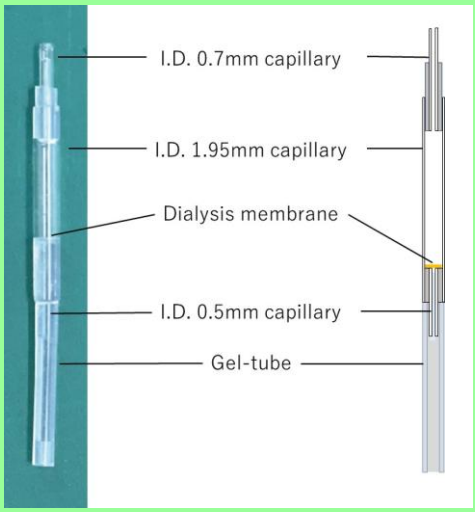
C-Tube LCDM

For growing large protein crystals by dialysis and diffusion



Catalog #	Product name	Description	Price (w/o tax)
MB2004-CRT810	C-Tube LCDM(RC)	Regenerated cellulose membrane MWCO 6-8kD 6 sets	Please contact us
MB2004-CRT820	C-Tube LCDM(CE)	Cellulose ester membrane MWCO 1kD 6 sets	Please contact us
MB2004-CRT830	C-Tube LCDM(PES)	Polyethersulfone membrane MWCO 10kD 6 sets	Please contact us

- Crystallization cell
  - Size: 2.5mm O.D., 1.92mm I.D., 18mm length
  - Material: Glass
  - Sample volume: 30μL
  - Dialysis membrane: Regenerated cellulose membrane (RC) MWCO 6-8kD; cellulose ester membrane (CE) MWCO 1kD; polyethersulfone membrane (PES) MWCO 10kD.
  - Pre-attached gel-tube.
- Other items : Gel soaking bag; crystallization bag; fine top tip; PTFE tubing tip; C-Cap.

Practical – Growing large Lysozyme crystal

1. Keep the gel-tube of C-Tube LCDM in 5% PEG 4000, 0.4 M NaCl and 50 mM acetate buffer pH 4.5 to soak the solution.
2. Load 25 mg/ml lysozyme, 5% PEG 4000 and 50 mM acetate buffer pH 4.5 into the C-Tube LCDM cell with the fine top tip.
3. Reservoir solution #1: 5% PEG 4000, 0.4 M NaCl, 50 mM acetate buffer pH 4.5. A small crystal starts growing (Fig. 1).
4. Change the reservoir solution from #1 to #2: 5% PEG 4000, 0.7 M NaCl, 50 mM acetate buffer pH 4.5. The crystal is growing larger (Fig. 2).
5. Change the reservoir solution from #2 to #3: 25% PEG 4000, 0.7 M NaCl, 50 mM acetate buffer pH 4.5. The crystal is growing larger. By using higher PEG solution, X-ray diffraction data of higher resolution is expected (Fig. 3).

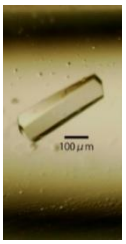


Fig. 1

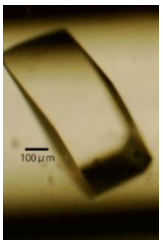


Fig. 2

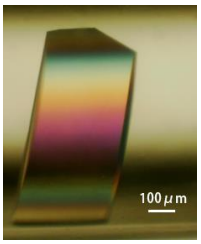


Fig. 3

Summary of X-ray diffraction experiment on lysozyme crystal

Diffraction source	Aichi SR BL2S1
Wave length (Å)	1.12
Camera system	ADSC315r
Space group	P43 21 2
Unit-cell parameters (Å, °)	79.1 79.1 38.2 90.0 90.0 90.0
Average mosaicity (°)	0.07
Resolution range (Å)	39.54 – 1.39 (1.42 – 1.39)
Completeness (%)	99.9 (100)
Rmerge	0.028 (0.569)
<I/σ(I) >	41.4 (4.0)
Mn(I) half-set correlation CC(1/2)	1.00 (0.923)

The 5 Major Features of C-Tube LCDM

1 Dialysis/diffusion method

No protein loss during the crystallization experiment.
Osmotic pressure difference is small in C-Tube LCDM.

2 Amount of protein sample

30μL of protein sample is required.
If V_m is 2.2Å^3/D, one crystal of 1.2mm^3 size can grow.

5 Crystallization condition

The crystallization condition which suppresses nucleation probability should be chosen, considering the diffusion of protein and precipitant molecules in the solution.
Please contact us for consultation and technical assistance.

3 Easy preparation

A gel-tube (a gel in silicone tubing) is pre-attached to the C-Tube LCDM. Preparation is easy.

4 Long-term stability/space-saving

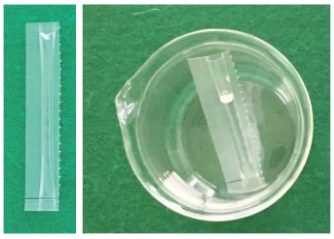
The crystals grown in the cell are stable in long term.
Using the gel soaking bag and the crystallization bag, you can perform crystallization experiments in a small space.

How to assemble C-Tube LCDM

■ Gel soaking

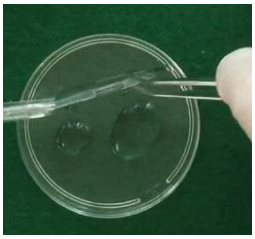
C-Tube LCDM should be immersed into the proper gel-soaking solution in several days before loading protein solution. The gel-soaking bag is sealed by a heat sealer (option).

■ Solution preparation



Fill the crystallization bag with 0.5 mL of reservoir solution using a PTFE tubing tip.

■ Picking up C-Tube LCDM



After the gel-tube is well-soaked with the gel-soaking solution, pick up C-Tube LCDM from the gel-soaking solution.

■ Protein solution loading

Load the protein solution into C-Tube LCDM with the fine top tip, and plug the upper edge of C-Tube LCDM into the C-Cap.

■ Crystallization cell set-up completed

Insert the C-Tube LCDM into the crystallization bag.

■ Sealing the bag

The crystallization bag is sealed by the heat sealer.

■ Start crystallization

Observe crystal growth.

■ Instructional video

Related item 'C-Chip-DM' : Gel-tube with dialysis membrane

■ MB2004-CRT901 C-Chip-DM15 / 6 pieces

■ Features

1. Crystallization reagent gradually diffuses into a capillary through the gel-tube. Mild crystallization condition can be realized.
2. Small amount of sample is required in this dialysis method.
   - 0.3mm I.D. and 30mm length in a capillary: 2.2μl
   - 0.5mm I.D. and 40mm length in a capillary: 7.9μl

Patent No. JP 6473788

A part of this product utilizes the result of large crystal container improvement examination work contracted from JAXA.

Please read the instruction manual carefully before using this product.

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