

# X-RAY CRYSTALLOGRAPHY

## Crystallography Kits

### Basic Crystallography Kit

The Basic Crystallography Kit is a rapid, empirical, and efficient screening method for determining the solubility and optimal starting conditions for the crystallization of biological macromolecules. Based on known and published data for various proteins, the Basic Kit uses a sparse matrix method and a minimal amount of protein sample to explore a broad range of buffers, pH, and precipitants.



### Basic Extension Kit

The Extension Kit substantially increases the screening range of the Basic Crystallography Kit by providing a broader range of organic solvents, PEGs, and additives (divalent ions and stabilizers).

Both the Basic and Basic Extension Kit are based on the "salting-out" principle: that increasing the concentration of the precipitating agent depletes the macromolecules of bound water and leads to their precipitation and crystallization.



### Membrane Protein Kit

The Basic Crystallization Kit for Membrane Proteins is a rapid, empirical, and efficient screening method to determine the best conditions for crystallization of hydrophobic macromolecules (primarily membrane proteins) in an empirical way. Based on known or published data for various proteins, broad ranges of buffers, pH, and precipitants in combination with a micelle-forming detergent are explored using the sparse matrix method with a minimal amount of proteins.

The crystallization principle of the kit is based on the screening of the hydrophilic, charged parts of the macromolecules by the binding of the detergent to hydrophobic areas of the macromolecules and subsequent reduction of their solubility. Detergent mediated contacts then lead to precipitation or crystallization of the screening molecules.



### Cryo Kit

The Crystallization Cryo Kit is a rapid, empirical, and efficient screening method to determine the solubility and optimal starting conditions for the crystallization of biological macromolecules in the presence of a cryoprotectant (primarily glycerol). Based on known or published data for various proteins, the Cryo Kit uses a sparse matrix method and minimal amount of protein sample to explore a broad range of buffers, pH, and precipitants. The screening range and probing ability of the Cryo Kit are comparable to those of the Basic Kit. A cryoprotectant is added to freeze crystals in an amorphous glass at  $-173\text{ }^{\circ}\text{C}$ .

The Cryo Kit is also based on the "salting-out" principle: that increasing the concentration of precipitating agent and cryoprotectant depletes the macromolecules of bound water and leads to their precipitation or crystallization.



### Low Ionic Kit

The Crystallization Low Ionic Kit for proteins is based on a screening protocol for monoclonal antibodies, which has been proven to be an effective screening method for soluble protein. The high-efficiency of this kit can be further improved by pre-determining the isoelectric point (pI) of the subject macromolecule followed by screening within a range at or near that value (within 2-3 pH units of the pI).

The Low Ionic Kit is based on the "salting-in" principle: that decreasing ion concentrations leads to a loss of electrostatic screening of charges on the macromolecules by low molecular weight ions. This loss of screening is compensated by the mutual screening of opposite charges on neighboring macromolecules. This leads to decreased macromolecular solubility and subsequent precipitation or crystallization.



Product Code	Description	Size
<a href="#">82009</a>	Basic Crystallography Kit	1 kit
<a href="#">70437</a>	Basic Extension Kit	1 kit
<a href="#">73513</a>	Membrane Protein Kit	1 kit
<a href="#">75403</a>	Cryo Kit	1 kit
<a href="#">86684</a>	Low Ionic Kit	1 kit