

## Heredity 1

### Each person has special traits

Traits are the things that make you who you are: the way you look, your personality.

The human body is made of cells, and inside our cells are genes.

Genes play an important role in determining physical traits — how we look, our personality traits, our gifts and talents. They carry information that makes you who you are and what you look like: curly or straight hair, long or short legs, even how you might smile or laugh. Many of these things are passed from one generation to the next in a family by genes.

*Think of a family that you know well. It can be your own family if you like. Name the family members. Explain how some of the traits of the parents are expressed in the children.*



## Heredity 2

### What Is a Gene?

Each cell in the human body contains about 25,000 to 35,000 genes. Genes carry the information that determines your traits, which are features or characteristics that are passed on to you — or inherited — from your parents.

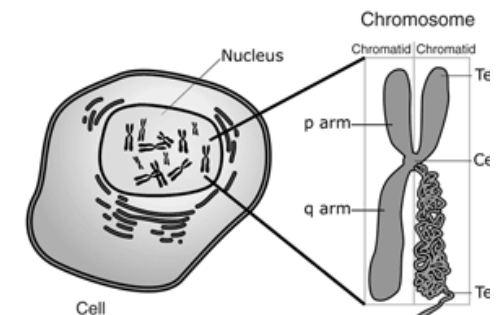
For example, if both of your parents have green eyes, you might inherit the trait for green eyes from them. Or if your mom has freckles, you might have freckles too because you inherited the trait for freckles. Genes aren't just found in humans — all animals and plants have genes, too.

Genes are so small that you can't see them. Genes are found on tiny spaghetti-like structures called chromosomes, and chromosomes are found inside cells. Your body is made of billions of cells. Cells are the very small units that make up all living things. A cell is so tiny that you can only see it using a strong microscope.

Chromosomes come in matching sets of two (or pairs) and there are hundreds — sometimes thousands — of genes in just one chromosome. Chromosomes are found in the centre part of the cell called the nucleus.

In humans, a cell nucleus contains 46 individual chromosomes, or 23 pairs. Half of these chromosomes come from one parent and half come from the other parent.

1. What is a cell?
2. What is a nucleus?
3. What are genes?
4. Where are they found?



### Heredity 3

#### How Do Genes Work?

When a baby is being formed in the mother's womb, each pair of genes inside the cells, is carrying out a specific job. Within each pair of genes there are specific instructions—much like in a cookbook recipe — for making proteins in the cell. Proteins are the building blocks for everything in your body. Bones and teeth, hair and earlobes, muscles and blood, are all made up of proteins. Those proteins help our bodies grow, work properly, and stay healthy.

Genes come in pairs. Each of your parents has two copies of each of their genes, and each parent passes along just one copy to make up the genes you have. Genes that are passed on to you determine many of your traits, such as your hair color and skin color.

You also can see genes at work if you think about all the many different breeds of dogs. They all have the genes that make them dogs instead of cats, fish, or people. But those same genes that make a dog a dog also make different dog traits. So some breeds are small and others are big. Some have long fur and others have short fur. Some dogs have genes for white fur and black spots.

1. Where are genes found?
2. What instructions do they give to the body that is being formed in the mother's womb?
3. Why are there so many different breeds of animals?



### Heredity 4

#### After their own kind

God created all the animals after their own kind, (Genesis 1:25). A *kind* is like a family of animals, like the dog family or the cat family. That means that only dogs can breed with dogs. Only cats can breed with cats. Donkeys can breed with horses because they both belong to the horse family.

Humans are the most special kind of being that God created. Humans cannot breed with animals. Humans did not come from monkeys. Monkeys are a kind of their own, totally separate from humans. Only humans have a free will to accept or reject Jesus, and to choose to live with God or not to live with God.

Some people ask, "If all people are descended from one family, what about apemen?"

The idea of apemen is an evolutionary idea, not a Biblical one. Some scientists claim that there are fossils that are between humans and apes, but this is really not the case.

Read and write out Psalm 139:13-15. Draw a picture of this.



## **Heredity 5**

### **All people in the world are related to Noah**

If all people descended from Noah's family, you might ask, "Why don't all people speak the same language?"

God created Adam and Eve to be the parents of everyone, so we are all related. And Adam's children, and their children after them, spoke the same language all the way to Noah. And then only Noah's family survived the Flood. So, all Noah's descendants spoke the same language even hundreds of years after the Flood. (Genesis 1:26-27)

Then something changed. After the Flood, Noah's descendants turned away from worshipping God. They did not spread out over the earth as God commanded, but instead built a huge tower to show how mighty they were without God. This made them feel like they didn't need God or His commandments. So, to force them to spread out across the world, God confused their language. Suddenly, people were speaking different languages and couldn't understand each other. People groups that spoke the same language started to move away from the Tower of Babel and the Tower was abandoned. (Genesis 11:1-9)

Noah and his family had genes for all the different traits that we see in all people groups today. But as people went off and lived in smaller groups (because of language), their children, and children's children expressed certain genetic traits, such as dark skin or light skin, blue eyes or brown eyes, curly hair or straight hair.

*Draw a diagram to show how different people groups came about.*

## **Heredity 6**

### **Where did all the races come from?**

The Bible refers to people groups as 'clans of people' or 'nations', not different races of people like we hear about today. All people alive today are descended from Noah's family, but as family groups moved away from Babel, they became isolated from everyone else. Over time, different features became dominant in different populations, so that, for instance, people in Africa and the Australian Aborigines have darker skin than people in Europe do, and people in China and Japan have almond-shaped eyes. But all these differences are very minor compared to all we have in common. 'Race' is just a convenient word to use for the appearance and customs we associate with different people groups. (Genesis 10:32)

### **A great big family**

Some people think some races are better than others, but this of course is not true. Because the Bible is so clear that we are one great big family, it teaches that we are really all the same. We may look different from each other, or have different customs or languages, but everyone is equally valuable.

The Bible says that in Christ, there is no Jew or Greek, which is another way of saying that all races are brought together. And it also says that in Heaven, people from every "tribe, tongue, and nation" will be there worshipping the Father and Christ. This is why it is so important for the Good News about Jesus to be preached in every part of the world.

*Explain why different people groups have similar traits.*