# Take out your DNA model

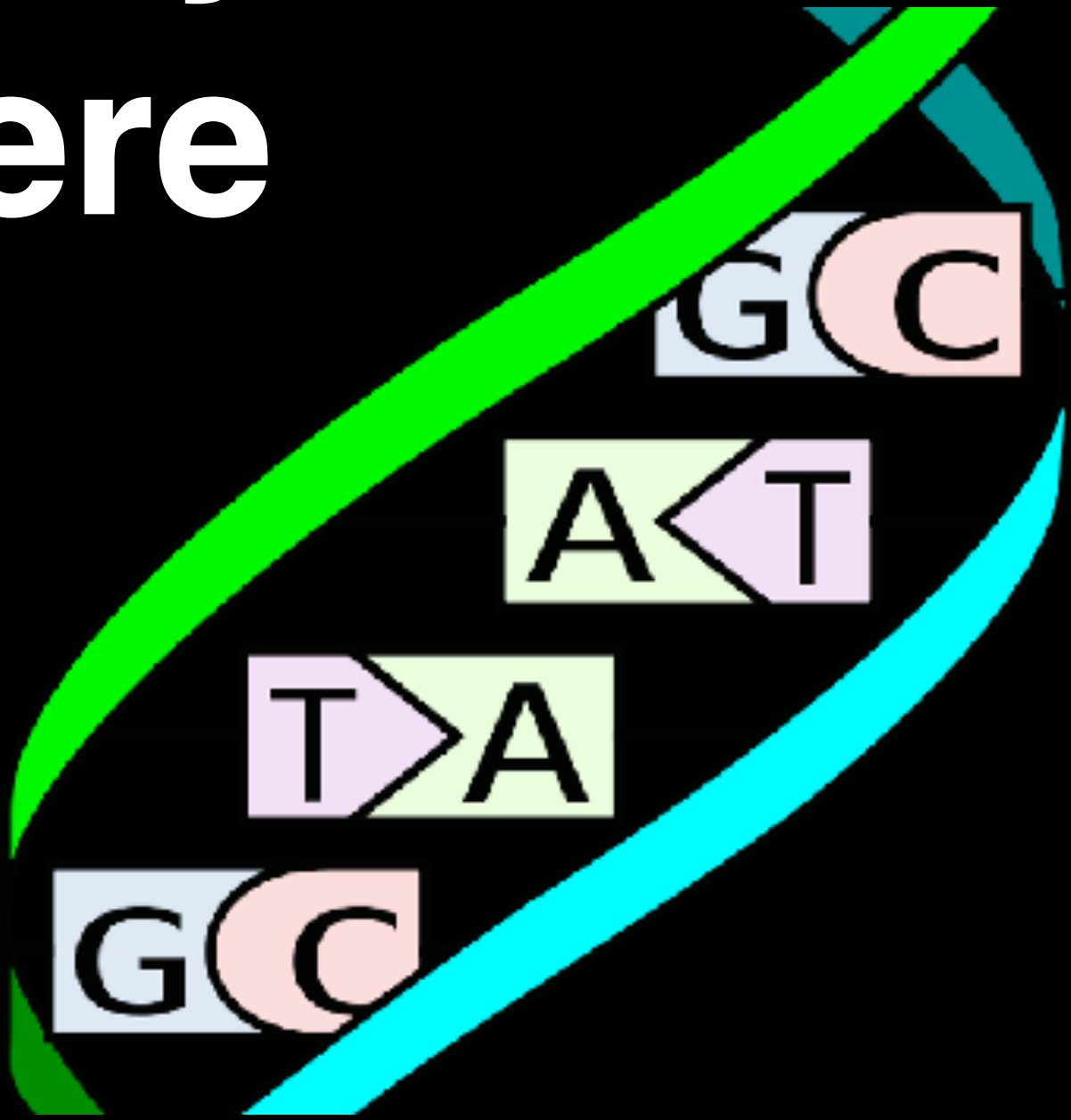
# DNA and the Human Genome

# DNA Model

**How was your model like actual DNA?**

**How was your model different from actual DNA?**

# How many base pairs were in your DNA model?



# GENETIC CODE

**DNA can be written out as a code. On your iPad, write the code of the 19 base pairs in your DNA model.**

# How'd you do?

GCCGCGTAAT
CGTACGCGCG
GCGCTATATAAT

