

## In your genes

### Worksheet 1 Teacher's notes

1. Do you take after your mum or your dad? What is the colour of your eyes? And your parents'? Your siblings? Can you roll your tongue? Are you short or tall? Do you know why? *all those traits are hereditary*

2. Watch Part one of video and find out :

<http://www.neok12.com/video/Genetics/zX57774078797d7564675a0a.htm>

- Inside each cell there is a nucleus. What is it? *it is the center of the cell with all our genetic material*
- How many genes do we have? *20,000*
- What is DNA composed of?

*DNA is made of chemical building blocks called nucleotides. These building blocks are made of three parts: a phosphate group, a sugar group and one of four types of nitrogen bases. To form a strand of DNA, nucleotides are linked into chains, with the phosphate and sugar groups alternating.*

*The four types of nitrogen bases found in nucleotides are: adenine (A), thymine (T), guanine (G) and cytosine (C). The order, or sequence, of these bases determines what biological instructions are contained in a strand of DNA.*

- What is the role of genes?

*they "tell" our cells what to do, they contain information about our body*

3. Now watch Part three and learn where do your genes come from.

- How many chromosomes do we have?  *$2 \times 23 = 46$*
- Where do they come from? *one set from the mother and one set from the father*
- How is your sex determined? *your mother has XX chromosomes, Your father XY, if the child gets XX chromosomes then it is a girl, XY combination makes a boy*
- What are dominant genes? *Genes can be either **dominant** or **recessive**. Dominant genes show their effect even if there is just one mutation in one copy of that gene pair; the one mutation "dominates" the normal back-up copy of the gene, and the characteristic shows itself. Dominant - a gene in one strand of DNA that is stronger than the corresponding gene in another strand of DNA. Recessive - a gene in one strand of DNA that is weaker than the corresponding gene in another strand of DNA.*
- What is a trait? *Trait - a distinguishing feature in a person*
- What is a diploid organism? *a pair of genes from each parent*
- What is a genotype? *our complete genetic identity*

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- What is a phenotype? *a description of our particular characteristics*

4. Read how the eye colour is passed from parents to children.

[http://www.sciencekidsathome.com/science\\_topics/genetics-a.html](http://www.sciencekidsathome.com/science_topics/genetics-a.html)

Can you draw the diagram for:

BB and Bb parents?

BB(brown)      Bb( brown)      BB (brown)      Bb (brown)

5. All these traits are hereditary. Check if you have it !

**1. Achoo Syndrome:** This dominant trait is also called the photo sneeze reflex. If, when suddenly exposed to light, you sneeze (usually two or three times) you have the genes for achoo syndrome. Next time you go to a movie, exit the dark theater through a door that leads directly outside. It's fun to wait outside and watch the people emerge from the movie. Some will sneeze as soon as they are exposed to light.

Dominant (have it) \_\_\_ Recessive (don't have it) \_\_\_.

**2. Chin Cleft:** A prominent cleft in the chin is due to the bone structure which underlies the Y-shaped fissure of the chin. Females appear to be less conspicuously affected than males.

Dominant (have it) \_\_\_ Recessive (don't have it) \_\_\_.

**3. Bent Little Finger:** A dominant allele causes the last joint of the little finger to dramatically bend inward toward the 4th finger. Lay both hands flat on a table relax your muscles, and note whether you have a bent or straight little finger.

Dominant (have it) \_\_\_ Recessive (don't have it) \_\_\_.

**4. Facial Dimples:** If you aren't sure if you have them, smile! Dimples are easiest to see when smiling. With dominant phenotype, you may have a dimple only on one side, or on both.

Dominant (have it) \_\_\_ Recessive (don't have it) \_\_\_.

**5. Free Earlobe:** The dominant trait is for lobes to hang free, a bit of lobe hanging down prior to the point where the bottom of the ear attaches to the head. With the recessive phenotype, the lobes are attached directly to the head.

Dominant (have it) \_\_\_ Recessive (don't have it) \_\_\_.

**6. Hand Clasping:** Clasp your hands together (without thinking about it!). Most people place their left thumb on top of their right and this happens to be the dominant phenotype.

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Now, for fun, try clasping your hands so that the opposite thumb is on top. Feels strange and unnatural, doesn't it?

Dominant (have it) \_\_\_ Recessive (don't have it) \_\_\_\_.

**7. Tongue Rolling:** If you have the ability to roll the sides of your tongue upwards to form a closed tube, you have the dominant phenotype for this motor skill. Those who are not dominant for this trait cannot roll their tongue, no matter how hard they may try.

Dominant (have it) \_\_\_ Recessive (don't have it) \_\_\_\_.

taken from:

<http://www.scienceprofonline.com/genetics/ten-human-genetic-traits-simple-inheritance.html>

Sources:

<http://www.neok12.com/video/Genetics/zX5870617f4648547e590445.htm>

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[http://www.sciencekidsathome.com/science\\_topics/genetics-a.html](http://www.sciencekidsathome.com/science_topics/genetics-a.html)

<http://www.pged.org/personal-genetics-101/what-is-genotype-what-is-phenotype/>