Mini, Midi, Maxi and Mega

GeBaFlex-tube

Dialysis and Sample Concentration

Gene Bio-Application (GeBA)

Tools for Research

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Product use Limitations

GeBaFlex-tube kit is developed, designed and sold for research purposes only. It is not to be used for human diagnostic purposes or drug production nor for producing did any substance intend to be administered to humans unless expressly cleared for that purpose by the Food and Drug Administration in the USA or the appropriate regulatory authorities in the country of use. All due care and attention should be exercised in the handling of materials described in this text.

GeBaFlex-tube is covered by the WO0190731 patent application assigned to Gene Bio-Application Ltd.

GeBaFlex-tube membrane is ultra-clean, sulfur and heavy metal free and EDTA treated.

Warning

Wearing gloves is highly recommended when handling the kit contents.

Mini, Midi, Maxi and Mega GeBaFlex-tube: Dialysis and Sample Concentration

Description

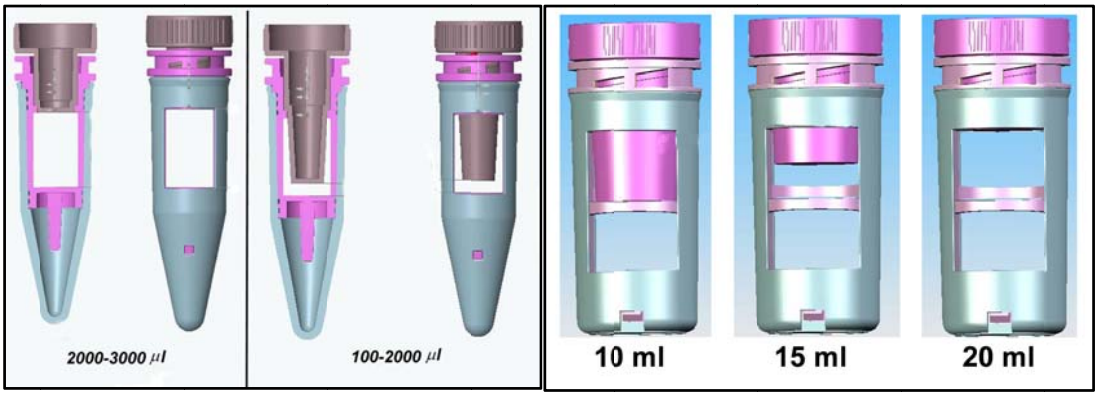
GeBaFlex-tubes provide an extremely convenient and versatile system for the manipulation of biological samples. Two modes of operation, dialysis and electroelution, enable efficient buffer exchange or gel extraction of protein, DNA, or RNA, in a single-tube format over a wide range of conditions. There is no need for a syringe, microcentrifuge, dedicated electroelution apparatus, or laborious steps during sample manipulations. The samples are added and removed using a standard laboratory pipet. GeBaFlex-tubes are also ideally suited for sample concentration by evaporation because of their dual membranes and large surface area.

GeBaFlex-tubes are available in several volume capacities: Mini (10–250 µl), Midi (50–800 µl), Maxi (0.1-3 ml) and Mega (3-20 ml). The GeBaFlex-tube Maxi kits are provided with two caps to allow easy adjustment of capacity from 0.1-2 ml to 2 ml-3 ml (see **Figure 1**A). The capacity range of the Mega GeBaFlex-tube is determined by the caps accompanying the tube (see **A** **B** Figure 1B). All GeBaFlex-tube membranes consist of ultra-clean, EDTA-treated regenerated cellulose. Membranes are free of sulfur and heavy metals. Nonspecific protein binding by the membrane is negligible.

GeBaFlex-tubes are available in different MWCO: Mini (8, 14, 25 kDa), Midi (1, 3.5, 8 kDa), Maxi (3.5, 8, 14, 25, 50 kDa) and Mega (1, 3.5, 8 and 14 kDa).

In addition to their utility for dialysis, GeBaFlex-tubes are unique tools for extraction and electroelution of any protein, protein-protein, and protein-nucleic acid complexes from non-denaturing and denaturing (SDS) polyacrylamide gels in less than two hours. Extracted proteins are compatible with applications such as MALDI-MS, immunization for antibody production (provided that running buffer is removed by dialysis), HPLC analysis, or peptide mapping. In addition, GeBaFlex-tubes can be used for oligonucleotide, RNA, and DNA extraction from polyacrylamide and agarose gels. Efficient extraction occurs for nucleic acids ranging in size from 15-nt oligonucleotides to 80 kbp double-stranded DNA. No specialized electroelution apparatus is required; as the GeBaFlex-tube supporting trays are compatible with most commercially-available horizontal electrophoresis units. Reagents are also provided for protein precipitation following electroelution. (For more details, download Protein, DNA and RNA Extraction protocols file from http://www.geba.org/apage/117431.php

Maxi GeBaFlex-tube **Mega GeBaFlex-tube**



A **B**

Figure 1: (A) GeBaFlex-tube Maxi kits are provided with a 3-ml cap (left panel) and a 2-ml cap (right panel). Cross-sections of the device and cap assembly are shown to the left of each panel. (B) Caps available with different Mega GeBaFlex-tube kits

Kit Contents

Each kit includes a floating rack along with the GeBaFlex-tubes and Protocol manual.

Storage Conditions

Store all components at room temperature. For wet GeBaFlex-tube (MWCO: 1, 25, 50 kDa), store at 4-8^{o}C.

Dialysis

Use the following protocol for dialysis and/or sample concentration using the GeBaFlex-tube Mini, Midi, Maxi or Mega.
The GeBaFlex-tube Maxi kits are provided with two caps. For sample volumes less than 2 ml, use the 2-ml cap. For sample volumes between 2 and 3 ml, use the 3-ml cap (See Figure 1A).
Wash wet GeBaFlex-tube thoroughly, outside and inside with deionized water.

