

## Transfection Reagent

### A. Product Description

#### Introduction

CarpTrans is a cationic polymeric transfection reagent optimized for the transfection of animal cells with plasmids and RNA, including complex applications such as plasmid co-transfection.

#### Application

- CarpTrans is widely utilized for transient expression of recombinant proteins and antibodies as well as the production of viral vectors (AAV, AdV, and LV).
- The standard ratio of exogenous nucleic acid ( $\mu\text{g}$ ) to transfection reagent ( $\mu\text{L}$ ) ranges from 1:3 to 1:4. It is recommended to perform initial optimization studies to determine the ideal ratio for specific applications.
- For optimal performance, OPM serum-free media are recommended for use with CarpTrans.
- This product is intended for research use or further manufacturing, including large-scale biopharmaceutical production. It is not intended for direct human administration or use as a drug substance or drug product.

#### Storage and Shipping Conditions

Storage: 2-8°C, dry and protected from light.  
Shipping conditions: insulated foam container with ice packs.

#### Shelf Life

Liquid: 12 months | Powder: 60 months

### B. Experimental Procedure

#### 1. Transient transfection

##### 1.1. Cell Preparation

**1.1.1. Suspension cell culture:** Resuspend the cells to a final density of  $3.0\text{--}5.0 \times 10^6$  cells/mL.

**1.1.2. Adherent cell culture:** Seed cells to achieve 60–80% confluency at the time of transfection.

##### 1.2. Transfection complex preparation

**1.2.1.** Prepare a concentrated plasmid solution of 20  $\mu\text{g}/\text{mL}$  in the recommended OPM medium. For co-transfection of plasmids, mix the

plasmids in a proper ratio, e.g., heavy chain to light chain plasmid ratio of around 2:3. The total concentration of heavy chain and light chain plasmids should equal 20  $\mu\text{g}/\text{mL}$ .

**1.2.2.** Prepare a concentrated CarpTrans solution in the recommended OPM medium according to the optimized ratio of plasmid to CarpTrans. If the optimized ratio of plasmid-to-CarpTrans is 1:3, the CarpTrans concentrate should be prepared at 60  $\mu\text{g}/\text{mL}$ . The optimized ratio is experiment-specific and requires optimization beforehand. The typical range is 1:3-1:4.

**1.2.3.** Add the concentrated CarpTrans solution to the concentrated plasmid solution, mix gently by inversion, and incubate at room temperature for 10-15 min to allow the two to fully complex.

#### 1.3. Transfection

**1.3.1.** Add the incubated transfection complex into the cell culture to reach the desired concentration and mix gently. Recommended final concentrations for transfection complexes are listed in Table 1-4. Nevertheless, initial optimization studies are recommended whenever possible to optimize for the specific experiment.

**1.3.2.** Culture the cells to harvest protein, virus, or functional cells.

#### 2. CarpTrans powder reconstitution method (To achieve 1 mg/mL final concentration)

**2.1.** Weigh 1 g of powder and add to 950 mL ultrapure water or water for injection (WFI).

**2.2.** Stir to completely dissolve the powder.

**2.3.** Gradually add 1M NaOH solution to adjust the pH to 6.8-6.9.

**2.4.** Adjust to a final volume of 1 L with ultrapure water or WFI.

**2.5.** Sterilize immediately by filtration through a low-protein-binding membrane, such as polyethersulfone (PES), with a pore size of 0.22  $\mu\text{m}$ .

**2.6.** Aliquot and store at 2-8 °C.

## C. Contact Technical Support

For technical inquiries or troubleshooting support, please contact our expert technical team:

- Technical Support :  
[opmus\\_support@opmbiosciences.com](mailto:opmus_support@opmbiosciences.com)
- Website:  
[www.opmbio.com](http://www.opmbio.com)

## D. Technical Recommendations

1. Use high-purity, endotoxin-free plasmid DNA to ensure optimal transfection efficiency.
2. The physiological state and cell health are critical; use only freshly passaged cells in the logarithmic growth phase. A minimum cell viability of 95% is recommended prior to transfection.
3. Wear appropriate personal protective equipment (PPE), including lab coats and gloves.

