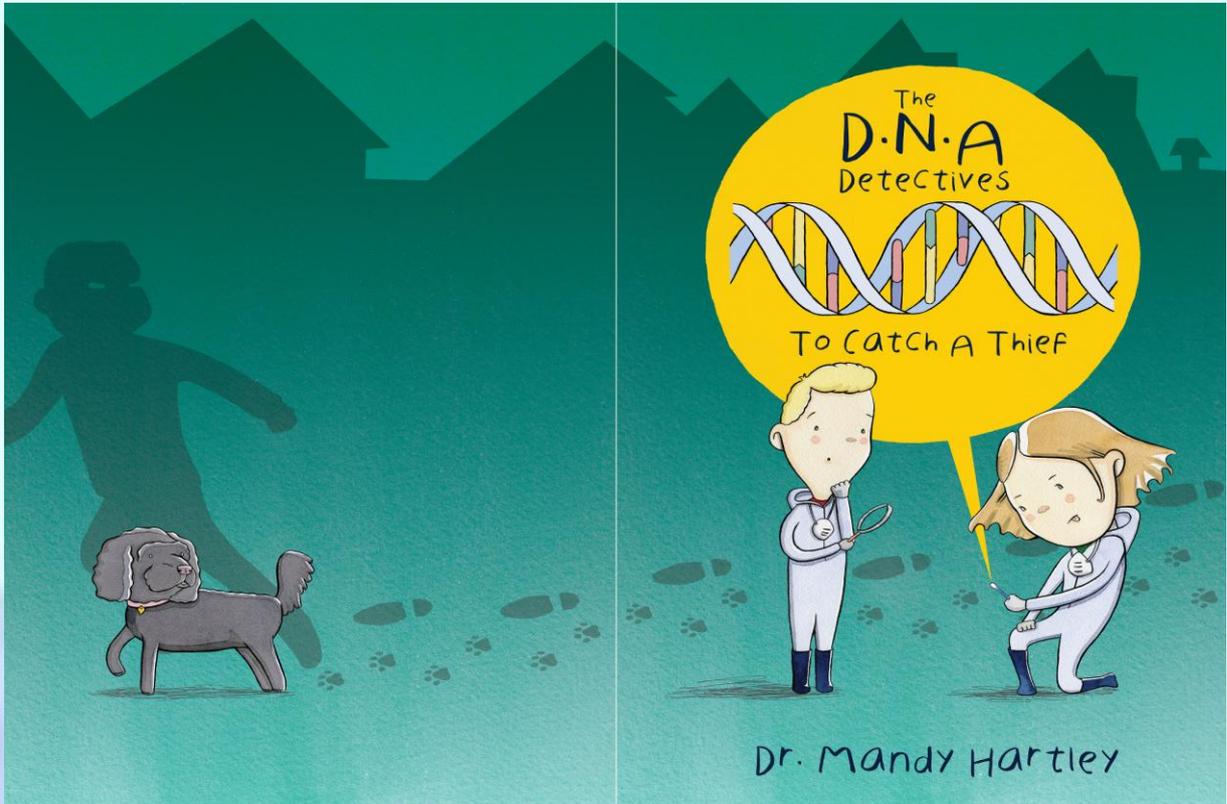
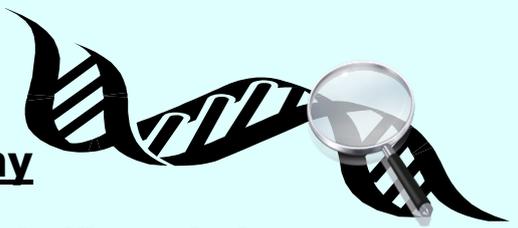


# 'DNA Detectives – To Catch a Thief'



**Weblinks**

## Web links to accompany



### “The DNA Detectives – To Catch a Thief” workshop

#### Literacy

In the first part of my workshop we focus on literacy. We have a go at writing a chapter in my book, use a thesaurus to discover some “wow” words and look at the importance of word order in sentences. I have found some great games and activities to complement this part of the workshop.

