

# Welcome to Thackray Museum of Medicine



## KS4 BUGS, BLOODS AND DRUGS: GCSE BIOLOGY TRAIL

This trail covers GCSE Biology highlights around the museum and is appropriate for all exam boards. We hope you enjoy finding your way around the museum.

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It is very important that we look after our bodies and keep healthy. This 'Bugs, Bloods and Drugs' trail helps us think about how we can do this and the potential challenges there might be for our bodies. Explore and see what you can find.

**Before we start there are some important things to note:**



This sign means there is something for you to watch



This sign means it is time for you to be a detective



This sign means there is something for you to think about



This sign means there is something for you to look at



This sign means there is an activity for you to do back at school

# DISEASE STREET

**SOME STUDENTS MAY FIND THIS GALLERY UPSETTING**

**This gallery shows us what life was like on a slum street in Victorian Leeds and how they attempted to look after themselves.**



Meet Hannah Dyson, travel back to Victorian Leeds and pick a character.



Find Alice and James.

Alice is 7 and James is 11 – what strikes you as strange?

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What condition do you think James might have?

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What condition can a lack of Vitamin D cause?

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Go into the 'Black Dog' public house.

What kind of diseases can be caused by lifestyle choices, such as alcohol consumption?

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People smoke, as well as drink alcohol, in the pub. Both are carcinogens.

What is a carcinogen?

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What disease of the liver can occur after long term, heavy drinking?

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What is the poisonous gas that takes up space in the blood, instead of oxygen, when someone smokes?

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Find John Oddy in the butcher's yard.

What are John Oddy's customers at risk of getting if they eat food prepared here?

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What are the three main types of bacteria that cause this?

1

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2

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3

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Can you spot one animal vector that is believed to be largely responsible for the spread of the Black Death in the 14<sup>th</sup> Century and The Great Plague in 1665?

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Plague is caused by a bacteria. What type of medicine can easily cure 'The Plague' if caught early?

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Name another animal vector responsible for spreading Malaria.

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Find Mary Holmes. Mary has Tuberculosis, which at this time is also known as consumption.

Is Tuberculosis a communicable or non-communicable disease?

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What are the 4 main types of pathogen that spread diseases?

1

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2

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3

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4

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## OPERATING THEATRE



Watch the video of the build up to Hannah Dyson's operation.

What physical defence, that usually protects the body against pathogens, does surgery breach?

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What main problem can you see about the instruments, and the clothing, that are used during the procedure?

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What modern piece of equipment is used to tackle this issue in hospitals?

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What three parts make up blood?

1

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2

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3

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Find and read 'Seeing the Light: Cataract Surgery'.

During this operation, what part of the eye needs to be moved or removed so the patient can see again?

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A needle is inserted into the white of the eye during this operation.

What is the scientific name for this part of the eye?

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What disease increases an individual's risk of developing a cataract and other eye problems?

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Find and read 'A Surgeon's Notes to his Medical Students'.

In number '5. Grab your saw' there is a type of blood vessel missing from the list. What type is missing?

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Why do you think a surgeon, performing an amputation, is not too worried about this type of blood vessel?

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## THE MORTUARY



Find the clipboard with 'Andreas Vesalius (1514–1564)' written on it and read it.

Vesalius rightly pointed out there are distinct differences between human and ape anatomy.

What is the study of the structure of the human body called?

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What was the name of the scientist that published 'On the Origin of the Species' in 1859 that proved apes and humans are related?

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What is the process called that means species gradually change over time through thousands of years to keep useful traits through natural selection?

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## MAKING US WELL, OUTSIDE IN



Read 'The Air we Breathe' wallpaper.

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What was, and still is, a major source of air pollution?

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How is acid rain formed and what effect does it have on the environment?

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Find the section entitled 'Food Safety' and read it.

Name five possible food sources responsible for the outbreak of food poisoning.

1

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2

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3

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4

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5

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Find and read the section entitled 'A letter written in 1986 by author Roald Dahl in support of vaccination'.

What disease did Roald Dahl's daughter die from?

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What kind of pathogen is this disease?

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## DISEASE DETECTIVES



Find and read the section entitled 'The Germ of an idea'.

What causes fermentation, infection and putrefaction?

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What kind of respiration is fermentation?

