

October 21 2013

**1) Review of base pairing/
compliment strands**

2) Mutations and Cancer

Warm-up:

"We begin feeling very separate and judging everything as it relates to us, as though we were the center of the universe. Even after we know better intellectually, we still judge things that way. In reality, of course, we are all cells in the body of humanity. We are not separate from our fellow humans. The whole thing is a totality. It's only from that higher viewpoint that you can know what it is to love your neighbor as yourself. From that higher viewpoint there becomes just one realistic way to work, and that is for the good of the whole. As long as you work for your selfish little self, you're just one cell against all those other cells, and you're way out of harmony...."

1. Ⓐ 46
 Ⓑ 78
 Ⓒ 90
2. Deoxyribonucleic Acid.

3. Provides the directions that guide the repair of worn out cell parts and the construction of new ones.

4. A = Adenine
 T = Thymine.
 C = Cytosine.
 G = Guanine.

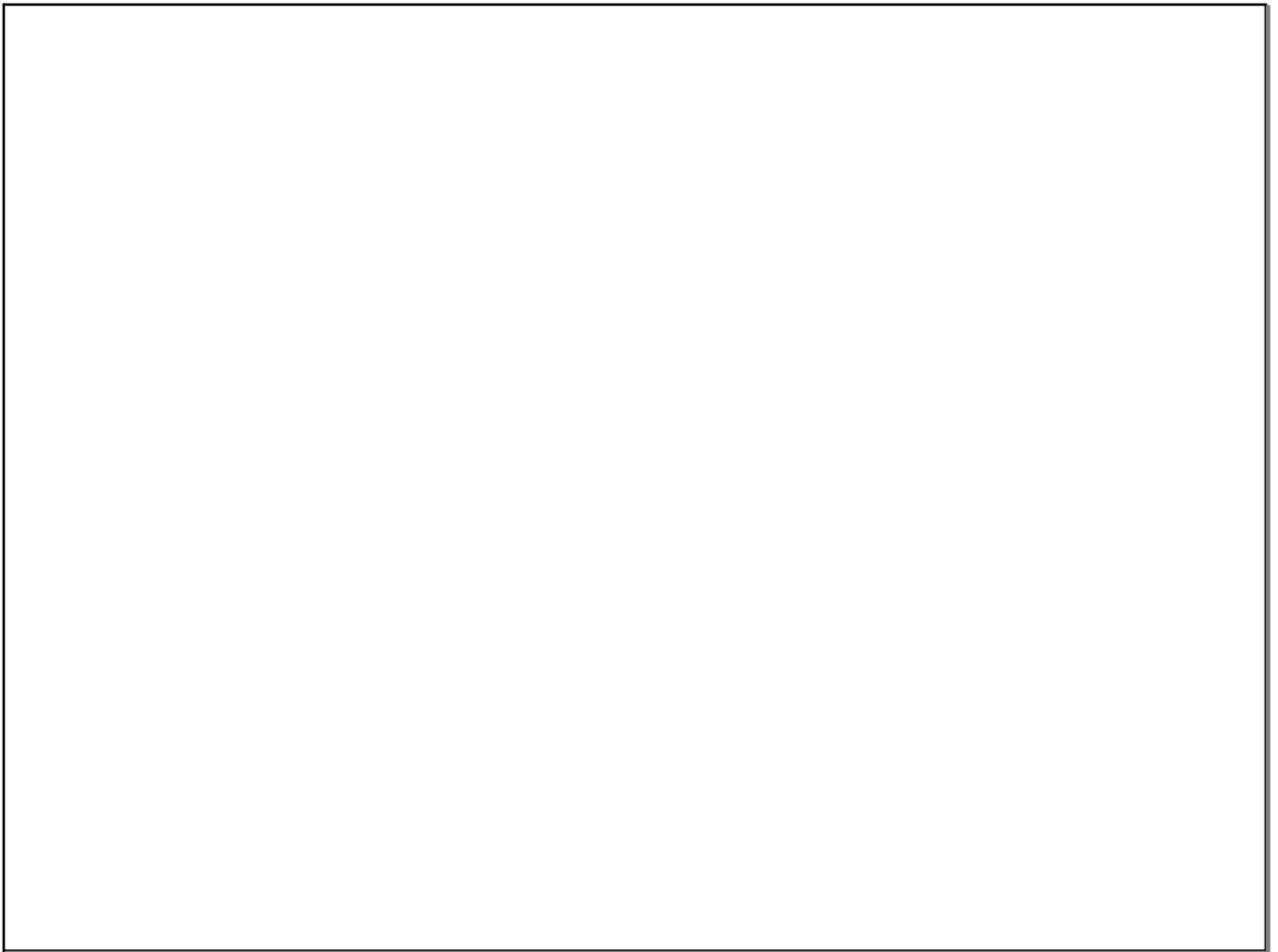
5. DNA makes a copy of itself
 It unzips from its double helix form and each nitrogen base pairs up with the matching bases to create two new DNA strands
 It is important because without it cell division would not be possible.

