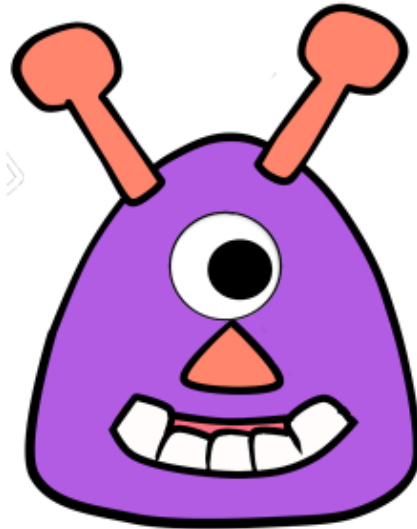
2) Make their baby!

3) Stick your alien baby on the wall.

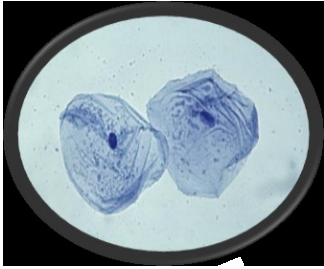
	Heads	Tails
Skin Colour		
Face Shape		
Blue Spots		
Antenna		
Eye Number		
Nose		
Mouth		



What could their babies look like?



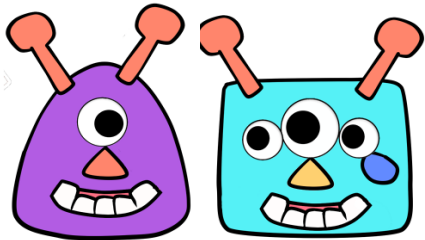
Summary of the day



- Learned the basic structure of animal cells and looked at your own cells.



- Looked at some of your own characteristics

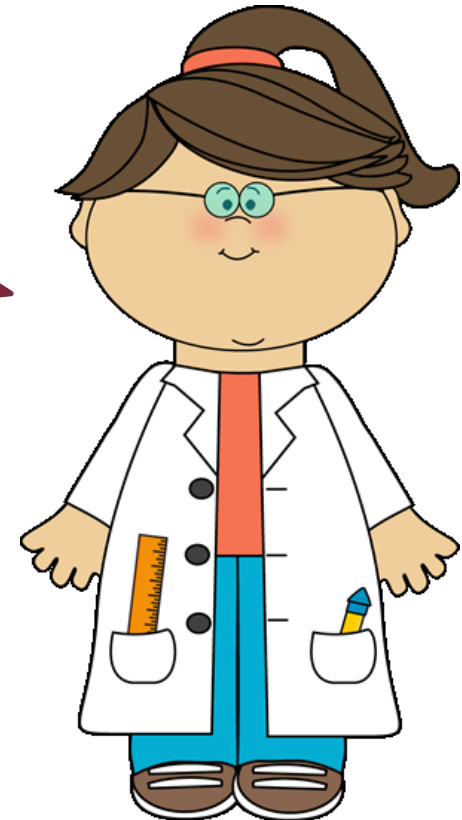


- Learned about what DNA does, how it is passed on to children and about the types of characteristics that can be inherited.



Feedback

Please write down
three words on our
wall that describe
your experience
today!



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Fun

Boring

Informative

Inspiring

Rewarding

Uninteresting

Interesting

Confusing

Enjoyable

Difficult

Thought-provoking

Frustrating

Dull



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