MemMeso™ HT-96 MD1-87

MemMeso™ – A 96-condition crystallization screen specifically for use with mesophases. (LCP compatible).

MD1-87 is a targeted sparse matrix presented as a 96 x 1.1 mL deep-well block.

Features of MemMeso:

- Optimized to work in synergy with Lipidic Cubic Phase (LCP) and the LCP crystallization method.
- Allows screening in both LCP and Sponge Phase.
- Conditions data-mined from current GPCR crystal structures.
- A semi-systematic screening kit, containing 96 conditions covering a range of pH, precipitants and salt.
- Proven successful at crystallizing the crystal structures of eight membrane proteins, including the structure of channelrhodopsin (2012, Nature).

Introduction:

Out of the successful laboratory of Prof. Osamu Nureki at University of Tokyo, Japan, this semi-systematic screen has been developed to work in synergy with the Lipidic Cubic Phase (LCP) used in membrane protein crystallization. Most commercially available crystallization screens have been optimized to work with the vapour diffusion method and are therefore not ideal to use with LCP.

Eight membrane proteins structures have already been elucidated using MemMeso: Channelrhodopsin (2012, Nature), PfMATE (2013, Nature), NCX_Mj (2013, Science), GkPOT (2013, PNAS), and four bacterial transporters (manuscript in preparation).

Tips for use

Usually 800 - 1000nL of MemMeso is needed for each experiment (well).

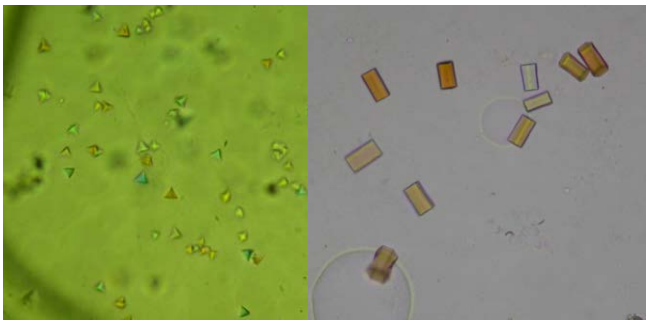
For LCP crystallization, dispense 25 - 50nL of LCP bolus onto 96-well sandwich plate (eg. Laminex plate), and then overlay with 800 - 1000nL of precipitant solution.

Mix the protein sample and lipid (monoolein) in a Hamilton syringe (in this process, the monoolein forms cubic phase and the protein is reconstituted in the cubic phase). Dispense the mixture (=protein in monoolein LCP) on the crystallization plate, and overlay MemMeso solution onto the mixture.

In some conditions, the mixtures are stable in the cubic phase, and in other conditions, the mixtures are changed to the sponge phase. It is impossible to predict whether the target protein is crystallized in the cubic phase and/or sponge phase, so MemMeso is ideal as it allows screening in both phases.

References:

Kato, H. *et al*, Nature. 2012 Jan 22;482(7385):369-74.
Tanaka, Y. *et a*l, Nature. 2013 Apr 11;496(7444):247-51.
Doki, So. *et al*, Proc Natl Acad Sci U S A. 2013 Jul 9; 110(28):11343-8.



Crystals grown using MemMeso. Courtesy of H.Kato

Formulation Notes:

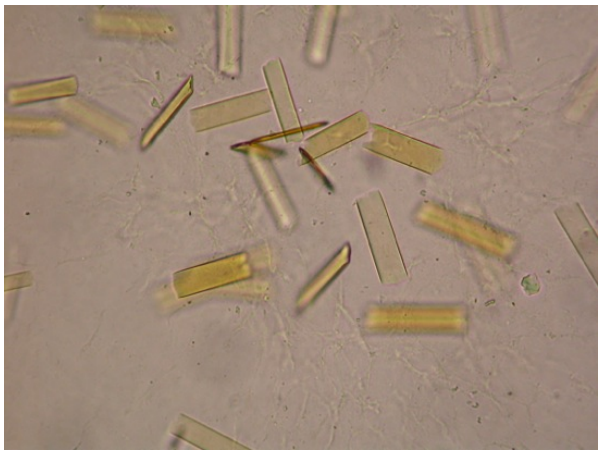
MemMeso reagents are formulated using ultrapure water (>18.0 MΩ) and are sterile-filtered using 0.22 µm filters. No preservatives are added.

