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1. Description

Components 20 µg StemMACS™ NeuroG2 mRNA encoding the transcription factor Neurogenin 2 (NeuroG2, NGN2, Math4A, bHLHa8; Entrez Gene ID 63973)

1 mL Double-distilled Water, RNase-free

Specifications *In vitro* transcribed, polyadenylated and capped mRNA that has been modified with pseudouridine and 5-methyl-cytidine to reduce the innate antiviral response to single-stranded RNA.

Formulation Lyophilized from a filtered (0.2 µm) solution.

Storage Store the lyophilized product at -20 °C. The expiration date is indicated on the label. After reconstitution, the product can be stored at -70 °C for up to 3 month.

Quality control mRNA size has been verified on an Agilent Bioanalyzer System. Neurogenin 2 protein expression after transfection was confirmed by immunofluorescence.

1.1 Principle

The transient expression of key developmental regulators, recombinases or markers via mRNA transfection is a powerful tool for modulating cell fate. StemMACS mRNAs are highly pure, *in vitro*-transcribed mRNAs that have been carefully optimized and validated to ensure high level expression after transfection.

1.2 Background information

Neurogenin 2, encoded by the NeuroG2 (NGN2) gene, is a neural-specific basic helix-loop-helix (bHLH) transcription factor that regulates specification of neuronal fate in ectodermal cells. Neurogenin 2 is expressed in neural progenitor cells within the developing central and peripheral nervous systems. In addition, it plays a role in the differentiation and survival of midbrain dopaminergic neurons. In pluripotent stem cell research, ectopic expression of Neurogenin 2 has been used to promote differentiation into mature neurons.

1.3 Applications

- Neuronal differentiation of pluripotent stem cells.
- Conversion of fibroblasts into induced neuronal (iN) cells.

2. Protocol: Reconstitution of lyophilizate

▲ RNA is susceptible to degradation by exogenous ribonucleases. Wear gloves, use RNase-free reagents, tubes, and pipette tips.

1. Dissolve StemMACS NeuroG2 mRNA in 200 µL of Double-distilled Water. Vortex thoroughly. The final concentration will be 0.1 µg/µL.
2. Briefly centrifuge to collect the content at the bottom of the tube.
3. Prepare aliquots and store at -70 °C to -80 °C. Do not subject aliquots to more than two freeze-thaw cycles.

For satisfactory transfection results, use a protocol that is optimized for your specific cell type. StemMACS eGFP mRNA or StemMACS Nuclear eGFP mRNA allow easy evaluation of transfection efficiency and are recommended as positive controls.

Refer to www.miltenyibiotec.com for all data sheets and protocols. Miltenyi Biotec provides technical support worldwide. Visit www.miltenyibiotec.com/local to find your nearest Miltenyi Biotec contact.

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