Year 6 Science Project

Evolution and Inheritance

Light

Animals including humans

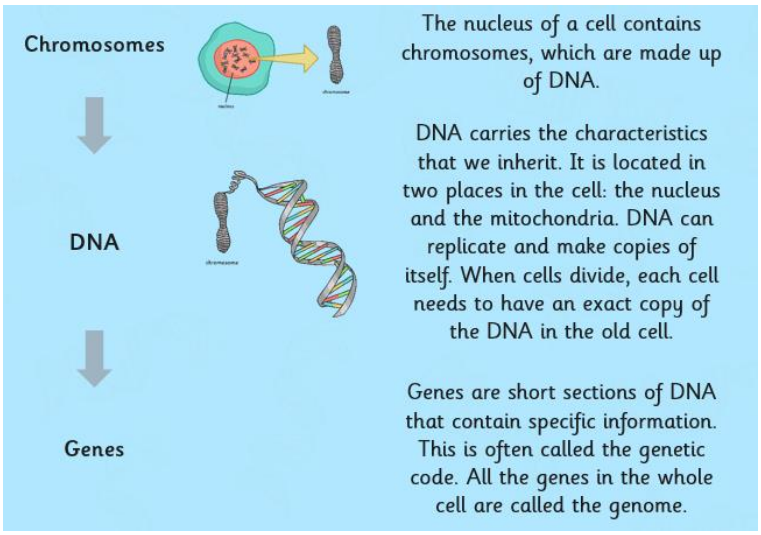
In our science project this week you are going to be completing some exploration work on different topics we have covered this year. Each day will have a different focus and you will be given some different ideas for activities. You **do not** have to complete these activities; these are simply ideas of what you could do to find out more, explain what you know or to just have fun exploring science!

Each day contains some useful background information, some useful websites and video links to help with your understanding and some potential activity ideas. However, it is up to you to be creative and have fun!

You can present your work however you want - the more creative the better! You can take photographs, videos, produce artwork, write poetry, draw graphs, or make a book (to name just a few). We would love to see your hard work so please send us an email on the class accounts 6G@ashdeneschool.net or 6B@ashdeneschool.net or post on the school twitter account.

Monday – Evolution and Inheritance: What is Evolution?

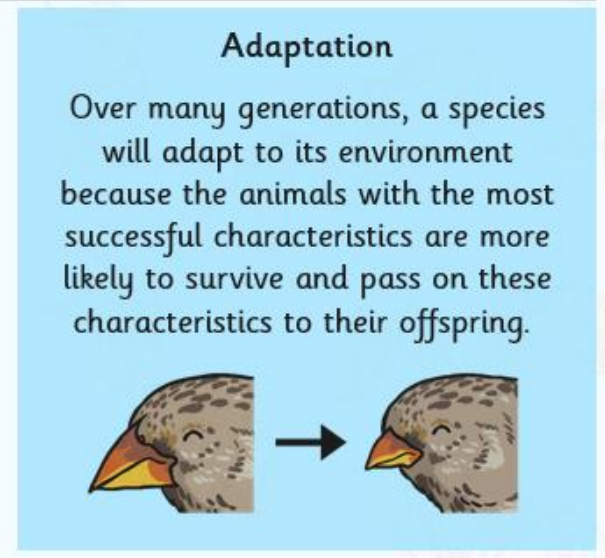
Video on 'What is Evolution?'
https://www.youtube.com/watch?v=GhHOjC4oxh8
Videos explaining evolution, adaptation and inheritance
https://www.bbc.co.uk/bitesize/topics/zvhhvcw



Evolution: any change in the heritable traits within a population across a generation.

Offspring inherit 50% of each parent's DNA. This means that offspring inherit characteristics from both parents. However, each DNA profile is unique (that's what makes you different from everybody else) as the offspring's DNA also includes a genetic mutation.

Darwin's Theory of Natural Selection states that adaptations which are beneficial to survival are passed on to future generations, enabling species to change over time (remember our bird beak and peas investigation).



