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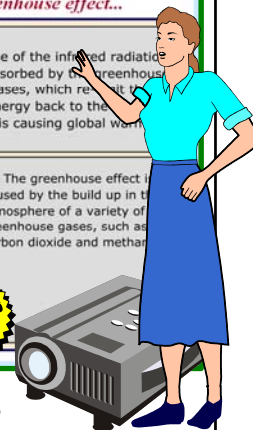
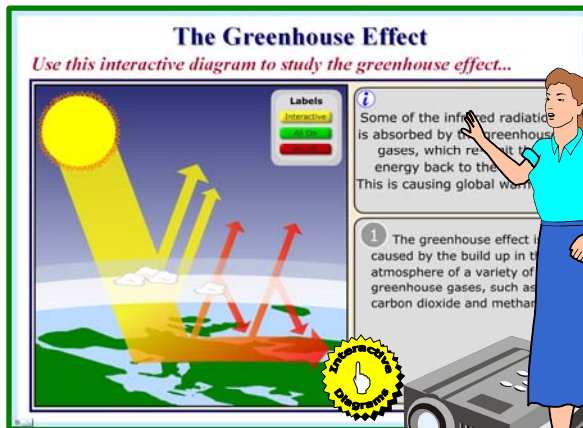
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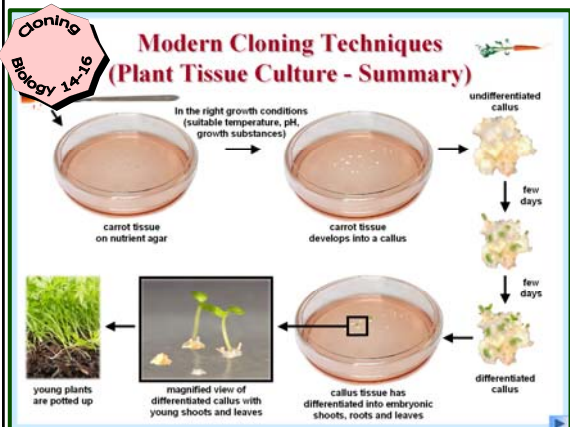
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The Spread of Infection - Droplets

When you breathe out, cough or sneeze you release millions of germs in droplets of moisture. Contagious diseases spread in this way include influenza, pneumonia, whooping cough and diphtheria.



Vaccinations

Today, vaccines are widely used to protect children and adults from a variety of infectious diseases.



Polio vaccine is administered orally as a liquid.

FEATURING BIOTECHNOLOGY, HEALTHY LIFESTYLE, INHERITANCE, MEDICINE AND SUSTAINABLE DEVELOPMENT

Adaptation & Competition 1
Biology 14-16



Kwashiorkor

Kwashiorkor sufferers showing many of the characteristic symptoms: oedema, swollen abdomen, thinning and de-pigmentation of the hair.

Unbalanced Diets - Deficient
Biology 14-16

The Genetics of Cystic Fibrosis

C represents the dominant allele for normal health.
c represents the recessive allele for cystic fibrosis.

Parental Phenotype: Cystic Fibrosis Carrier (father) Cc, Cystic Fibrosis Carrier (mother) Cc

Parental genotypes: Cc, Cc

Gametes: C, c, C, c

F₁ genotypes: CC, Cc, Cc, cc

F₁ phenotypes: 50% : 50%, 25% : 50% : 25%, 75% : 25%, 100%

Instructions: Drag and drop the gametes into the correct places for the F₁ genotypes. Enter the correct F₁ genotypes into the Punnett square. Select the correct phenotype ratio in the F₁ generation.

Correct, there is a 3:1 chance that any offspring will not suffer from Cystic Fibrosis. Click the arrow to move on.

Check Answer, Reset



Thinning hair in a child with kwashiorkor



Pitting oedema on the feet of a child suffering from kwashiorkor

Cloning
Biology 14-16

Obesity

Obesity has the following effects:

- Extra strain is placed on the heart, muscles, bones and ligaments.
- Joint and back injuries, heart attacks and strokes are more likely - usually resulting in an early death.
- Exercise becomes very difficult and dangerous, so even more weight is put on!

Unbalanced Diets - Excess
Biology 14-16

Solvent Abuse (Glue Sniffing)

- Solvent abuse can result in:
- unsteadiness, slurring of the speech and unpredictable behaviour
 - severe headaches
 - red spots/blistering around the mouth
 - vomiting

Young children are at the greatest risk; some even die after trying solvents for the very first time.



Drugs - Illegal
Biology 14-16

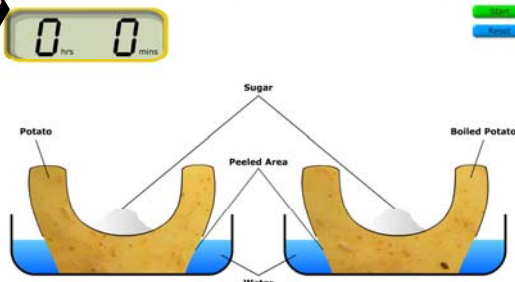


Unbalanced Diets - Excess
Biology 14-16

Transport of Soluble Substances - Introduction

Demonstrating Osmosis With Potato Cups

In the experiment to see the effect on osmosis of boiling a potato...



