Lentiviral transduction

Lentiviral transduction is an efficient method for the delivery of transgenes to mammalian cells and unifies the ease of use and speed of transient transfection with the robust expression of stable cell lines.

Uhlmann et al. from the University Hospital of Düsseldorf, described a protocol for the alteration of gene expression in human induced pluripotent stem cells (hiPSCs) via overexpression of a mutant form of the TP53 (R249S) gene using lentiviral transduction. A high amount of TP53 protein is detected 1 week after transduction and antibiotic selection. Differentiation of transduced hiPSCs gives insight into a better understanding of cancer formation in different tissues and may be a useful tool for genetic or pharmacologic screening assays.

Basic Protocol 1: Production and concentration of third-generation lentivirus Support Protocol 1: Cloning of gene of interest into modulation vector Support Protocol 2: Preparation of DMEM GlutaMAX™ with 10% fetal bovine serum and 1% penicillin-streptomycin Basic Protocol 2: Transduction of human-induced pluripotent stem cells and selection of positively transfected cells Support Protocol 3: Preparation of Matrigel® -coated plates Support Protocol 4: Preparation of mTeSR™1 medium [1)].

1)
Uhlmann C, Kuhn LM, Tigges J, Fritsche E, Kahlert UD. Efficient Modulation of TP53 Expression in Human Induced Pluripotent Stem Cells. Curr Protoc Stem Cell Biol. 2020 Mar;52(1):e102. doi: 10.1002/cpsc.102. PubMed PMID: 31883435.