Tube-O-Reactor™

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 (*see related products*).

Catalog No.	**ITEM(S) SUPPLIED**
786-024-4K	**1 Kit Pack Contains:** 5 Tube-O-Dialyzers - **4kDa MWCO***, **Micro** (for 20-250ul reaction volume), 5 Micro Caps, 5 Micro Floats, 5 Micro Dialysis Cups and 60 glass balls
786-024-8K	**1 Kit Pack Contains:** 5 Tube-O-Dialyzers - **8kDa MWCO*, Micro** (for 20-250ul reaction volume), 5 Micro Caps, 5 Micro Floats, 5 Micro Dialysis Cups and 60 glass balls
786-024-15K	**1 Kit Pack Contains:** 5 Tube-O-Dialyzers - **15kDa MWCO***, **Micro** (for 20-250ul reaction volume), 5 Micro Caps, 5 Micro Floats, 5 Micro Dialysis Cups and 60 glass balls
786-027-4K	**1 Kit Pack Contains:** 5 Tube-O-Dialyzers - **4kDa MWCO***, **Medi** (for 0.2-2ml reaction volume), 5 Medi Caps, 5 Medi Floats, 5 Micro Dialysis Cups and 60 glass balls)
786-027-8K	**1 Kit Pack Contains:** 5 Tube-O-Dialyzers - **8kDa MWCO*, Medi** (for 0.2-2ml reaction volume), 5 Medi Caps, 5 Medi Floats, 5 Micro Dialysis Cups and 60 glass balls)
786-027-15K	**1 Kit Pack Contains:** 5 Tube-O-Dialyzers - **15kDa MWCO***, **Medi** (for 0.2-2ml reaction volume) , 5 Medi Caps, 5 Medi Floats, 5 Micro Dialysis Cups and 60 glass balls

***MWCO** – Mol Weight Cut Off

Note: *Other MWCO Tube-O-Dialyzers (Micro or Medi size) can be ordered from our list (see Related Products).*

STORAGE CONDITIONS
The kit is shipped at ambient temp. Upon arrival, store Tube-O-Reactor with Tube-O-Dialyzers at 4^0C.

ITEMS NEEDED BUT NOT SUPPLIED
Shaker or Stir Plate and Stir Bar

Preparation before Use:

A. Wash: Tube-O-Dialyzers are supplied in a preserving solution containing azide. A brief rinse is recommended before use. Place the dialysis cap of the Tube-O-DIALYZER™ on a clean surface or in a clean beaker, the membrane side facing down ward. Add 1-2ml DI water or a buffer of your choice in to the cap (membrane) and let it drain away. Keep the Tube-O-DIALYZER™ membrane wet in water until you are ready to use. ***Do not allow the membrane to dry.***

B. Just before use, remove the cap from water. Remove excess water from the cap with a pipet tip. ***DO NOT DISTURB THE MEMBRANE***

PROTOCOL

Equilibration Steps:

Place the sample into the Tube-O-Dialyzer™ (Micro for 20µl to 250µl samples and Medi for 200µl to 2.5ml samples). Position the dialysis cap on the tube and tighten it firmly. Assemble Tube-O-Dialyzer, using right size float in a *Micro Dialysis Cup* containing an appropriate buffer for the reaction with 5-6 glass balls.
Place the *Tube-O-Reactor*™ on a laboratory shaker for the equilibration to proceed. The glass balls in each *Micro Dialysis Cup* will gently agitate the dialysis buffer and allow rapid and efficient exchange of buffers.

Reaction Steps:

After equilibration, add the reaction agents into the Tube-O-Dialyzer™ and mix well. Invert the Tube-O-Dialyzer™ and reposition into the Micro Dialysis Cup without any buffer. Incubate Tube-O-Dialyzer™ for the reaction to complete. At the end of incubation, add appropriate dialysis buffer and dialyze the sample for the removal of reaction bi-products and un-reacted agents as described below.

Removal (Dialysis) Steps:

I. Add dialysis buffer to the *Micro Dialysis Cup* and make sure the entire sample rests on the dialysis membrane. If sample is viscous, spin the Tube-O-DIALYZER™ in inverted position (i.e. the dialysis membrane facing downward) for 5-6 seconds. Check the tube to make sure the entire sample has moved down on to the dialysis membrane of the Tube-O-DIALYZER™**.** Hold the Tube-O-DIALYZER™ in an inverted position when removing from the centrifuge**.**

WARNING: *Spinning longer than necessary may rupture the Tube-O-Dialyzer membrane.*

Check 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. Gently, stir the dialysis buffer.

II. **Dialysis Time**: Dialysis time will depend on the nature of sample, MWCO of Tube-O-DIALYZER™, sample volume and the dialysis buffer as well as concentration of the sample solution. Higher MWCO will allow faster dialysis. As a guide, the sample should be dialyzed 2-12 h. The content of the Tube-O-DIALYZER™ should be mixed once or twice during dialysis, either by inverting or gently tapping the Tube-O-DIALYZER™. If necessary, repeat the step I). Dialysis buffer should also be replaced at least once during dialysis.

III. After dialysis, take out the Tube-O-DIALYZER™ from the float and immediately spin the Tube-O-DIALYZER™ in up-right position for 5-6 seconds at 1,000x g.

The reaction product is ready for use or labeled proteins may be stored in the same tube for later use.
Discard the dialysis cap and replace a normal cap (supplied with the kit) for storage.

RELATED PRODUCTS

NOTE: *For other related products, visit our web site at www.GBiosciences.com or contact us.*