Presenter notes for “What is a Chromosome?” school presentation

- **Slide 1** - You have probably heard about chromosomes and DNA, but you probably don’t know that much about them.

  This talk is a taster; a basic overview - which will hopefully give you inspiration to want to learn more!

- **Slide 2** - We all know that we have a heart. Lungs. Other organs in our bodies.

  But what are they made from? How do they work? And why are we all different?

  Let’s apply this to real life - the best way to learn.

- **Slide 3** - We’re going to work our way from big (our bodies) to very, very small (genes).

- **Slide 4** - Cells are like the lego.

  There are trillions of cells in our bodies.

  Imagine you are on your favourite beach; hold your hand out and pretend to pick up one, tiny grain of sand; in this grain of sand you could fit 15,000 human cells!

- **Slide 5** - RECAP: we’re going smaller now. So we have our bodies, within that we have cells, now we have chromosomes..

- **Slide 8** - RECAP: we’re going smaller now. So we have our bodies, within that we have cells, within that we have chromosomes, now we have DNA..

  Can you say DeoxyriboNucleic Acid?

- **Slide 9** - Remember we said how many cells were in a grain of sand? (15,000); remember we said that in the middle of each of those is a pair of chromosomes?; now imagine stuffing those chromosomes with this 2 metre bit of string?

  What if we added all our DNA in this classroom together - we could whizz around the universe!

- **Slide 10** - RECAP: we’re going smaller now. So we have our bodies, within that we have cells, within that we have chromosomes, within that we have DNA, now we have genes..

  Our unique instructions.

- **Slide 12** - I thought you all looked a bit like a chimpanzee; and there are some cabbagy looking people in the room too!

The 2% difference we have compared to a chimpanzee covers intelligence and walking upright; some genes are more vital than others.

- **Slide 13** - Think of it like a book; from big to small. Our body is the library!

  Or a packet of crisps - our bodies are the packet, the crisps are the cells, the chromosomes are the flavouring and the genes are the crumbs.

- **Slide 14** - Remember we said that we have 23 pairs of chromosomes - 1 from our dad and one from our mum - Ivor is missing his mum chromosome 15.

  An easy way to explain Angelman syndrome is “cleaning the house”: Gene UBE3E does the housework in our brains - it cleans and sorts. In my house (maybe yours?) mum does all the housework. Ivor’s 2 dad copies are lazy and don’t do anything!

  This explains why Ivor is the way he is. We want to use genetic science to make those dads do some work - we’ll come on to this later.

- **Slide 15** - Let’s talk about some more real life stuff.

  Nobody else in the whole world has the same DNA as you (unless you are an identical twin).

- **Slide 16** - Can you guess who the criminal is?

- **Slide 17** - Where do you think you are from? I have a large “Roman” nose - maybe I’m from Italy?!

- **Slide 19** - Angelman syndrome is diagnosed with a simple blood test.

  Recap the lazy gene story. If we can get one of Ivor’s dad genes to do some work he might be able to say some words and understand more. We may even be able to cure Angelman syndrome. Can you imagine that! Scientists are working out how to do this right now.

- **Slide 20** - Hands up, if you want - who thinks genetic profiling is a good thing? (remember the different uses we’ve talked about) Remember we need to take care. Scientists are very careful.

- **Slide 21** - Remember what we have learnt simply about the size of it all - how it’s all packed in. And our very own instruction book.

  And how scientists around the world have worked this out. (Francis Crick and James Watson first discovered the DNA double helix in 1953 in Cambridge!)

  And what we can do with this fantastic knowledge. We will be able to treat Angelman syndrome soon.