

ACHIEVEMENTS OF GLYCOBIOLOGY IN MEDICINE

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The specific term glycobiology was coined in the Oxford English Dictionary by Raymond Dwek (1988) to recognize the coming together of the traditional disciplines of carbohydrate chemistry and biochemistry. Glycobiology is studying structures, synthesis and biological role of glycans and glycoconjugates, including glycoproteins, glycolipids, proteoglycans, and of protein-glycan interactions. Glycosylation is the most common modification of proteins and lipids, which involved more than 1% of all human genes, indicating the critical importance of this process. It is very sensitive to changes of metabolism of cells, organs and whole organism. Value, composition and structure of glycans components of glycoconjugates change significantly during the growth and in time of development of many pathological processes. Proliferation of the cells and their migration are directly related to the violation of glycans-protein interactions and the development of cancer. Today identified more than 40 genetic diseases that are caused by disruption of protein glycosylation and named congenital diseases of glycosylation or CDG. Glycans and their derivatives are used in the treatment of inflammation, thrombosis, cancer, cardiovascular diseases and others diseases. The exact definition of the structure and role of carbohydrate chains of glycoconjugates are important for medicine as a basis for developing new drugs with reduced antigenicity, high specificity and high efficiency.