

EASTER BUSH SCIENCE OUTREACH CENTRE



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



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Welcome to the Hospital for Small Animals



Pet Accident & Emergency



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The Small Animal Hospital



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Who works there?



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What happens when an animal is take in?



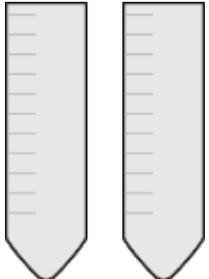
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The Royal (Dick) School
of Veterinary Studies



Patient's details:
Name:
Age:
Weight:
Symptoms:
Other information:

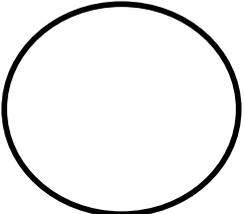
Vital Signs
Heart rate:
Breathing Rate:
Temperature:

Blood Analysis



Normal Patients

Microscope Analysis



Notes:



This is Penny, our receptionist.
She takes all the details of the pet and makes sure the vets and nurses know the patient is here.



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Here is our first patient



Patient's details:

Name: Buddy

Age: 2 years

Weight: 7kg

Symptoms: Buddy was healthy and happy but suddenly collapsed an hour ago. He is very floppy and looks very ill. The owner noticed that his gums were a bit paler than normal and he was breathing a little bit fast.



Emergency and Critical Care

Carolyn, one of our qualified Registered Veterinary Nurses has come with a trolley to collect Buddy from reception.



This is Emily, she is the Head Nurse in our Intensive Care Unit. Here she is looking after a dog in an oxygen bed.

Buddy is taken to the Intensive Care Unit where he is looked after by the Emergency and Critical Care team.



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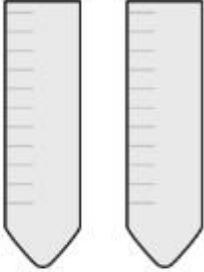
Can you help Buddy?

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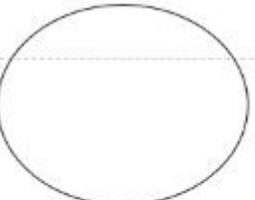
Patient's details
Name: Buddy
Age: 2 years
Weight: 7kg
Symptoms: Buddy was healthy and happy but suddenly collapsed an hour ago. He is very floppy and looks very ill.

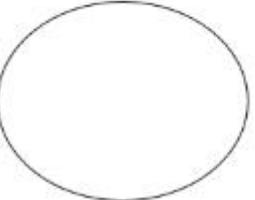
Vital Signs
Heart rate:
Breathing Rate:
Temperature:
Other information:

Blood Analysis


Normal Patient

Microscope Analysis of Blood

Normal 

Patient 

Notes

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Today you are going to be examining Buddy.

Fill his patient notes as you discover new information.



What are these instruments called?



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Checking Buddy's vital signs



Normal temperature



Pale gums



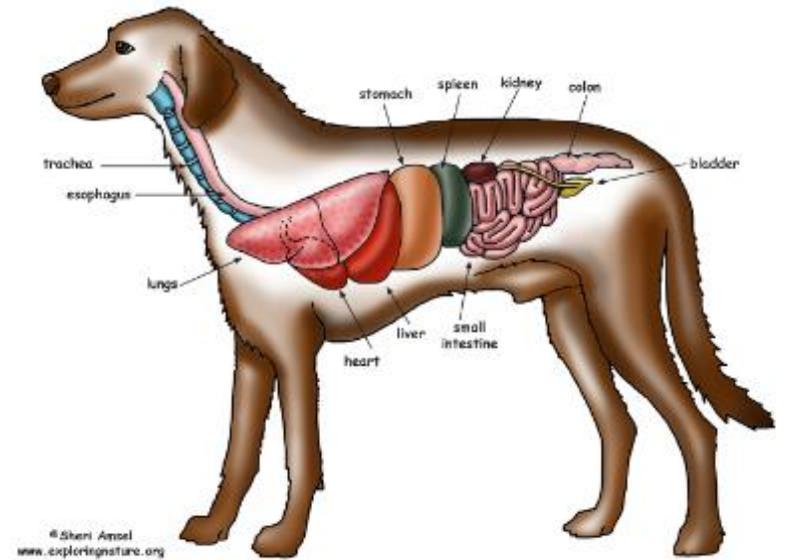
Practice using a stethoscope



1. Place the earpieces in your **ears**.
2. Position the bell of stethoscope on the left upper part of the chest, apply gentle pressure .
3. **Listen to the heart for a full minute.** You should hear the normal sounds of the human heart, which sound like “lub-dub.”



Measuring a dog's heart rate



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What does your heart do?

Think and write your answer on the whiteboard:

