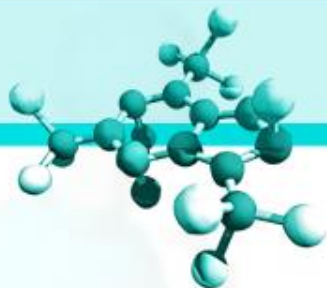


Ch. 2 "The Chemical Level of Organization"

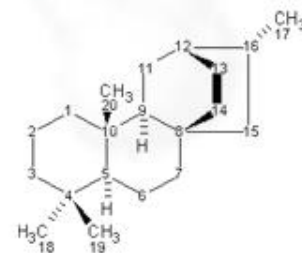
Class 2.5

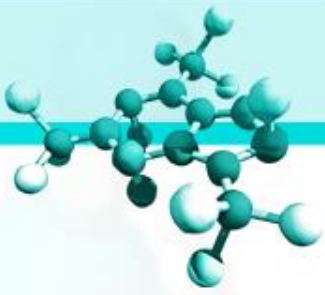


Warm-up

Read “You Are What You Eat”
and
complete the student worksheet.

<http://foodmatters.tv/screeningeventcinema>





Warm-up

1. List the six nutrients.

Carbohydrates, Proteins, Fats, Vitamins, Minerals, & Water

2. What are simple sugars?

Carbohydrates that are made up of only 1 or 2 molecules of glucose (sugars)

3. What are complex carbohydrates?

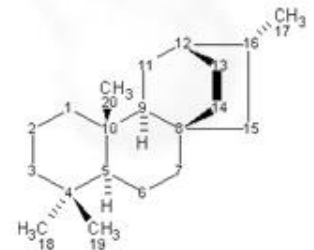
Made up of many molecules of sugars bound together

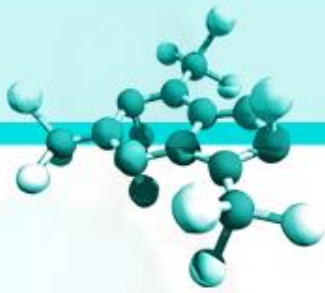
4. Why is fiber important?

For digestive function and to help remove toxic substances and excess cholesterol

5. What do amino acids build?

Proteins





Warm-up

6. What can happen if you eat too much saturated fat?

Increase your cholesterol & raise your risk of heart disease

7. What are vitamins?

Chemical substances that help your body use energy, build proteins, make cells, and repair injuries

8. If a person cannot digest milk products, where can they get calcium?

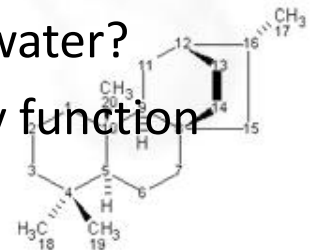
Dark green leafy vegetables like spinach & broccoli

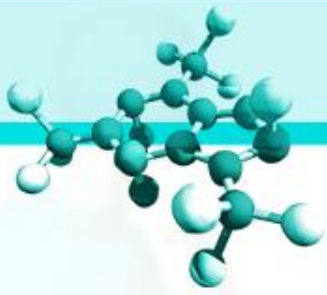
9. What does the body use water for?

To metabolize your food, lose heat through sweating, & remove toxins in the urine

10. What happens if your body does not have the right amount of water?

Cannot maintain the right temperature, blood pressure, or kidney function



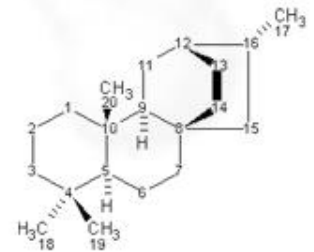


How Organisms Obtain Energy

MAIN IDEA

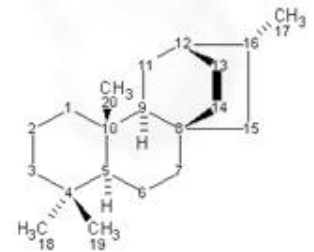
All living organisms use energy to carry out all biological processes.