# What happens if one part of the code is copied wrong?

GCCGCGTAATCG

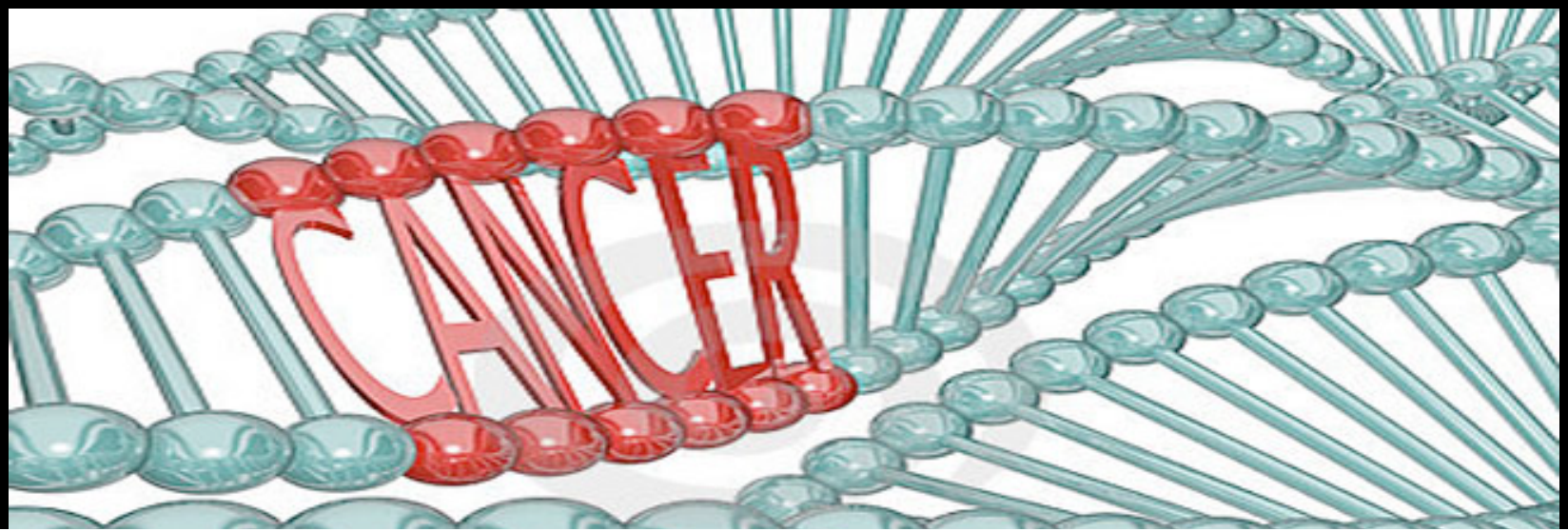
GCCGCGTATACG

# Do you think this ever happens in humans?

# Mistakes in the DNA code happen very frequently. They are called *genetic mutations*.

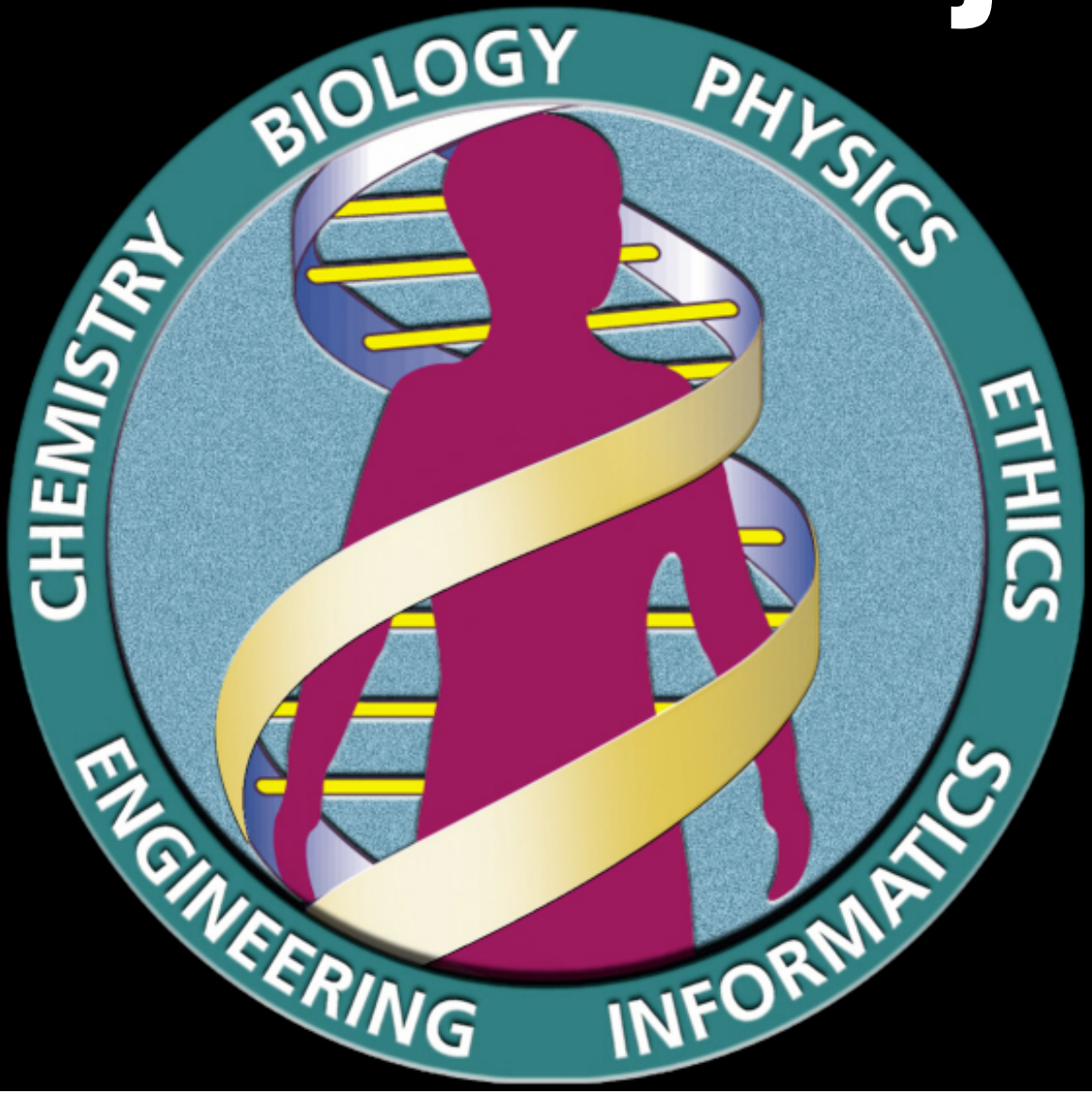
**Most mutations do not have a very big effect. However, some times the result is what is called a *genetic disorder.***

