

Do Now (5 min)

4-22-11

1. What is the difference between **organic** and **inorganic** substances?
2. What are the **4 most common inorganic substances** in the human body?
 3. What **purpose** does each of those substances serve?

The Chemicals in Cells: Part 2

4-22-11

4-22-11 Agenda

1. Do Now (5 min)
2. Objectives (2.5 min)
3. Organic vs. Inorganic (2.5 min)
4. Organic Chemicals In Cells (37.5 min)
5. Closing (2.5 min)
6. Exit Slip (5 min)
7. Participation Grades (5 min)

Objectives (3 min)

- Content (The objectives you'll master today)
- **SWBAT:**
 1. *List the most common organic and inorganic substances in cells*
 2. *Describe the purpose of the most common organic and inorganic substance in cells*
- Language (How you will master the objectives)
- **By:**
 1. *Writing notes based on the PowerPoint*

Organic vs. Inorganic (5 min)

Objective: SWBAT: *List and describe the purpose of the most common organic and inorganic chemicals in cells by taking notes based on the PowerPoint*

Chemicals that are used in any of your **metabolic processes**: (body processes) can be divided into two categories.

Corrected!!!

Inorganic Substances:

-substances that **do not** contain C (carbon)

Organic Substances:

-substances that **do** contain C (carbon) and H (hydrogen)

-usually dissolve in H₂O (water) to release **ions**

Inorganic Chemicals in Cells (10 min)

Objective: SWBAT: *List and describe the purpose of the most common organic and inorganic chemicals in cells by taking notes based on the PowerPoint*

The 4 Most Common Organic Substances in Cells

Carbohydrates (Carbs.)

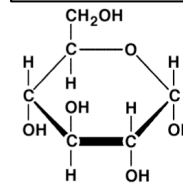
- contain molecules of carbon, hydrogen, and oxygen
- provide most of the energy cells require
- can be stored as “reserve energy”
 - Your body uses these if you don’t eat enough food

Three Types of Carbohydrates

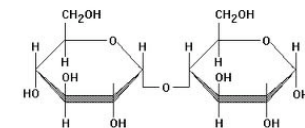
1. **Monosaccharide** (a.k.a. simple sugar): (sugar with 6 carbon atoms)
 - gives you quick energy (sugar, candy, white bread)
2. **Disaccharide**: (sugar with 12 carbon atoms)
 - gives you medium energy (sugar, candy, white bread)
3. **Polysaccharide**(a.k.a. complex carb.): (sugar with more than 12 carbon atoms)
 - gives you long lasting energy (fruit, veggies, whole-grains)

Structural formulas of carbohydrates

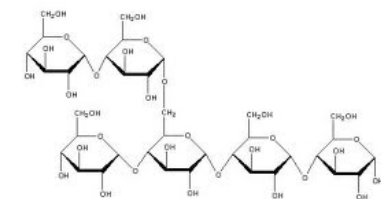
Monosaccharide



Disaccharide



Polysaccharide



Inorganic Chemicals in Cells (10 min)

Objective: SWBAT: *List and describe the purpose of the most common organic and inorganic chemicals in cells by taking notes based on the PowerPoint*

The 4 Most Common Organic Substances in Cells

Lipids (Fats and Steroids)

-fats and steroids are both types of lipids

-do not dissolve in water H_2O

Fats

-used to build cell parts

-supply cell w/ energy

-made from **fatty acids** and **glycerol**

-**saturated fats**: (fats bonded w/ hydrogen)

