Notes for teachers

At a glance

Since the Human Genome Project was completed in 2003, the technology used for genetic sequencing has progressed rapidly. Researchers at the Oxford Genomics Centre have used it to investigate how cancer appears in our bodies, how malaria is carried by mosquitoes and how diabetes works. Private companies are also using new technology to test individual’s genomes for 'variants', specific changes in some bases of the DNA that are associated with different traits such as an increased risk of developing heart disease.

In this activity students think about what genetic tests can show, and if they would consider having one. They create media to help people make an informed decision on whether to have a genetic test.

Learning Outcomes

- Students learn what genetic testing is
- Students write media that contains a balanced, unbiased view of genetic testing

Each group of students will need

- Copy of student worksheet page 1
- Copy of student worksheet page 2
- Access to the internet
- Copy of the student worksheet on the school shared network or uploaded as a Google document (so students can click on the hyperlinks provided).
Possible Lesson Activities

1. Starter activity
   - Ask the class what they know about the Human Genome Project - what was discovered and scientists today are using this information.
   - Play the class the animation 'How to Read DNA', which outlines the work on genome sequencing being carried out at the Oxford Genomics Centre.
   - Ask students to read through the information on page 1 of the student sheet.

2. Main activity: Discussing genetic tests
   - Introduce the class to genetic testing kits. You can show them the homepage of a company that sells them (see weblinks below).
   - Ask the students to raise their hands if they would want to have a genetic test.
   - Display the following questions:
     - Would having a genetic test interest you? Why?
     - Which would be more interesting to you: the ancestry or health information?
     - Would the information change anything about your life or just be interesting?
     - If your DNA contains information on a genetic susceptibility to developing incurable illnesses, would you want to know?
     - Do you have any concerns about having a genetic test?
   - Ask the students to discuss these questions in small groups.

3. Main activity: Creating media
   - Give the class their task: They will be creating a video clip, article or information sheet to help inform people before they buy a kit.
   - Briefly discuss the kind of content it should contain. Remind them what 'unbiased means'. Discuss why media created by companies that carry out genetic testing might be biased.
   - Give students page 2 of the student sheet, which contains useful weblinks to help them research.
   - Students carry out their research, plan their work and then write it.

4. Plenary
   - Ask each student to write down:
     - What a genetic test can show and how.
     - Whether they would have a genetic test and why.
   - Ask the class to put up their hand if they would have a genetic test. Ask if any students changed their mind after finding out more about them. Invite them to share with the rest of the class why.

Weblinks

How to Read DNA animation  https://www.oxfordsparks.ox.ac.uk/content/how-read-dna

Homepage of 23 and me, a company that sells genetic testing kits  https://www.23andme.com/en-gb/