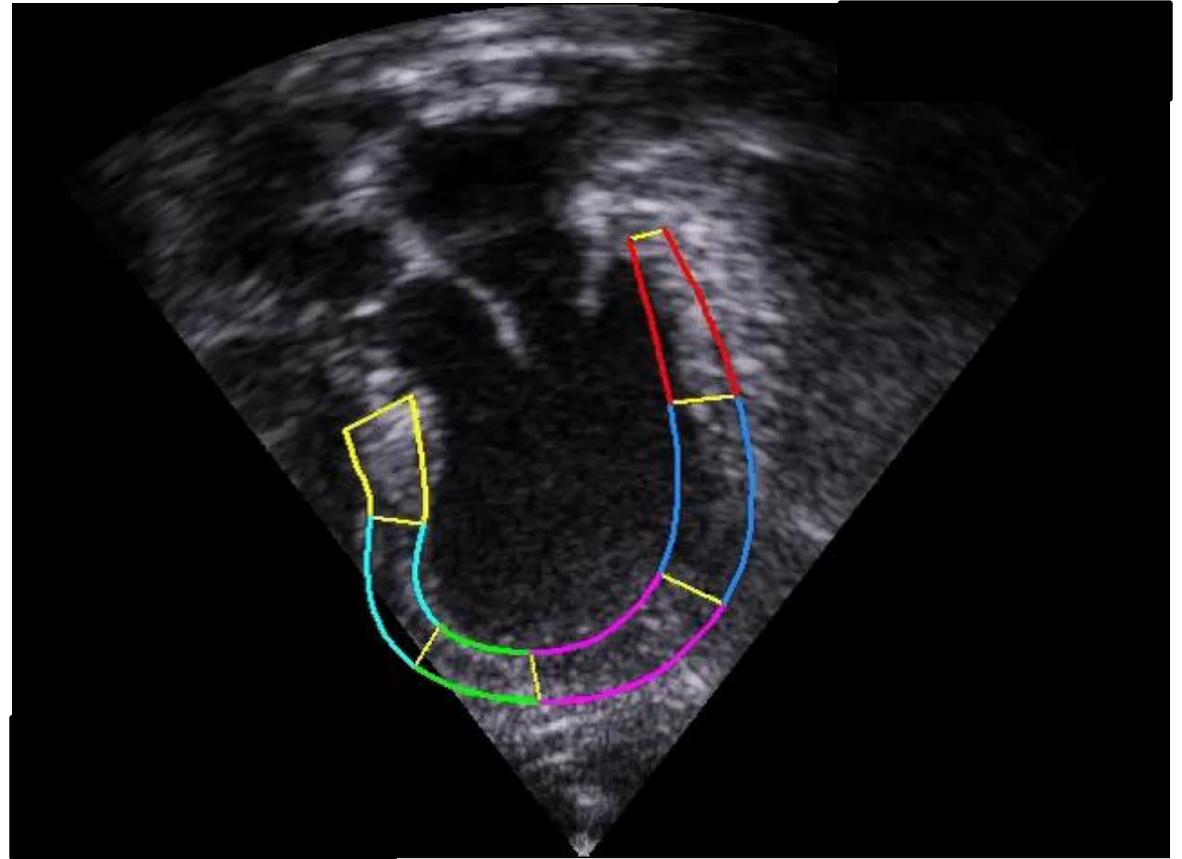
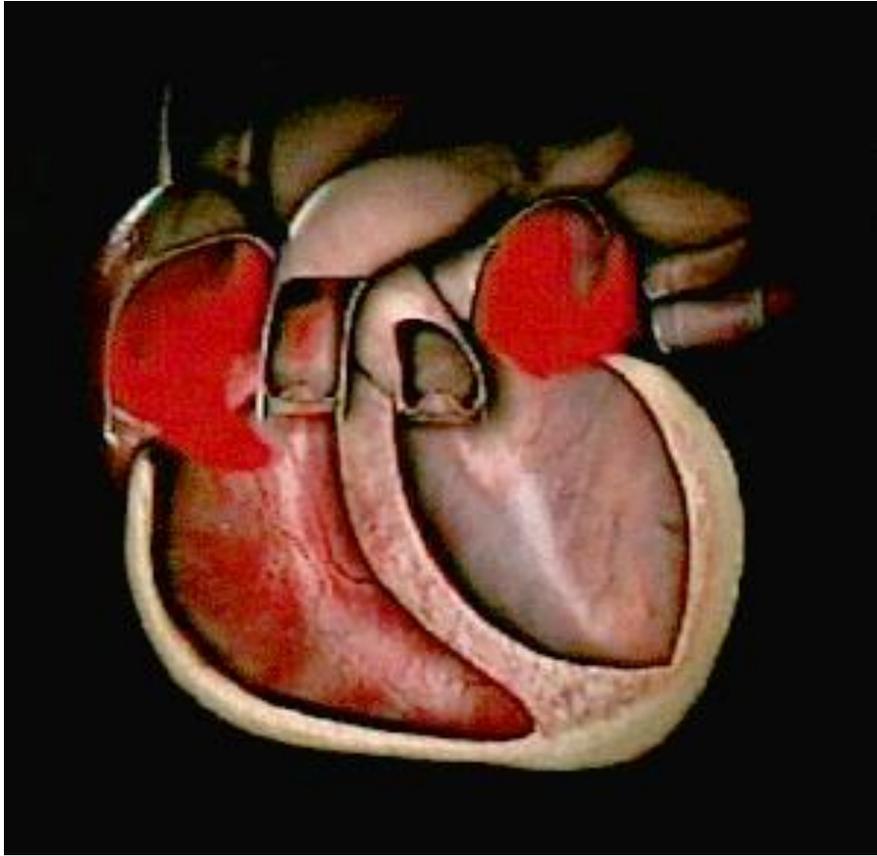
A) It pumps blood around your body.

B) It transports oxygen around your body.

C) It transports food around your body.



How does your heart do it?



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24/05/2011 13:15:31

V

5

10



95
HR

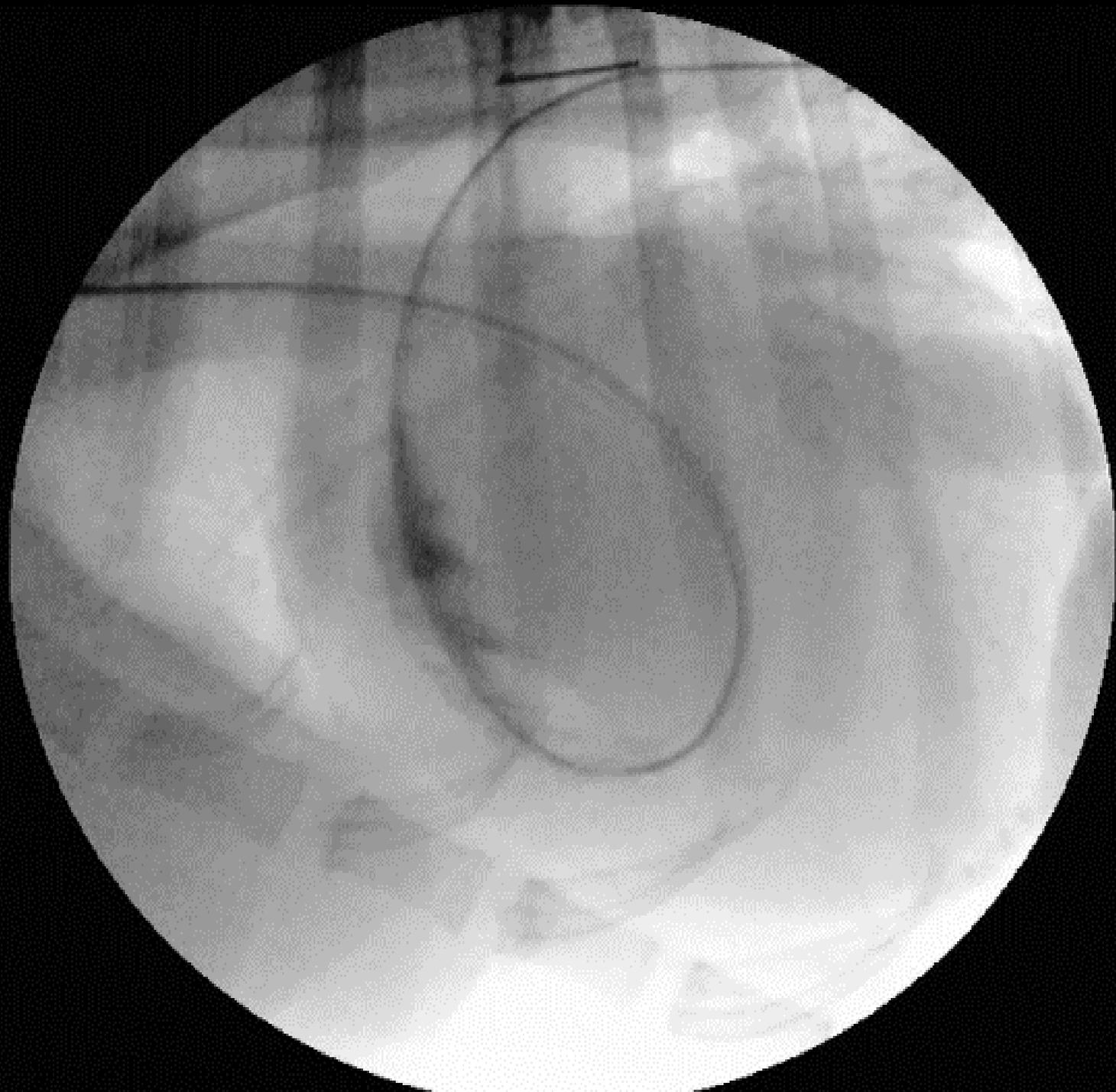
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.85
-.85









