



# Mutation Alert!

## A Lung Cancer Poster Project

### The assignment

Your class is invited to create posters that will be displayed all around your school. These posters will raise awareness surrounding various causes of lung cancer, including: genetics, behaviour, external factors and the environment.

Any media may be used to create the posters, for example: paint, pencil, collage or digital. Here is your chance to unite scientific facts with artistic creation!

Knowing that there is much controversy surrounding the causes of lung cancer, we have consulted with medical specialists, oncologists and scientists to gather the current scientific information on this subject.

Here is some information for your students that will allow them to better understand what lung cancer is and under what circumstances it will develop. Your students can use this information to help them create their posters.

### Background information

When our genes are subjected to mutations, we become more susceptible to developing a serious disease like cancer.

These genetic mutations can occur right at the very start of our lives, when we are still in our mother's womb. Genetic mutations can also occur when we are exposed to certain chemicals, X-rays and sunrays, or because of the food we eat.

Our lifestyle and the environmental conditions around us (called environmental factors) play a vital role in the development of a disease. However, some mutations can also occur spontaneously, without being caused by external factors.

Let's take lung cancer as an example. Several factors can cause this disease because they all cause mutations in the cells of the lungs. The accumulation of these mutations is what triggers the process that leads to the formation of cancerous cells. So what are these factors?

- 1. Cigarettes:** Smoking is the major cause of lung cancer. It is responsible for 80% of new cases in women and 90% in men. It is important to know that the chances of contracting lung cancer are greater if you smoke a significant number of cigarettes per day, if you have smoked for several years and especially if you started to smoke at an early age. It hasn't been proved that smoking filtered and light cigarettes reduces the chances of developing lung cancer.
- 2. Hazardous substances and minerals:** Handling substances such as arsenic, asbestos, nickel and petroleum-based products and being exposed to a gas called radon can increase the risk of lung cancer.
- 3. Second-hand smoke:** When a smoker has a cigarette, she or he only inhales a third of the toxic smoke that is produced. The remaining two thirds are left in the air and can be breathed in by the other people around. This smoke contains over 4,000 chemicals, for example, ammoniac, carbon monoxide, cyanide, nicotine and tar, and some 50 of them cause cancer. This is how non-smokers come to be at risk of developing smoking-related illnesses, for example throat and eye irritation, pneumonia, asthma and cancer.

Knowing that smoking is thus the major cause of lung cancer and that certain lifestyles and behaviour can greatly increase the chances of developing lung cancer, make posters to heighten your classmates' awareness of the problem.

