

let's talk 
science
partnership program

Diversity of Living Things

Agenda

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science

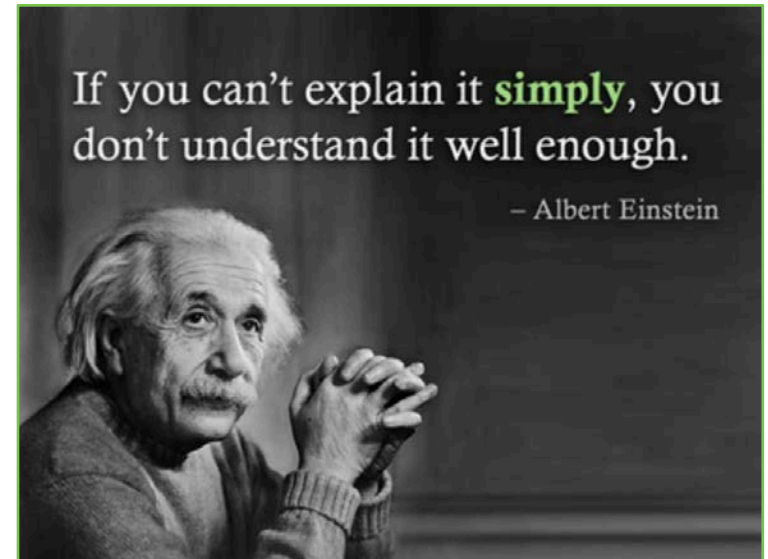
- Introduction
- Things On Earth
- Diversity Within Animals
- Blood!
- Matching Game
- Guilty or Innocent?
- Conclusion



Introduction

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- What do scientists do?
- Where are they?
- What is a biologist?
Ecologist?
- How does this type of science affect you?



Things on Earth

- Can you list some living and some non-living things?
- Today we will be discussing **5 Major Types of Life**.
- Can you guess how many types of creatures there are on Earth?



Things on Earth

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All Living Things



Kingdom

Phylum

Class

Order

Family

Genus

Species

All Non-Living Things



Rocks/Minerals

Water

Atmosphere

Organics

Inorganics

Energies

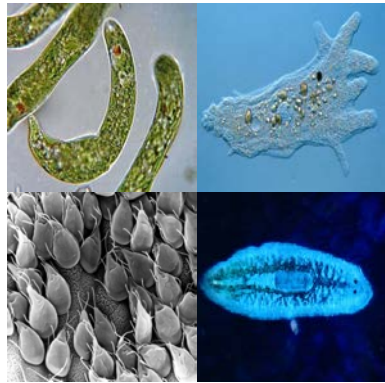
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Kingdoms Breakdown



Fungi

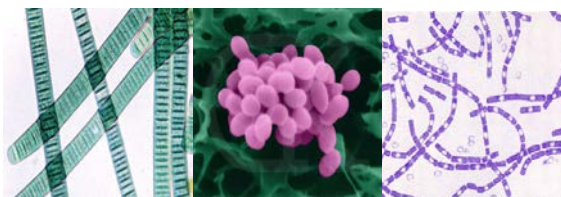
Protista



Plantae

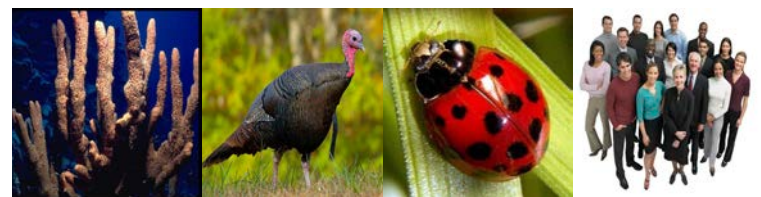


Monera



5 Major
Types
of Life

Animalia



The Diverse Animal Kingdom

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- Do you know some of the major animal groups?
- What sort of characteristics do these groups have?