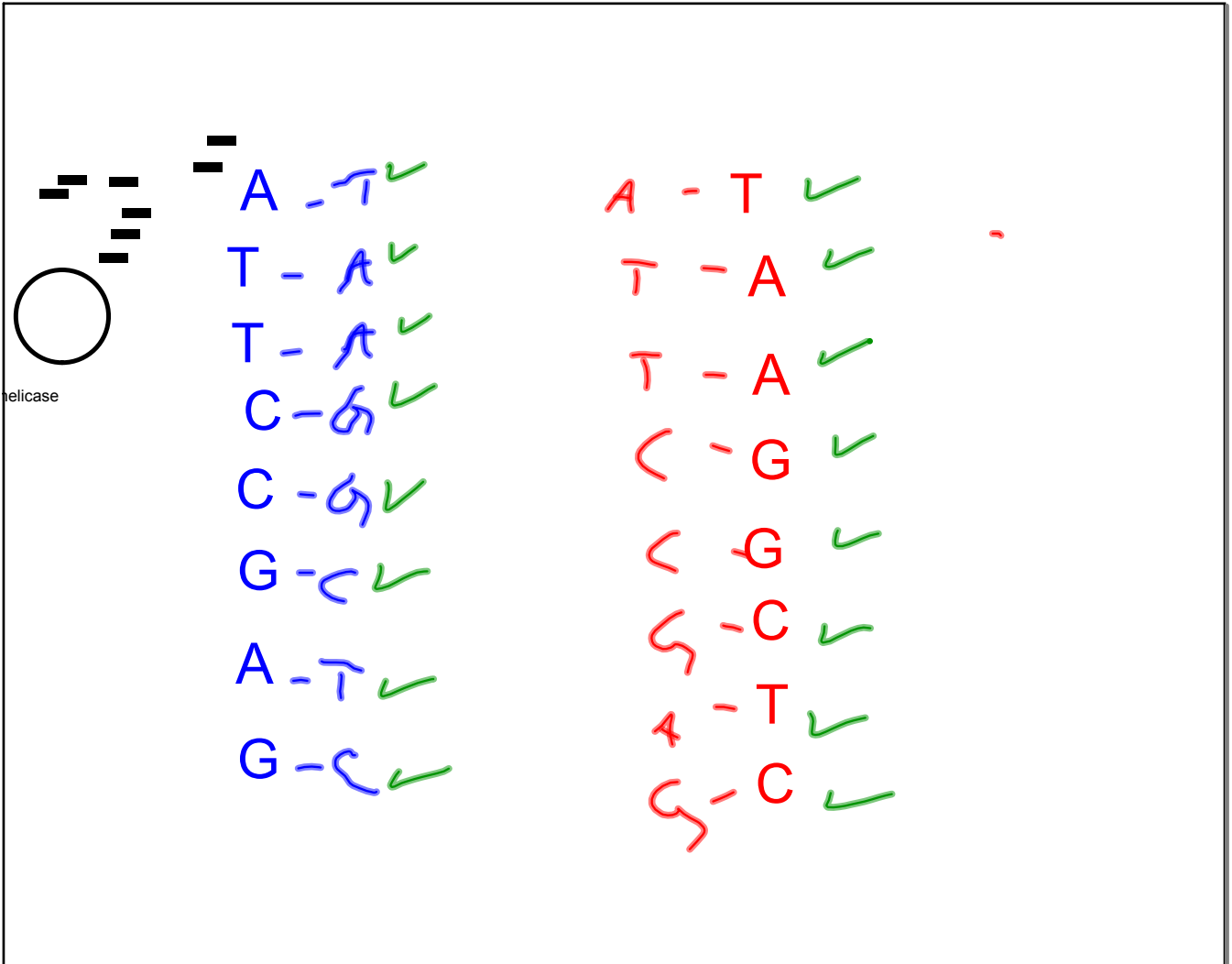
6. Organisms are so different because these 4 bases can be arranged in 100,000 genes, all with different combinations.

7. Because we have different genes.

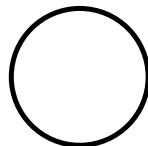
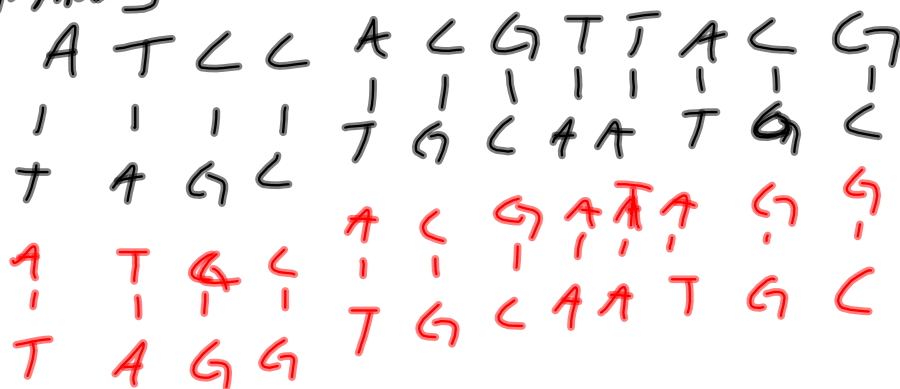
8. DNA fingerprinting is used to identify an individual from a cell. They take the DNA from strands of one cell (hair, skin, etc) and they compare it to the DNA content in an unknown sample.