**This includes many cancers, hemophilia, Down Syndrome, Parkinson's, and more.**

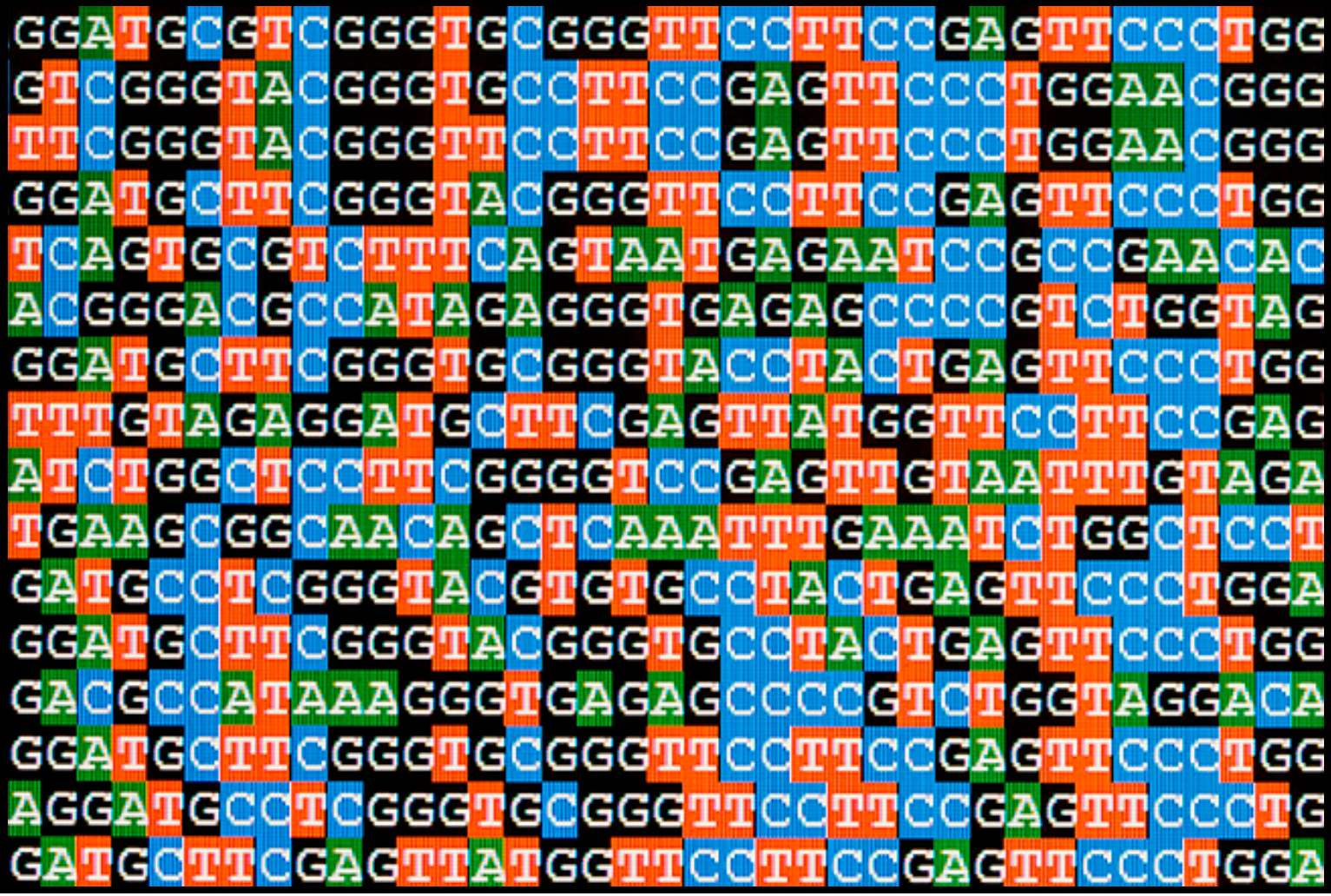


# We'll get back to genetic disorders, but first...

# The Human Genome Project



# The entire genetic code of an organism is called its *genome.*



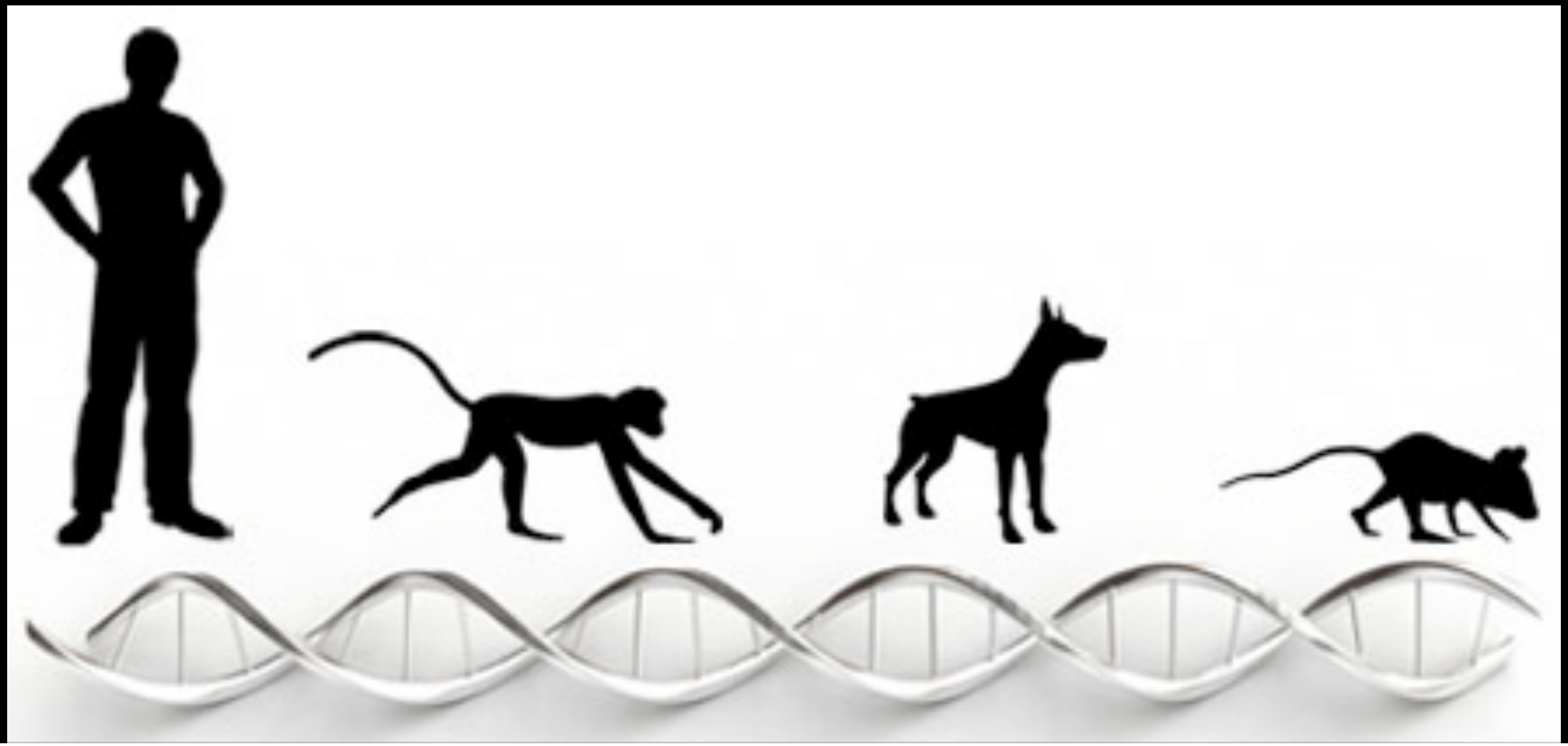
# The human genome contains over 3 billion base pairs.

# Scientists spent 13 years "mapping" the human genome. They finished in 2003.

# They found that each person's DNA is 99.9% identical to all other humans

# Only 0.1% of your DNA is different from other human's DNA.

# Knowing an organisms genome helps us see how closely different species are related….



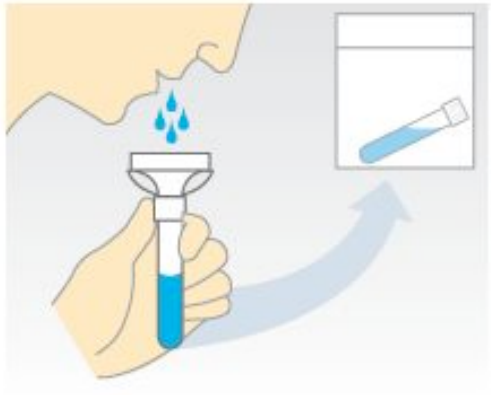
# In the past few years, services that will map an individual's specific genome have become available.

