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A Geno Technology, Inc. (USA) brand name

# Tube-O-Reactor™

(Micro: Cat. # 786-024-4K, 786-024-8K, 786-024-15K)

(Medi: Cat. # 786-027-4K, 786-027-8K, 786-027-15K)



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## INTRODUCTION

The Tube-O-Reactor™ is a simple reactor-device for performing a wide variety of reactions including cross-linking, modification, and labeling of proteins and nucleic acids. Most reactions involve three critical steps - equilibration of reaction conditions for efficient reaction, reaction with target specific agents, and then removal of un-reacted agents and bi-products, followed by recovery of the reaction products. Tube-O-Reactor™ has been designed to perform all three critical steps of any such reaction with minimum user interventions or hands-on efforts, which uses only an ordinary laboratory shaker.

The Tube-O-Reactor™ consists of a sealed reaction chamber box provided with Tube-O-Dialyzer™ and dialysis assemblies (includes micro-dialysis cups, floats and stirring balls) in one kit. Each Tube-O-Reactor™ is suitable for 5 separate reactions, per sample volume of Micro or Medi size. Additional Tube-O-Dialyzer™ can be purchased separately.

## ITEM(S) SUPPLIED

	<b>Tube-O-Reactor™ , Micro For 20-250µl Samples</b>		
<b>Cat. #</b>	<b>786-024-4K</b>	<b>786-024-8K</b>	<b>786-024-15K</b>
MWCO (Da)	4,000	8,000	15,000
Tube-O-DIALYZER™ , Micro	5	5	5
Floats (Micro)	5	5	5
Storage Caps (Micro)	5	5	5
Micro Dialysis Cups	5	5	5
Glass Balls	50	50	50

	<b>Tube-O-Reactor™ , Medi For 0.2-2ml Samples</b>		
<b>Cat. #</b>	<b>786-027-4K</b>	<b>786-027-8K</b>	<b>786-027-15K</b>
MWCO (Da)	4,000	8,000	15,000
Tube-O-DIALYZER™ , Medi	5	5	5
Floats (Medi)	5	5	5
Storage Caps (Medi)	5	5	5
Micro Dialysis Cups	5	5	5
Glass Balls	50	50	50

## STORAGE CONDITIONS

The kit is shipped at ambient temp. Upon arrival, store Tube-O-Reactor at 4°C.

## ADDITIONAL ITEM(S) REQUIRED

Shaker or Stir Plate and Stir Bar

## PREPARATION BEFORE USE

Tube-O-DIALYZER™ are supplied in a preservative to maintain quality. Prior to use discard the preservative from the tube and place the dialysis cap upside down in a beaker or other suitable container and add 1-2ml DI water or dialysis buffer to rinse. Keep the Tube-O-DIALYZER™ membrane wet until required

## PROTOCOL

### ***Equilibration of Sample***

1. Pipette your sample directly into the Tube-O-DIALYZER™ tube. For Tube-O-DIALYZER™ Micro use 20-250µl and for Tube-O-DIALYZER™ Medi use 0.2-2.5ml.
2. Remove the Tube-O-DIALYZER™ dialysis cap from the rinse water/buffer and carefully remove excess liquid with a pipette tip.
3. Screw the dialysis cap on to the Tube-O-DIALYZER™ tube until finger tight. Invert the Tube-O-DIALYZER™, ensuring the entire sample rests upon the membrane.  
**NOTE:** *If sample is too viscous, centrifuge the Tube-O-DIALYZER™ in an inverted position (i.e. the dialysis membrane facing downward). We recommend inverting the Tube-O-DIALYZER™ in the Tube-O-DIALYZER™ centrifuge adaptor (Cat. # 786-145) or a 50ml centrifuge tube and centrifuging for 5 seconds at 500-1,000g. Do not spin longer as this may cause the membrane to rupture.*
4. Keeping the Tube-O-DIALYZER™ in an inverted position, slide the supplied float onto the Tube-O-DIALYZER™ tube.
5. Place the Tube-O-DIALYZER™ in the Micro Dialysis Cup containing an appropriate equilibration buffer and 6 glass balls.
6. Ensure that the dialysis membrane contacts the dialysis buffer. If there are large air bubbles trapped underneath the dialysis membrane surface, tilt the tube or squirt buffer to remove the air bubbles.
7. Place the Micro Dialysis Cup containing the Tube-O-DIALYZER™ on an orbital shaker and gently shake for an appropriate time to allow equilibration to occur.
8. **Equilibration Time:** Equilibration time will depend on the nature of sample, MWCO of the Tube-O-DIALYZER™, sample and dialysis buffer volume and concentration. Higher MWCO will allow faster dialysis. As a guide, the sample should be dialyzed for 2-12h. Dialysis buffer should also be replaced at least once during dialysis.
9. After dialysis, remove the Tube-O-DIALYZER™ from the float and immediately spin the Tube-O-DIALYZER™ (in up-right position) for 5-6 seconds at 500-1,000xg.  
**NOTE:** *Do not spin longer as this may cause the membrane to rupture.*

