Optimizing neural stem cell transfection with NeuroMag

PROTOCOL FOR:

High transfection efficiency of neural stem cells with magnetofection

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See full protocol online: <https://benchtalk.biotechniques.com/users/8521-biotechniques-editors/posts/11622-protocol-for-optimizing-neural-stem-cell-transfection-with-neuromag>

Protocol Summary: Primary neural stem cells (NSCs) can be cultivated and differentiated in vitro but are difficult to transfect using conventional methods. We describe a simple and rapid magnetofection-based method suitable for the lab bench as well as for high-throughput projects. Our method yields high transfection efficiency and can be used for deciphering the genetic control of neural cell differentiation.

Protocol Schematic: Optimization of NeuroMag transfection efficiency in mouse NSCs. (A–D) Fluorescent images of Neural Stem Cells cultured in a 24-wells plate transfected with 0.2 g (A), 0.4 g (B), 0.8 g (C), and 1.6 g (D) DsRed plasmid mixed with NeuroMag reagent in a 1:1 ratio. (E) Percentage of GFP-positive cells (upper graph) and mean fluorescence intensity (lower graph) 2 days after transfection with different amounts of DNA/NeuroMag complexes at a 1:1 ratio. For transfection, NeuroMag reagent was mixed with DNA in a volume of culture medium of 50 μ L per transfected well. Complexes of magnetic nanoparticles and DNA were allowed to form via 15 min of incubation at room temperature before addition into the wells. The culture plate was then placed on a magnet for 15 min. Cells were incubated in the presence of NeuroMag for 1 day before changing the medium.