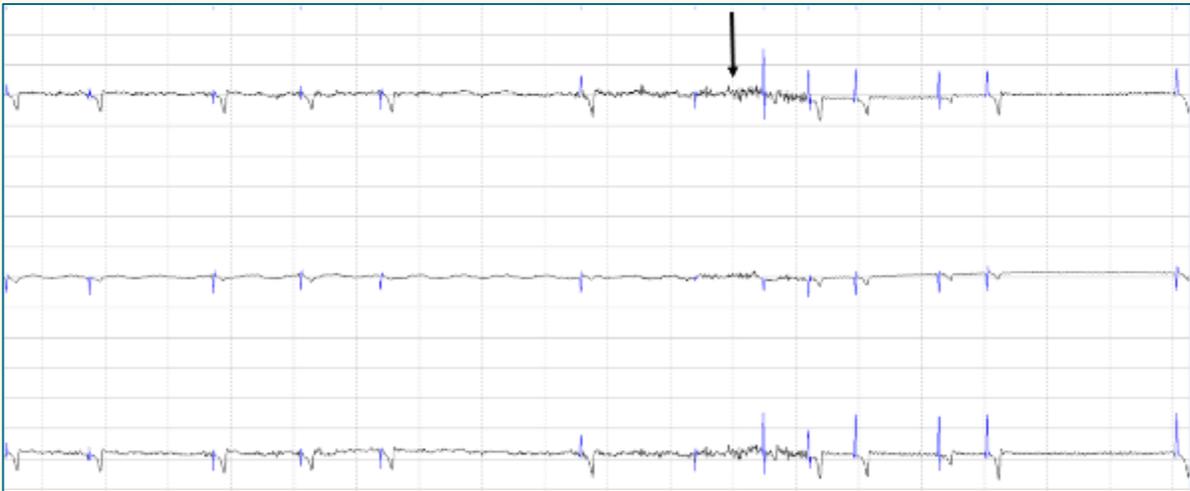
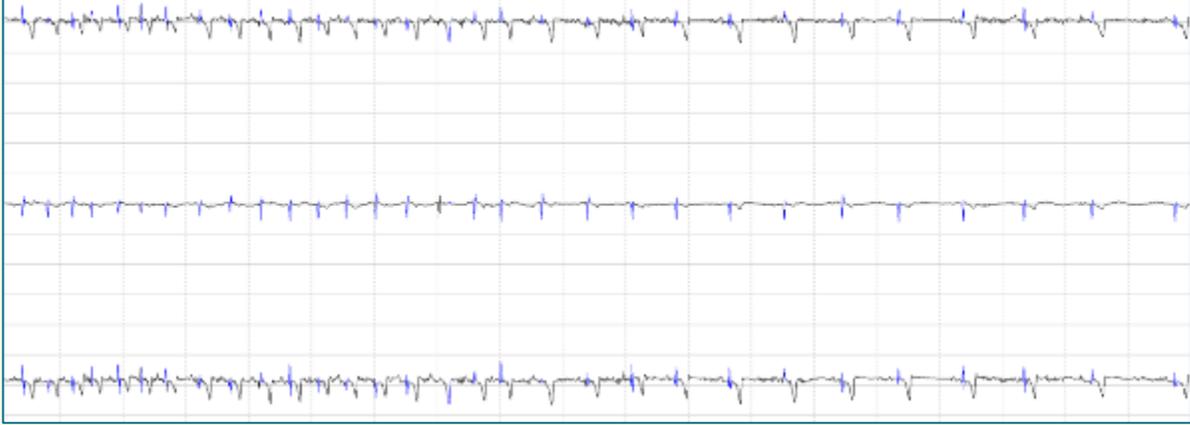
Other ways to measure heart rate

