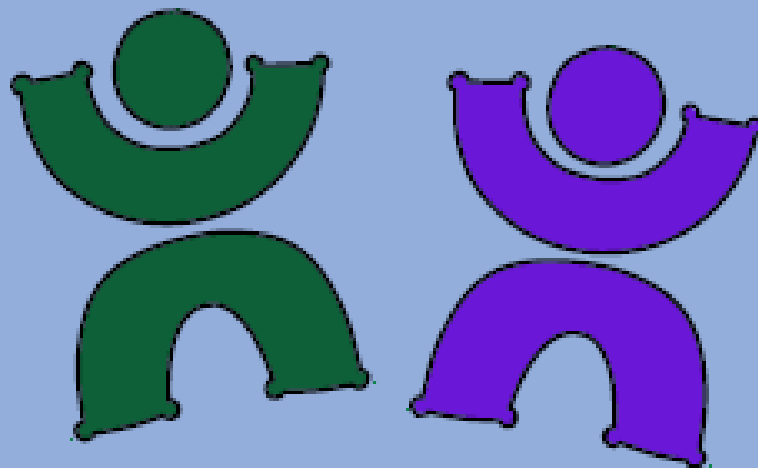


# Through the Microscope

my lab book!



Name .....

Paediatric Gastroenterology Research team, Addenbrooke's Hospital

## Science and Research Day

Friday 26th August 2022

Hello, and welcome to our science day!

Our team works in the lab using science to see how we can make the lives of our patients better. But we couldn't do that without you. So today we want to share some science activities with you.

We have 5 science stations for you to explore. You will be helped at each station by your lab assistant. But don't worry - they aren't the mad scientists whose labs are more like evil lairs (like you see on the TV!).

Please use your lab book however you like - it's a guide for you as you work through the different science stations:

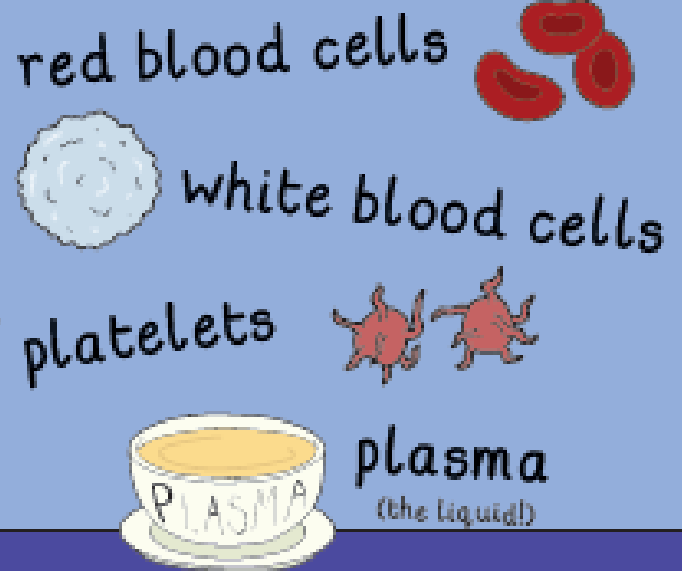
- Making blood soup!** (your lab assistant will be Francesca)
- Looking at your own cheek cells!** (your lab assistants will be Komal and Claire)
- Pipette challenge!** (your lab assistant will be Federica)
- Using a microscope!** (your lab assistant will be Dr Zilbauer)
- Making a cell!** (your lab assistant will be Greg)

The chances are that someone who is still a young person today will go on to develop a scientific breakthrough. Why couldn't that be you?

Have fun and enjoy your day!

Blood is a special fluid in your body. It's made up of three main ingredients mixed into a liquid (a bit like soup!)

Can you fill in the blank spaces below? It will help you understand the job of the different parts of your blood!



# BLOOD SOUP!

\_\_\_\_\_ have the important job of carrying oxygen all around your body!

\_\_\_\_\_ stick together and make a scab to stop you bleeding!

\_\_\_\_\_ help your body fight off germs, bacteria and infections!

\_\_\_\_\_ makes up over 50% of your blood, and helps transport all the other blood parts around your body!

my lab notes...

# CHEEK CELLS!

The aim of this experiment is to make a microscope slide with your own cheek cells! We'll stain the slides with a special dye so you can look at them through the microscope!