## Personal Genome Service™

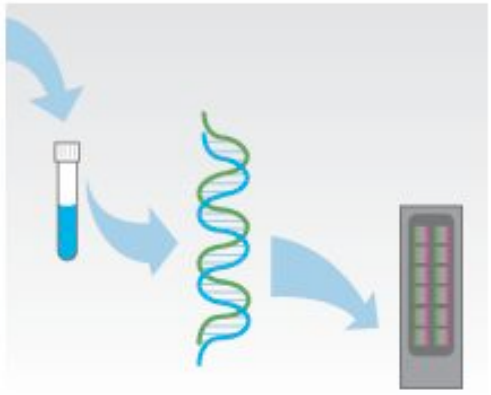
Get to know your DNA. All it takes is a little bit of spit.

Here's what you do:

1. Order a kit from our online store.



2. Register your kit, spit into the tube, and send it to the lab.



3. Our CLIA-certified lab analyzes your DNA in 6-8 weeks.

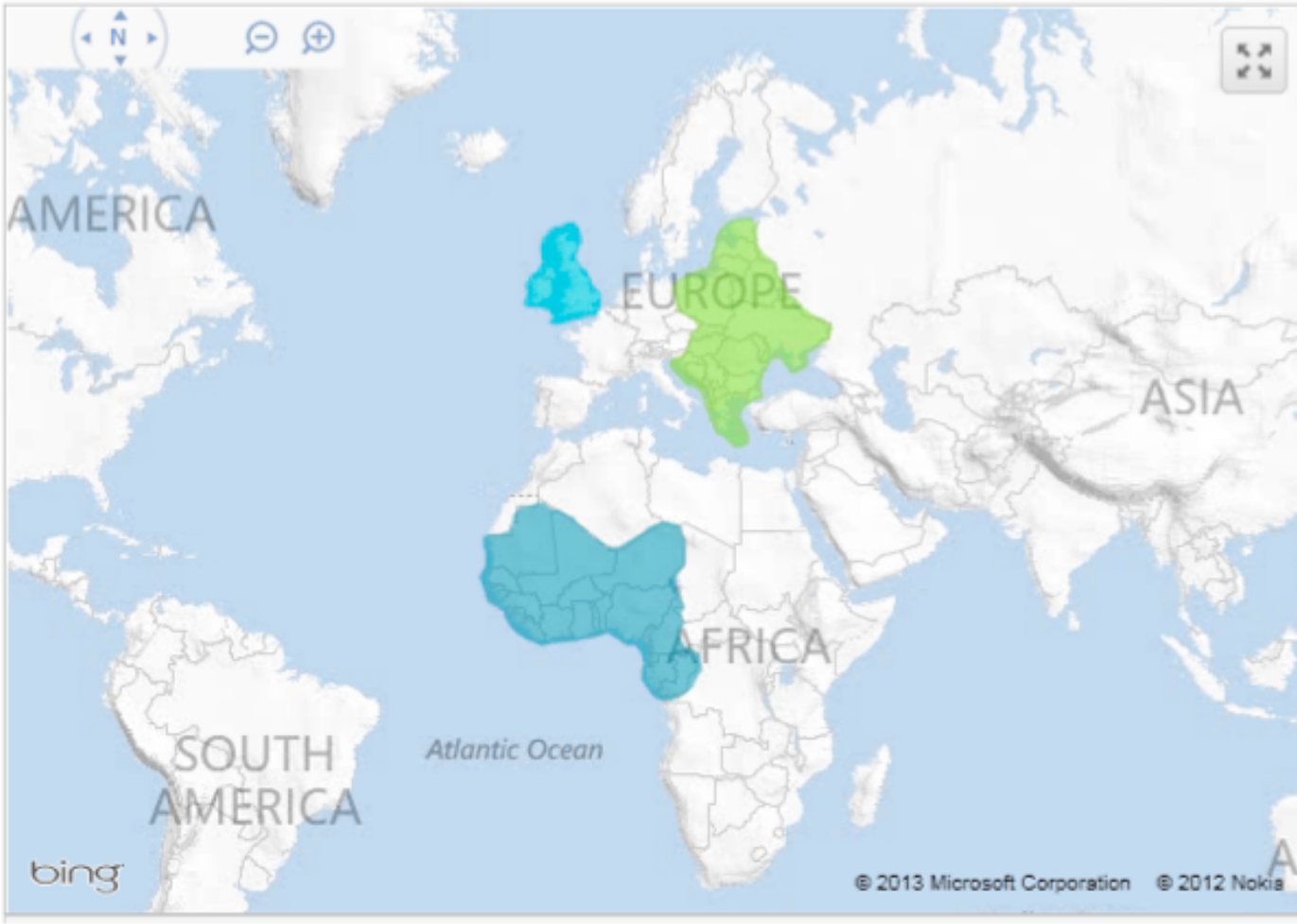

4. Log in and start exploring your genome.

# This let's people learn about their genetic ancestry.

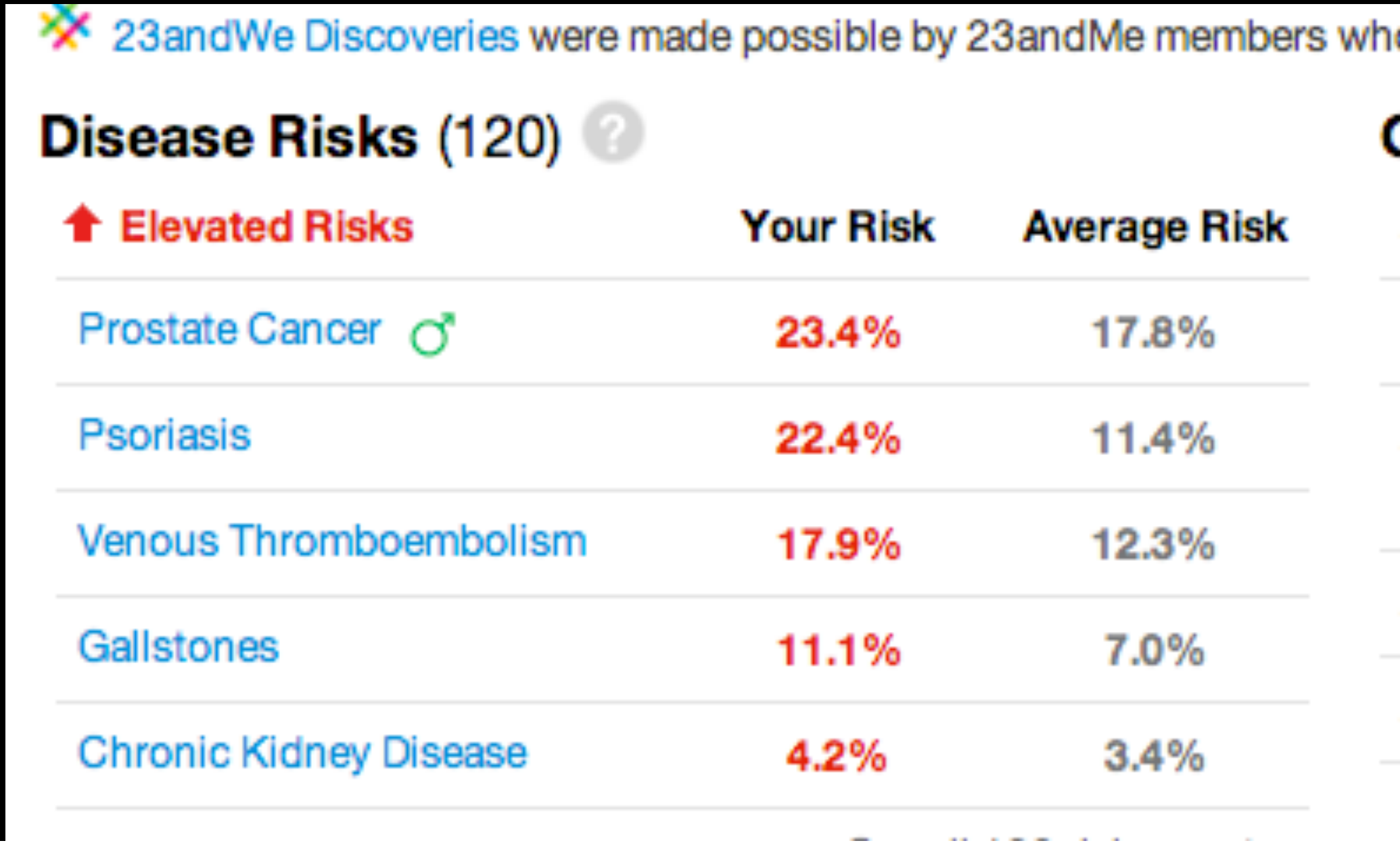
ancestryDNA™

## Genetic Ethnicity

| | |
|---|---|
| West African | 76% |
| British Isles | 11% |
| Eastern European | 8% |
| Uncertain | 5% |



