

# C-Kit Ground Pro



## High quality protein crystallization kit for XRD and ND

C-Kit Ground Pros are kits for growing high quality protein crystals. C-Kit Ground Pro **XRD** is for X-ray diffraction and C-Kit Ground Pro **ND** for neutron diffraction. Use of C-Kit Ground Pro allows you to optimize crystallization conditions easily in your lab.

| Product No   | Item                                 |
|--------------|--------------------------------------|
| CFS-CRT101-1 | C-Kit Ground Pro XRD <sup>1,2)</sup> |
| CFS-CRT101-2 | C-Kit Ground Pro ND <sup>3,4)</sup>  |
| CFS-CRT101-3 | C-Kit Ground Pro e-mail support      |
| CFS-CRT101-4 | C-Kit Ground Pro video support       |

### References:

- <sup>1)</sup>J. Synchrotron Rad. (2004) **11**, 45.
- <sup>2)</sup>Int. J. Microgravity Sci. Appl. (2019) **36**, 360107.
- <sup>3)</sup>Crystals (2020) **10**, 78.
- <sup>4)</sup>Int. J. Microgravity Sci. Appl. (2021) **38**, 380103.

These prices do not include sales tax and shipping fee.

## C-Kit Ground Pro XRD<sup>1,2)</sup>

This kit contains two types of experimental tools; one is for the **counter diffusion method (CD)** and the other is for **the diffusion pair under osmotic concentration method (DPOC)**. The instructions for both methods are included.

**CD<sup>1)</sup>** is an established method for apo- and complex- protein crystal growth. It's self-searching mechanism increases the probability of generating high quality protein crystals. In addition, diffusion process decreases the concentrations of co-existing small molecules around protein, so that the crystallization conditions are less affected by contaminated chemicals in protein than the conventional vapor diffusion method (VD). Seeding is also available in this method for the robust crystallization.

**DPOC<sup>2)</sup>** is a new method. In this method, the precipitant and the protein are tandemly loaded to form a diffusion pair in a silicon tubing. They diffuse into each other and are osmotically concentrated at the same time. As a result, protein is crystallized by both VD and CD mechanisms. DPOC is recommended in the cases when the protein concentration is not optimal, the quantity of the ligand for the co-crystallization is limited, or when CD generates no crystal. Seeding is also available in this method for the robust crystallization.

| Item               | QTY   | CD | DPOC | Details                                                                              |
|--------------------|-------|----|------|--------------------------------------------------------------------------------------|
| Capillary          | 15    | ○  |      | Glass capillary (ID 0.5 mm, OD 1.2 mm, length 47 mm).                                |
| Gel-tube           | 18    | ○  |      | ID 1 mm, OD 2 mm, length 10 mm                                                       |
| 5 mL test tube     | 23    | ○  | ○    | For incubating loaded samples                                                        |
| DPOC-tube          | 8     |    | ○    | Silicon tube (ID 1.0 mm, OD 2.0 mm, length 39.5 mm) without an osmo-resistant cover. |
| C-Cap              | 16    |    | ○    | For protect DPOC-tube ends from osmotic pressure.                                    |
| Silicon-tube       | 50 cm |    | ○    | For sample loading                                                                   |
| Instruction manual | 1     | ○  | ○    |                                                                                      |
| Sealing compound   | 1     | ○  | ○    |                                                                                      |

## C-Kit Ground Pro ND<sup>3,4)</sup>

To generate a single large protein crystal for ND, this kit contains experimental tools for successful optimization of crystallization conditions in a **large bore capillary (ID 2 mm) with a dialysis membrane (LCDM)**. It contains narrow bore capillaries for the **batch method (BT)** and the capillaries and the gel-tubes for the **CD**. CS recommends checking the crystallization behavior by BT at first to identify crystallization conditions, confirm and refine the crystallization behavior by CD, and finally applying it to the LCDM trial.

| Item               | Qty | BT | CD | LCDM | Details                                                                                                            |
|--------------------|-----|----|----|------|--------------------------------------------------------------------------------------------------------------------|
| Capillary          | 100 | ○  |    |      | ID 0.29 mm, OD 1.15 mm, length 29 mm                                                                               |
| Capillary          | 15  |    | ○  |      | Glass capillary (ID 0.5 mm, OD 1.2 mm, length 47 mm).                                                              |
| Gel-tube           | 18  |    | ○  |      | ID 1 mm, OD 2 mm, length 10 mm                                                                                     |
| LCDM (glass)       | 6   |    |    | ○    | ID 1.9 mm, OD 2.4 mm, length 18 mm glass capillary with a dialysis membrane (MWCO 6-8 kDa). GT is attached already |
| LCDM (quartz)      | 2   |    |    | ○    | ID 2 mm, OD 2.4 mm, length 18 mm Quartz capillary with a dialysis membrane (MWCO 6-8 kDa). GT is attached already  |
| C-Cap              | 10  |    |    | ○    | For protecting an end of LCDM from osmotic pressure. Including 4 spares                                            |
| Gel loading chip   | 9   |    |    | ○    | For loading a sample into LCDM                                                                                     |
| 5 mL test tube     | 30  | ○  | ○  | ○    | For incubating loaded samples                                                                                      |
| Instruction manual | 1   | ○  | ○  | ○    |                                                                                                                    |
| Sealing compound   | 1   | ○  | ○  | ○    |                                                                                                                    |

## On-line technical support

We provide on-line technical support on the concept of crystallization condition optimization and experimental methods by **e-mail** or **video meeting**. If the biochemical information of the target protein, crystallization conditions, and your results of crystal-experiment are disclosed, CS will identify candidate countermeasures to obtain good crystals.

| Items          | Details    |
|----------------|------------|
| e-mail support | 5 times QA |
| video support  | 1 hour     |

The methods and the devices of C-Kit Ground Pro are compatible with the commercial Kirara service (<https://www.jamss.co.jp/en/kirara/index.html>) and the JAXA PCG service to use the microgravity environment.



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