Activity ideas

Can you explain what evolution is?		
Battle of the Beaks! Set up an investigation to replicate what Darwin discovered about finches in the Galapagos islands. The instructions can be found here https://www.stem.org.uk/resources/elibrary/resource/32696/battle-beaks You could use anything as potential beaks and then all you need are some peas and some people to be your finches! (you need to create an account to access the materials but it is free)	**Theories of Evolution** Research different theologians and create an information resource on them. You could look at many or focus explicitly on Charles Darwin, what he did and what he discovered. Get creative: make an e-book, poster, video – whatever you like!	**I've got my mum's eyes** Dig out some old photos of members of your family. Create a display to explain which characteristics you think you inherited from whom. Remember to look at grandparents too: you have some of their DNA as well.
Adapt to survive What's your favourite animal (excluding your pets)? Research how an animal has adapted to his habitat. What characteristics does it have to help it survive? Some good ones to look at are camels, penguins and giraffes. You could even look at how different species of the same animal differ in their adaptations. E.g. foxes and bears. How can you creatively present what you have found?	**Crossbreeding** Selective breeding of dogs has become incredibly popular in recent years with people pairing up specific breeds for reproduction, so that desirable traits are inherited by the offspring. Watch this video on selective breeding. https://www.bbc.co.uk/teach/class-clips-video/science-ks1-ks2-what-is-selective-breeding/z6cs382 Look up your favourite or unusual dog crossbreeds and create a presentation about how they've inherited specific features from their parents.	

Tuesday – Evolution and Inheritance: Life on Earth

Watch these videos which take us right back to how life began on Earth.
https://www.stem.org.uk/resources/elibrary/resource/36610/evolutionary-history-life
https://www.youtube.com/watch?v=pktDqFy5IcE
https://www.bbc.co.uk/teach/class-clips-video/science-ks1-ks2-showing-the-timeline-of-life-on-earth-using-fossils/zmcs382

Scientists now believe that all living things are descended from the first living organisms, found in the oceans millions of years ago. That means every living thing on earth is related!
How do they know? A lot of what scientists have discovered about life on earth is through the study of fossils.

