

SCIENCE APPRENTICE

The title 'SCIENCE APPRENTICE' is written in a bold, yellow, blocky font with a brown outline. The letter 'i' in 'SCIENCE' has a small orange test tube with a red liquid inside it as its dot. The letter 'A' in 'APPRENTICE' is replaced by a brown and orange laboratory flask. The background is a light purple with white circuit-like lines and a recycling symbol.

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Lesson: The Immune System

[Suitable for 3rd – 6th class]

Subject: **SCIENCE**
Strand: Living Things
Strand Unit: Human Life
Integration: PE, SPHE

Introduction:

Every day our body is exposed to millions of germs, and it works hard to protect us from them. Ask the class, **how do you think our body protects us?** The children should chat about the question in pairs, before having a whole group discussion.

Read Aloud: How does our body protect us?

1. The Skin – Your skin is like a protection blanket for your body. It stops germs getting inside you. It also has special glands that can make chemicals to kill bacteria that enters through cuts and grazes. But what about the parts of your body that are not covered in skin, such as your nose, mouth and eyes?
2. Mucous and Saliva – Your nose and mouth have a layer of mucous which traps germs and dust, stopping them from entering your body. The saliva in your mouth and the tears in your eyes have special chemicals which can fight off bacteria and viruses.
3. White Blood Cells - In your blood you have red blood cells and white blood cells. The white cells work together to find and destroy bacteria and viruses that have made it past the skin and mucous.

All these parts together are called the immune system.

Activity: Immune System Chasing

Ready , Set, INFECT!

The body has to protect itself from germs, and one way it does this is with white blood cells.

1. Pick out five students to be white blood cells. They can wear a sports bib to distinguish themselves from everyone else.
2. The rest of the class will be germs.
3. Explain that the hall/section of the yard represents a human body. You can mark a large square on the ground with cones if necessary.
4. The germs should start at the edge of the hall or outside the marked area.
5. When the teacher shouts go, the germs enter the body. The five white blood cells need to find the germs and capture them. Explain that the white blood cells will tag the germs, and then the germs are out of the game. Once all the germs have been captured, the game is over, and the white blood cells have successfully helped the body to fight off the infection.

When the children are tired and hot from running around, sit them down and tell them that this helps to explain why we feel a certain way when we are sick. White blood cells work very hard to fight germs and this can cause us to get a temperature and feel tired and weak.

Conclusion:

To conclude, have the children create Immune System posters, which explain what the immune system is and show how it works. For example they may wish to draw white blood cells working like soldiers to attack germs, or draw images of how our superbodies use the skin, mucus, saliva and tears to protect us.

Lesson: Muscles and Tendons

[Suitable for 1st – 6th class]

Subject: **SCIENCE**
Strand: Living Things
Strand Unit: Myself; Human Life
Integration: PE, Visual Arts, SPHE

Introduction:

Ask the question “What parts of your body help you to move?”

Encourage the children to discuss their answers in small groups or pairs or to draw or write their answers. After five minute open it up to the class for a whole group discussion.

The answer is your bones, muscles, joints and tendons help you to move.

Tell the children that today they are going to focus on muscles and tendons.

Read Aloud:

Muscles are elastic tissue, similar to thick elastic bands, which help our bodies to move. Your bicep is a muscle in your arm. Can you touch your bicep? Can you flex it? What does it feel like?

Tendons are strong cords that connect muscles to bones. The tendon allows the muscle to move the bone. Can you find the tendon in your wrist?

Activity 1: Identify muscles in your body.

Read Aloud:

There are over 600 muscles in a human body. Today we are going to play a game where I will name a muscle and without speaking you must try and locate that muscle by pointing to it or moving it.

[For younger classes you may choose to teach them 3 or 4 muscle names, and for older classes you may teach all 7.]

