

Glycoproteins Encyclopedia Article

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Glycoproteins

Glycoproteins are **proteins** to which one or more carbohydrate **chains** are attached. Glycoproteins are most commonly found embedded in the **plasma** membranes of cells, with the carbohydrate exposed to the cell interior. Glycoproteins are thought to function in cell-cell recognition.

The carbohydrate portion of a glycoprotein is commonly a branched chain of fifteen or fewer monosaccharides. Glucose, galactose, fructose, and other common monosaccharides may be combined in the chain, often with linkages not normally found in non-protein linked **carbohydrates**. A single glycoprotein may have multiple carbohydrate chains. Carbohydrate chains are added after **protein synthesis**, by special enzymes in the endoplasmic reticulum.

The exact function of most glycoproteins is not known, although many are thought to aid in the interactions between cells. One of the most important groups of glycoproteins are those of the major histocompatibility complex, or MHC. MHC glycoproteins display antigens, molecular fragments formed within the cell. The antigen-MHC complex is detected by cells of the immune system to determine whether the cell is infected. Other glycoproteins are thought to act during development to aid cells as they migrate to their proper location in the body. Viruses employ glycoproteins as well, where they may function to promote entry into the host cell. The human immunodeficiency virus (HIV) virus, responsible for Acquired Immune Deficiency Syndrome (AIDS), uses a surface glycoprotein known as gp120 to attach itself to its cell surface receptor, called CD4. Once this occurs, the virus can enter the cell. Because of its critical role in infection, gp120 is a target for development of an HIV vaccine.