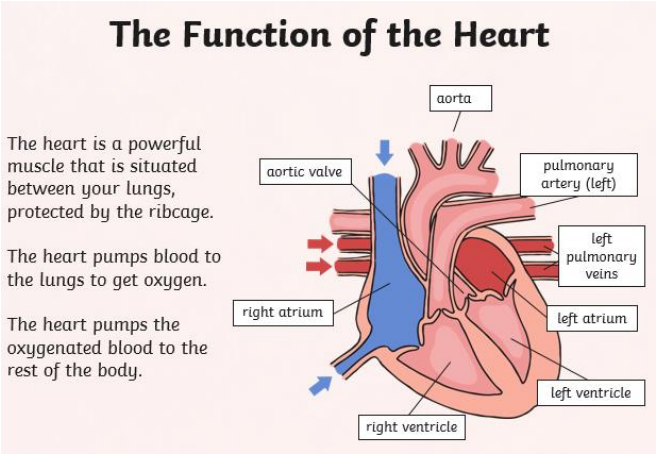
Activity ideas

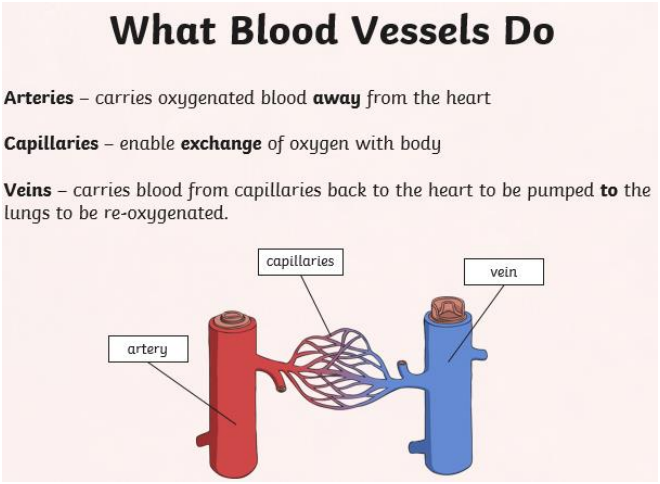
Can you explain how life has evolved on Earth?		
Map it out Using the videos listed above, create a timeline of life on Earth. You can go as big and elaborate as you like or create a digital timeline. Include pictures too!	**Are we apes?** Investigate the evolution of human beings. What forms have humans taken over the years? What's the difference between humans today and our ancestors? Did we descend from apes? Here's some websites to help you. https://www.britannica.com/science/human-evolution https://kids.britannica.com/kids/article/human-origins/353271 https://thekidshouldseethis.com/post/seven-million-years-human-evolution	**Skeletons** Watch this video. https://www.bbc.co.uk/teach/class-clips-video/science-ks1-ks2-how-have-animals-skeletons-adapted-over-time/zbmkjhv Look up the skeletons of different four-limbed animals and sketch their skeletons. What similarities can you see?
Just for fun!		
Make your own jelly fossils Use this video and resource https://www.stem.org.uk/resources/elibrary/resource/36611/fossils to understand what fossils are and how they are created. Then have a go at making your own!	**She sells seashells on the seashore** Mary Anning is renowned for her work on fossils. She also has a fascinating story! Research her and create a presentation, biography or timeline of her life. You could even act out the story of her life and record it for us (dressing up is absolutely essential).	**Humans of the future** Research how humans have evolved. How do you think we will evolve over generations to come? Design your idea of a future human – draw and label them. Consider what the future may hold and what adaptations the human race would need to evolve in order to survive.

Wednesday- Animals including humans: The Circulatory System

Your circulatory system is made up of three parts: the heart, blood vessels and the blood itself.

Your heart keeps all the blood in your circulatory system flowing. The blood travels through a network of blood vessels to everywhere in your body. It carries useful materials like oxygen, water and nutrients and removes waste products like carbon dioxide.





Take a look at the following websites for further information:

- https://www.theschoolrun.com/homework-help/human-circulatory-system
- https://www.bbc.co.uk/bitesize/topics/zwdr6yc

Now you have looked at some information about the human circulatory system, fill in the missing gaps below, using words from the vocabulary box at the bottom. Some of the words come up more than once and some may not be needed at all!

The heart is part of the _____system and is responsible for pumping _____ around the body. It is described as an _____ muscle and there are 3 blood vessels that work with the heart to transport blood around the body. These are _____, _____ and _____.The _____ are responsible for carrying blood **away** from the heart. The _____ carry blood **to** the heart while the _____ are responsible for swapping gasses. If a blood vessel is high in Oxygen, it is called _____ blood. If the blood is rich in Carbon Dioxide, it is called _____ blood.

Circulatory	Oxygen	Blood	Capillaries	Lungs	Arteries	Deoxygenated
Atriums	Ventricles	Involuntary	Veins	Carbon Dioxide	Oxygenated	

Activity Ideas

Can you explain how the circulatory system works?		
Draw it Using the key vocabulary from above, make a clear diagram which shows how the circulatory system works.	**Become a Rap star** Make your own circulatory system rap detailing how the circulatory system works. Please make sure you send us these as we would love to see them!	**Delve inside** Have a play around on this website. It provides an interactive simulation inside the human body. http://www.tenalpscommunicate.com/clients/siemens/humanbodyOnline/#home
Just for fun!		
Get bloody Make your own blood… https://www.myjoyfilledlife.com/components-blood-activity-kids/	**Create the circulatory system…** https://www.youtube.com/watch?v=tLyUnZp-1Hc	**Pump it up!** Heart pump project… https://www.homesciencetools.com/article/how-to-make-a-heart-pump-science-project/

Thursday - Animals including humans: the impact of diet and exercise on the way your body functions

You Are What You Eat... and Do!

It's obvious, if you don't look after a car and don't put in the right petrol, it's not going to work properly.

What many people do not realise is that our body is the same and what it becomes depends on how we choose to treat it.

We need to think carefully about both diet and exercise as these things can have an impact on your body.

The Effect of Your Diet

The standard healthy diet for a person contains a balanced mix of different types of food and drink highlighted in the Eat-well Plate.

Can you name the different sections of the Eat-well Plate and identify their roles within a healthy diet?