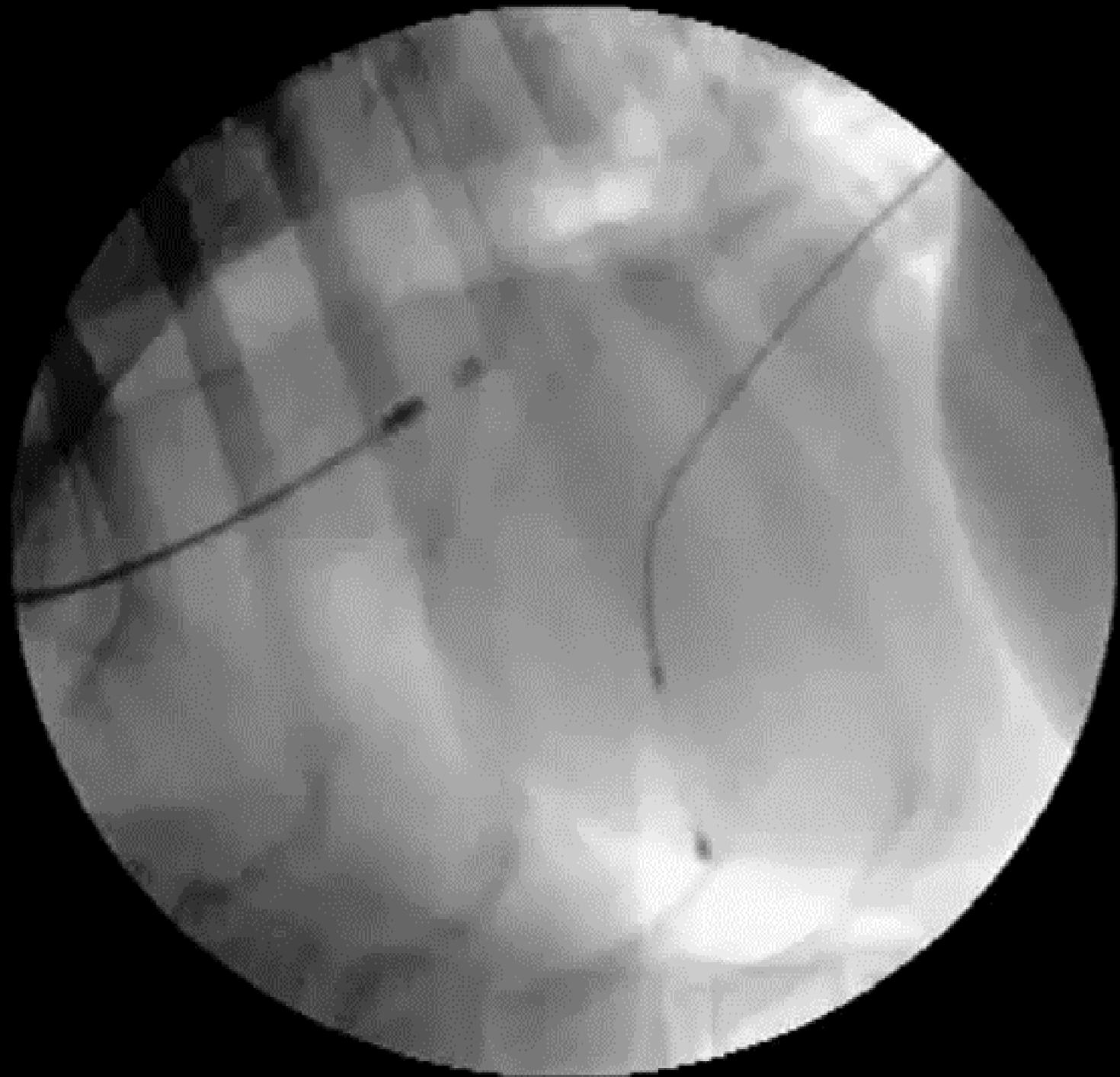


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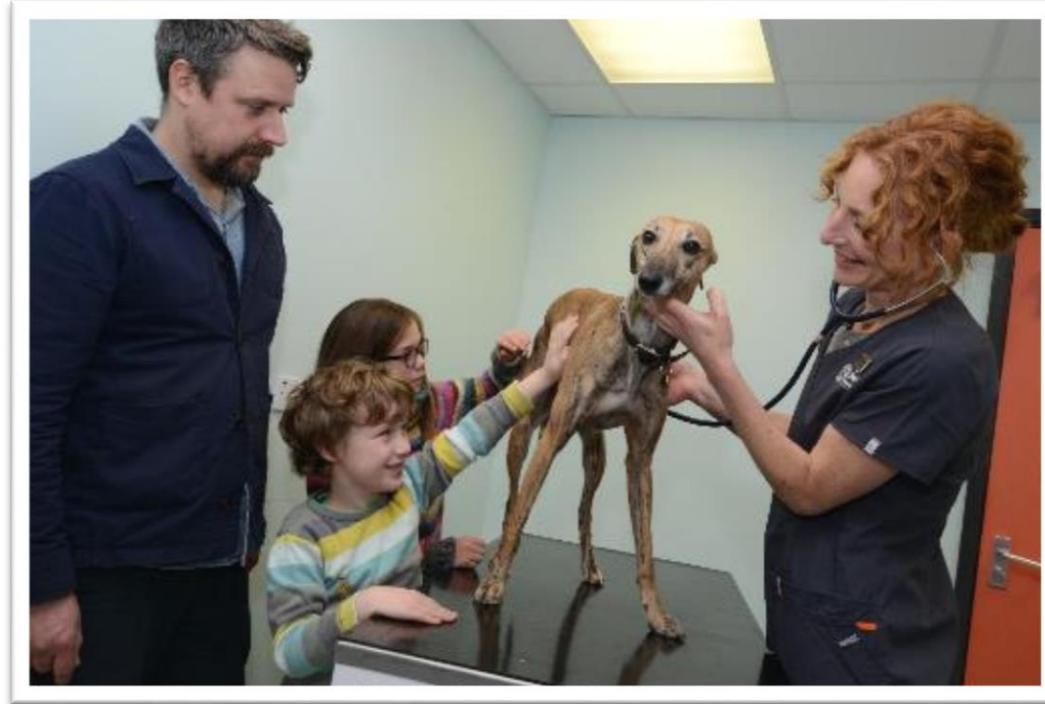
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Buddy's heart



The nurse is measuring Buddy's heart rate
She counts 180 beats per minute



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Is Buddy's heart rate normal?

Weight of Dog	Healthy heart rate (BPM)
0 to 13 kg	100 - 160
13 to 40kg	60 - 100
More than 40kg	60 - 80



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Name: Buddy

Age: 2 years

Weight: 7kg

Symptoms: Buddy was healthy and happy but suddenly collapsed an hour ago. He is very floppy and looks very ill.

Other information: His gums are pale.

Vital Signs

Heart rate: 180 BPM



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How much blood is in your body?

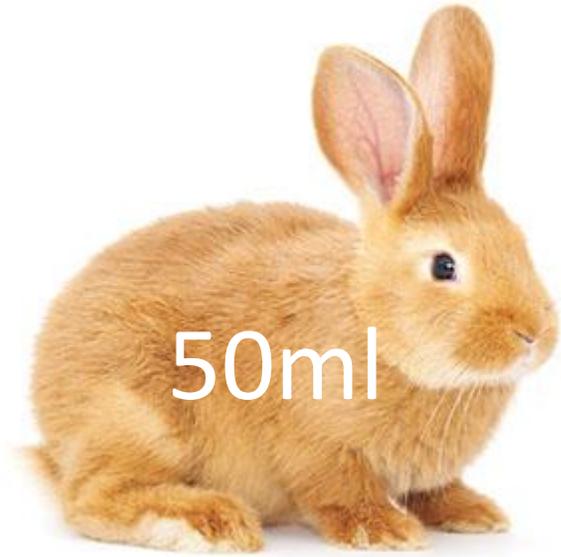
Most of you have about 4000ml!



Animal blood volumes



2ml



50ml



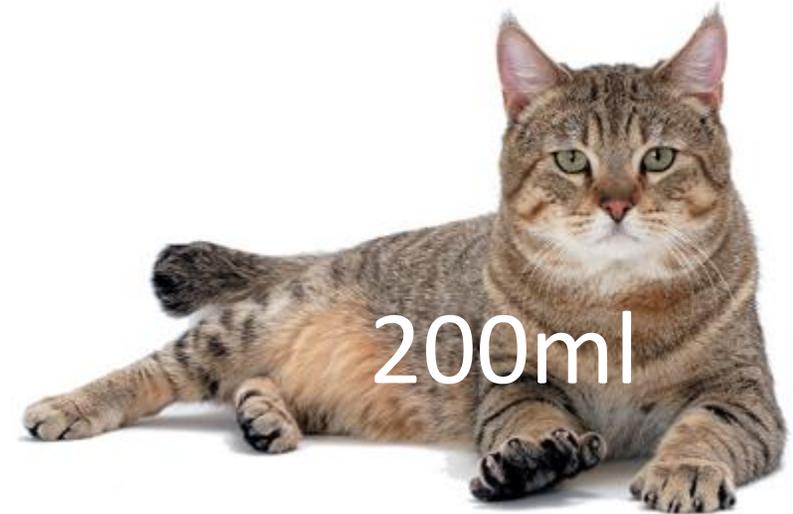
4000ml



25ml



2000ml



200ml



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How is blood taken?



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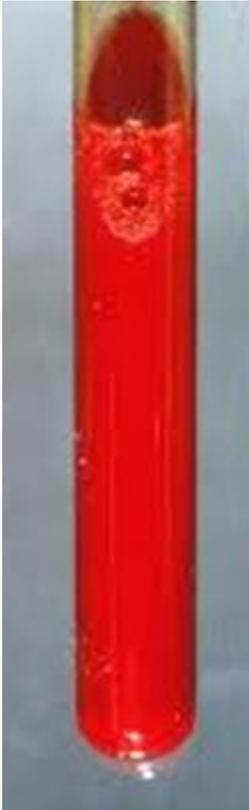
Where is the blood sent to?



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Analysing blood



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What is blood made up of?



red blood
cells



white blood
cells



platelets



Plasma



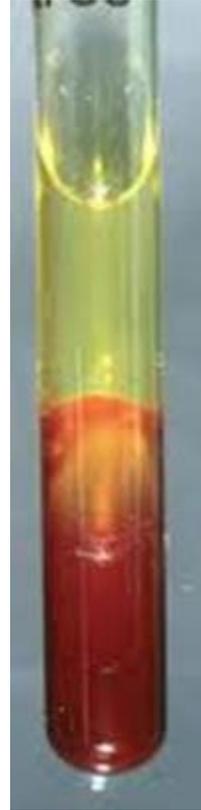
The liquid part of blood



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Analysing blood



Plasma

White blood cells and platelets

Red blood cells



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Safety first!