Inside The Living Body - Digestive System



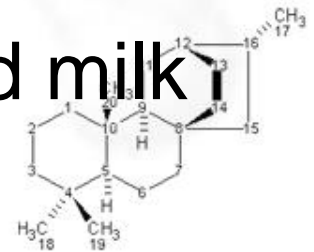
Nutrition

- Nutrient – substance used by the body for growth, maintenance, and repair
- Categories of nutrients
 - Carbohydrates
 - Lipids
 - Proteins
 - Vitamins
 - Mineral
 - Water



Dietary Sources of Major Nutrients

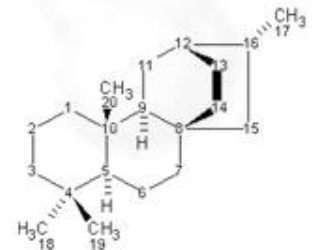
- Carbohydrates
 - Most are derived from plants
 - Exceptions: lactose from milk and small amounts of glycogens from meats
- Lipids
 - Saturated fats from animal products
 - Unsaturated fats from nuts, seeds, and vegetable oils
 - Cholesterol from egg yolk, meats, and milk products

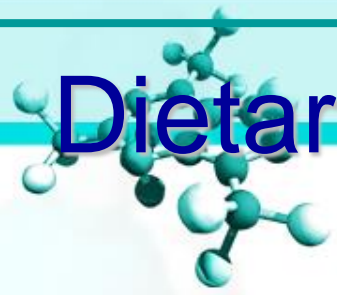




Dietary Sources of Major Nutrients

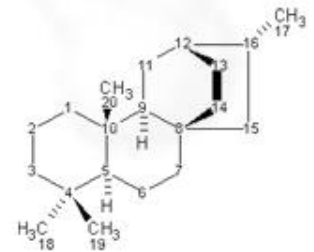
- Proteins
 - Complete proteins – contain all essential amino acids
 - Most are from animal products
 - Legumes and beans also have proteins, but are incomplete
- Vitamins
 - Most vitamins are used as cofactors and act with enzymes
 - Found in all major food groups

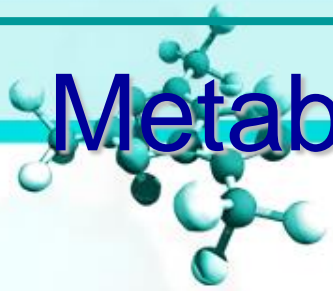




Dietary Sources of Major Nutrients

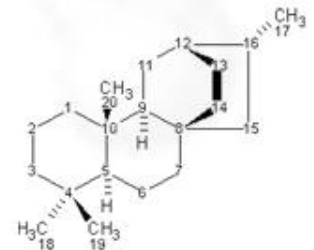
- Minerals
 - Play many roles in the body
 - Most mineral-rich foods are vegetables, legumes, milk, and some meats





Metabolism

- Chemical reactions necessary to maintain life
 - Catabolism – substances are broken down to simpler substances
 - Anabolism – larger molecules are built from smaller ones
 - Energy is released during catabolism



Cellular Respiration

- The body's preferred source to produce cellular energy (ATP)
- Glucose (blood sugar) is the major breakdown product and fuel to make ATP

Glycolysis Rap

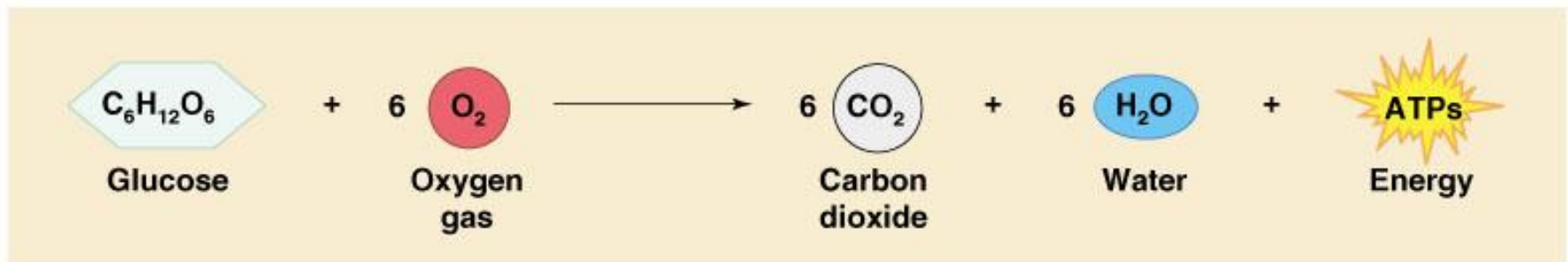
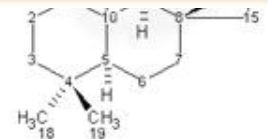
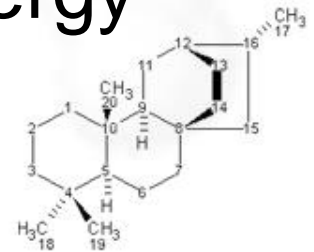


