

Good essay about wa4-bio

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Protein synthesis is the process through which the biological cells produce new protein molecules. The process helps in balancing the cellular proteins that are lost through export or degradation. The synthesis of proteins occurs through a series of processes known as translation where the ribosomes are the organelles that are involved in the creation of proteins. Translation is a part of gene expression using the messenger RNA or mRNA that is produced through transcription of the DNA molecule. The produced mRNA is then decoded to produce a chain of specific amino acids using the ribosome complex. The amino acid chain produced is later folded to form an active protein molecule (Lehninger, Nelson and Cox).

The process of translation takes place in four distinct phases. These phases are the initiation phase, elongation phase, translocation and termination phases. All these stages describe the development of the amino acid chain. In activation phase, the transfer RNA or tRNA is activated by bonding with the correct amino acid. The amino acid is bonded through an ester bond to the tRNA using the carboxyl group on the amino acid and the 3' OH of the tRNA. The tRNA that has an amino acid attached to it is referred to as a charged tRNA. In the elongation step, the charged tRNA gets into the ribosome, and when the anticodon matches the codon in the mRNA, the two are base-paired allowing the ribosome to link the amino acid attached to the tRNA with the amino acid chain. Once the amino acid is added, in the translocation phase, the ribosome moves one codon forward allowing another charged tRNA to enter the ribosome and processes are repeated. During the termination phase, the ribosome encounters one of the several stop codons that are not recognized by the tRNA. The stop codon triggers

the release factor to initiate the disassembly of the whole ribosome/mRNA complex (Lehninger, Nelson and Cox).

Amino acids are classified into either essential or non-essential categories.

The essential amino acids refer to those amino acids that are not produced by the body while the non-essential amino acids are produced by the body.

Low glycine tryptophan diet results in a shortage in the amount of these amino acids in the body since they are essential amino acids. This leads in reduced production rate of the proteins resulting deficiency in proteins that use these amino acids as their building blocks. A diet that is has a reduced level of calories may result in a reduced rate of protein production since the translation process is an energy dependent process (Shaw).

Most people take protein supplements with an aim of reducing their body weight, spur muscle building, as well as help in fat loss (Shaw). Taking supplements has, however, been associated with an imbalanced diet. This result from the increased amount of proteins that are taken in a day compared to the amount of other nutrients such as the vitamins, fiber and minerals that are essential. Although protein supplements are not directly associated with kidney or heart problems, long-tem intake of these supplements may result in development of heart and kidney issues as they are associated with increased cholesterol levels in the body (Schuna).

Categories of people who are not supposed to take protein supplements include young children, pregnant mothers, elderly, pregnant, and some specific illnesses.

Works Cited

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Schuna, Carly. What Are the Dangers of Protein Powder Consumption? 2011. 11 April 2014. .

Shaw, Gina. Vitamins and Supplements Lifestyle Guide. 2013. 11 April 2014. .