1. This is a fantastic interactive way to create some brilliant stories. You can choose Sci –Fi, adventure, fantasy or scrambler.

<http://www.scholastic.com/teachers/story-starters/>

2. There are great story telling activities to try on this page.

<http://www.jumpstart.com/parents/activities/story-writing-activities>

3. This is another great interactive website where you can write a piece in a newspaper or comic, help write an invitation or come up with an exciting story.

<https://www.topmarks.co.uk/english-games/7-11-years/writing>

4. Some great games and activities to help discover lots of “wow” words

<http://www.sparklebox.co.uk/literacy/vocabulary/activities/other.html#.WcOIoMiGPIV>

5. Some fantastic “wow” word resources for expanding on vocabulary.

<http://www.twinkl.co.uk/resources/wow-words-adjectives/1>

6. This is a brilliant online thesaurus for children so they can discover plenty of “wow” words.

<https://www.collinsdictionary.com/dictionary/english-thesaurus/black>

7. There are some great games on this page to help get sentence structure and punctuation correct.

<http://www.sentenceplay.co.uk/sentenceGames.htm>

8. Lots of fantastic games for creating sentences on this page.

<http://www.bbc.co.uk/skillswise/topic/sentence-structure>



## **Science**

In the second part of the workshop we concentrate on the science element of the book. We find out what DNA is, how big it is, where it is found in the body. We also discover what cells are and find out how forensic scientists use DNA to solve a crime. Finally we use electromagnets to have an exciting competition. There are some great weblinks in this section which complement this section of the workshop.

### **What is DNA?**

1. Watch this video clip to find out what DNA is:  
<http://learn.genetics.utah.edu/content/basics/dna>
2. This fact page from yourgenome gives a great introduction to what DNA is.
3. What is DNA fact page – <https://www.yourgenome.org/facts/what-is-dna>
4. Do you know what a genome is? Find out with this fact page from yourgenome.

What is a genome fact page - <https://www.yourgenome.org/facts/what-is-a-genome>

5. Why not make a DNA sequence bracelet. Find out more about DNA and its chemical letters A, T, G and C with this bracelet making activity from yourgenome.

<https://www.yourgenome.org/activities/sequence-bracelets>

6. Find out how to make a DNA Helix out of sweets:

<https://www.youtube.com/watch?v=iNztJjHKw98>

7. Make an origami DNA helix:

<http://www.yourgenome.org/activities/origami-dna>

8. Have a look at this great song all about DNA!

<https://www.youtube.com/watch?v=T5gEIViVAPw>



## Find out what our DNA does and how our DNA makes us unique

1. This video clip by Dr. Aoife McLysaght from the Royal Institution lectures explains about DNA, genes and chromosomes. There are some great illustrations of these different topics which make them easy to understand  
<http://ed.ted.com/on/86fguRtb>

2. Find out about the DNA code from yourgenome. What does DNA do?  
<https://www.yourgenome.org/facts/what-does-dna-do>

3. Why do some people have different eye colour or dogs have different fur colour? It's all in the DNA code find out more from yourgenome

What is genetic variation: <https://www.yourgenome.org/facts/what-is-genetic-variation>

4. Why not have a go at this interactive game to learn about variation in our DNA that makes us unique.

<http://www.insidedna.org.uk/hmlm>

5. Have a go at this interactive program to find out what happens when you zoom into our bodies and have a look at the cells, nucleus and our DNA in more detail.

<http://www.rigb.org/education/games/human-body/dna-focus>

6. Watch the video clip first to see how DNA affects the colour of our eyes then try the interactive game to see if you can use what you have learnt to change the colour of the baby's eyes to blue and then brown!

<http://www.richannel.org/collections/2013/chromosome#/chromosome-15>

<https://www.abpishools.org.uk/full-screen-animation/232/229>

7. This video clip gives a beautiful animated explanation about DNA 'The instruction manual for life'. It explains about what makes us unique.