### **Reaction Steps**

1. Unscrew the dialysis cap and add the appropriate reaction reagents direct to the equilibrated sample in the Tube-O-DIALYZER™ and mix well. Replace the dialysis
2. Screw the dialysis cap on to the Tube-O-DIALYZER™ tube until finger tight. Invert the Tube-O-DIALYZER™, ensuring the entire sample rests upon the membrane.  
**NOTE:** *If sample is too viscous, centrifuge the Tube-O-DIALYZER™ in an inverted position (i.e. the dialysis membrane facing downward). We recommend inverting the Tube-O-DIALYZER™ in the Tube-O-DIALYZER™ centrifuge adaptor (Cat. # 786-145) or a 50ml centrifuge tube and centrifuging for 5 seconds at 500-1,000g. Do not spin longer as this may cause the membrane to rupture.*
3. Keeping the Tube-O-DIALYZER™ in an inverted position, slide the supplied float onto the Tube-O-DIALYZER™ tube.
4. Place the Tube-O-DIALYZER™ an empty Micro Dialysis Cup with 6 glass balls and incubate at the appropriate temperature and time to complete the reaction.

### **Sample Clean Up**

1. At the end of incubation, add dialysis buffer to the Micro Dialysis Cup and make sure the entire sample rests on the dialysis membrane.  
**NOTE:** *If sample is too viscous, centrifuge the Tube-O-DIALYZER™ in an inverted position (i.e. the dialysis membrane facing downward). We recommend inverting the Tube-O-DIALYZER™ in the Tube-O-DIALYZER™ centrifuge adaptor (Cat. # 786-145) or a 50ml centrifuge tube and centrifuging for 5 seconds at 500-1,000g. Do not spin longer as this may cause the membrane to rupture.*
2. Ensure that the dialysis membrane contacts the dialysis buffer. If there are large air bubbles trapped underneath the dialysis membrane surface, tilt the tube or squirt buffer to remove the air bubbles.
3. Place the Micro Dialysis Cup containing the Tube-O-DIALYZER™ on an orbital shaker and gently shake for an appropriate time to allow equilibration to occur.
4. **Dialysis Time:** Dialysis time will depend on the nature of sample, MWCO of the Tube-O-DIALYZER™, sample and dialysis buffer volume and concentration. Higher MWCO will allow faster dialysis. As a guide, the sample should be dialyzed for 2-12h. Dialysis buffer should also be replaced at least once during dialysis.
5. After dialysis, remove the Tube-O-DIALYZER™ from the float and immediately spin the Tube-O-DIALYZER™ (in up-right position) for 5-6 seconds at 500-1,000xg.  
**NOTE:** *Do not spin longer as this may cause the membrane to rupture.*
6. The reaction product is ready for use or labeled proteins may be stored in the same tube for later use. Simply replace the dialysis cap with the storage cap.

## MEMBRANE COMPATIBILITY

Acetic acid (diluted-5%)	R	Formaldehyde (2%)	R	Nitric acid (concentrated)	NR
Acetic acid (med conc-25%)	R	Formaldehyde (30%)	R	Nitrobenzene	NR
Acetic acid (glacial)	R	Formic acid (25%)	R	Nitropropane	NR
Acetone	R	Formic Acid (50%)	R	Oils, mineral	R
Acetonitrile	R	Freon®	R	Pentane	R
Ammonium hydroxide (diluted)	R	Gasoline	R	Perchloric acid (25%)	NR
Ammonium hydroxide (med conc)	NR	Glycerine	R	Perchloroethylene	R
Amyl acetate	R	Glycerol	R	Petroleum based oils	R
Amyl alcohol	R	Hexane	R	Petroleum ether	R
Aniline	R	Hexanol	R	Phenol (0.5%)	R
Benzene	R	Hydrochloric acid (diluted-5%)	R	Phenol (10%)	R
Benzyl alcohol	R	Hydrochloric acid (25%)	NR	Phosphoric acid (25%)	NR
Boric acid	R	Hydrochloric acid (37%)	NR	Potassium hydroxide (1N)	NR
Brine	R	Hydrofluoric acid (25%)	NR	Potassium hydroxide (25%)	R
Bromoform	R	Hydrogen peroxide (30%)	NR	Potassium hydroxide (50%)	NR
Butyl acetate	R	Iodine solutions	NR	Propanol	R
Butyl alcohol	R	Isobutyl alcohol	R	Pyridine	R
Butyl cellosolve	NR	Isopropanol	R	Silicone oil	R
Butylaldehyde	R	Isopropyl acetate	R	Sodium hydroxide (0.1N)	R
Carboh tetrachloride	R	Isopropyl alcohol	R	Sodium hydroxide (diluted-5%)	NR
Cellosolve	NR	Isopropyl ether	R	Sodium hydroxide (25%)	NR
Chloroacetic acid	R	Jet Fuel 640A	R	Sodium hydroxide (conc-50%)	NR
Chloroform	R	Kerosene	R	Sodium Hydroxide (Concentrated)	NR
Chromic acid	NR	Lactic acid	R	Sodium Hypochlorite	R
Cresol	R	Methyl acetate	R	Sulfuric acid (diluted-5%)	R
Cyclohexane	R	Methyl alcohol	R	Sulfuric acid (med conc-25%)	R

