



JUL 03, 2023

OPEN ACCESS

**DOI:**  
[dx.doi.org/10.17504/protocols.io.kxygx3ekog8j/v1](https://dx.doi.org/10.17504/protocols.io.kxygx3ekog8j/v1)

**Protocol Citation:** Nathan Liu, Hani Abd-UI-Salam, Noemie Joannette-Lafrance, Jingjing Li, Karim Menassa, Monzur Murshed 2023. MED-JET H4 MULTIJET (MJH4M) Transfection Protocol.  
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**Protocol status:** Working  
 We use this protocol and it's working

**Created:** Jun 27, 2023

**Last Modified:** Jul 03, 2023

**PROTOCOL integer ID:**  
 84108

## MED-JET H4 MULTIJET (MJH4M) Transfection Protocol

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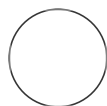
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### ABSTRACT

Transfection, a non-viral method of nucleic acid delivery, often shows poor efficiency *in vivo*. The needle-based *in vivo* delivery of transfection reagents can be invasive. Here, we report a non-invasive *in vivo* gene delivery protocol via the needle-free MED-JET H4 MULTIJET (MJH4M) devices using glucose-based and commercial transfection reagents. The objective of this study is to compare the relative transfection efficiencies of the needle-free system to that of the needle-based delivery method. The highest transfection efficiency was noted using 5% glucose as a delivery agent; a 15-fold increase was observed using MJH4M compared to delivery with needles.

1 Prepare transfection reagent by diluting renilla-luciferase plasmid DNA (pR-Luc) in 5% glucose

(w/v) to a final concentration of 0.1 µg/µl.

- 2 Insert the transfection reagent cartridge into the MED-JET H4 MULTIJET (MJH4M) device.
- 3 MJH4M device parameters were set to 80 psi and 75 µl.
- 4 Adult wild-type C57BL/6 mice were anesthetized via a mixture of inhaled isoflurane and oxygen gas.
- 5 The dorsal and ventral regions of the mice hind legs were shaved to expose the skin covering the region below the knee.
- 6 The injection landmark was identified on the mice hindleg ventral skin 7mm proximal to the heel.
- 7 The tip of the device is positioned directly on the injection landmark and the trigger was pressed. The device was held on the hindleg for 3 seconds to ensure retention of the injected liquid.
- 8 Tissue collection occurred 48 hours after the injection. The mice were euthanized using inhaled isoflurane and carbon dioxide followed by cervical dislocation.
- 9 Mice hindleg muscles were extracted from the bone and flash frozen in liquid nitrogen.

- 10 Luciferase assay and signal normalization were performed to determine the transfection efficiency.