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What is wrong with Buddy's blood?



Normal blood



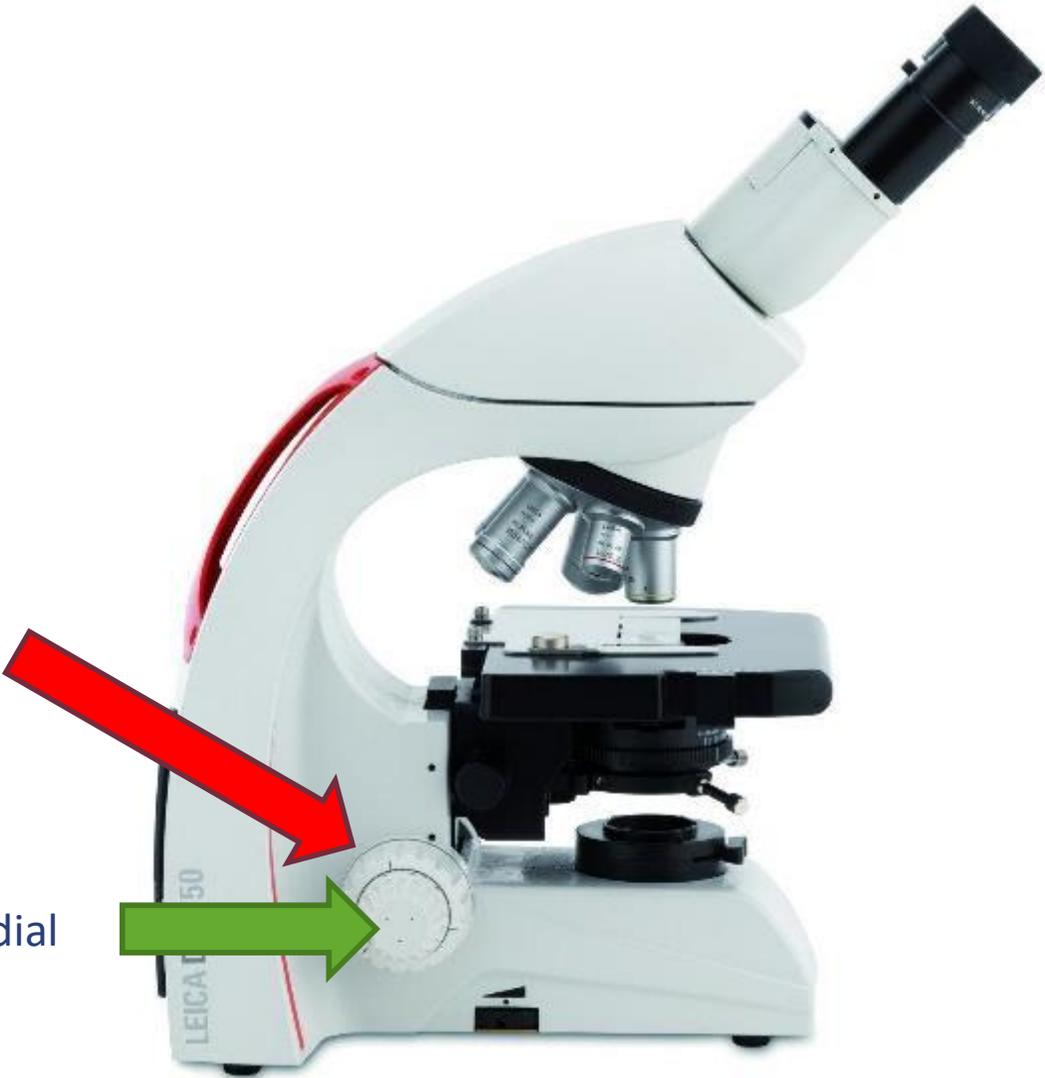
Buddy's blood



What instrument do we need to see blood cells?

✗ Don't touch the outer dial

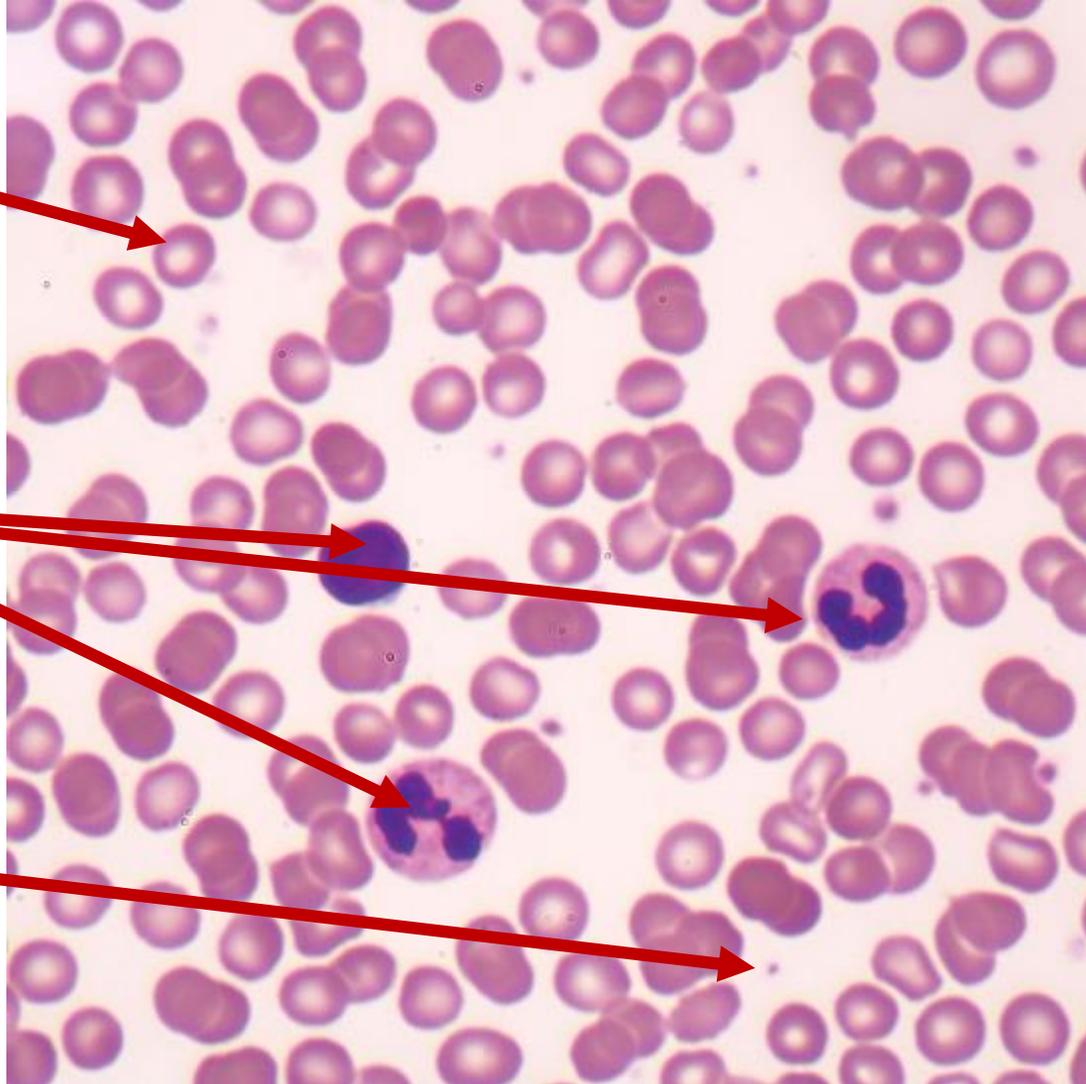
✓ Touch the inner dial



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Can you see the three different blood cells?