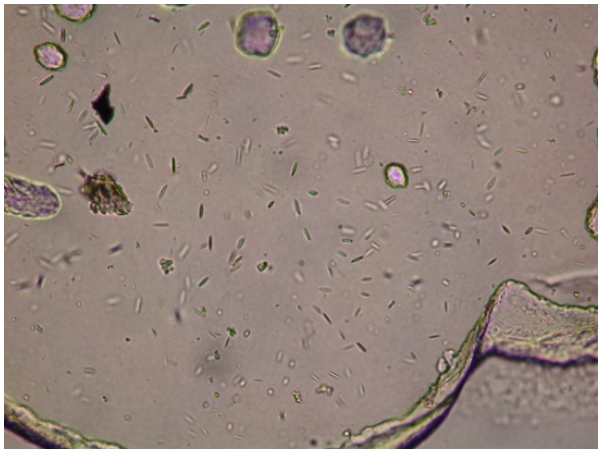
Final pH may vary from that specified on the datasheet. Molecular Dimensions will be happy to discuss the precise formulation of individual reagents.

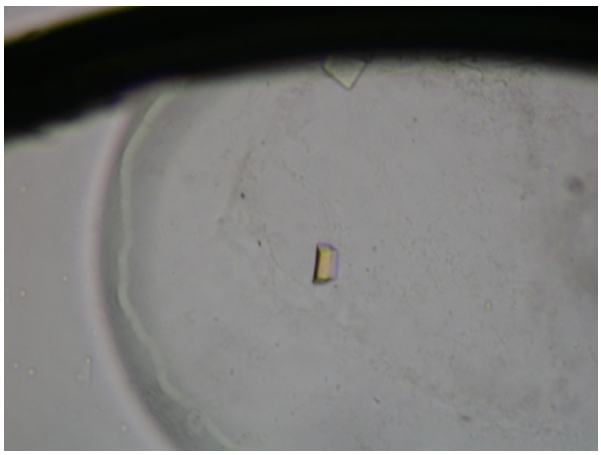
Individual reagents and stock solutions for optimization are available from Molecular Dimensions.

Enquiries regarding MemMeso formulation, interpretation of results or optimization strategies are welcome. Please e-mail, fax or phone your query to Molecular Dimensions.

