

**Non-viral in vivo mRNA transfection for cancer research, vaccination or gene therapy**

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**Abstract**

A major challenge to the use of nucleic acids in both Vaccination and Gene therapy is its efficient transfection. mRNA transfection can be beneficial for a number of other applications, including cellular reprogramming, genome editing (CRISPR/Cas9) and vaccines.

**Chemical modifications of mRNA improve gene expression**

mRNA encoding Luciferase were injected into mice using -jetRNA® through retro-orbital injection. Complexes were formed using 10 µg of mRNA and 10 µL of -jetRNA® (ratio mRNA/in vivo-jetRNA® of 1:1) in mRNA Buffer. Luciferase expression was assessed 24 h post-injection.

**Biodistribution of mRNA/in vivo-jetRNA® complexes**

![Image](image_url)

**Protocol optimization**

**Determination of the optimal mRNA amount**

![Graph](graph_url)

**Determination of the optimal volume of in vivo-jetRNA®**

![Graph](graph_url)

**mRNA expression profile using in vivo-jetRNA®**

mRNA encoding Luciferase was injected into mice using -jetRNA® through retro-orbital injection. Complexes were formed using 40 µg of mRNA with an mRNA/in vivo-jetRNA® ratio of 1:1 in mRNA Buffer. Luciferase expression was assessed 24 h post-injection.

**Comparison of mRNA expression profiles using different administration routes**

![Graph](graph_url)

**Conclusion: advantages of in vivo-jetRNA®**

+ Efficient: High gene expression with low amount of mRNA
+ Adaptable: Suited for any injection route to target any organ
+ Time-saving: Ready-to-use with an easy protocol
+ Tailored: Customized protocols from in vivo delivery expert

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