Loss-of-function assay

A loss-of-function assay is a type of experiment in molecular biology and genetics that aims to determine the function of a gene or protein by observing the effects of reducing or eliminating its activity. In such assays, a specific gene or protein is targeted using techniques such as RNA interference (RNAi), CRISPR-Cas9 genome editing, or small molecule inhibitors to block its expression or activity.

The effects of reducing or eliminating the gene or protein's function are then observed and compared to the effects in a control group where the gene or protein is not targeted. This can provide information on the role of the gene or protein in a particular cellular process, pathway, or disease.

Loss-of-function assays can be used to investigate the functions of individual genes or proteins in vitro or in vivo, in a variety of model systems including cell culture, animal models, and even human subjects. They are commonly used in drug discovery and development to identify potential therapeutic targets and to test the efficacy of candidate drugs.

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