Note: Boiling kills the potato cells by denaturing proteins such as those found in the cell membranes - partial permeability is lost.

WORLD NEWS

24th February 2011

Drug companies accused of encouraging 'pill popping'

A recent report accuses drug companies of needlessly creating medical conditions, to promote the sale of their drugs. The report suggests that many conditions for which doctors are encouraged to prescribe pills, do not warrant medication. Conditions such as 'restless leg syndrome' and 'irritable bowel syndrome' are highlighted...

What do you think?

Drugs - Development
Biology 14-16

INSPIRING, HIGH QUALITY PHOTOS, DIAGRAMS, INTERACTIVE ANIMATIONS & SIMULATIONS USED THROUGHOUT

Human Impact - Air
Biology 14-16

Monitoring By Lichen

Lichen grows on certain tree trunks, gravestones and brickwork. Many lichen species have disappeared in cities and surrounding areas. This is because the lichens are sensitive to sulfur dioxide - over 65% of SO₂ is produced by fossil fuel burning power stations.

A study of the prevailing wind directions can help identify the source of any pollution.

Arctic Biome - Adaptation for Survival

Marine mammals that inhabit this cold biome have a thick layer of blubber (fat cells) under their skin. Their bodies are designed for swimming under the ice for long periods - their blood is able to store much larger amounts of oxygen than land mammals.

Adaptation & Competition
Biology 14-16

Adaptation & Competition
Biology 14-16

Hibernation - An Adaptation

Drag the animal name into the correct category.

Hibernating Animals

Bat

Tortoise

Hedgehog

Non-Hibernating Animals

Rabbit

Polar Bear

Pigeon

Well Done - Click the arrow to move on

Environment - Deforestation
Biology 14-16

Deforestation

The rate of deforestation is difficult to determine accurately, although satellite imagery is helping to provide more accurate data. It is estimated that 27 million acres of tropical forest disappear each year.

Variation - Source & Type
Biology 14-16

Heredity and the Environment

All the characteristics of an animal or plant are inherited from their parents. Some characteristics are affected by the environment.

For example, the flower colour of **Hydrangeas** (a popular plant in UK gardens) is affected by the soil. Flowers are **blue** if the soil has an **acidic pH** of 5.5 or slightly less, and **pink** if the soil has a pH of 7.0 or a slightly higher **alkaline pH**.

Acidic pH Alkaline pH

Tissues & Organs
Biology 14-16

Plant Cells - Root

The roots of plants absorb water and mineral ions from the soil.

Roots are often covered in thousands of fine extensions called root hairs.

Can you relate the fine structure of a root to the function it carries out?

[Click here for the answer.](#)

Transport of Soluble Substances - Plants 2
Biology 14-16

The Potometer

The bubble potometer can be used to investigate the effect of various factors on the rate of transpiration.

- Control
- Fan
- High Temperature
- High Humidity
- Vaseline

Effects of Exercise
Biology 14-16

Recovery Rates of a Fit and Unfit Runner

Recovery rates measure how quickly the body returns to normal once exercising has stopped. An indication of metabolic rate can be obtained by monitoring a person's heart rate.


Explain the key points in the graph below...

Comparison of Recovery Rates for Fit and Unfit People

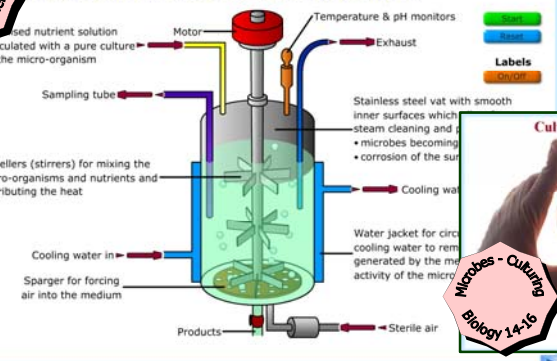
Time (min)	An Unfit Person (bpm)	A Fit Person (bpm)
Rest	~70	~70
Activity Start	~150	~120
Activity Stop	~150	~120
Recovery	~100	~80
Rest	~70	~70

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Industrial Fermenters - Features
The animation to learn more about a fermenter...

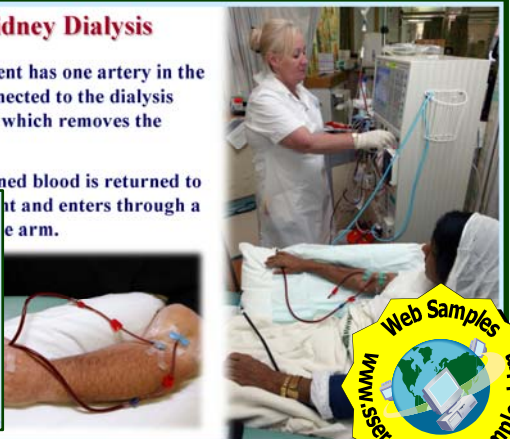



Microbes - Culturing Biology 14-16





Kidney Dialysis
A patient has one artery in the arm connected to the dialysis machine which removes the urea.
The cleaned blood is returned to the patient and enters through a vein in the other arm.





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