Contact and product details can be found at www.moleculardimensions.com







Molecular Dimensions

LCP

Membrane Proteins

MemMeso HT-96 Conditions A1- D12 MD1–87

Well #	Conc	Salt	Conc	Buffer	pH	Conc	Precipitate
A1	0.1 M	Magnesium chloride hexahydrate	0.1 M	Sodium citrate tribasic dihydrate	5	40 % v/v	PEG 200
A2	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	40 % v/v	PEG 200
	0.1 M	Lithium sulfate					
A3	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	40 % v/v	PEG 200
A4			0.1 M	Sodium citrate tribasic dihydrate	5	40 % v/v	PEG 200
A5	0.1 M	Sodium chloride	0.1 M	MES	6	40 % v/v	PEG 200
	0.1 M	Magnesium chloride hexahydrate					
A6	0.1 M	Sodium chloride	0.1 M	MES	6	40 % v/v	PEG 200
	0.1 M	Lithium sulfate					
A7	0.1 M	Sodium chloride	0.1 M	MES	6	40 % v/v	PEG 200
	0.1 M	Calcium chloride dihydrate					
A8	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	40 % v/v	PEG 200
A9	0.1 M	Sodium chloride	0.1 M	HEPES	7	40 % v/v	PEG 200
	0.1 M	Magnesium chloride hexahydrate					
A10	0.1 M	Lithium sulfate	0.1 M	HEPES	7	40 % v/v	PEG 200
A11	0.1 M	Sodium chloride	0.1 M	HEPES	7	40 % v/v	PEG 200
	0.1 M	Calcium chloride dihydrate					
A12			0.1 M	HEPES	7	40 % v/v	PEG 200
B1	0.1 M	Sodium chloride	0.1 M	Tris	8	40 % v/v	PEG 200
	0.1 M	Magnesium chloride hexahydrate					
B2	0.1 M	Sodium chloride	0.1 M	Tris	8	40 % v/v	PEG 200
	0.1 M	Lithium sulfate					
B3	0.1 M	Sodium chloride	0.1 M	Tris	8	40 % v/v	PEG 200
	0.1 M	Calcium chloride dihydrate					
B4	0.2 M	Ammonium sulfate	0.1 M	Tris	8	40 % v/v	PEG 200
B5	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 300
	0.1 M	Magnesium chloride hexahydrate					
B6	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 300
	0.1 M	Lithium sulfate					
B7	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 300
B8			0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 300
B9	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 300
	0.1 M	Magnesium chloride hexahydrate					
B10	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 300
	0.1 M	Lithium sulfate					
B11	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 300
	0.1 M	Calcium chloride dihydrate					
B12	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	30 % v/v	PEG 300
C1	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 300
	0.1 M	Magnesium chloride hexahydrate					
C2	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 300
	0.1 M	Lithium sulfate					
C3	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 300
	0.1 M	Calcium chloride dihydrate					
C4			0.1 M	HEPES	7	30 % v/v	PEG 300
C5	0.1 M	Magnesium chloride hexahydrate	0.1 M	Tris	8	30 % v/v	PEG 300
C6	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 300
	0.1 M	Lithium sulfate					
C7	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 300
	0.1 M	Calcium chloride dihydrate					
C8	0.2 M	Ammonium sulfate	0.1 M	Tris	8	30 % v/v	PEG 300
C9	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 400
	0.1 M	Magnesium chloride hexahydrate					
C10	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 400
	0.1 M	Lithium sulfate					
C11	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 400
C12			0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 400
D1	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 400
	0.1 M	Magnesium chloride hexahydrate					
D2	0.1 M	Lithium sulfate	0.1 M	MES	6	30 % v/v	PEG 400
D3	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 400
	0.1 M	Calcium chloride dihydrate					
D4	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	30 % v/v	PEG 400
D5	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 400
	0.1 M	Magnesium chloride hexahydrate					
D6	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 400
	0.1 M	Lithium sulfate					
D7	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 400
	0.1 M	Calcium chloride dihydrate					
D8			0.1 M	HEPES	7	30 % v/v	PEG 400
D9	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 400
	0.1 M	Magnesium chloride hexahydrate					
D10	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 400
	0.1 M	Lithium sulfate					
D11	0.1 M	Calcium chloride dihydrate	0.1 M	Tris	8	30 % v/v	PEG 400
D12	0.2 M	Ammonium sulfate	0.1 M	Tris	8	30 % v/v	PEG 400