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Record your results

- You can use coloured pencils
- You can label your picture with the names of the cells



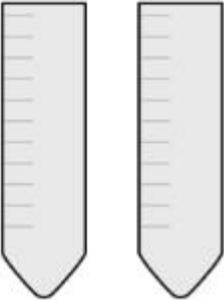
Patient's details

Name: *Buddy*
Age: *2 years*
Weight: *4kg*
Symptoms: *Buddy was healthy and happy but suddenly collapsed an hour ago. He is very floppy and looks very ill.*

Vital Signs

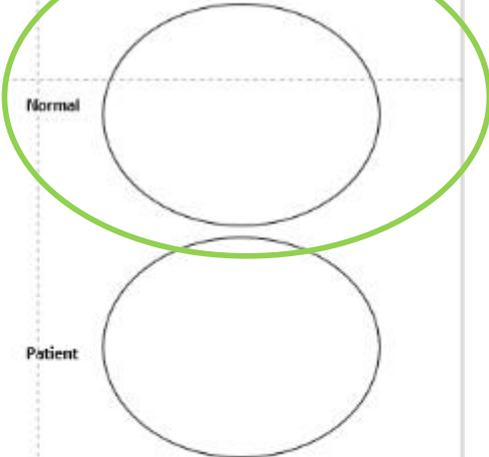
Heart rate:
Breathing Rate:
Temperature:
Other information:

Blood Analysis



Normal Patient

Microscope Analysis of Blood



Notes



Use the microscopes to look at real blood



Did you see ... ?

Red blood cells

White blood cells

Platelets

Plasma



Lunch

In the View café
11:45am - 12:15pm



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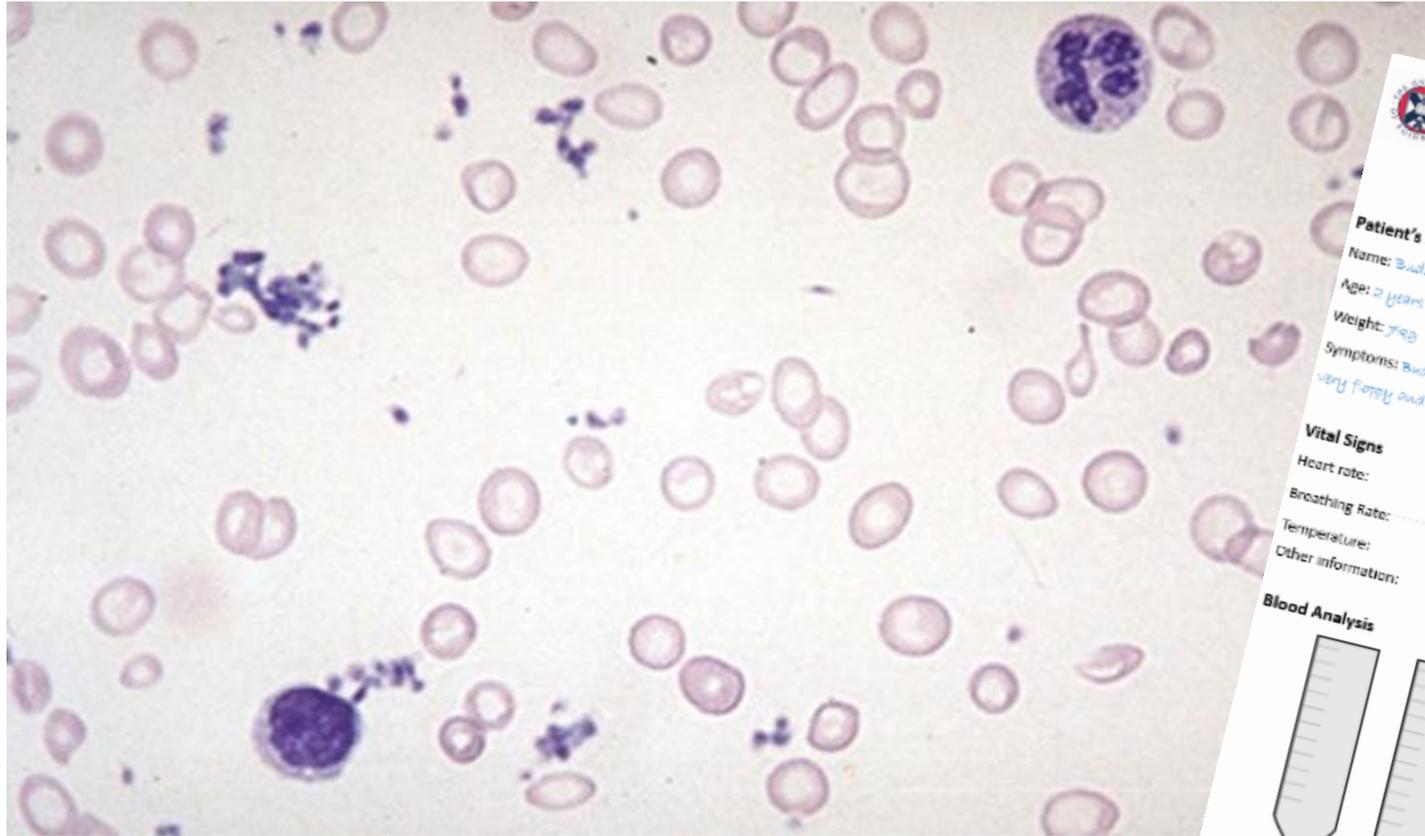




Meet the Vets & Vet Nurses



Buddy's blood smear....



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Patient's details
Name: Buddy
Age: 2 years
Weight: 7kg
Symptoms: Buddy was healthy and happy but suddenly collapsed an hour ago. He is very floppy and looks very ill.