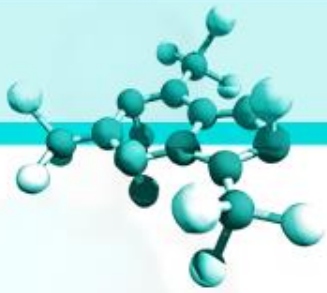
Figure 14.16



Cellular Respiration

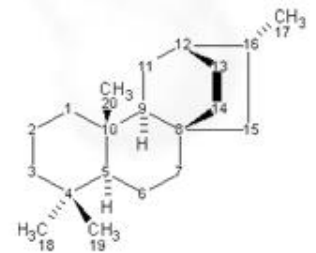
- Oxygen-using events take place within the cell to create ATP from ADP
- Carbon leaves cells as carbon dioxide (CO_2)
- Hydrogen atoms are combined with oxygen to form water
- Energy produced by these reactions adds a phosphorus to ADP to produce ATP
- ATP can be broken down to release energy for cellular use

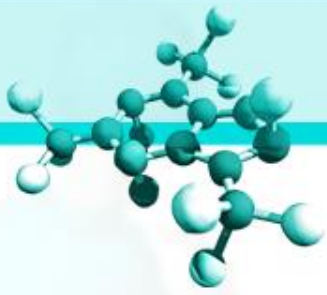




Fart Science

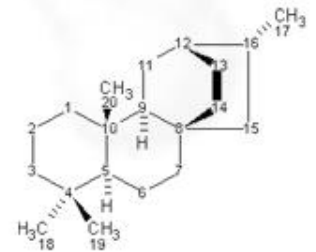
Farts

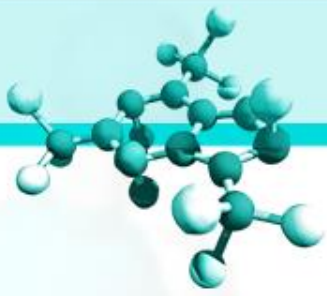




Why???

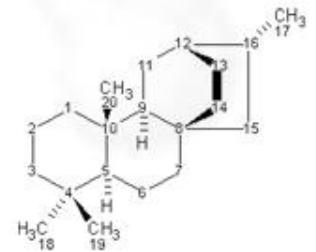
<http://www.biology.arizona.edu/default.html>

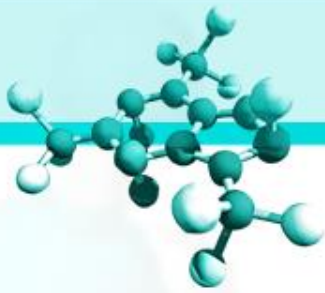




Food Record

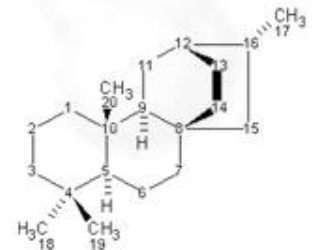
<http://www.myfoodrecord.com/mainnat.html>

