

# We Are All Genetic Creatures

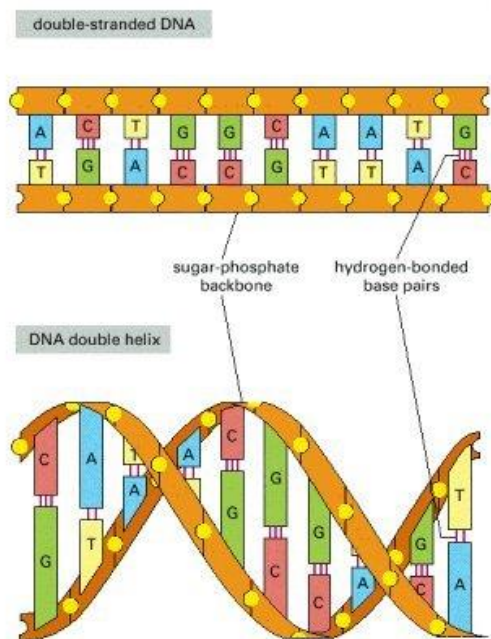
## Understanding Our Humanness Series Module #01

*Beliefs play key roles in dividing people today. One fact has become very clear to me as I studied religious, political and economic belief systems over the past thirty-five years is that **beliefs change**. Something I didn't know until a few years ago is that **the biology of beliefs doesn't change**. Until the 21<sup>st</sup> century, science had not discovered "how people know." But, today we have a growing body of factual evidence about "how people know" and it is called "The Biology of Beliefs." "Believing" is a biological process and it is the same in all people. The first step in understanding it is learning what it means to be a genetic creature. *Understanding the Biology of Beliefs will play a key role in bringing people together.**

*"Not one of your pertinent ancestors was squashed, devoured, starved, stranded, stuck fast, untimely wounded, or otherwise deflected from its life's quest of delivering a tiny charge of genetic material to the right partner at the right moment in order to perpetuate the only possible sequence of hereditary combinations that could result eventually, astoundingly, and all too briefly — in you." (Bill Bryson, A Short History of Nearly Everything)*

Bill Bryson's sentence sums up the reason you exist, along with all of your ancestors and every other human.

*A tiny charge of genetic material had to be delivered to the right partner at the right moment in order to perpetuate the only possible sequence of hereditary combinations that could result eventually in you, your parents, your grandparents, your great grandparents, etc.*



The "genetic material" is **DNA** (deoxyribonucleic acid). A male contributes one half of a baby's DNA and the other half comes from a female. It is important to know the following facts about DNA.

- The **DNA code** is written in a **four letter chemical alphabet** – **A** (adenine), **T** (thymine), **G** (guanine) & **C** (cytosine).
- Notice that **A** is always linked to **T** and **G** is always linked to **C**.
- We are members of one of the three million species with a DNA code.

Humans have about 19,000 genes.



More than a chicken.



About the same as a cat.

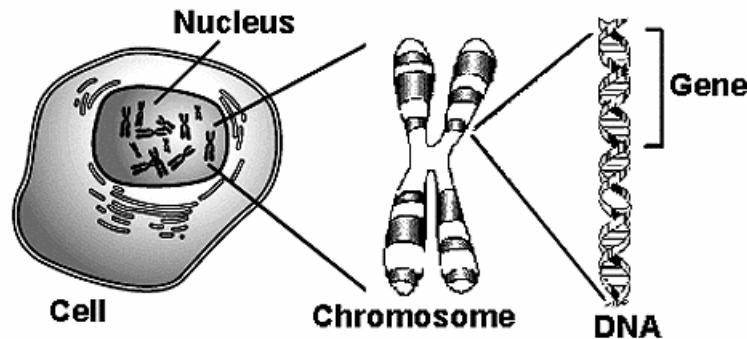


Fewer than an earthworm.

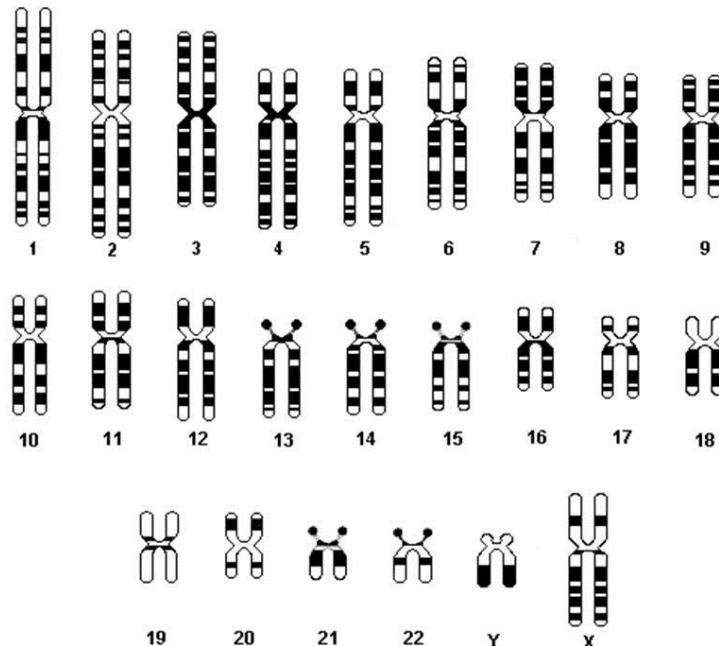


Fewer than a tomato.

- A **gene** is a specific section of DNA and genes are part of **chromosomes**, which are found in the **nucleus** of **cells**.



- Each cell normally contains 23 pairs of chromosomes (46 chromosomes in total).



- Twenty-two of the pairs of chromosomes **are the same in all people**. The 23rd pair, the sex chromosomes, differs between males and females. **Females have two X chromosomes. Males have one X and one Y chromosome.**

- A **genome** is **the complete DNA code of a specie**. The human genome is written in **3 billion DNA letters** and, if we were to print it out, *it would fill a space about the size of 800 bibles*.
- A complete copy of the human DNA code is stored in each cell of the human body. The average body contains approximately **37.2 trillion cells** and each cell contains about **6 feet of DNA thread**. This means there is a total of approximately **3 billion miles of DNA thread inside of every person**.
- The DNA code contains **instructions for making physical bodies** -- *eyes, ears, skin, fingernails, hearts, brains, livers, feet, bones, stomachs, elbows, skin, etc.*
- The DNA code also contains **epigenetic memories, genetic instructions for human functions** and a lot other things science has not figured out yet.
- **The DNA code in all humans is 99% the same.**

### Summary

The above information is based on facts that have been observed, measured and tested by many people who come from different cultures and have different belief systems. In order to internalize it as the subconscious level we encourage you to repeat and memorize these statements:

*I am a genetic creature.  
I am 99% percent genetically the same as other humans.*

When you have encounters and interactions with another person, remind yourself to think of these statements too:

*You are a genetic creature like me too.  
You are 99% genetically the same as me and every other person.*

Therefore, the more we know about the roles genetic factors play in human encounters and interactions the more successful we can make those situations. When discussions are about human bodies, specifically skin colors or genders, it is essential to make clear distinctions between genetic facts and beliefs.

### SOURCES:

<http://en.wikipedia.org/wiki/DNA>

<https://www.23andme.com/gen101/genes/>

<http://ghr.nlm.nih.gov/handbook/basics/howmanychromosomes>