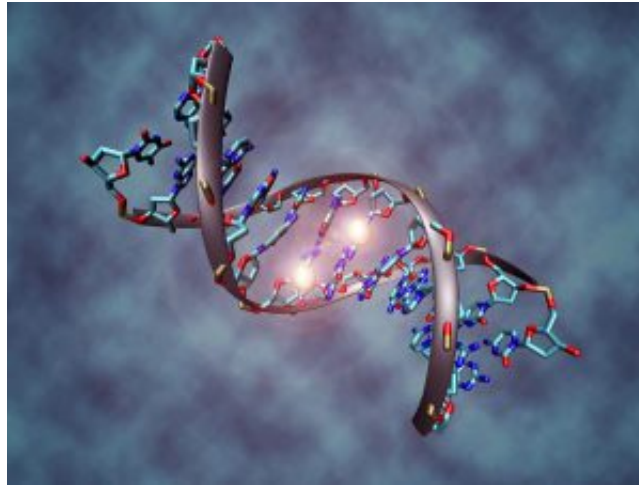


## Epigenetics, the science of change



Epigenetics is the science that studies the biological mechanisms that switch genes on and off, that make them active or inactive, without involving any changes in the DNA sequence. Having a gene switched on or off will change how the cells read the gene, read the information and how the cells produce proteins. To give you an idea, our DNA possesses over twenty thousand genes. That's a lot of information to read...

Why is Epigenetics important? It concerns the kingdoms of plants, animals and humans and the heritable changes in the' expression of their genes. Regarding plants, scientists are saying that further studies could help increase the yields and quality of crops. Plant Epigenetics is actually simpler than the Epigenetics of mammals and allows plants to remember past stresses, such as droughts or threats from other plants or animals, and pass that knowledge on quite effectively to the next generation so they can learn how to deal with them in the future.

As for us, recent studies have shown that the activation or de-activation of certain genes can be a cause of cancer and other diseases such as mental retardation associated disorders, immune disorders, neuropsychiatric disorders and paediatric disorders. You might have seen on the news the discovery of genes responsible for breast cancer, the brca 1 and brca 2 genes. A change in one of those genes can cause cancerous tumours to develop in the breasts and ovaries. Changes in these genes are hereditary and nowadays can be detected quite easily, allowing women to have preventive lifesaving surgery.

What are the root causes of Epigenetics? This is where the difficulty lies, as well as its misinterpretation. Scientists agree on saying that many factors, such as our growth, our environment and our lifestyle can have an effect on the epigenetics of our genes, and make certain genes activate or de-activate themselves. What has not been identified yet, as it is very complex, is what specific trigger will influence a specific gene change.

Even if we can't pinpoint an exact cause for every gene change it can at least make us more aware and study further the influence of our environment and lifestyle on the diseases, such as cancer, that are rising in our modern societies. The scientific community is warning us about the



increased number of pseudo medicines and practices that advertise themselves as linked with epigenetics. And although the scientific community does not reject the possible influence of some so called “new age” practices such as meditation on epigenetics, it is a long way from providing any concrete answers on the subject.

It is therefore our responsibility to observe how our behaviour affects our life and health, as well as that of others. We should review and consider how we deal with the different stresses of life and how we let them change us for the better or for the worse.