<http://www.popsci.com/science/article/2013-03/watch-absolutely-beautiful-animated-explainer-dna>

8. Find out about other organisms which have DNA, how much DNA they share in common with humans and what makes you – you! There are some amazing facts in this video!

<http://www.richannel.org/18-things-you-should-know-about-genetics>



## What is a cell?

Find out more about cells by clicking on the links below.

1. Why not watch the video clips below to help your understanding of what cells are?

<https://www.youtube.com/watch?v=8qFACgy7Ufw>

<http://ed.ted.com/on/lm7NqUdx>

2. Find out what a cell is with this great fact page

<https://www.yourgenome.org/facts/what-is-a-cell>

3. Ever wondered what the inside of the cell looks like? Click on this link to zoom into the cell, the nucleus and the chromosomes!

<https://www.abpischools.org.uk/full-screen-animation/231/228>

4. Find out what a chromosome is?

<https://www.yourgenome.org/facts/what-is-a-chromosome>

5. Watch this video clip to find out more about the structure and function of different cells.

<https://www.youtube.com/watch?v=hywRdDVR76A>

6. Got a good memory? Can you match all the things found inside a cell with this game?

<https://www.yourgenome.org/interactives/cell-snap>

7. See where your DNA is found by zooming into the body with this 3D animation.

Zoom into your genome: <https://www.yourgenome.org/video/zoom-in-on-your-genome>

8. Try these interactive games to find out just how big a cell in your body is!

[http://www.cellsalive.com/howbig\\_js.htm](http://www.cellsalive.com/howbig_js.htm)

<http://learn.genetics.utah.edu/content/cells/scale/>

9. Why not make your own cell out of a cookie. Click on the link below to find out how.

<https://www.childrensmuseum.org/blog/saturday-science-homemade-animal-cell-cookie>



## **Why not try extracting some DNA from fruit at home**

1. Why don't you try extracting some DNA at home? Watch the video clip below to find out how.

[https://www.youtube.com/watch?v=Fga\\_IUQdVh4](https://www.youtube.com/watch?v=Fga_IUQdVh4)

## **What does extracted DNA look like?**

1. Have you ever seen human DNA? Why not watch the video clip below to see Professor Brian Cox extract some human DNA.

<http://www.bbc.co.uk/news/science-environment-21184523>

2. Click on the link below to see an image of what human DNA looks like. Do you think it looks like white cotton?

<https://explainers.wordpress.com/2007/10/18/the-bubbles-in-your-test-tube/>

## **Find out "What is a DNA profile?"**

Have a look at the DNA from the suspects and the sweets to work out who was the thief!

1. Click on the Power point presentation on my website "Who stole the sweets". Follow the instructions to find out what a DNA profile is and find out the identity of the thief! Is it Harry or Peter?

## **How can you tell if DNA is from a girl or a boy?**

1. Have a look at the PowerPoint presentation "How can you tell if DNA is from a boy or a girl?" on my website. Use the presentation to find out how to tell the difference between a male and female from looking at the DNA profiles. See if you can correctly identify which of Annabelle and Harry's friends are male and which are females.
2. Click on this interactive animation which explains how Nettie Stevens and Dr Edmond Wilson discovered the chromosomes responsible for making you male or female.

<http://www.dnaftb.org/9/animation.html>



3. Click on the movie clip on my website "Explanation of X and Y chromosome" to find out more and how we can identify males and females

### **DNA Snap – Can you match the DNA from the stolen dogs just like in the workshop?**

1. This is your chance to be DNA Detectives. Print out the DNA profiles from five stolen dogs and the fur found in the shed (you can find these on my website). See if you can correctly identify which dogs were being kept in the shed. Check the results to see if you identified which dogs were in the shed correctly.

PDF: 'Can you match the DNA to the dog?'