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Find and read the section called 'Infection Control'.

What recommendation did Semmelweis make to help stop infection within hospitals?

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Name a disease that this recommendation would not help stop spreading.

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Read 'Building Immunity'.

What is the difference between an inoculation and vaccination?

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Who is widely credited with the discovery of 'vaccination'?

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Read 'Team Penicillin'.

What two conditions does a bacteria need to multiply every 20 minutes?

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**Make your way up the stairs to the 'Cutting Edge' gallery.**



## CUTTING EDGE

This gallery looks at the life changing innovations in medicine that have occurred through time.



Look at the 'Licensed to kill germs' panel on the 'Antiseptics' case.

What could happen to a wound if carbolic acid wasn't used?

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Read the panel entitled 'Magnetic Resonance Imaging' on the 'Imaging' case.

Why are MRI scanners so important for diagnosing a patient?

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What field does an MRI scanner need to capture images of inside the brain?

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Read the object label 'Thalidomide c.1960' in the 'Assisted Birth' case.

What are the stages that a new drug must go through before it makes it to the patient?

1 - Preclinical Stage - where the new drug is tested on cells/  
tissue

2 - Animal testing on the whole body

3

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4

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Read 'Diabetes' in the 'Managing life' case.

What causes diabetes?

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How many types of diabetes are there?

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Read 'Matters of the Heart' panel on the 'Replacement parts' case.



What does a pacemaker do?

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What system isn't functioning correctly if a patient has cardiovascular (heart) disease?

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Read the 'Banking on Blood' panel on the 'Donations' case.



Why is blood screened before donation?

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Which blood cells are packed with haemoglobin that bind with oxygen?

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Read the clipboard 'Donation and transplants'.

Name three organs that can be donated after death.

1

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2

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3

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## Go to the STI Clinic.

Read 'A night with Venus'.



Penicillin helped treat a range of different Sexually Transmitted Infections / Diseases.

What kind of drug, that fights bacterial infections, is Penicillin?

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What is the rising concern over this type of drug, that has occurred through over usage?

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Condoms are an effective way to protect against STIs and STDs.

Find the condom from 1875.

Can you reuse modern condoms? (Circle your answer)

**Yes / No**

What problems could occur through reusing a condom?

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Is a female condom a hormonal or non-hormonal method of contraception? (Circle your answer)

**Horomonal / Non-hormonal**

## NORMAL AND ME

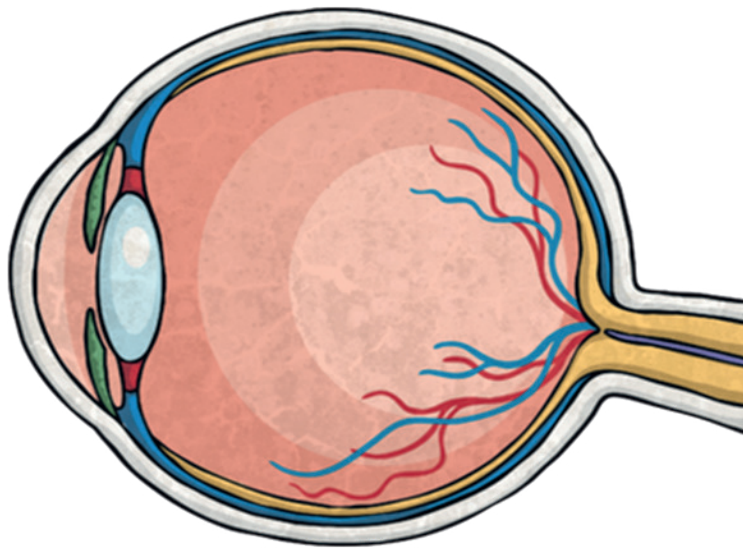
Look at the 'visual impairment' area.



What can people wear to correct long or short sightedness?

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Label the eye.



### Word Bank

Sclera

Cornea

Pupil

Lens

Iris

Retina

Optic Nerve

Suspensory Ligament

Ciliary Muscle

We hope you enjoyed your trail around the museum and we hope to see you again.

## BACK AT SCHOOL ACTIVITY



Plan a podcast, using the objects you saw on your visit in the museum, to argue which part of the body is the most important, how innovations have improved and what human evolution might look like in the future.