# People can also find out if they are likely to get certain genetic diseases.

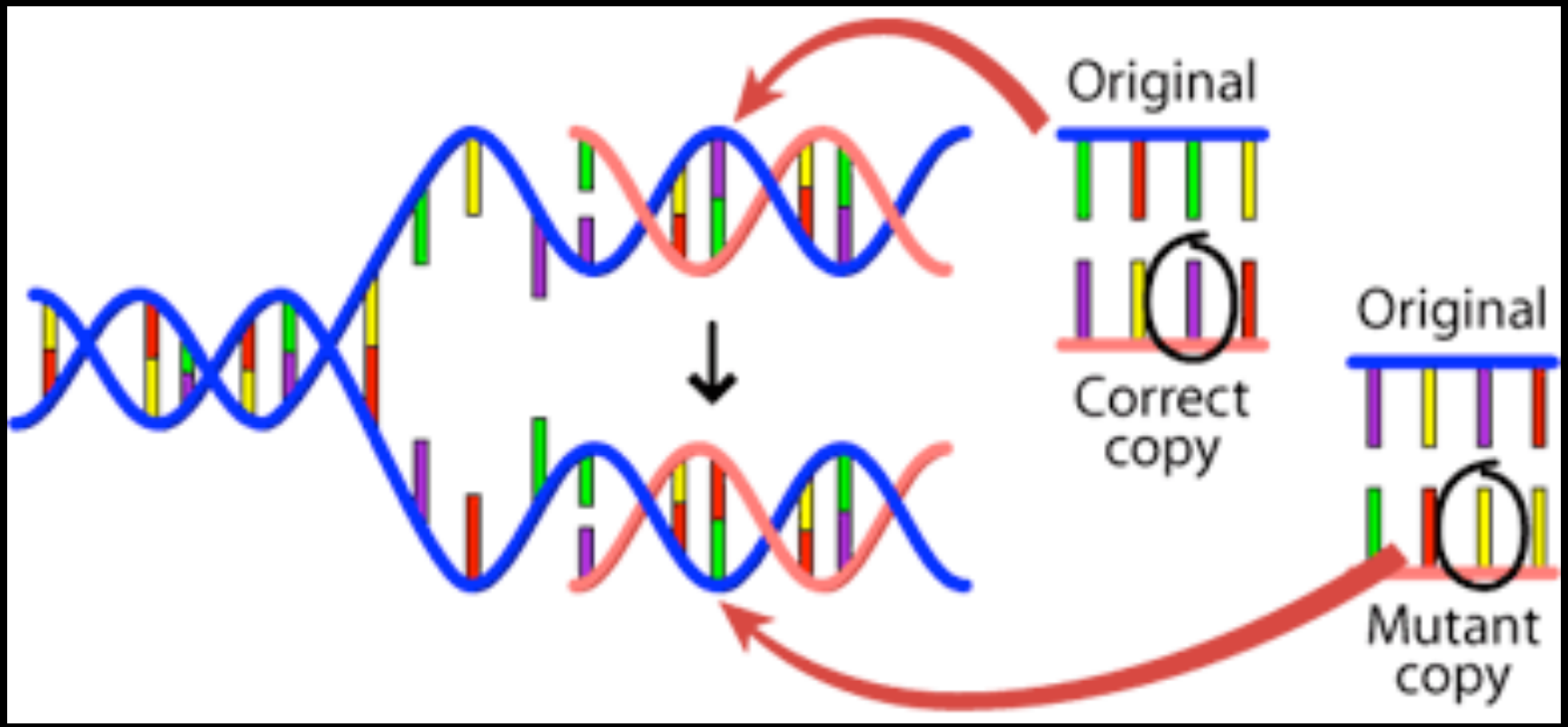


**In 2013, Angelina Jolie had a double mastectomy after learning she had a 65% chance of developing breast cancer.**

# Would you use a personal genome mapping service?

| Pros: | Cons: |
| --- | --- |
| | |

# Back to GENETIC MUTATIONS



# Mistakes in the DNA code happen very frequently. They are called *genetic mutations*.

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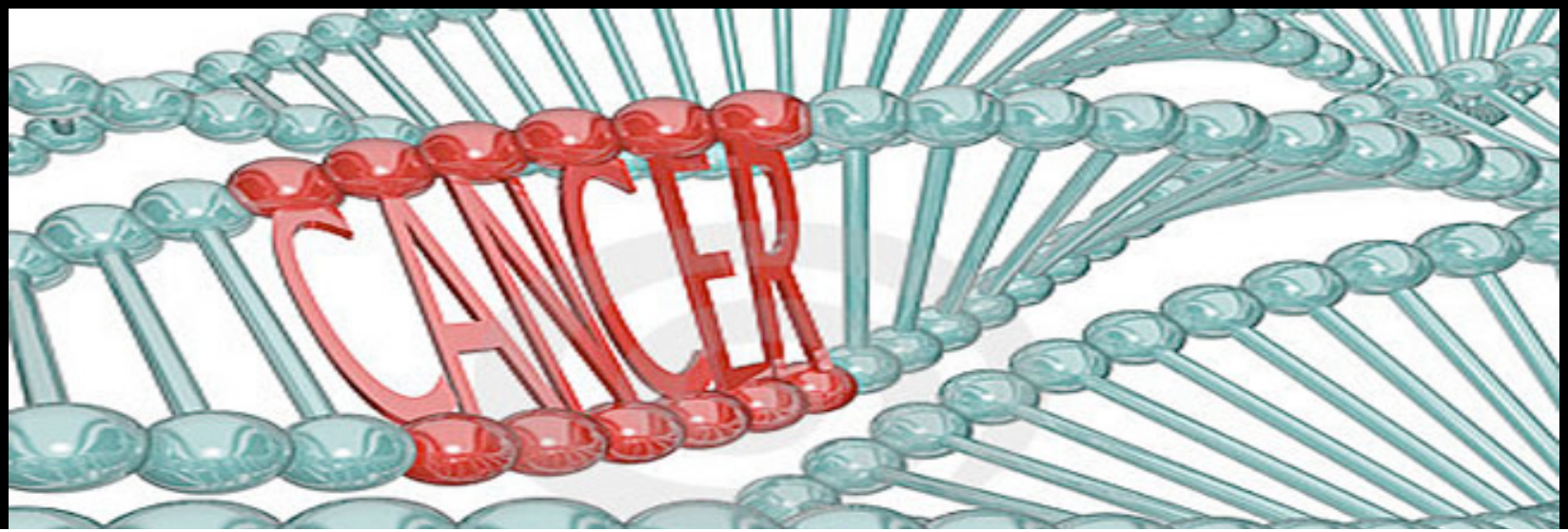