Cyclohexanone	R	Methyl alcohol (98%)	R	Sulfuric acid (6N)	NR
Diacetone alcohol	R	Methyl cellosolve	NR	Sulfuric Acid (concentrated)	NR
Dichloromethane	R	Methyl Chloride	R	Tetrahydrofuran	R
Dimethyl formamide	NR	Methyl ethyl ketone	R	Toluene	R
Dimethylsulfoxide	R	Methyl formate	NR	Trichloroacetic acid (25%)	NR
1,4 Dioxane	NR	Methyl isobutyl ketone	R	Trichlorobenzene	R
Ethers	R	Methylene chloride	R	Trichloroethane	R
Ethyl acetate	R	N-Methyl-2-Pyrrolidone	R	Trichloroethylene	R
Ethyl Alcohol	R	Mineral spirits	R	Triethylamine	R
Ethyl alcohol (15%)	R	Monochlorobenzene	R	Turpentine	R
Ethyl alcohol (95%)	R	Nitric acid (diluted-5%)	R	Urea	R
Ethylene dichloride	R	Nitric acid (med conc-25%)	NR	Urea (6N)	R
Ethylene glycol	R	Nitric acid (6N)	NR	Water	R
Ethylene oxide	NR	Nitric acid (conc-70%)	NR	Xylene	R

NR: Not Recommended; R: Recommended. This chart is intended as a guide and not a guarantee of compatibility.

## OPTIONAL ACCESSORIES

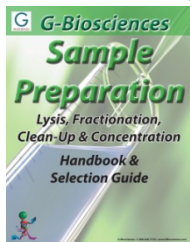
- **Centrifuge Tube Adaptor [Cat # 786-145]:** Optional adaptor for centrifugation in bench top centrifuges. Pack of 2.
- **Additional Micro Dialysis Cups [Cat # 786-145C]:** For dialysis of small sample volumes, equilibrium dialysis, dialysis of single use preparations, and other dialysis applications. Dialysis buffer capacity of 2-10ml.
- **Tube-O-Array™ Dialyzer [Cat # 786-145A]:** Specifically developed for dialysis-equilibration of samples prior to 2D-gel analysis or other applications. Optimize up to 12 samples at a time. Consists of a tray for holding up to 12 Tube-O-DIALYZER™ assemblies. Suitable for 20µl to 2.5ml samples each.
- **Additional Floats:** Additional Tube-O-DIALYZER floats, both Micro [Cat # 786-141F] and Medi [Cat # 786-142F] sizes are also available separately.

## TROUBLESHOOTING

1. **Reusing Tube-O-DIALYZER™:** Tube-O-DIALYZER™ is not recommended for re-use because of obvious reason of cross contamination.
2. **Precipitate Forms in Sample:** As with all dialysis methods, precipitation may occur in your sample. The unique tube format means the entire Tube-O-DIALYZER™ can be centrifuged to collect the precipitate. We recommend centrifuging for 5-6 seconds at 500-1,000xg. Check the sample and if necessary repeat the centrifugation. *Do not spin longer as this may cause the membrane to rupture.*
3. **Mishandling Dislodges White Gasket:** In some cases the white gasket inside the Tube-O-DIALYZER™ cap can be dislodged by mishandling. In this event, we recommend using the base of the Tube-O-DIALYZER™ tube to push the gasket back in to position.

## RELATED PRODUCTS

Download our Sample Preparation Handbook.



<http://info.gbiosciences.com/complete-protein-sample-preparation-handbook/>

For other related products, visit our website at [www.GBiosciences.com](http://www.GBiosciences.com) or contact us.

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