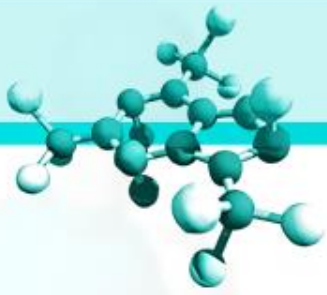




Nutrition & Excretion

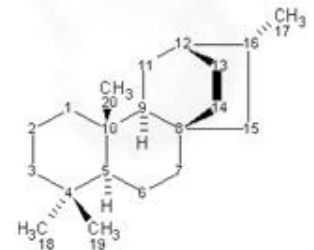
[http://www.hippocampus.org/hippocampus.php/course_locator.php?course=AP Biology](http://www.hippocampus.org/hippocampus.php/course_locator.php?course=AP%20Biology&&lesson=47&topic=1&width=600&height=350&topicTitle=Diet%20and%20Feeding%20Mechanisms%3A%20Overview&skinPath=http://www.hippocampus.org/hippocampus.skins/default)
[II&lesson=47&topic=1&width=600&height=350&topicTitle=Diet%20and%20Feeding%20Mechanisms%3A%20Overview&skinPath=http://www.hippocampus.org/hippocampus.skins/default](http://www.hippocampus.org/hippocampus.php/course_locator.php?course=AP&&lesson=47&topic=1&width=600&height=350&topicTitle=Diet%20and%20Feeding%20Mechanisms%3A%20Overview&skinPath=http://www.hippocampus.org/hippocampus.skins/default)

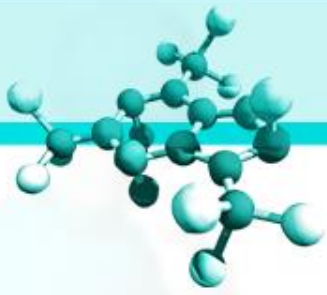




Metabolism

<http://www.youtube.com/watch?v=MUtfF2qnzGo>

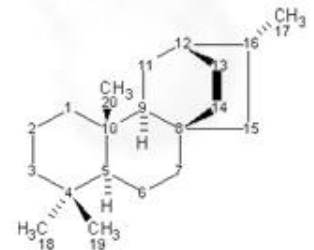


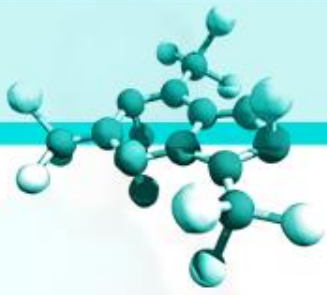


ATP

<http://www.youtube.com/watch?v=ZFzL061UBos>

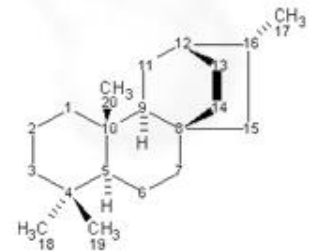
<http://www.youtube.com/watch?v=YyN0wx2AHfE&NR=1>

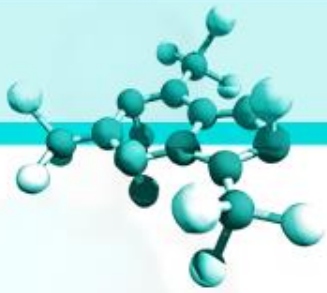




Lab Time

With a partner complete the paper lab “DNA and RNA”



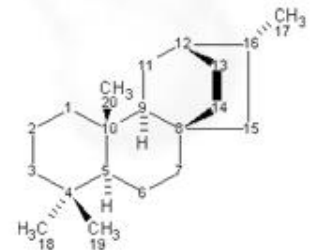


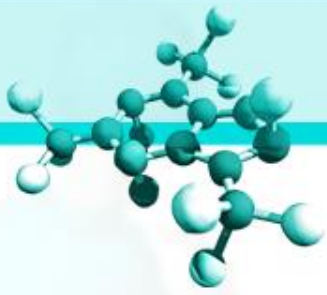
Class Work

Complete WS QC 97

Review

1. An adenine base, a ribose sugar, and three phosphate groups
2. Answers will vary. The amount of energy stays the same. Energy can change forms but it cannot be created or disappear.