Vital Signs
Heart rate:
Breathing Rate:
Temperature:
Other information:

Blood Analysis

Normal Patient

Microscope Analysis of Blood

Normal Patient

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What do these cells do?



red blood
cells



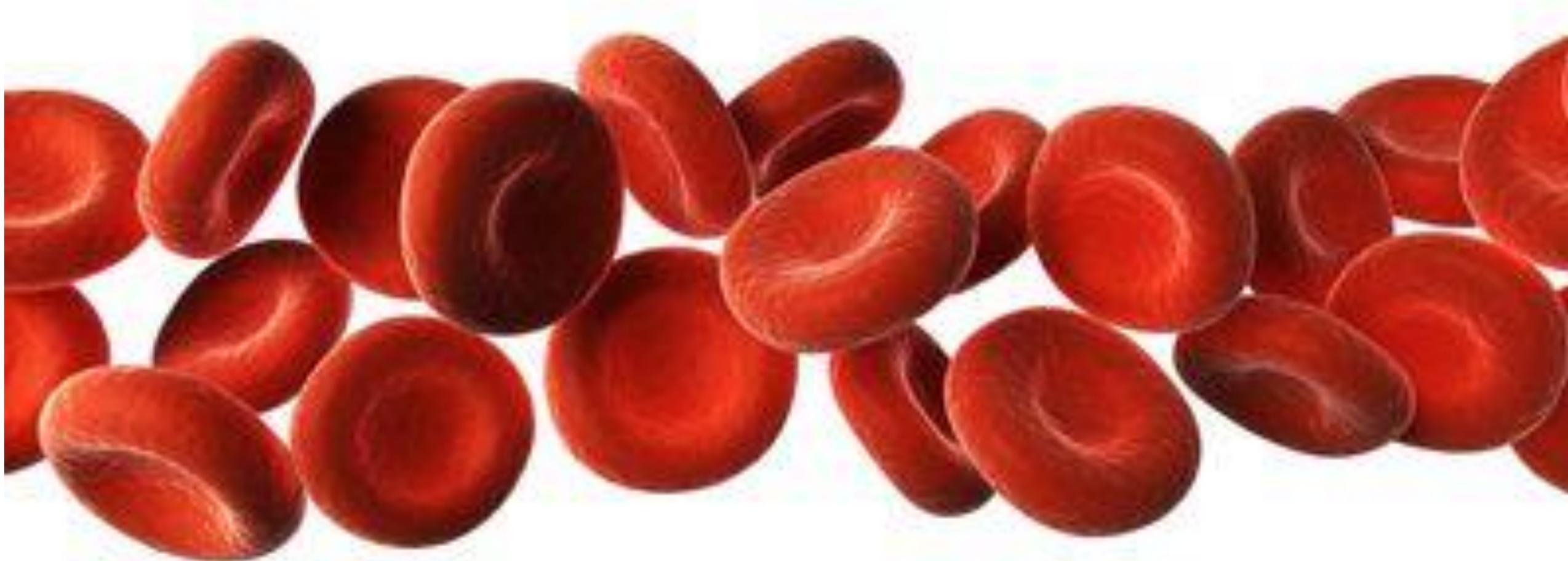
white blood
cells



platelets



Red blood cells carry



oxygen

White blood cells



fight germs



Platelets



stop bleeding



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Make a blood smear model



You will need:



Red and white modelling clay



Ruler



Petri Dish





Make some cells!

- 1) Write your name on the petri dish
- 2) Think about how many cells you need (use your microscope analysis)
- 3) Use your ruler to measure their sizes
- 4) Look at their shape
- 5) Stick them in the dish using a glue stick
- 6) Can you name them? Use the pen to write on the dish.
- 7) Can you remember what they do?



red blood cells



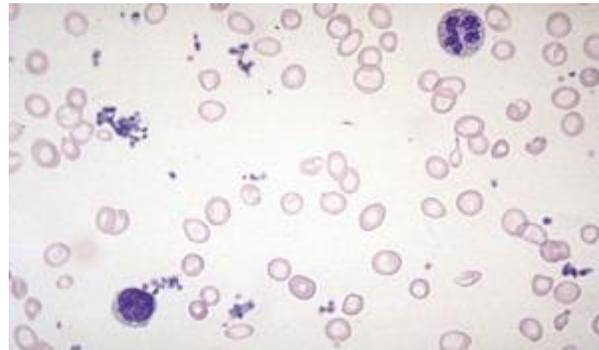
white blood cells



platelets



Final diagnosis- look at the evidence



Buddy has anaemia.



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What treatment do we need to give Buddy?

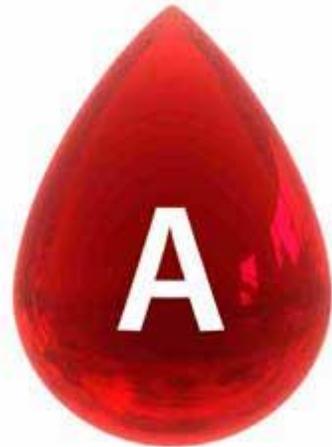


Transfusions can treat anaemia.

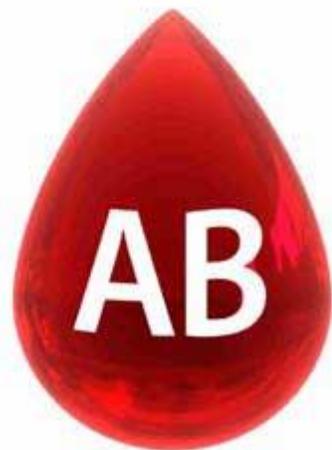
Dogs have more than 12 blood groups



Human blood types



Typing of blood donors and recipients is done before transfusion

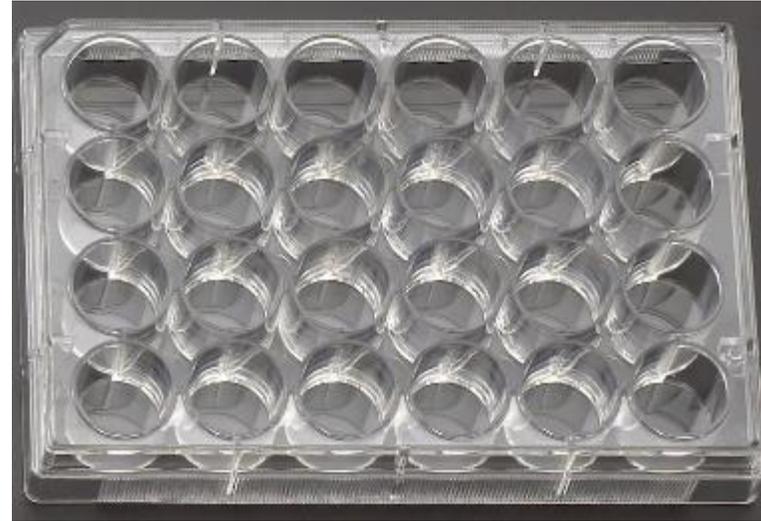


Blood Typing

You will need:



4 droppers



1 plate



4 tubes of "blood"