1. Heart (Yes the heart is a muscle! It is the hardest working muscle too, pumping blood around the body all day and night.)
2. Biceps
3. Triceps
4. Calves
5. Hamstrings
6. Quadriceps
7. Abdominal muscles

Each of these muscles have tendons to attach them to our bones.

Activity 2: Create a life sized body map

You will need:

- Large sheets of paper or a roll of wall paper
- Pencils
- Markers, paint or crayons (at your discretion)

1. Divide the children into small groups of no more than 6.
2. Select one person to lie down on the wallpaper. It is important that this child is wearing trousers to allow this part of the activity be completed easily. They should lie down on their back with their hands flat and fingers spread.
3. Ask the other children to trace the outline of this child's body.
4. Once the body has been created the children can draw the muscles. Muscles are simple to draw, to do so the children just need to draw an outline of the muscle and colour/paint it red.

You may wish to display a child friendly image of the human body with muscles. One can be found at <https://easyscienceforkids.com/all-about-human-body-muscles/>

Conclusion:

After the children have completed the outline and draw the muscles, ask them to label the muscles that they know. Remind them of the muscles you spoke about earlier.

Extension Activities

These activities can be given to individuals or groups of children who wish to explore more about SUPERBODIES!

1. Read the SUPERBODIES book again and create a SUPERBODIES quiz for the other children in your class!
2. In the SUPERBODIES book Dr. Brendan Egan told us all about how to keep our bodies healthy and our muscles strong. Can you create an exciting poster to tell people his important advice?
3. Edward Jenner created the first successful vaccine.
He gave it to an 8 year old boy, who became immune to smallpox!
Can you find out more about this story, and create a comic strip to tell your class what happened?
4. There are lots of very interesting people in the SUPERBODIES book.
Which one of the researchers would you like to interview? Write a pretend interview with this person and act it out with your friend.
5. What does the word "SUPERBODY" mean to you? Create a poster to show what is super about the human body.

Do more at home!!

Only a small amount of a child's life is spent under their teacher's guidance. Therefore, it is really important that children's learning extends beyond the classroom door! Encourage your class to complete mini projects at home, and to figure out the answers to these questions!

1. The most powerful way to help your immune system is by washing your hands. Can you list other ways that we can stop germs spreading in our schools?
2. There are five different types of white blood cells. Can you find out the names of all of them? Can you draw them?
3. The heart is the hardest working muscle. Can you measure how many time your heart beats in one minute by checking your pulse? Now run on the spot for two minutes and measure it again. Is there a difference?
4. There are 640 muscles in the human body. Can you find out how many bones we have? How many tendons we have? And how many joints we have? Make a poster with all of these facts.

SOMETHING I KNEW
BEFORE READING
SUPERBODIES...

SOMETHING NEW
THAT I LEARNED ..

SOMETHING THAT
I FOUND
INTERESTING ..

