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Abstract

High-Throughput Cell Engineering as a Tool for Research and Drug Development

Manipulation of eukaryotic cells by introducing nucleic acids and other substrates using chemical, physical or viral methods is one of the fundamental tools in the life sciences. Changing the molecular equipment of a cell by has many applications in basic research as well as drug development. With the advent of methods exploiting RNA interference (RNAi), gene identification and functional validation in eukaryotic cells have become promising tools in life sciences during the past few years, including high-quality, high-throughput approaches. Recent developments, especially in the field of electroporation, now allow the efficient high-throughput engineering of virtually any cell type, including primary cells that are gaining more and more interest.

We present data showing the efficient use of multiwell Nucleofection® for screening of siRNA libraries a) for anti-proliferative and pro-apoptotic genes in human umbilical vein endothelial cells (HUVEC) and b) for genes that are required for FAS-induced apoptosis in Jurkat T lymphocytes. Recent results and the perspectives of delivering non-nucleic acid molecules into cells and will be discussed. Efficient tools for molecule delivery into cells with the capacity of integration into automated lab environments will render target identification and validation possible in cell types highly relevant for medical research.

Biography

Studied biology in Cologne and Munich, Germany. Ph.D. work on cell biology and genetics. With R&D department of amaxa AG, now a part of the Lonza Group, since 2000. Eight years experience in research & development in the field of cell engineering.