## E. Related Products

Table 1. Related products recommended to use with CarpTrans Transfection Reagent

Product name	Description
293F Hi-Exp Medium	Non-GMP basal medium for transient transfection of HEK293F cells and protein expression
293F Hi-Exp Feed	Non-GMP feed medium for transient transfection of HEK293F cells and protein expression
OPM-293 CD05 Medium	GMP-grade basal medium for transient transfection of HEK293F cells and protein expression
OPM-293 ProFeed	GMP-grade feed medium for transient transfection of HEK293F cells and protein expression

## F. Recommended Transfection Volumes

Table 2. Recommended transfection volume for suspension cell culture of Expi293

Vessel Type	Culture Volume (mL)	Cell Density (cells/mL)	Plasmid ( $\mu\text{g}$ )	CarpTrans Transfection Reagent ( $\mu\text{L}$ )	Protein Collection Time (Day)
96-Deep Well Plate	0.8	$2.5 \times 10^6$	0.8	2.4	5–7
24-Deep Well Plate	2.5	$3.0 \times 10^6$	2.5	7.5	5–7
Mini Bioreactor Tube	15	$3.0 \times 10^6$	15	45	5–7
SF125	25	$3.0 \times 10^6$	25	75	5–7
SF250	50	$3.0 \times 10^6$	50	150	5–7
SF1000	200	$3.0 \times 10^6$	200	600	5–7
SF2000	400	$3.0 \times 10^6$	400	1200	5–7
SF3000	800	$3.0 \times 10^6$	800	2400	5–7

Table 3. Recommended transfection volume for suspension cell culture of ExpiCHO-S

Vessel Type	Culture Volume to Transfect (mL)	Recommended Transfection Density (cells/mL)	Recommended Plasmid Dosage (µg)	Recommended Transfection Reagent Dosage (µL)	Recommended Protein Collection Time (Day)
SF125	25	6.0 x 10 <sup>6</sup>	12.5-25	75-150	9-12
SF250	50	6.0 x 10 <sup>6</sup>	25-50	150-300	9-12
SF500	100	6.0 x 10 <sup>6</sup>	50-100	300-600	9-12
SF1000	200	6.0 x 10 <sup>6</sup>	100-200	600-1200	9-12
SF2000	400	6.0 x 10 <sup>6</sup>	200-400	1200-2400	9-12
SF3000	800	6.0 x 10 <sup>6</sup>	400-800	2400-4800	9-12

Table 4. Recommended transfection volume for suspension cell culture or adherent cells (96-well plate is used as an example)

Cell Type	Cell Density	Plasmid (µg)	CarpTrans Transfection Reagent (µL)
293T	60-80%	0.2	0.6-0.8
293H	60-80%	0.2	0.6-0.8
HeLa	60-80%	0.3	0.9-1.2
Vero	60-80%	0.3	0.9-1.2
SF9	60-80%	0.4	1.2-1.6
BHK21	60-80%	0.2	0.6-0.8
HepG2	60-80%	0.5	1.5-2.0
MDCK	60-80%	0.6	1.8-2.4

Table 5. Recommended transfection volume for suspension cell culture of virus proliferation (12-well plate is used as an example)

Cell Type	Number of Cells Plated Per Well	Plasmid (µg)	CarpTrans Transfection Reagent (µL)	Virus Collection Time (Day)
Packaging AAV with HEK293T cells	2x10 <sup>5</sup>	0.3	0.9-1.2	2-3

## G. Ordering Information

Product Name	Grade	SKU	Volume
CarpTrans Transfection Reagent	Non-GMP	AC501302-01	1 mL
		AC501302-02	5 × 1 mL
		AC501302-03	50 mL
	GMP	C253981-01	1 mL
		C253981-02	5 × 1 mL
		C253981-03	50 mL
CarpTrans Transfection Reagent (Powder)	Non-GMP	AC501303-01	100 mg
		AC501303-02	1 g
		AC501303-03	50 g