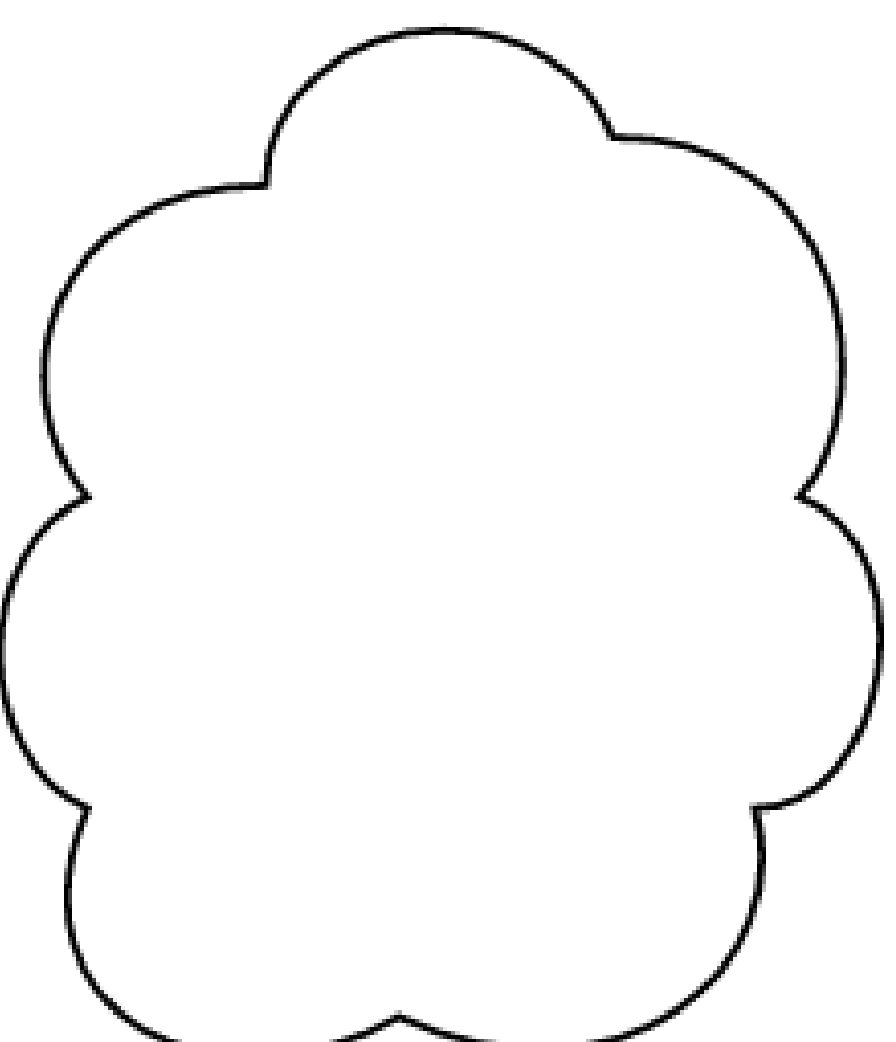
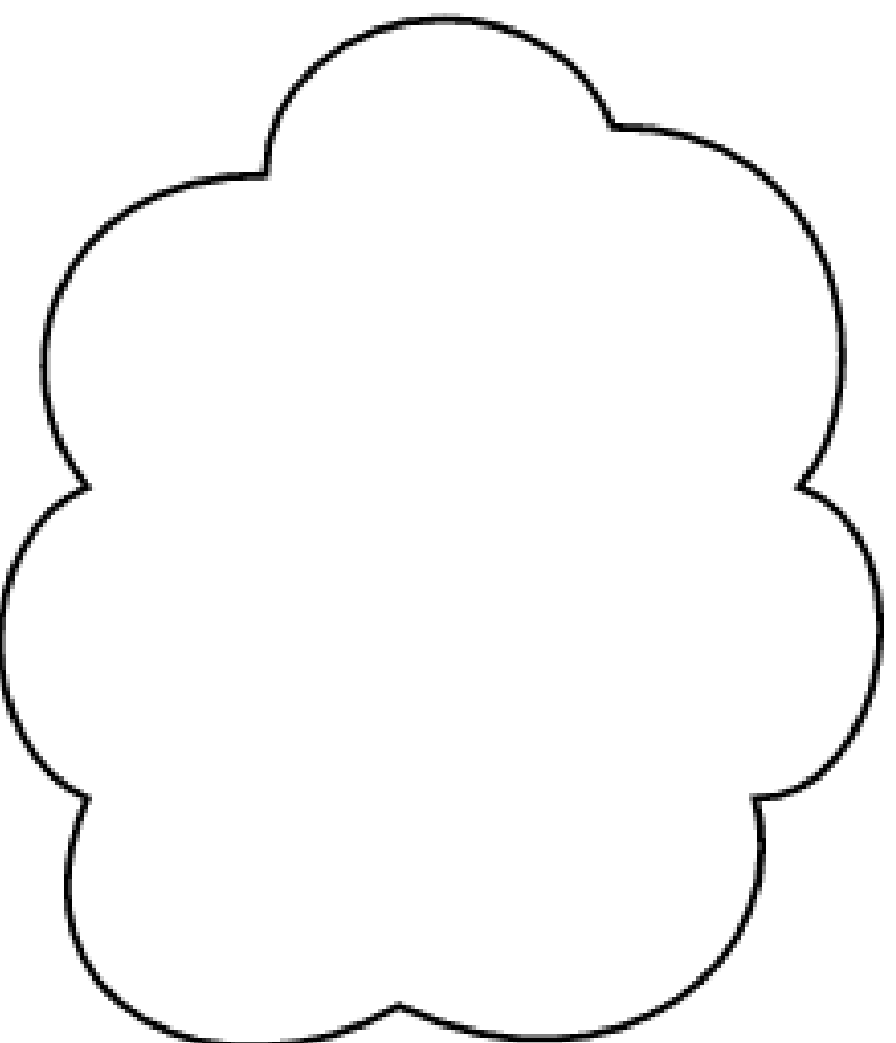
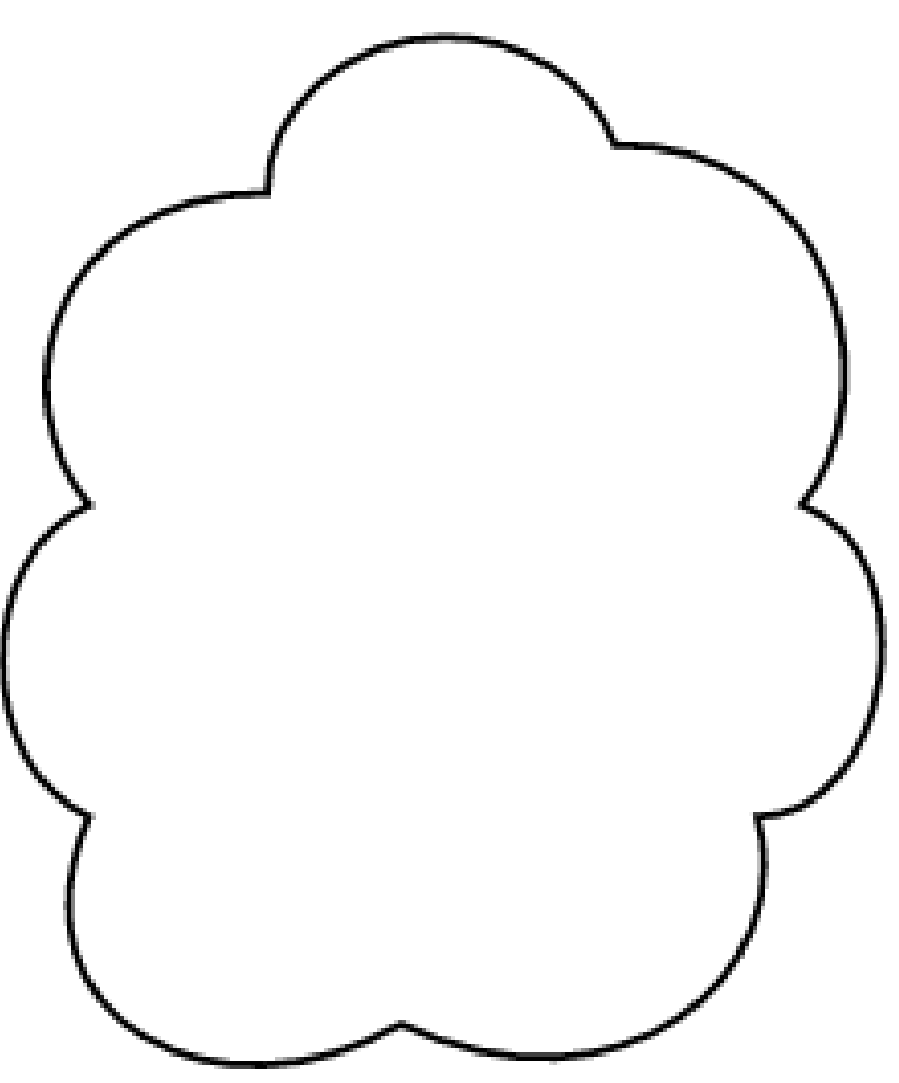
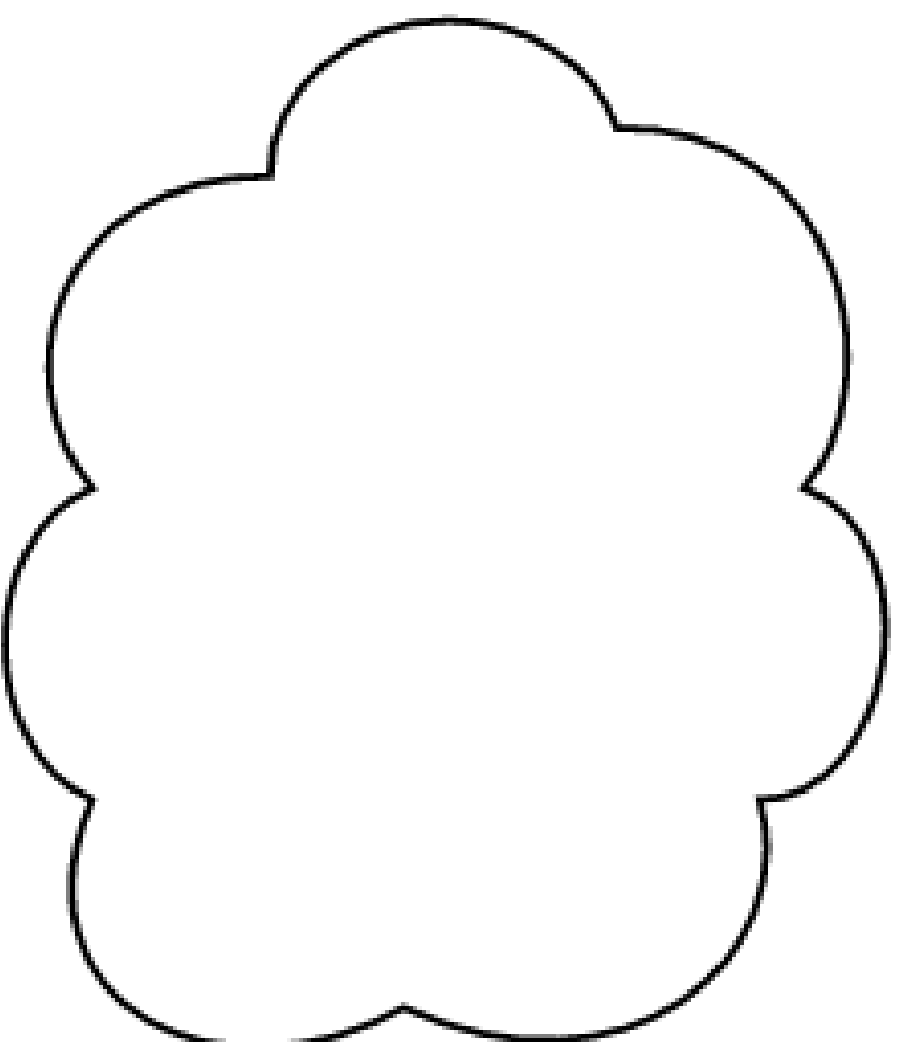
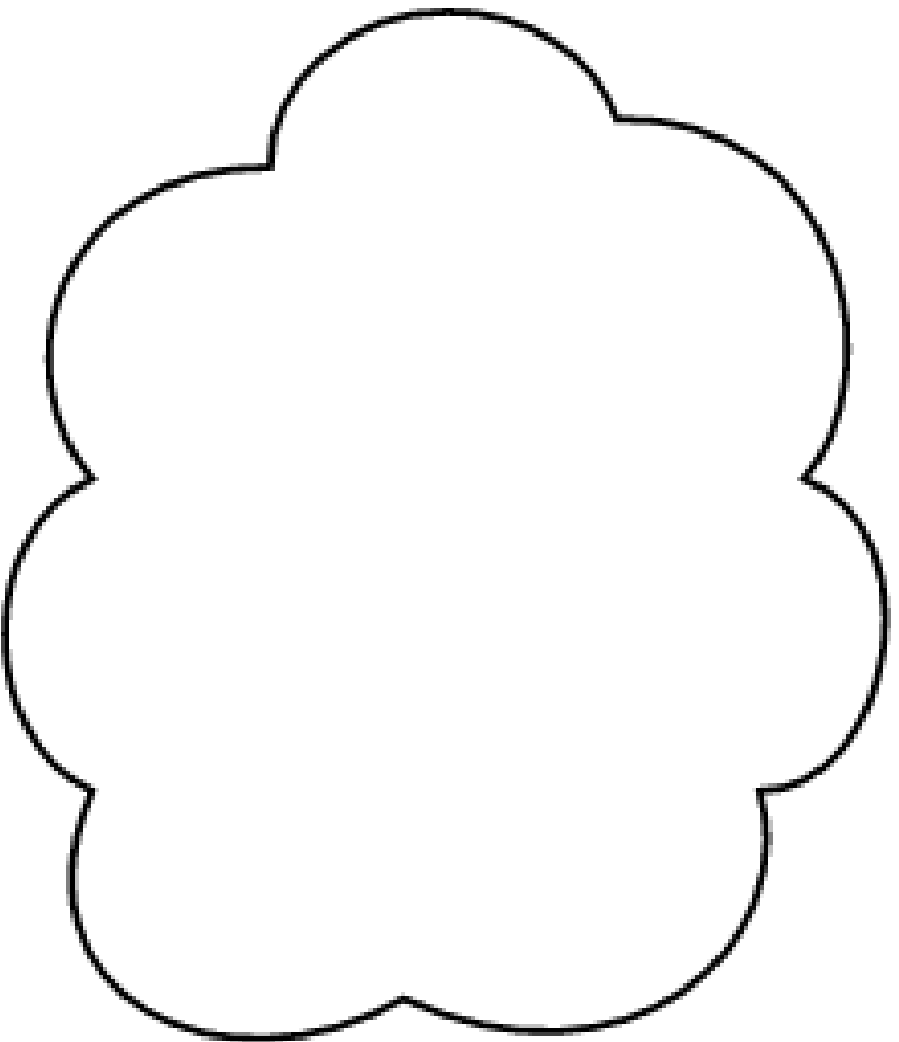


SOMETHING THAT I
REALLY ENJOYED..

SOMETHING I WANT
TO KNOW MORE
ABOUT ..

SOMETHING THAT I
WANT TO TRY
IN SCHOOL OR AT
HOME ..

Can you invent five new devices that could help scientists and biomedical engineers explore the human body?



SCIENCE APPRENTICE Robotics for Bodies!

EXTRA! EXTRA!
Read all about it!

Write an article for the Irish Independent about a new robotic body part scientists have created. Make sure your headline is exciting, and you include a picture.

[illegible]

Sleep is important for a healthy body!
In SUPERBODIES Dr. Annie Curtis gave advice
about getting a good night's sleep.
Can you list five things that will help
you get a good night's sleep?

1. _____

2. _____

3. _____

4. _____

5. _____

TEACHER'S LEARNING CANVAS

Learning Canvas
Created and Written by
Sorcha Browne
Illustrated by
Martin Beckett



Irish Independent 