

# Investigate!

## Activity Guide

What makes us similar and what makes us different? Carry out your own genetic variation investigation using a selection of household items.

Suitable for: age 9-14

Estimated duration: 30-45 minutes

### You will need:

- Characteristics guide
- Pens
- Small mirror
- Tissues or wet wipes
- Data collection sheets
- PTC Strips or fresh coriander
- Fresh freesias - crushed and placed in a jar or pot

### Introduction

All of the DNA in a cell is called the genome. Within the genome there are sections of DNA called genes. Genes provide specific instructions for our individual characteristics, like eye and hair colour.

Sometimes there can be small differences in a gene, for example where there's an A in one person there may be a T in someone else. These changes can alter the outcome of the instruction, like giving some people brown eyes and other people blue eyes. These differences are known as genetic variation. It is this variation that makes us all unique, whether in terms of hair colour, skin colour or the shape of our faces.

Researching DNA and comparing lots of genomes helps us to identify where there are differences in our genomes and what effects these differences may have on physical characteristics and our health.

This activity will encourage learners to investigate some variable physical characteristics and consider if they are the result of genetic variation. They will learn how differences in the DNA code can have an impact on our appearance, from our eye colour to our hair colour.

### Running the activity

#### Warm up discussion

- Introduce the topic of DNA and genetic variation - can the group think of physical characteristics that might be linked to their DNA?

#### Completing the activity

- Give everyone a data collection sheet to complete.
- Explain that everyone needs to collect data from at least 10 people.
- Explain the different testing materials, and that each can be used to test a different characteristic.

*Bitter test:* learners will place a PTC stripe (or coriander) on the tip of their tongue - does it taste bitter? Learners should not eat the stripes, and they must be placed in the bin after use.

*Smell test:* learners open the 'mystery jar' (crushed freesias) and sniff the jar - can they smell anything?

*Ear wax test:* learners use a wet wipe or tissue to lightly wipe the entrance of their ear canal (do not stick anything inside anyone inner ear). Is there ear wax? Is it sticky or wet?

*Freckles and dimples test:* learners use the mirrors to check for freckles and dimples - are they present?

- Ask everyone to start collecting data from people in the room and to record their data on their data sheet

- Once everyone has collected data, they can go about investigating their data - learners could create a bar graph to explore the distribution of characteristics, using Excel or by hand. They can explore other ways of investigating and presenting the data.

**Follow-on questions**

- To take this activity further, learners can investigate other easy to measure traits with a genetic link and use the blank data sheet to collect further data. A few examples are listed on the characteristics guide below.