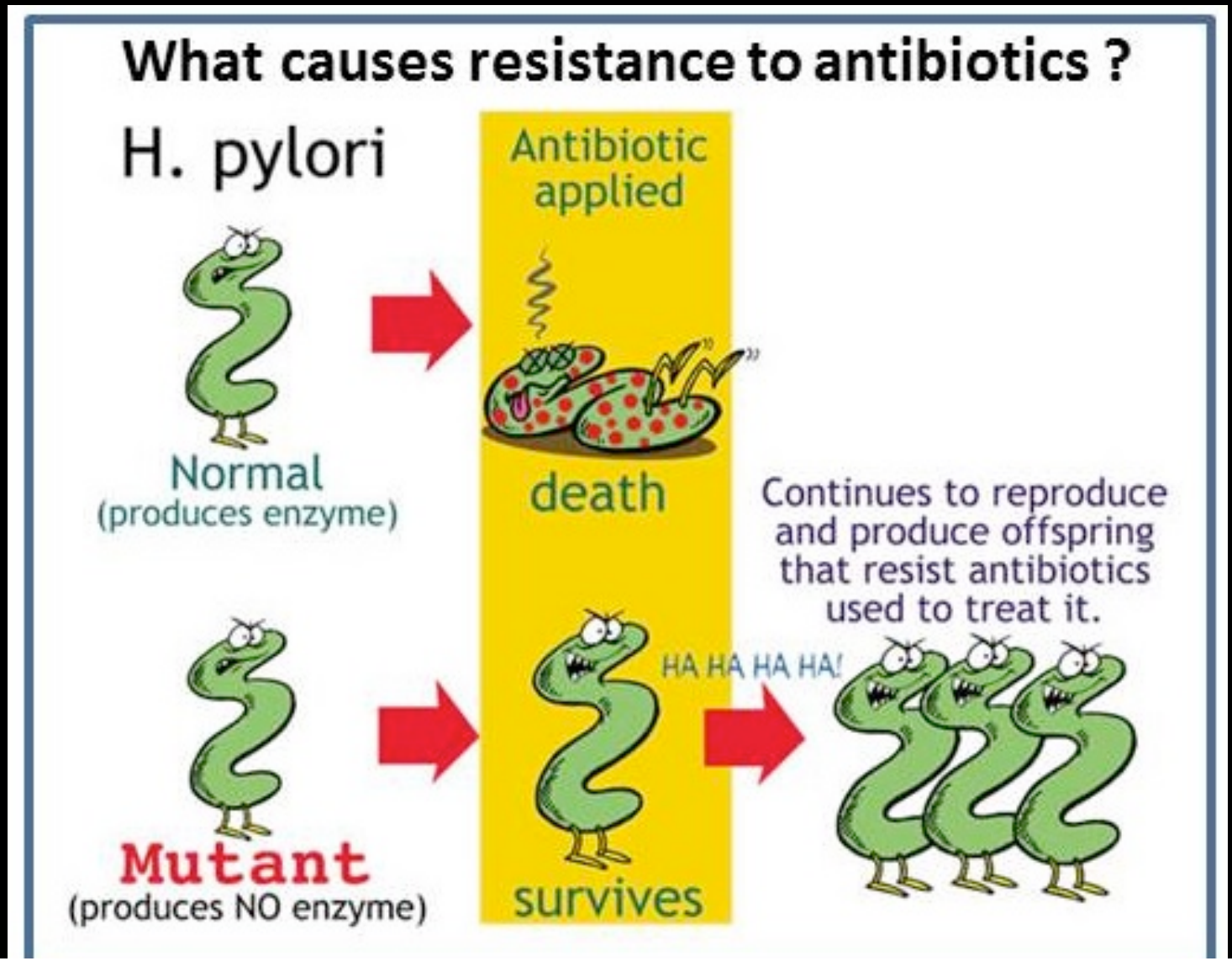
**This includes many cancers, hemophilia, Down Syndrome, Parkinson's, and more.**



# The comic X-MEN is based on the idea of genetic mutations that are beneficial.

# Mutations like in X-Men are not realistic, however some mutations do help survival.



# We will talk more about beneficial genetic mutations when we learn about Evolution.

# Assignment

Watch NOVA DNA -Cracking the Code of Life
Check on Human Genome Links on blog.