PDF: 'Can you match the DNA to the dog?' Results

### **Every contact leaves a trace**

This means everything you touch can leave a trace of DNA. Forensic scientists can use the DNA to identify who has been at the crime scene. You can find out how forensic scientists collect evidence and try these fun activities by clicking on the web links below.

1. Watch this video clip to see how forensic scientists use DNA evidence found at a crime scene to catch a criminal.

<https://www.youtube.com/watch?v=AkBUriMK9u8>

2. Find out about the different roles of the police, Crime Scene Investigators (CSI), crime scene photographers and forensic scientists, how they work together to solve a crime and what qualifications you need to do these jobs by watching this presentation made by Birmingham Metropolitan College.

<https://www.youtube.com/watch?v=QP9IE0XWqw0>



3. Have a look at this series of videos made by a Primary school who carried out their own criminal investigation. Find out what evidence was left at the crime scene and how the children tested the evidence to find the culprit. They even did their own DNA analysis from a sample found at the crime scene just like Annabelle and Harry in the story.

<http://archive.teachfind.com/ttv/www.teachers.tv/videos/part-2-collecting-the-evidence.html>

<http://archive.teachfind.com/ttv/www.teachers.tv/videos/part-3-dna-fingerprinting.html>

<http://archive.teachfind.com/ttv/www.teachers.tv/videos/part-4-the-verdict.html>

### **Find out about the outfit worn by Crime Scene Investigators (CSI) and how real forensic scientists investigate a crime scene**

1. Watch the video clip below to find out why real Crime Scene Investigators (CSI) wear outfits like this when they collect evidence from a crime scene.

<https://www.youtube.com/watch?v=JgzdhUAJrBA>

### **Find out how Crime Scene Investigators collect evidence from a crime scene**

1. Watch the video clip below to find out what it is like to work as a real Crime Scene Investigator (CSI) and collect evidence from a crime scene.

[http://news.met.police.uk/blog\\_posts/realcsi-crime-scene-examiners-47236](http://news.met.police.uk/blog_posts/realcsi-crime-scene-examiners-47236)

2. Help Detective Bones solve a crime that has occurred in the Science Centre. You will need to collect the evidence and then send it to the laboratory to be analysed. Can you solve the case?

<http://www.glasgowsciencecentre.org/play-games-online/gsi-glasgow-science-investigation.html>

3. Another case for you to solve against the clock! Gather the clues and see if you can work out who did it!

[https://web.archive.org/web/20131226063804/http://www.trutv.com/shows/forensic\\_files/games/buraledbonuses/index.html](https://web.archive.org/web/20131226063804/http://www.trutv.com/shows/forensic_files/games/buraledbonuses/index.html)



## **Have a look round a real forensic laboratory**

1. Why not click on the link below to have a look around a real forensic laboratory.

<http://kidsahead.com/external/activity/6>

2. This is a great activity to try. Click on the link to go to a virtual laboratory where you can extract DNA just like Annabelle and Harry using pipettes, centrifuges and water baths!

<http://learn.genetics.utah.edu/content/labs/extraction/>

## **Looking at the DNA evidence – Criminal Snap!**

1. Why don't you become DNA Detectives? Print out the PDF's "Criminal Snap Part 1" from my website. Look at the evidence and play your own game of Criminal Snap. Look at the results (PDF Criminal Snap Part 1 – Answer) to see if you got it right!

PDF: Criminal Snap Part 1

PDF: Criminal Snap Part 1 Answer

2. Find out about "DNA fingerprinting" and how it is used to solve a crime (this is for older children).

<https://www.yourgenome.org/facts/what-is-a-dna-fingerprint>

## **Can you make an electromagnet?**

1. Find out how to make an electromagnet by clicking on the link below (you will need an adult to help you):

[https://www.youtube.com/watch?v=wX9QBwJBI\\_Y](https://www.youtube.com/watch?v=wX9QBwJBI_Y)

2. Read more about electromagnets and why they work by clicking on the link below:

<http://www.bbc.co.uk/education/guides/z3g8d2p/revision/4>