# Technical Data Sheet

## MVL5/GMO Transfection Reagent Kit

### Storage Conditions:

Store lipid blend at -20°C prior to reconstitution. Following hydration, store lipid blend at 4°C.

### Product Description:

The MVL5/GMO transfection reagent is a formulation for transfecting plasmid DNA and siRNA into a wide range of eukaryotic cells. MVL5 and GMO form cationic liposomes, which when complexed with DNA forms a promising nonviral vector for gene delivery and silencing applications[1,2]. Nonviral vectors are desirable as transfection systems because of their low potential immunogenicity and the ability to transfer very large pieces of nucleic acids[2]. This multivalent cationic lipid vector system exhibits high transfection efficiency, even in the presence of serum[2]. This is advantageous in cell culture applications for its ease of use and its elimination of the potentially adverse affects of serum starvation on the cell cycle[2]. Most importantly, high transfection efficiency in the presence of serum may predict high transfection efficiency *in vivo*[2]. The MVL5/GMO multivalent cationic lipid vector system has been found to outperform other commercially available formulations *in vitro*, particularly in the presence of serum[2].

### Supplied Reagents:

A lipid blend containing MVL5 and glycerol monooleate (GMO) (1:1, mol:mol).
The blend contains the following: 0.6 mg of MVL5 and 0.2 mg of GMO
These quantities are sufficient to produce 1 mL of a 1 mM stock solution of vesicles.

### Additional Reagents Required but not Supplied:

Plasmid DNA
Opti-MEM Reduced Serum Medium or DMEM
Eppendorf Tubes

**Product**

| Avanti No. | Description |
|---|---|
| 640009 | MVL5/GMO Transfection Reagent Kit |

## General Protocol:

### Preparation of Liposomes:

- To prepare liposomes, hydrate the lipid blend with 1 mL of sterile, high-resistivity water to produce a 1 mM stock solution.
- Close the vial tightly, and incubate the mixture at 37°C for at least 12 hrs.
- Place the vial in a water bath, and sonicate for 10 minutes or until the solution is clear.
- Transfer the solution to a new container (glass vial or 1.5 mL centrifuge tube) by passing the solution through a filter (0.2 $\mu$m pores).
- Store the liposomal solution at 4°C.

Note.
The liposome stock may be re-used for up to four months with sonication prior to each use.

### Transfection:

Note. This Protocol is optimized for a 24-well plate format.

- Seed cells to be ~70% confluent at the time of transfection.
- Dilute the required amount of plasmid DNA to 4 $\mu$g/mL in Opti-MEM or DMEM.
- Add an appropriate volume of the prepared Liposomal Solution (12 $\mu$L/1 $\mu$g of DNA) to the diluted plasmid DNA.
- Incubate at room temperature for 20 min.
- Add 200 $\mu$L of the solution (0.4 $\mu$g DNA) to each well.
- Following 6 hrs of incubation at 37°C, remove the transfection medium.
- Wash each well once with phosphate buffered saline.
- Add fresh culture medium to each well.
- Harvest cells following an additional 18-48 hr of incubation.

## Additional Guidelines:

• Optimum transfection conditions and the amount of DNA per well must be determined empirically for each cell type by the user.
• Prepare sufficient reaction mixture in order to perform duplicate or triplicate analyses.

| Component | 96-Well | 24-Well | 12-Well | 6-Well |
|---|---|---|---|---|
| Volume of DNA-Lipid Complex added to each well | 100 µL | 200 µL | 400 µL | 1000 µL |
| Final DNA per well | 0.2 µg | 0.4 µg | 0.8 µg | 2 µg |

General guidelines are applicable to the transfection of plasmid DNA and siRNA.

## References:

[1]Chan, C-L., Ewert, K.K., Majzoub, R.N., Hwu, Y-K, Liang, K.S., Leal, C., Safinya, C. Optimizing cationic and neutral lipids for efficient gene delivery at high serum content.
*The Journal of Gene Medicine,* 2014, 16:84-96.

[2]Leal, C., Ewert, K.K., Shirazi, R.S., Bouxsein, N.F., Safinya, C. Nanogyroids Incorporating Multivalent Lipids: Enhanced Membrane Charge and Pore Forming Ability for Gene Silencing.
*Langmuir,* 2011, 27(12):7691--7697.

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