



Bacteriorhodopsin crystal grown by Dr. Peter Nollert in the laboratory of Dr. Jurg Rosenbusch.

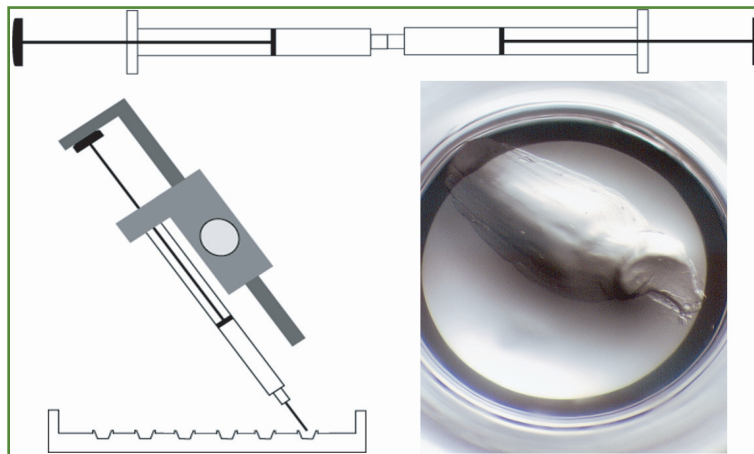
Each Cubic™ LCP Kit contains:

- Two 250 microliter Hamilton syringes with a mixer union for the preparation of the LCP.
- Ratchet dispenser with 10 microliter syringe and short needle to dispense the LCP.
- One 10 microliter Microsyringe pipette.
- 100 mg Monoolein.
- Ten microtrays.
- Cubic™ Screen formulation matrix block.
- Oil and tape.
- All Emerald BioSystems' kits include instruction and technical sheets.

Emerald BioSystems is the exclusive worldwide distributor of the Cubic™ LCP Kit, developed by deCODE biostructures, Inc.

EBS-LCP-2

Cubic™ LCP Kit



Clockwise from top: Schematic depiction of two gas-tight syringes coupled with the patented mixer union; a 'slug' of ca. 200 nanoliter of dispensed LCP in a well within a microtray; ratchet dispenser with 10 microliter syringe and short needle.



Ratchet dispenser with 10 microliter syringe and short needle.

The Scientist Behind the Kit

Peter Nollert, Ph.D. - Senior Research Scientist, deCODE biostructures (pictured here)

"Having purified several membrane proteins while working on my PhD thesis (in Tuebingen, Germany at the Max Planck Institute for Biology), I very much appreciated their capricious nature. I learned LCP-based membrane protein crystallization in Jurg Rosenbusch's lab at the Biozentrum in Basel, Switzerland as a postdoc and, to my surprise, produced superior quality X-ray diffracting bacteriorhodopsin crystals. At the time, we prepared LCP-based crystallization set-ups in custom-made glass test tubes with total volumes of 5 - 10 microliters. But often we would work for weeks and obtain mere milligrams of the protein sample worthy of crystallization experimentation. During work on my second postdoc at UCSF and Stanford, I realized that a micro method is critical for success with these difficult proteins.

Working with Ehud Landau on Sensory Rhodopsin II, I employed early components of the Cubic™ LCP Kit and produced diffraction-quality SRII crystals starting from less than a half milligram of protein. The crucial step was separating the crystallization set-up into two processes, (i) formation of the LCP and, (ii) simple dispensation of small volumes (i.e. 200 nL) into standard crystallization plates. LCP is highly viscous and cannot be dispensed using a standard pipette, therefore, the Cubic™ LCP kit contains positive displacement syringes, a coupler for transfer and a ratchet dispenser to mix and dispense small volumes of LCP while minimizing the dead volume loss.

The Cubic™ LCP kit assembles all of the required tools and reagents into a single kit that enables efficient and economic preparation of LCP-based crystallization trials. While the LCP method was originally developed for membrane proteins, it can also be applied to soluble proteins.

I would love to hear about your experiences with the Cubic™ LCP Kit. Please send an email to pnollert@decode.com."



References

¹ Nollert, P., (2002) "From test tube to plate: a simple procedure for the rapid preparation of microcrystallization experiments using the cubic phase method", *J. Appl. Cryst.*, 35, 637-640.