b). In forensics, courtroom





Primary Strand.



Mutations are changes in the genetic code

How do mutations occur?

simple copying errors that are introduced when DNA replicates itself.

DNA damage through environmental agents including sunlight, cigarette smoke, and radiation.

Our cells have built in mechanisms that catch and repair most of the changes that occur during DNA replication or from environmental damage.

As we age, however, our DNA repair does not work as effectively and we accumulate changes in our DNA.

One set of damaging mutations are those that cause **Cancer**.
Cell division that has gone out of control.

Cancer

Any substance that causes a mutation is called a **carcinogen**

What are some things you have heard of that are carcinogens?

→ Tobacco use.

→ Artificial sweeteners.

→ Alcohol

→ Drugs

→ Radiation.

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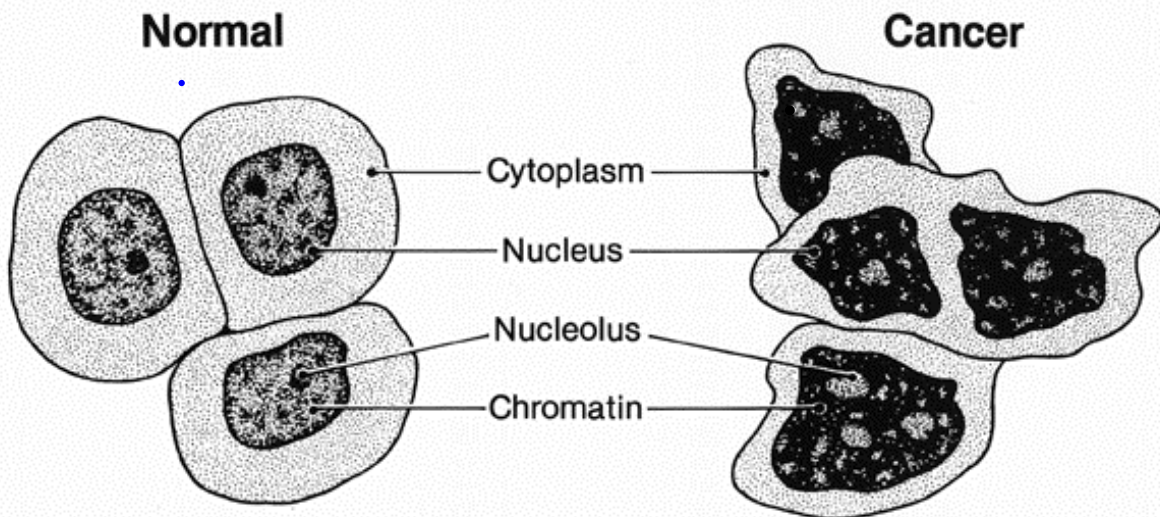
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Cancer Cells vs. Normal Cells

Difference between Normal cells and Cancer Cells

Normal Cells	Cancer Cells
cannot divide in isolation	divide in isolation
change shape and specialize	do not change shape or specialize

Normal and Cancer Cells Structure



- Large cytoplasm
- Single nucleus
- Single nucleolus
- Fine chromatin

- Small cytoplasm
- Multiple nuclei
- Multiple and large nucleoli
- Coarse chromatin

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Pg. 181 Qu. 1-3

Pg 182 Qu. 1,2.

Because cancer cells do not specialize and have no function they take up energy and resources from other cells.

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Questions 1-3 Pg. 181

Questions 1-2 Pg. 183.

1) When cell division is out of control.

→ Disease characterized by uncontrolled cell growth.

2) A mutation is a change in the genetic information in a cell.

↳ caused by carcinogens.

3) Cancer cells can divide in isolation, cannot specialize, and are structurally different.

↳ multiple nuclei, smaller cytoplasm

→ require more energy than normal cells.

Pg. 183, 1, 2.

1) A mass of cancer cells caused by rapid cell division

2) Benign → Harmless / stable.
→ isolated.

Malignant → Harmful / Dangerous.

→ spread to other areas.

Lifestyle and Cancer
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Tumor- rapid cell growth resulting in a mass of cells

Benign- Harmless tumors

Malignant- Dangerous tumors