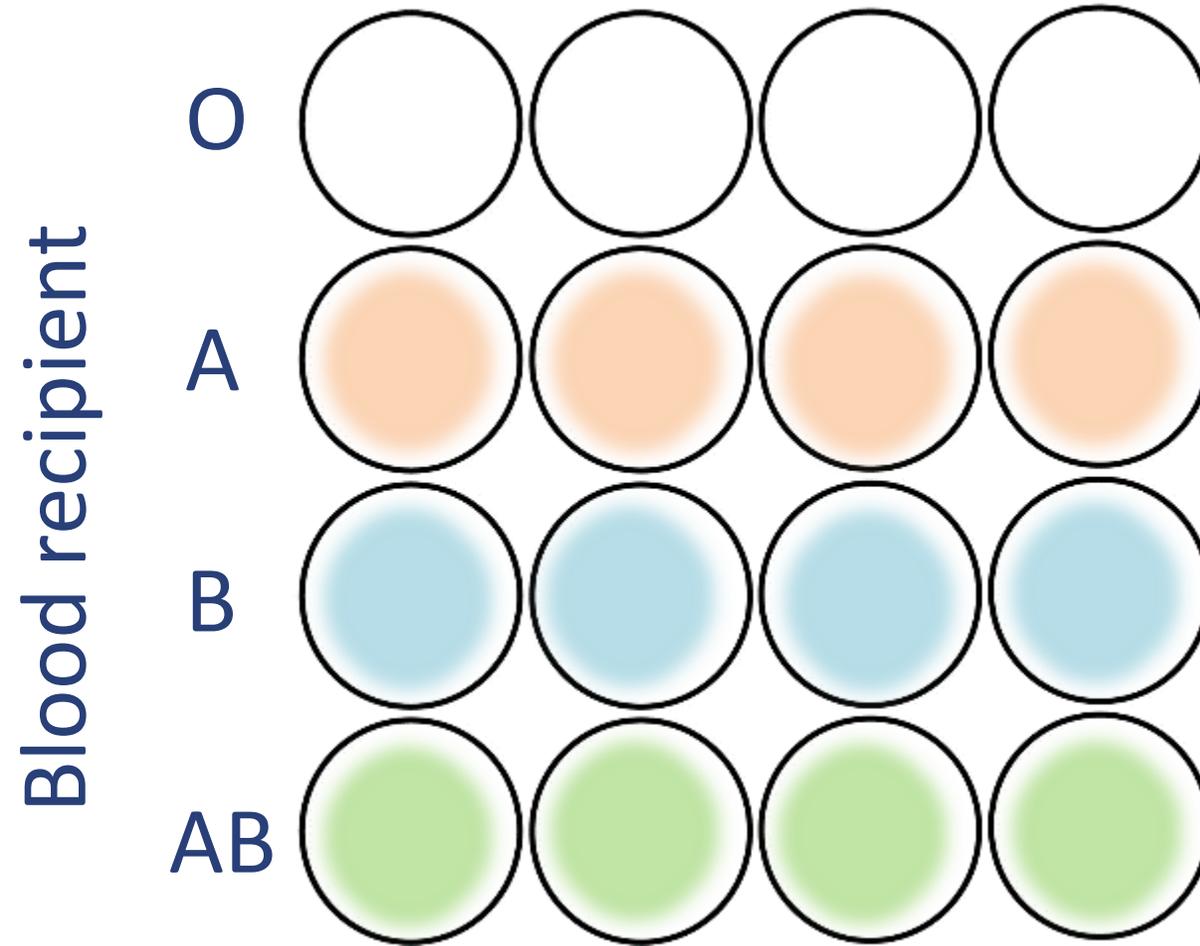
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Which blood can you receive?

1) Use the dropper to put 1ml of “blood” in each well.

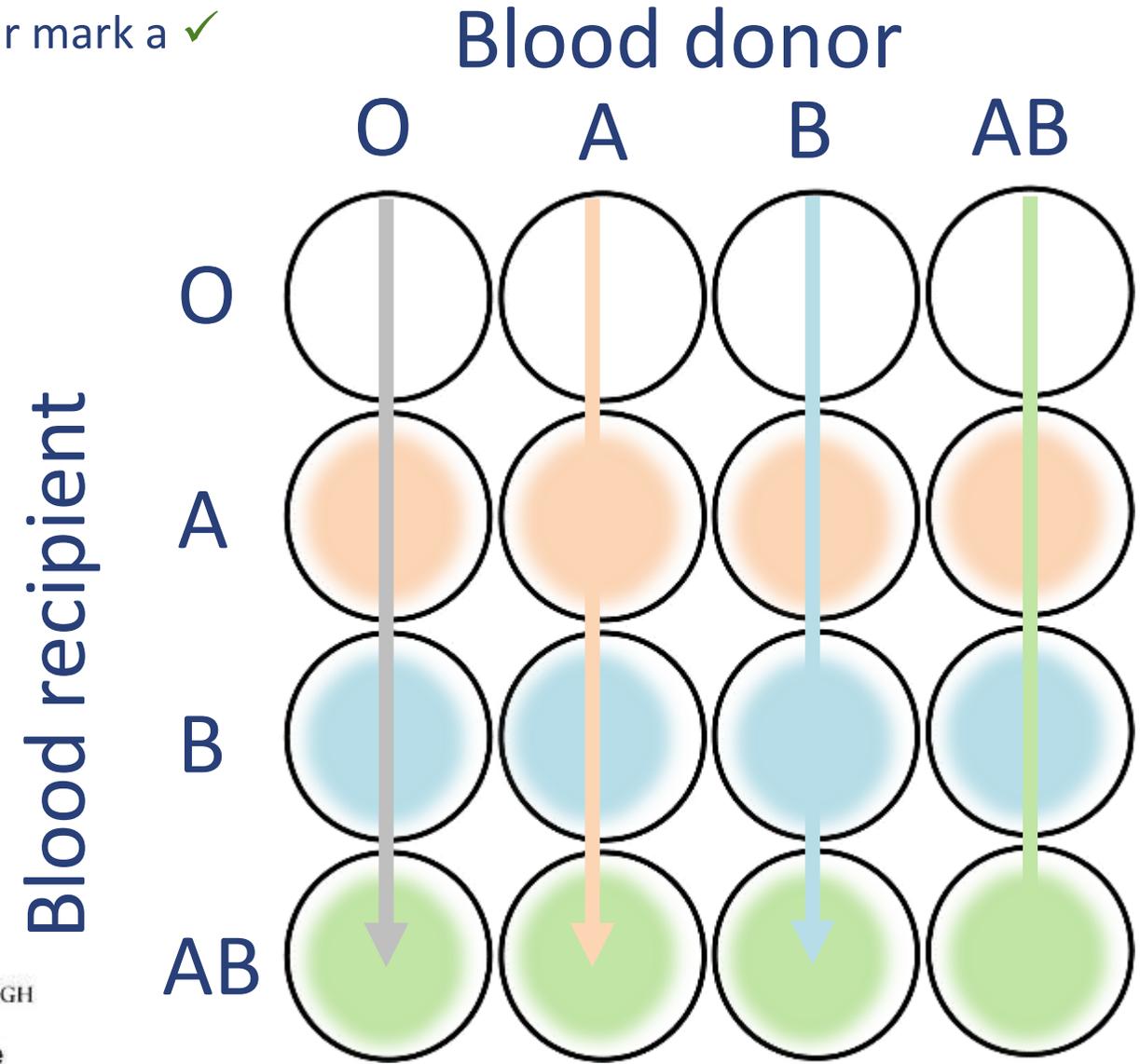




2) Use the dropper to put 1ml of “ donor blood” in each well

If the “blood” changes colour mark an X

If it does not change colour mark a ✓



If the colour stays the same then the blood can be given.



Blood donor

	O	A	B	AB
O	✓	X	X	X
A	✓	✓	X	X
B	✓	X	✓	X
AB	✓	✓	✓	✓

3) Buddy has type B blood, what blood can you give him?

Blood donor

	O	A	B	AB
Blood recipient				
O				
A				
B	✓	✗	✓	✗
AB				



Order the right blood for Buddy!



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**Thank you for helping
us treat Buddy!**



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