Annotation

Cell engineering

Cellular engineering is a professional discipline consisting of theoretical knowledge of cell biology and a set of technologies used to work with cell cultures and design new cells. Includes cultivation and cloning of cells on specially selected media, hybridization of cells, technologies for working with stem cells, in vitro fertilization, as well as transplantation of cell nuclei and other microsurgical operations to “disassemble” and “assemble” (reconstruct) viable cells from separate fragments; introduction of cells into culture, their origin, extracellular matrix; signal transmission according to the Inside-out and outside-in scheme; classification and sources of stem cells; transplantation into organs and tissues of an adult body; storage, banks, stem "niches" in tissues and organs; reprogramming of human somatic cells in IPSCs, efficiency and search for new approaches, application possibilities; diseases successfully treated with stem cells; human cell cultures; stromal mesenchymal tissue, trans-differentiation, miRNA participation; cell technologies in hematology, participation of stem cells of peripheral blood and bone marrow in physiological regeneration and repair of organs and tissues, miRNA; GSK mobilization concept; types of TGSK; engineering of organs and tissues: state and prospects; alternative methods of organ restoration: bioengineering methods in the creation of artificial human organs and problems; basic methods of tissue engineering; cells for tissue engineering.