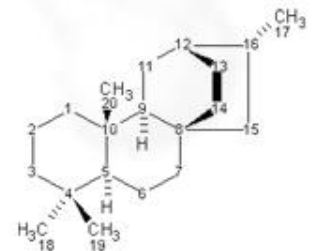


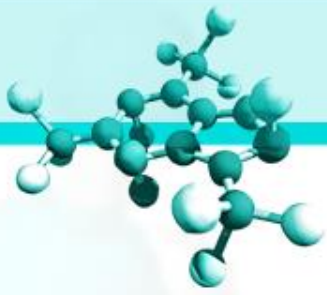


Class Work

3. Catabolic pathways release energy by breaking down larger molecules into smaller molecules.

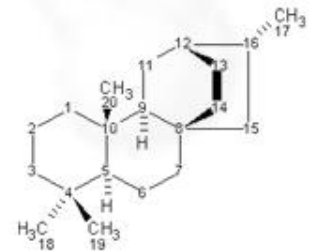
Anabolic pathways use the energy released by catabolic pathways to build larger molecules from smaller molecules.

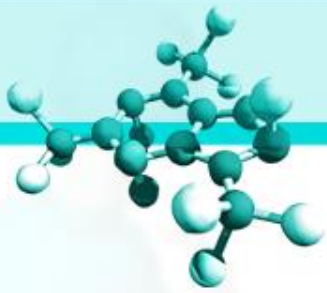




Class Work

4. Plants convert light energy from the Sun into chemical energy, and heterotrophs eat either plants or animals that got their energy from eating plants.
5. It is anabolic because a larger molecule is being built from smaller ones.





Questions?

- What is energy?

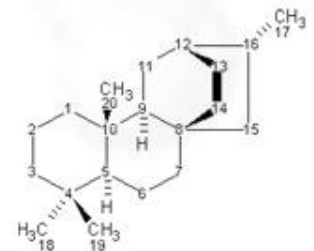
The ability to do work

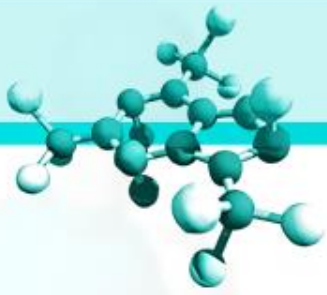
- Can energy be created?

No; energy exists in many forms

- List some energy forms.

Thermal/heat, mechanical, elastic, chemical, light





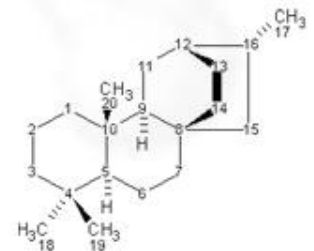
Questions?

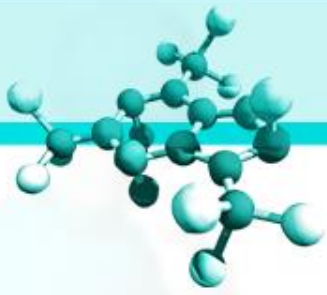
- Why do living things need energy?

To grow, move, reproduce, etc.

- How do humans obtain energy?

Humans obtain energy by eating and digesting food.

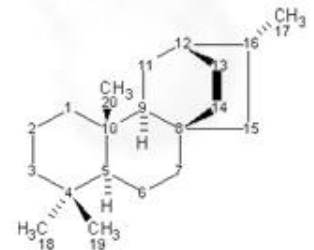


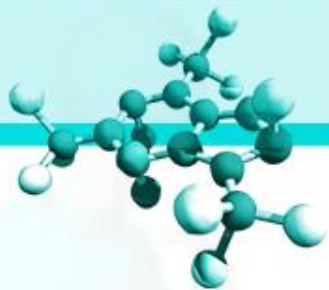


Metabolic Processes

<http://faculty.alverno.edu/bowneps/new%20indexes/osmosiscellbioindex.html>

<http://www.tvdsb.on.ca/westmin/science/Biology12/Metabolic%20Processes/Metabolic%20Processes.htm>





HW

None for tonight.