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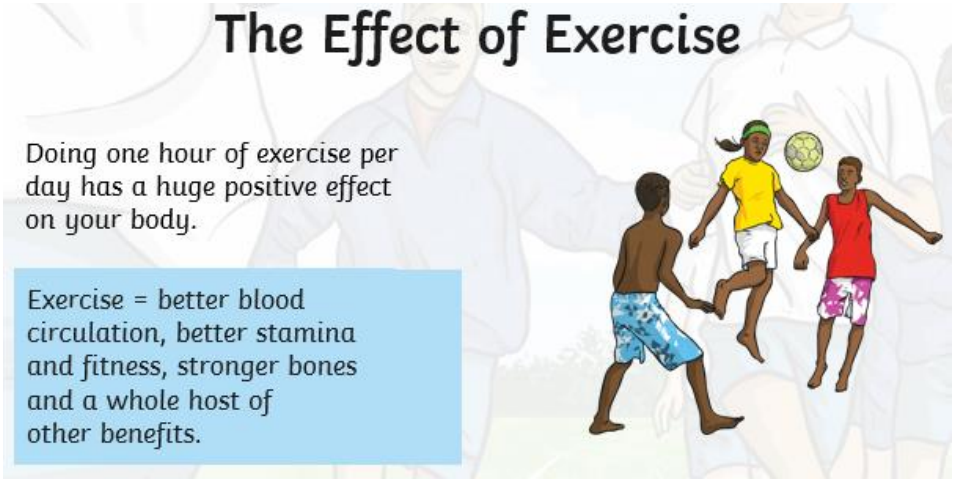
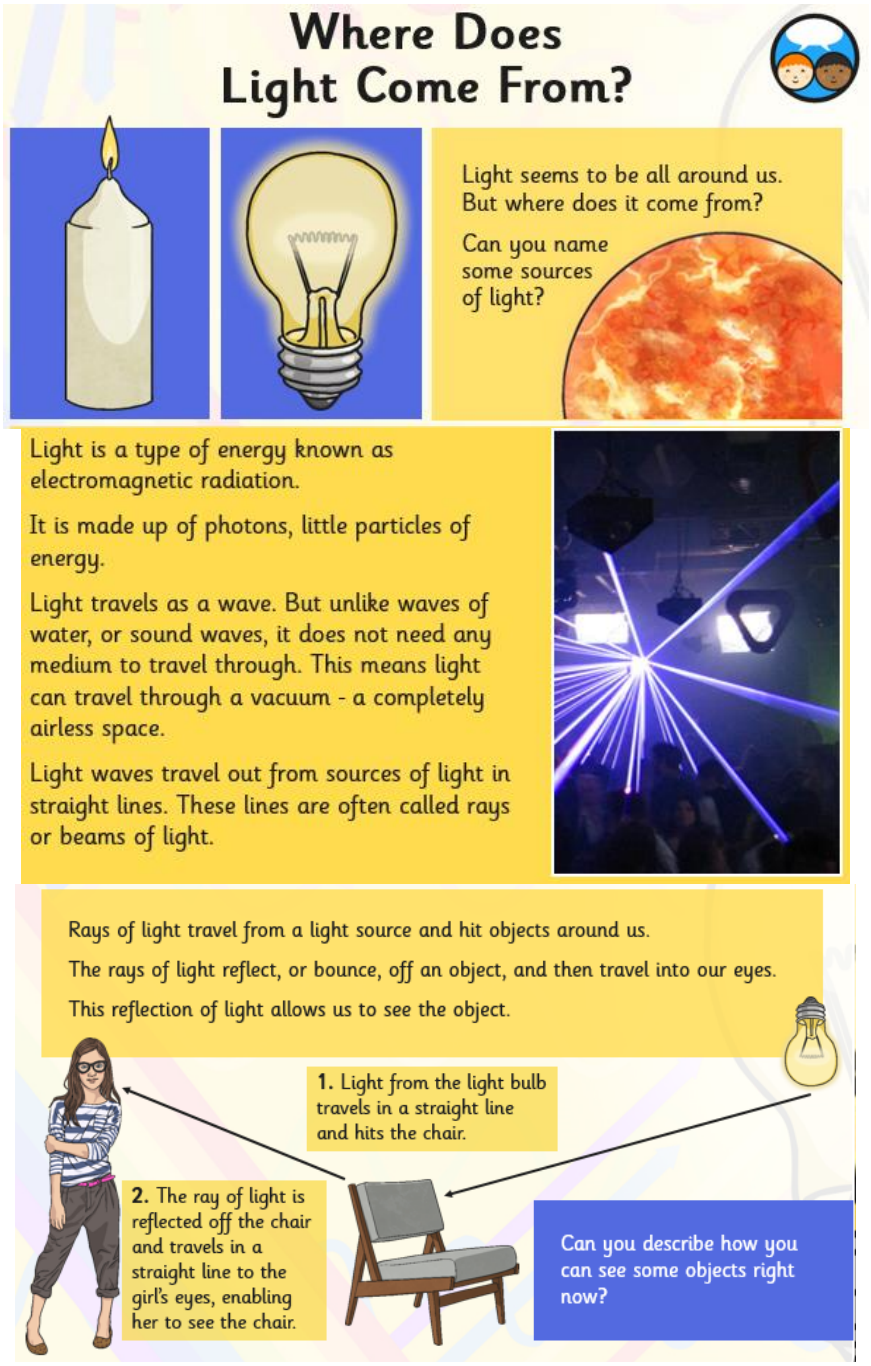