Animal Kingdom let's talk science

Groups

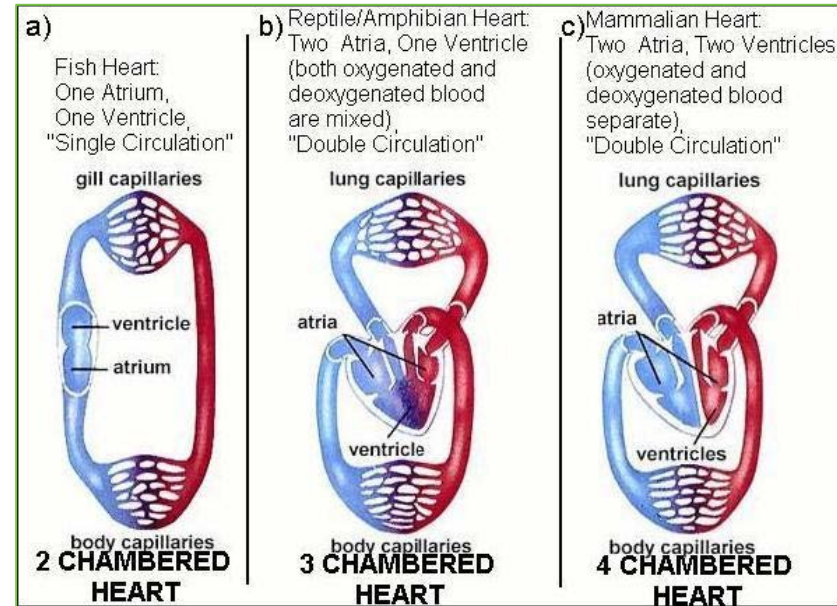
- Mammals (humans, lions)
- Reptiles (snakes, turtles)
- Amphibians (frogs, salamanders)
- Fishes (salmon, shark, bass)
- Birds (pheasant, eagle, sparrow)

- Anthropods (insects, spiders, lobsters)
- Molluscs (snails, clams, squids)
- Coelenterates (jellyfish, coral, hydra)
- Echinoderms (starfish, sand dollars, sea cucumbers)
- Worms (earthworms, leeches)
- Roundworms (tapeworms, pin worms)
- Flat worms (tape worms, planarians)
- Sponges (bath sponges, towering sponges)

How Can We Distinguish?

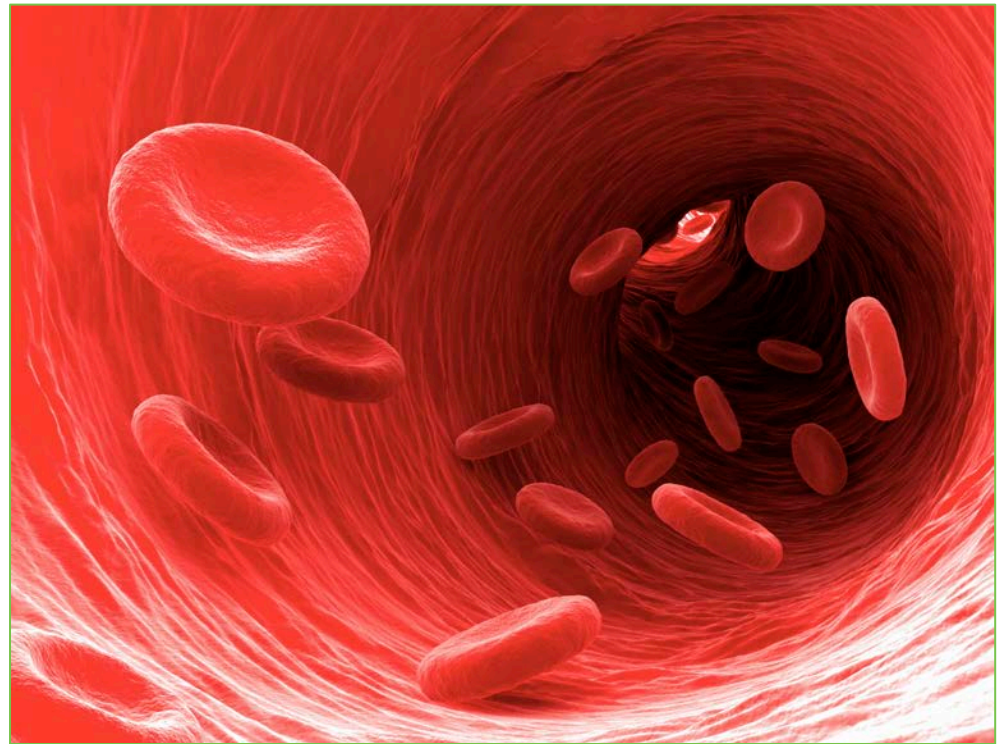
- What are some differences between the Animal Kingdom groups?
 - Skeleton
 - Hearts
 - Body Temperature
 - Red Blood Cells!

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Blood!

- Today we are going to compare the red blood cells of animal groups with backbones.
- First, there are 6 main functions of blood... How many can you list?
- What molecule lets blood cells carry oxygen?



