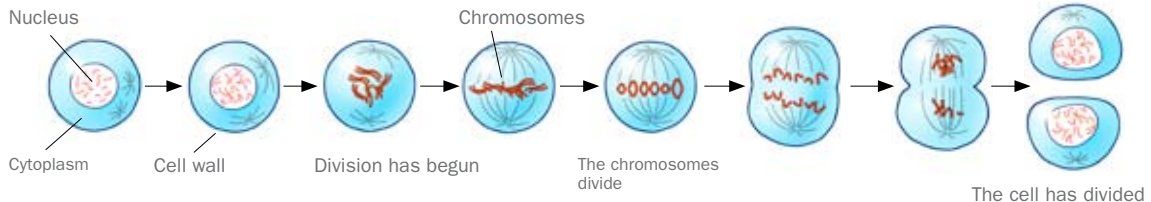


# WHAT IS CANCER?

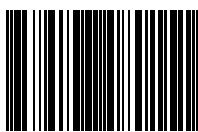
Cancer is not a single disease but an umbrella term for many different diseases with common features. Anyone can be affected by cancer, but it is much more common among the elderly than among children. Around 300 children in Sweden develop cancer each year.



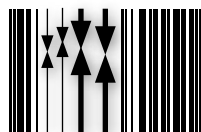
Common to all types of cancer is uncontrolled cell division somewhere in the body. This results in a tumour, which may grow to a very large size in one place and damage the surrounding organs, or be relatively small but spread to other parts of the body and form secondary tumours, or metastases.

## HOW DOES A NORMAL CELL BECOME A CANCER CELL?

A normal body cell can have many different functions. Some cells are there to produce hormones, while others are there to turn into nerve cells or liver cells, and so on. It is the genes in the cell's nucleus that govern what cells are to do and how often they are to divide. The genes are found in our chromosomes, which are made up of DNA molecules. A DNA molecule looks rather like a ladder, and this ladder can be likened to a barcode. If there are errors in the DNA molecule's barcode, the information it provides will be incorrect and could lead to uncontrolled cell division and the formation of a tumour.



Ordinary barcode



A DNA molecule is made up of molecules which form a barcode – our genes.

## NOT NORMALLY HEREDITARY

A change in these genes does not mean that cancer is hereditary. The change takes place only in the cancer cell itself, not in the rest of the body. There are hereditary forms of cancer, but the vast majority of cancers are not. In many cases we do

not know why errors arise in the barcode. We do know, however, that radiation and some toxins (from cigarette smoke, for example) can corrupt some of the information, resulting in a tumour.

## ERRORS IN THE GENETIC CODE

To see whether a cell has turned into a cancer cell, a sample needs to be taken. It is often possible to identify a cancer cell from its appearance alone when viewed under a microscope. In other cases more refined methods need to be used to identify the error in the genetic barcode and confirm that it is indeed a cancer cell.

## A COMBINATION OF TREATMENTS

It is almost always necessary to combine a number of different treatments when dealing with cancer. Sometimes all three of the treatment types available are used: chemotherapy, surgery and radiotherapy. Other times just two of these are used, and in some cases only one. The treatment depends partly on where in the body the tumour is located. If it is in a difficult place, it may not be possible to operate, and radiotherapy and/or chemotherapy will be used instead. Sometimes the tumour needs to be shrunk with chemotherapy before it can be removed surgically. Some forms of cancer do not respond well to chemotherapy, in which case radiotherapy and/or surgery will be required.

**SUCCESSFUL PROGRESS**

The treatment of child cancer has improved greatly over the past 30 years. The 1970s brought the first proper care programmes for children with cancer where individual chemotherapy drugs were combined. In the 1980s, multi-drug therapies were developed where several different chemotherapy drugs could be combined

now that enough was known about their effects. Not many new medicines were discovered in the 1990s, but it became possible to increase the doses and find new combinations. This clinical development work has meant that more than three in four children with cancer are now cured.

*Factual information verified by specialist Olle Björk from the Astrid Lindgren Children's Hospital in Stockholm*