## instructions:

1. Put on your gloves
2. Take a clean cotton swab and gently run it around the inside of your cheek (you don't need to rub very hard)
3. Rub your swab onto the slide for 2-3 seconds, then drop your swab in the special dustbin.
4. Ask your lab assistant to dye your slide with the methylene blue
5. Place a cover slip on your slide
6. Your slide is now ready!

This is a special blue liquid that stains the cells so they are easier to see

Can you draw what you see?

(Your lab assistant can help you to label your drawing)

Can you see...  
the cell wall?  
the cytoplasm?  
the nucleus?

my lab notes...

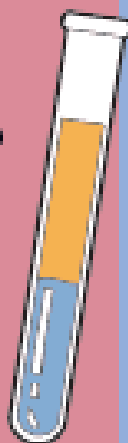
# PIPETTE

## challenge!

A pipette is a common piece of lab equipment, and scientists use them to measure and move very accurate amount of liquids.

You are going to learn to use pipette - this can be much trickier than it seems!

We have prepared a colourful mix of water and oils for you to use! We chose water and oil because they are held together by different chemicals bonds that means they will not mix!



How did you get on? Was it as easy as you thought? Can you write or draw about what you did in your lab notes?

my lab notes...

Using a...

# MICROSCOPE



Here you can take a look at some prepared slides through the microscope! Do they look different to how you expected?

Can you tick off each slide as you look at them?

my lab notes...

Pine leaf

Coprinus Mushroom Set

Sunflower Stem

Young Root of Broad Bean

Onion Epidermis

Tilia Stem

Pumpkin Stem

Lilium Ovary

Lilium Anther

Zea Stem

Rabbit Spinal Cord

Nymphaea of Aquatic Stem

Rabbit Testis

Hydrilla Verticillata Leaf

Dog Cardiac Muscle

Pine Stem

Dense Connective Tissue

Dog Oesophagus

House Bee Mouth Parts

Human Blood

Honeybee Worker Leg

Dog Skeletal Muscle

Hydra

Pig Motor Nerve

Dog Stomach

Did you learn the name of the different parts of the microscope?

Which slide was the most interesting?

# making a cell...

What are cells?

All living things are made up of cells. Cells are very small and you normally need a microscope to see them. Living things might be single cells or they might be very complex such as a human, a dog or a tree!

What do cells do?

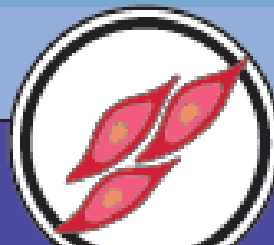
Cells are responsible for everything that your body can do! There are over 200 different types of cells in your body and each type has a different job to do!



epithelial cell



red blood cell

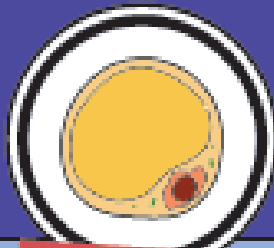


muscle cell

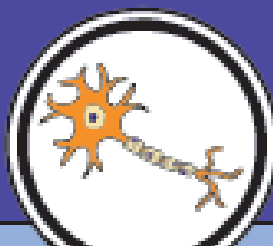


white blood cell

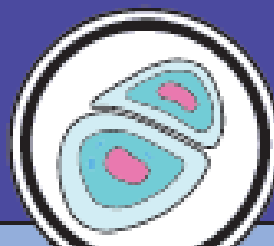
These are all SPECIALISED CELLS. This means they have special jobs to do to make your body work! They help to absorb your food, transport oxygen around your body and even help you to move!



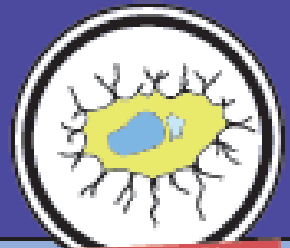
fat cell



nerve cell



cartilage cell



bone cell

Can you use the playdough to make your own cells? You could make one type of cell or lots! You can even take your cells home!

See if your lab assistant can guess which cell you made! They can tell you more about the different types of cell too!

What about stem cells?

STEM CELLS are another type of cell - they are your body's way of repairing itself! Unlike specialised cells, stem cells are able to continuously make copies of themselves. They can also change into more specialised cell types.

Stem cells help you grow and mend your body's tissues throughout your life!



A little bit of extra space - use it in any way you like!