Molecular Dimensions

LCP

Membrane Proteins

MemMeso HT-96 Conditions E1- H12 MD1–87

Well #	Conc	Salt 1	Conc	Buffer	pH	Conc	Precipitate
E1	0.1 M	Magnesium chloride hexahydrate	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 DME
E2	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 DME
	0.1 M	Lithium sulfate					
E3	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 DME
E4			0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 DME
E5	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 DME
	0.1 M	Magnesium chloride hexahydrate					
E6	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 DME
	0.1 M	Lithium sulfate					
E7	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 DME
	0.1 M	Calcium chloride dihydrate					
E8	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	30 % v/v	PEG 500 DME
E9	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 500 DME
	0.1 M	Magnesium chloride hexahydrate					
E10	0.1 M	Lithium sulfate	0.1 M	HEPES	7	30 % v/v	PEG 500 DME
E11	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 500 DME
	0.1 M	Calcium chloride dihydrate					
E12			0.1 M	HEPES	7	30 % v/v	PEG 500 DME
F1	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 500 DME
	0.1 M	Magnesium chloride hexahydrate					
F2	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 500 DME
	0.1 M	Lithium sulfate					
F3	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 500 DME
	0.1 M	Calcium chloride dihydrate					
F4	0.2 M	Ammonium sulfate	0.1 M	Tris	8	30 % v/v	PEG 500 DME
F5	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 MME
	0.1 M	Magnesium chloride hexahydrate					
F6	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 MME
	0.1 M	Lithium sulfate					
F7	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 MME
F8			0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 MME
F9	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 MME
	0.1 M	Magnesium chloride hexahydrate					
F10	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 MME
	0.1 M	Lithium sulfate					
F11	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 MME
	0.1 M	Calcium chloride dihydrate					
F12	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	30 % v/v	PEG 500 MME
G1	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 500 MME
	0.1 M	Magnesium chloride hexahydrate					
G2	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 500 MME
	0.1 M	Lithium sulfate					
G3	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 500 MME
	0.1 M	Calcium chloride dihydrate					
G4			0.1 M	HEPES	7	30 % v/v	PEG 500 MME
G5	0.1 M	Magnesium chloride hexahydrate	0.1 M	Tris	8	30 % v/v	PEG 500 MME
G6	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 500 MME
	0.1 M	Lithium sulfate					
G7	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 500 MME
	0.1 M	Calcium chloride dihydrate					
G8	0.2 M	Ammonium sulfate	0.1 M	Tris	8	30 % v/v	PEG 500 MME
G9	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 600
	0.1 M	Magnesium chloride hexahydrate					
G10	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 600
	0.1 M	Lithium sulfate					
G11	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 600
G12			0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 600
H1	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 600
	0.1 M	Magnesium chloride hexahydrate					
H2	0.1 M	Lithium sulfate	0.1 M	MES	6	30 % v/v	PEG 600
H3	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 600
	0.1 M	Calcium chloride dihydrate					
H4	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	30 % v/v	PEG 600
H5	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 600
	0.1 M	Magnesium chloride hexahydrate					
H6	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 600
	0.1 M	Lithium sulfate					
H7	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 600
	0.1 M	Calcium chloride dihydrate					
H8			0.1 M	HEPES	7	30 % v/v	PEG 600
H9	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 600
	0.1 M	Magnesium chloride hexahydrate					
H10	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 600
	0.1 M	Lithium sulfate					
H11	0.1 M	Calcium chloride dihydrate	0.1 M	Tris	8	30 % v/v	PEG 600
H12	0.2 M	Ammonium sulfate	0.1 M	Tris	8	30 % v/v	PEG 600

Abbreviations:

HEPES; N-(2-hydroxyethyl)-piperazine-N'-2-ethanesulfonic acid, **MES**; 2-(N-morpholino)ethanesulfonic acid, **MME**; Monomethylether, **PEG**; Polyethylene glycol, **PEG DME**; Poly(ethylene glycol) dimethyl ether, **Tris**; 2-Amino-2-(hydroxymethyl)propane-1,3-diol.

Manufacturer's safety data sheets are available from our website or by scanning the QR code here:

Re-Ordering details:

Catalogue Description	Pack size	Catalogue Code
MemMeso HT Mini Kit	96 x 0.25 mL	MD1-85
MemMeso 10 mL Kit	96 x 10 mL	MD1-86
MemMeso HT-96	96 x 1mL	MD1-87
Single Reagents		
MemMeso HT single reagents	100 mL	MDSR-85 (or 87)-well number
MemMeso 10 mL kit reagents	100 mL	MDSR-86- tube number

For MemMeso stock solutions please visit the Optimization section on our website.