Blood Activity

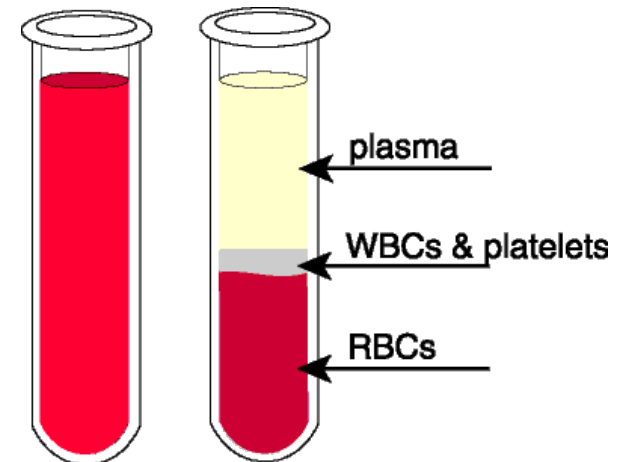
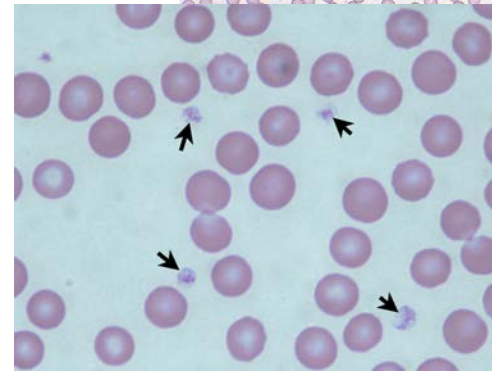
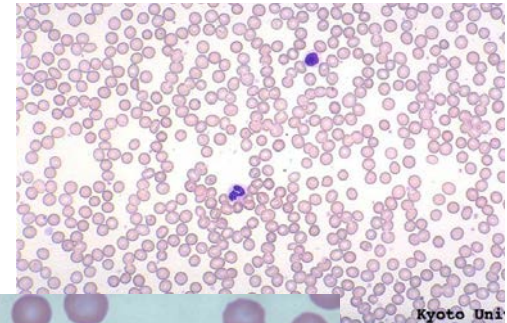
- We are going to split you into 5 teams.
- Make a model of human blood cells!
Can you describe this shape?
- Why did we give you both red and blue Play-Doh?



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What Does Blood Do?

- Carries oxygen from lungs (or gills, skin) to tissues
- Carries carbon dioxide from tissues to lungs (or gills, skin)
- Protection from disease
- Moving nutrients through the body to feed tissues
- Moving hormones through the body
- Some blood components produce a natural “patch kit”



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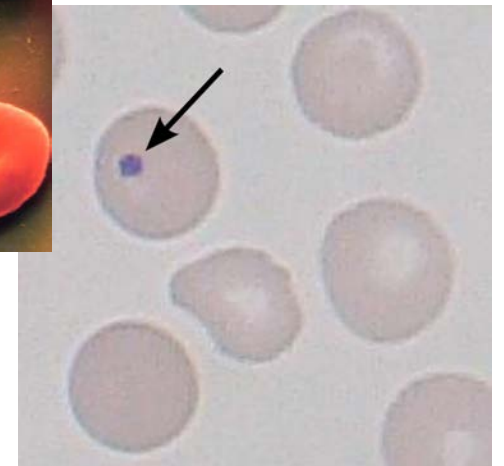
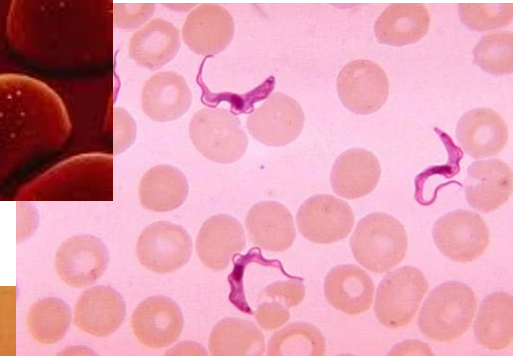
- Research scientists and pathologists
- Veterinarians
- Physicians and nurses
- Medical laboratory technicians



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What if YOU Were the Examiner?

