

# GENETICS WITH PROFESSOR ANN MATTHYSSE

## TALKING POINTS

1. What are the types of *E. coli* in the US that cause diarrhoea?
2. According to the CDC, how many toxigenic *E. coli* infections are there in the US every year? Research online to find out how this compares to the number of infections in other countries and to the number of infections caused by *Salmonella enterica* (*S. enterica*) in the US.
3. Why are *E. coli* infections of such concern when there are many more infections with *S. enterica*? What genes do some *E. coli* strains have that *S. enterica* lack?
4. Name three plant surfaces that *E. coli* bind to.
5. In what way can *E. coli* bacteria be thought of as 'sneaky'?
6. How many genes do we have inside each individual cell in our body?
7. What do genes do?

## ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

### BACTERIA EXPERIMENT

To perform this experiment, you will need a microscope, because bacteria are incredibly small! You should get some produce, such as lettuce leaves or sprouts from the store, and take a look at them underneath a microscope. Look carefully for any bacteria on the edges of your produce.

Once you have done this, try removing the bacteria by washing the produce in water. Have another look under the microscope. Has that made any difference to the number of bacteria on the produce?

Next, wash the produce in water and detergent (wear gloves for this). Now take another look under the microscope. Has that made any difference to the number of bacteria on the produce?

You could also compare the number of bacteria on undamaged parts of a plant, with the number on damaged parts of a plant (on lettuce, the damaged parts will show up as brown spots).

### OTHER ACTIVITIES

- Ann and her team have a page dedicated to their research project on *E. coli*. You can read more about their investigations and watch a video featuring Ann: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6101768/>
- The CDC website is an extremely useful resource, particularly for those who want to keep track of a current outbreak of an illness without all of the misinformation you get in the press and social media: <https://www.cdc.gov>
- No article on genes and gene variants would be complete without mentioning The Human Genome Project. We recommend exploring the site to find out as much as possible about this ground-breaking research: <https://www.genome.gov/human-genome-project>