Take a look at these brief clips and websites for more information:
https://www.youtube.com/watch?v=wWGulLAa0O0
https://www.nutrition.org.uk/healthyliving/healthydiet/healthybalanceddiet
https://www.bbc.co.uk/bitesize/topics/zrffr82

Activity Ideas

Can you explain how diet and exercise can impact on the human body?		
Eat me! Create your own Eat-Well Plate, detailing what each section represents and how they can support the body.	**Model it** Create a model to help explain the impact exercise has on the body. Why does the heart pump faster during exercise? Why does exercise become easier over time?	**Get active** Set up an experiment to see what impact different exercises have on heart rate. Set up the experiment considering how you are going to make it a fair test, what are your predictions and how you are going to record your results. Some further ideas are available on the following website: https://www.science-sparks.com/exercise-affect-heart-rate/
Just for fun!		
Does exercise make you brainier? Exercise investigation This is a great investigation and looks at whether exercise can improve your brain function. Some aspects may need adapting, for example, it may not be possible to create a 20-metre course for a bleep test. Take a look and see what you think: **https://www.bbc.co.uk/teach/terrific-scientific/KS2/zmtxy9q**	**Make your own lungs.** Although we looked at something similar in class I really like the following model. https://www.youtube.com/watch?v=abnW9QTl6LA	**Feeling ambitious?** This is an ambitious task and links closely to the work from yesterday but can you create your own circulatory system? You may want to look at the following video for inspiration: https://www.youtube.com/watch?v=Q_VMMX2mBeQ

Friday- Light: how does light travel?



There is some further helpful information on the following websites:
https://www.theschoolrun.com/what-is-light
https://www.bbc.co.uk/bitesize/topics/zbssgk7
https://www.bbc.co.uk/bitesize/topics/zbssgk7/resources/1

Activity Ideas

Where does light come from and how are shadows made?		
Shiny spoons When you look into the back of a spoon your reflection is upside down. Why is that? Why do your eyes see it this way? Present your findings in any way you wish. 	**Human Model** Create a human model to show how light enables us to see things. Use some yellow wool (if you have some) as the ray of light - remember, it should always go in a straight line! You could use a member of your family as the light source, and one member acting as an object. Show how the ray of light travels to the other group members' eyes.	**History of light** Make a timeline showing the history of light.
Bouncing spotlight You will need: ball, torch, mirror, dark room. Experiment: Place the ball in different parts of the room. Keeping the torch in one place can you move the mirror so that the light can always shine on the ball? Write up your findings including diagrams.	**Light snaps** Take some photographs which show/use light in an interesting way. (This could be natural or artificial light) 	
Just for fun!		
Shadow show Make shadow puppets which could be used to tell stories 	**Create a periscope** There are loads of different ways of making a periscope available on the internet. I particularly liked the following step by step guide: https://www.instructables.com/id/The-Doodle-Periscope/	**Back to front** Can you write a message that when reflected in a mirror will make sense?