Procedure

1. Fill the GeBaFlex-tube with amount of deionized water indicated in Table 1. Incubate upright for at least 5 min. Check that there is no water leaking from the tube. The water level will decrease as dry membranes absorb some of the water.

Table 1

GeBaFlex-tube	Volume of deionized water	Sample volumes
Mini	250 µl	10-250 µl
Midi	800 µl	50-800 µl
Maxi (2-ml cap)	3 ml	0.1-2 ml
Maxi (3-ml cap)	3 ml	2-3 ml
Mega (10-ml cap)	20 ml	3-10 ml
Mega (15-ml cap)	20 ml	10-15 ml
Mega (20-ml cap)	20 ml	15-20 ml

2. Remove water from GeBaFlex-tube. Add sample and close the tube. If small volume is used, load the sample near inner membrane of the tube.
3. Place GeBaFlex-tube in Floating Rack provided. Place rack in a beaker containing 100- to 1000-fold sample volume of desired dialysis buffer and a stir bar. The user must determine exact equilibration times for the dialysis. Low-molecular weight salts and buffers (e.g., Tris·Cl and KPO_4) equilibrate within 3 hours. Equilibration times for viscous samples will be longer.
4. Change dialysis buffer as needed. If sample volume increased during dialysis, let your sample evaporate on the bench top (using a fan to increase airflow across the membrane will speed up the process), making sure to check every 10 min or less to prevent evaporation to dryness.
5. Carefully remove sample from GeBaFlex-tube with a pipet to a clean microcentrifuge tube.

Sample Concentration by evaporation

GeBaFlex-tubes are ideally suited for sample concentration via evaporation because of their dual membranes and large surface area. Dialysis and concentration in the same device reduce protein loss. Unlike closed-system centrifuge-type devices, sample concentration can be easily monitored in the GeBaFlex-tube.

1. Place a sample in the GeBaFlex-tube or use already dialyzed sample and place it on microtube rack stand.
2. Let your sample evaporate on the bench top (using a fan to increase airflow across the membrane will speed up the process). Making sure to check every 10 min or less to prevent evaporation to dryness. When concentrating by evaporation the water from your sample, the small molecule (buffer salts, reducing agents, etc.) will also be concentrated because no diffusion occurs.

Troubleshooting Guide

Symptom	Possible Cause	Comments and Suggestion
Low yield	Insufficient elution time	Increase elution time. Increase applied voltage.
	Polarity of current was not reversed after elution	Reverse polarity of current for 2 min.
	Tube not fully immersed in buffer of electrophoresis tank	Fully immerse tube in buffer of electrophoresis tank, using supporting tray.
	Gel slice not fully immersed in buffer inside tube, or air bubbles are present	After inserting gel slice in tube, add running buffer or deionized water to top of the two membranes. Make sure no air bubbles are present in tube.
	More than recommended gel volume inserted in tube	Do not cut large gel slices or place multiple pieces in the same tube. Separate large gel slices into multiple tubes.
	Tube oriented incorrectly, electric current does not pass through tube	The two membranes of the GeBaFlex-tube must be perpendicular to electric field.
Long elution time	Low applied voltage	Increase applied voltage.
	Gel slice is not fully immersed in the buffer inside the tube, or air bubbles are present	After inserting gel slice in tube, add running buffer or deionized water to top of the two membranes. Make sure no air bubbles are present in tube.
	Tube not fully immersed in buffer of electrophoresis tank	Fully immerse tube in buffer of electrophoresis tank, using supporting tray.
Volume of solution reduced after elution	Membrane was dry when sample was added	Wet membrane for 5 min with deionized water before adding sample.
	Pinhole in membrane	Use new GeBaFlex-tube.

Ordering Information

Mini GeBaFlex-tube		
Units	**MWCO**	**Cat. No.**
10	8,000	D070-6-10
30	8,000	D070-6-30
50	8,000	D070-6-50
100	8,000	D070-6-100
10	14,000	D070-12-10
30	14,000	D070-12-30
50	14,000	D070-12-50
100	14,000	D070-12-100
5	25,000	D070-25-5

Midi GeBaFlex-tube		
Units	**MWCO**	**Cat. No.**
5	1,000	D015-1-5
10	3,500	D010
30	3,500	D012
50	3,500	D010-50
100	3,500	D010-100
10	8,000	D020
30	8,000	D022
50	8,000	D020-50
100	8,000	D020-100

Maxi GeBaFlex-tube		
Units	**MWCO**	**Cat. No.**
5	3,500	D030
15	3,500	D035
50	3,500	D030-50
100	3,500	D030-100
5	8,000	D040
15	8,000	D045
50	8,000	D045-50
100	8,000	D045-100
5	14,000	D050
15	14,000	D055
50	14,000	D050-50
100	14,000	D050-100
5	25,000	D060-25-5
5	50,000	D060-50-5

Mega GeBaFlex-tube 10 ml		
Units	**MWCO**	**Cat. No.**
5	1,000	D080-1/10-5
10	3,500	D080-3.5/10-10
10	8,000	D080-6/10-10
10	14,000	D080-12/10-10
Mega GeBaFlex-tube 15 ml		
5	1,000	D080-1/15-5
10	3,500	D080-3.5/15-10
10	8,000	D080-6/15-10
10	14,000	D080-12/15-10
Mega GeBaFlex-tube 20 ml		
5	1,000	D080-1/20-5
10	3,500	D080-3.5/20-10
10	8,000	D080-6/20-10
10	14,000	D080-12/20-10

For more ordering Information visit: http://www.geba.org/apage/117431.php