- What would you look for?
- Parasites in blood (malaria, sleeping sickness)
- Shapes of red blood cell (sickle cell disease)
- Unusual cellular bodies or crystals (Howell-Jolly bodies)
- Blood chemistry (oxygen, sugar, haemoglobin, nutrients)
- Cell counts



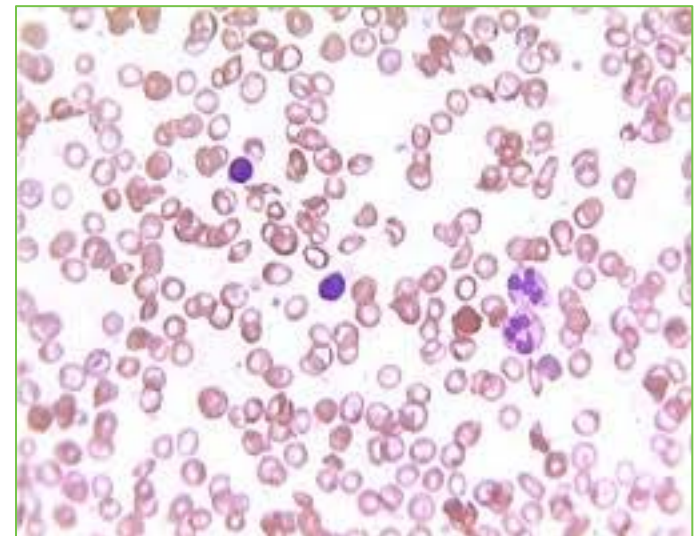
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Comparing Vertebrates

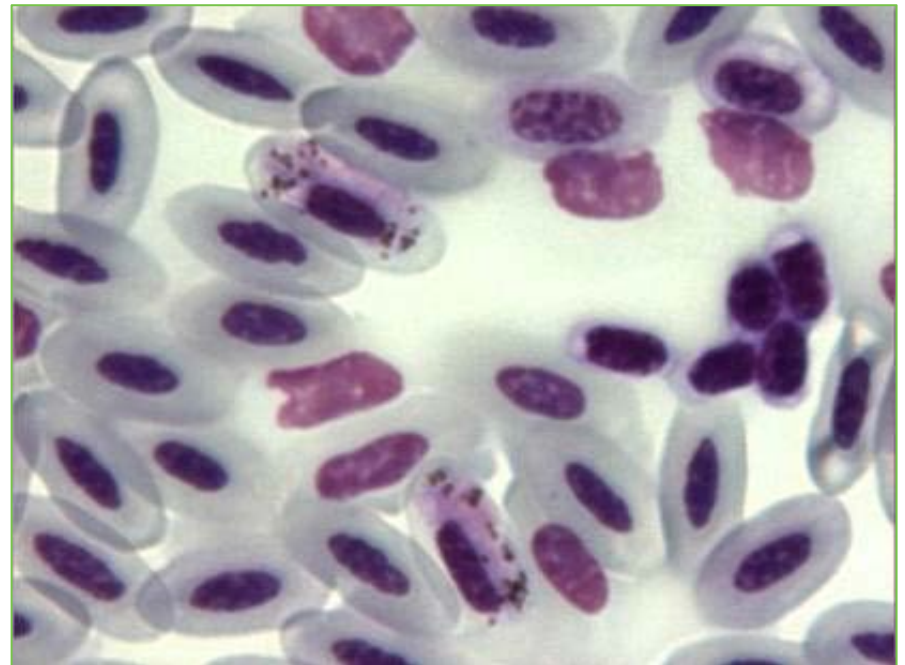
Activity

- We are going to compare the similarities between mammals, reptiles, fish, amphibians and birds.
- Given an animal type and a blood smear, try to guess which goes with which!
- Look at your cells... what are some differences?



Refining Our Guess!

- Cells can be described in many ways:
 - Presence of a nucleus
 - Cell shape (spherical, ovate, irregular)
 - Nucleus shape (spherical, ovate, irregular)
 - Size (very small, regular, very large)



Hints:

- Hold up your **amphibian!**
 - Oval-shaped red blood cells
 - Red blood cells have an oval-shaped nucleus
 - Red blood cells are relatively large
- Hold up your **bird!**
 - Oval-shaped red blood cells
 - Red blood cells have an oval-shaped nucleus
 - Incredibly high number of red blood cells

Hints:

- Hold up your **mammal!**
 - Round red blood cells
 - Red blood cells do not have a nucleus
- Hold up your **reptile!**
 - Oval-shaped red blood cells
 - Red blood cells have an oval-shaped nucleus
- Hold up your **fish!**
 - Some red blood cells that are almost round, some are oval-ish
 - Red blood cells have a nearly round nucleus

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Thanks for having us!