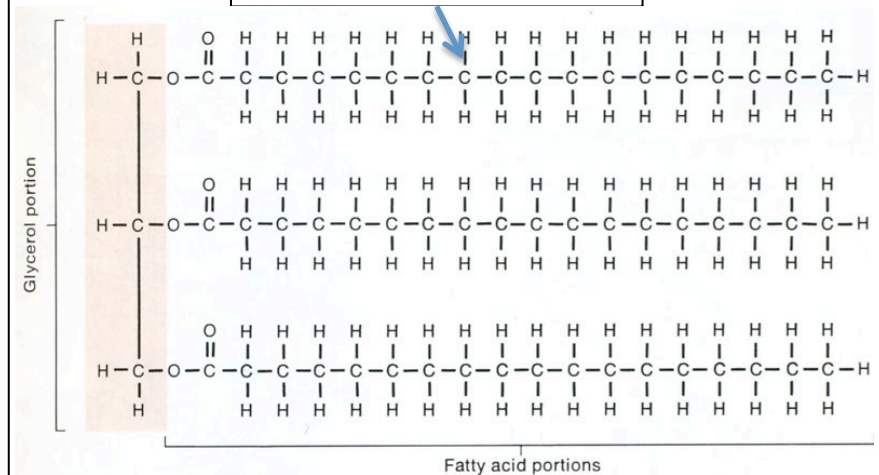
Steroids

-cholesterol is a steroid that is used to make:

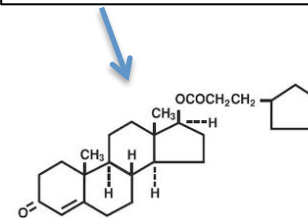
-other steroids

-sex hormones (estrogen, testosterone)

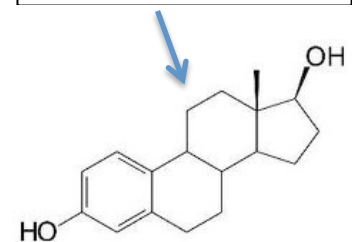
Structural formulas of a saturated fat



Structural formulas of a steroid (testosterone)



Structural formulas of a steroid (estrogen)



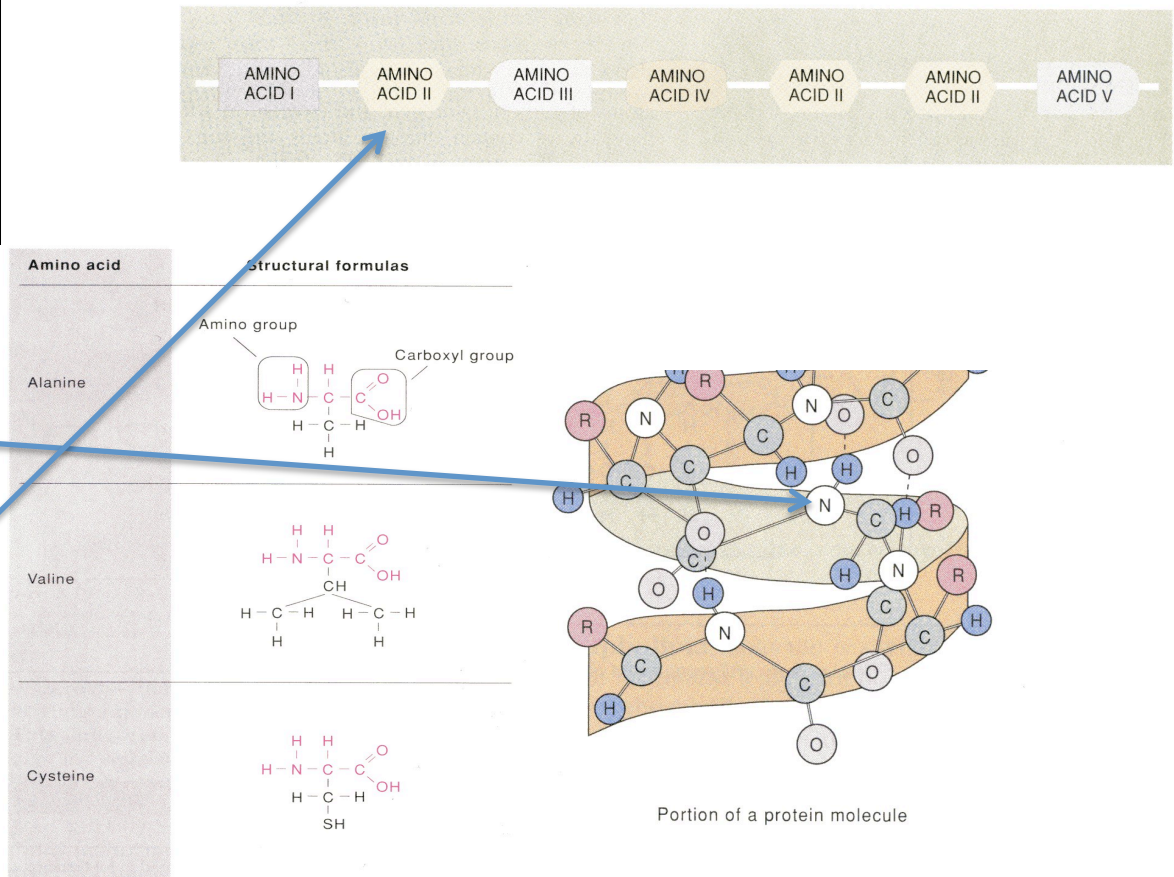
Inorganic Chemicals in Cells (10 min)

