

PepJet™ In Vivo DNA Transfection Reagent

----- A Protocol for In Vivo Transfection

- ☐ 100 µL
☐ 500 µL
☐ 1000 µL



5260 Westview Dr, Suite 100
 Frederick MD 21703
 FAX. 301-560-4919
 TEL. 301-330-5966
 Toll Free. 1-(866)-918-6812
 Email: info@signagen.com
 Web: www.signagen.com

This product is for laboratory research ONLY and not for diagnostic use

PepJet™ In Vivo DNA Transfection Reagent is a novel cationic peptide–based platform for efficient plasmid DNA delivery in vivo. The active component is a synthetic 28-amino-acid peptide that was initially identified as a highly effective DNA delivery vector and subsequently optimized through protein sequence alignment, molecular modeling, and computational simulation based on viral protein architectures. The peptide was synthesized, refined, screened, and experimentally validated to maximize in vivo gene transfer efficiency.

To further improve systemic performance, a proprietary shielding peptide is covalently linked to the peptide backbone to reduce nonspecific interactions with biological components in vivo, thereby enhancing the stability and delivery efficiency of PepJet™/DNA complexes. In animal studies, PepJet™ has demonstrated robust transgene expression following systemic administration, with particularly high levels of Renilla luciferase expression observed in the lung, liver, spleen, and kidney.

Reagents Required but Not Supplied with PepJet™ Transfection Reagent:

Sterile isotonic 10% (w/v) glucose solution in water.

Important: Formation of small, stable PepJet™/DNA complexes is only possible in the absence of high salt concentrations. Therefore, ionic solutions such as PBS, saline, or cell culture media must not be used for dilution. We strongly recommend using sterile isotonic 10% (w/v) glucose solution to dilute both PepJet™ Reagent and plasmid DNA, resulting in a final glucose concentration of 5%.

Brief Protocol for In Vivo Transfection in Mice

The following protocol is designed for intravenous administration via the mouse tail vein using 50 µg of plasmid DNA complexed with PepJet™ Reagent in a final volume of 400 µL.

Important: To prevent precipitation of PepJet™/DNA complexes, the final DNA concentration should not exceed 0.5 µg/µL.

1. Prepare the DNA solution: Dilute 50 µg of plasmid DNA in 100 µL of sterile 10% glucose solution. Add sterile water to obtain a final volume of 200 µL containing 5% glucose. Mix gently by vortexing and briefly centrifuge.

Note: The amount of DNA and injection volume should be adjusted according to the size of the animal and the route of administration. Maintain an optimal PepJet™ Reagent-to-DNA ratio of 2:1 (µL:µg). Adjust the reagent volume accordingly. Recommended DNA doses for mice are provided in [Table 1](#).

2. Prepare the PepJet™ solution: Dilute 100 µL of PepJet™ Reagent in 100 µL of sterile 10% glucose solution to obtain a final volume of 200 µL containing 5% glucose. Mix gently by vortexing and briefly centrifuge.
 3. Form the PepJet™/DNA complexes: Immediately add the entire 200 µL PepJet™ solution to the 200 µL DNA solution in a single step.

Note: Do not add the DNA solution to the PepJet™ solution. Always add the PepJet™ solution to the DNA solution.

4. Vortex the mixture immediately for 2–3 seconds and briefly centrifuge to ensure that all liquid is collected at the bottom of the tube.

5. Incubate the PepJet™/DNA complex for 10 minutes at room temperature.

Note: Do not incubate the PepJet™/DNA complex at room temperature for longer than 15 minutes.

4. Inject 300 µL of the transfection complex into the mouse via the tail vein immediately after incubation.

5. Monitor transgene expression at the desired time point. Robust gene delivery and transgene expression are typically observed within 12–48 hours, depending on the route of administration and the target organ.

Table 1. Recommended DNA Amounts for In Vivo Transfection in Mice According to the Route of Administration

Animals	Injection Site	DNA Amount Suggested	Injection Volume Suggested
Adult mouse	Tail vein	50 µg	200~300 µL
	Retroorbital	60 µg	200 µL
	Portal vein	100 µg	500 µL
	Intraperitoneal	100 µg	600 µL
	Brain ventricle	1 µg	5 µL
	Heart	50 µg	200 µL
	Lung instillation	50 µg	400 ~ 600 µL
	Subcutaneous tumor	20 µg	100 µL

Storage: PepJet™ DNA In Vitro Transfection Reagent is stable for up to 24 months at +4 °C. This item shipped at ambient temperature