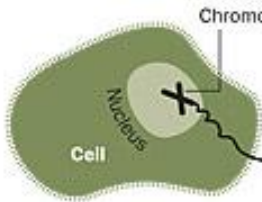


# HOW YOU CAN CHANGE YOUR GENES

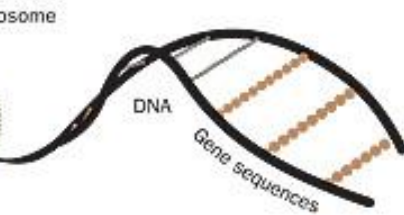
Dr. Lars Olov Bygren's research helps explain how a father's diet might affect certain traits he passes to his son.

## The Structure of Cells

### 1 THE STRUCTURE OF CELLS



### 2 THE ROLE OF DNA AND GENES



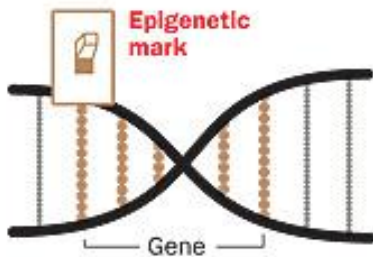
The human body has trillions of cells, each one with a nucleus, its command center. In each nucleus, DNA is tightly coiled around proteins called histones that work as support structures for genes

### The Role of DNA and Genes

Genes contain the codes for cells to produce the various proteins that organisms need to function. Humans have approximately 25,000 genes. Darwin and his followers taught us that it takes many generations to rewrite this basic genetic code.

## Where to Find Epigenetic Marks

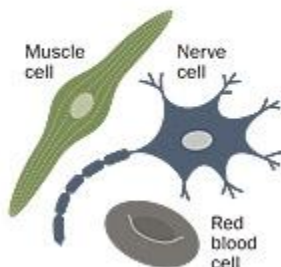
### 3 WHERE TO FIND EPIGENETIC MARKS



Just as genes provide the codes for producing proteins, various chemicals called epigenetic marks sit atop genes and offer basic instructions to them, telling them to switch on or off.

## Epigenetic Marks Define Cell Types

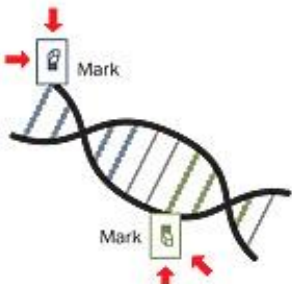
### 4 EPIGENETIC MARKS DEFINE CELL TYPES



All cell types — muscle cells, nerve cells, etc. — contain the exact same DNA. Epigenetic marks silence certain gene sequences and activate others so that nascent cells can differentiate. If the marks don't work properly, cancer or cell death is possible.

## How Environment Changes the Marks

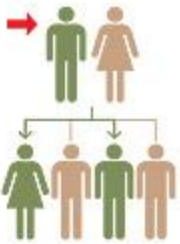
### 5 HOW ENVIRONMENT CHANGES THE MARKS



Stressors like a rich diet can activate epigenetic marks, modifying histones or adding methyl groups to DNA strands. These changes can turn genes on or off and may affect what gets passed down to your offspring.

## What Epigenetic Changes Can Mean

### 6 WHAT EPIGENETIC CHANGES CAN MEAN



If you overstimulate genes for, say, obesity or a shortened life span, your kids can inherit these overactivated sequences. That could mean a lifetime of battling unfavorable gene expression.

Reference website: (Time Magazine)

[http://www.time.com/time/specials/packages/article/0,28804,1952062\\_1952061\\_1952056,00.html](http://www.time.com/time/specials/packages/article/0,28804,1952062_1952061_1952056,00.html)