## What do we know?

Many of the most common lung diseases in Europe, such as lung cancer and chronic obstructive pulmonary disease (COPD), are caused by changes that occur in the cells that make up the lungs. Studies on stem cells in the lungs could lead to new understandings of these diseases and set the basis for future treatments.

Lung stem cells are important for initial lung development in foetuses. Although rare in abundance, lung stem cells in adults are important for repairing damage to lungs and replacing the specialised cells that make up the lungs, which naturally die and need to be replaced.

![Fluorescence tagging of progenitor and stem cells before and after lung injury.](image)

*Image: Adam Giangreco, University College London*

## What are researchers investigating?

Lung stem cells are present in developing lungs of foetuses and adult lungs, but these cells are not exactly the same. Researchers know there are changes that take place, but little is known about how these cells are different.

Researchers are investigating how damage to genes that control the growth and multiplication of lung stem cells may lead to cells that continue to divide, multiply, and potentially becoming lung cancers.

Most research on lung stem cells has been carried out in mice, however studies are beginning to examine how previous results relate to human lung cells.

## What are the challenges?

Studying how human lung cells function is very difficult in the laboratory because these cells form complex structures and tissues that are not yet possible to artificially replicate in the laboratory.