Objective: SWBAT: *List and describe the purpose of the most common organic and inorganic chemicals in cells by taking notes based on the PowerPoint*

The 4 Most Common Organic Substances in Cells

Proteins

- have many purposes:
 - structural materials
 - energy source
 - hormones
 - antibodies
 - enzymes**: (a protein that speeds up a chemical reaction)
- always contain N (Nitrogen)
- made from **amino acids**
- each protein has a specific **amino acid** sequence
- proteins can only do their job if they are in the right shape
- denatured protein**: (a protein that has lost its shape)



Inorganic Chemicals in Cells (10 min)

Objective: SWBAT: *List and describe the purpose of the most common organic and inorganic chemicals in cells by taking notes based on the PowerPoint*

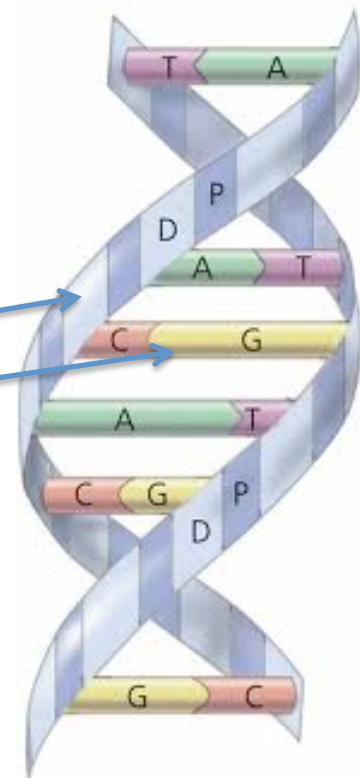
The 4 Most Common **Organic** Substances in Cells

Nucleic Acids

- control cellular activities
- the “recipe” for your bodies proteins
- very large
- made of **nucleotides** (the “handrails”) and **base pairs** (the “steps”)

Two Types:

1. **DNA:** (deoxyribonucleic acid)
 - carries your genetic code
 - can be changed due to radiation
2. **RNA:** (ribonucleic acid)



Academy Artworks

Closing/**HW** (5 min)

- Did you master the following objectives?

Content (The objectives you'll master today)

SWBAT:

1. *List the most common organic and inorganic substances in cells*
2. *Describe the purpose of the most common organic and inorganic substance in cells*

Language (How you will master the objectives)

By:

1. *Writing notes based on the PowerPoint*

Exit Slip (5 min)

1. What is the difference between **organic** and **inorganic** substances?
2. What are the **4 most common *organic* substances** in the human body?
3. What **purpose** does each of those substances serve?

Participation Grades (5 min)

- Each day **YOU** will decide the grade you deserve...Though, I reserve the right to change these.
- Your 5-point daily participation grade is based on CLA's core-values:
 - CLA Students are S.M.A.R.T.
 - S = Self-Controlled
 - M = Motivated
 - A = Accountable
 - R = Respectful
 - T = Timely
 - One point for each core-value
 - (5 points possible each day)
- What do you deserve today?