

Name:

Date:

Topic 3.1 – Nutrients

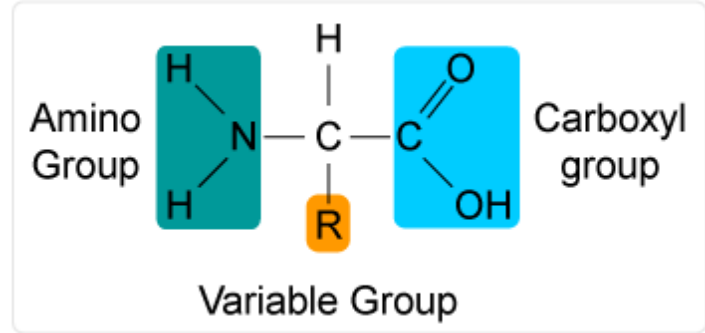
IB SEHS

3.1.9 State the chemical composition of a protein molecule

3.1.10 Draw a diagram representing the basic structure of an amino acid

- Proteins are the most complex and functionally diverse of _____ of living organisms.
- They compose enzymes, _____ and muscle tissue just to name a few and are therefore associated with meat products.
- The base elements of _____ are C, H, O and N. The monomers of proteins are 20 different amino acids.
 - The “Variable Group” to the right is the part of the amino acid _____ that makes each of the 20 amino acids unique. The _____ group and _____ group are uniform among all amino acids.

General structure of Amino Acids



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3.1.11 Distinguish between an essential and a non-essential amino acid

- Amino acids are the _____ units or building blocks that make up protein. Every living organism is _____ of protein and it is vital in the _____ processes that sustain life.
- In addition to _____ to form the body's proteins, some amino acids act as neurotransmitters or precursors of transmitters, the chemicals that carry information from one _____ cell to another.
- There are approximately _____ amino acids encoded by the _____ genetic code that are combined in various ways to create more than _____ proteins known so far to science.
- The _____ amino acids are those that the body cannot synthesize in sufficient quantities to satisfy the nutritional requirements for good _____ and that they must be included in the _____.
- The _____ essential amino acids are HISTIDINE, ISOLEUCINE, LEUCINE, LYSINE, METHIONINE, PHENYLALANINE, THREONINE, TRYPTOPHAN and VALINE
 - Their best sources are meat, fish, fowl, eggs and dairy _____.
- In addition, CYSTEINE and TYROSINE, sometimes classified as NONESSENTIAL AMINO ACIDS, are now considered _____-essential because if the diet contains them (meat, milk, fish, poultry and legumes are good sources), the body can use them in place of two essential amino acids _____ and phenylalanine, respectively to make protein.
- The _____ amino acids are ALANINE, ARGININE, ASPARAGINE, ASPARTIC ACID, GLUTAMIC ACID, GLUTAMINE, GLYCINE, PROLINE, SERINE and TAURINE

3.1.12 Describe current recommendations for a healthy balanced diet

- See Button's #1-3 on the class website

3.1.13 State the energy content per 100g of carbohydrate, lipid and protein.

- Energy content per 100g:
 - _____ 1600kJ
 - _____ 3700kJ
 - _____ 1700kJ

Which would release the most heat if burned?

Research Task: Consider the implications these energy values will have if consuming a diet based on junk food.

(see Button #4 on the class website BEFORE answering)

3.1.14 Discuss how the recommended energy distribution of dietary macronutrients differs between endurance athletes and non-athletes.

- The quality of the athlete's diet is _____ primarily in terms of the _____ (carbohydrates, proteins, fats).
- Micronutrients, such as vitamins and minerals, are _____, but do not provide energy.
- _____ people should consume a diet that has approximately _____% carbohydrates, no more than 30% fat and 10-15% protein.
- The _____ athlete requires additional carbohydrates, which may comprise up to 60-70% of the diet. The increase should be at the expense of _____.
- Athletes who train heavily on _____ days, such as endurance runners and swimmers must be aware of the need for _____ replenishment to avoid feeling "flat".
- While replenishment of _____ glycogen is reasonably rapid, _____ glycogen stores take 24 hours to restore.

Research Task: Using the link from Button #5 on the class website, outline below the dietary requirements of endurance athletes.