MemMeso™ MD1-86

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

MD1-86 is a targeted sparse matrix presented as a 96 x 10 mL conditions.

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).

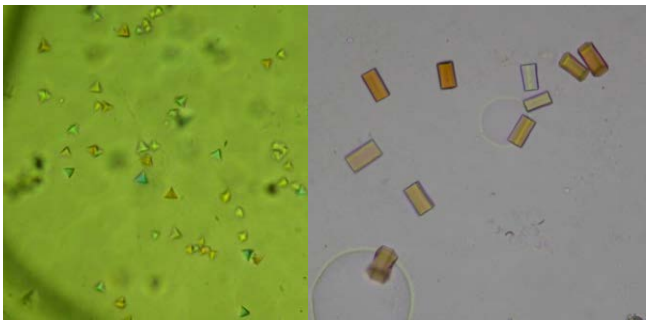
For LCP crystallization, dispense 25 - 50nL of LCP bolus onto 96-well sandwich plate (eg. Laminex plate), and then overlay with 800 - 1000nL of precipitant solution.

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:

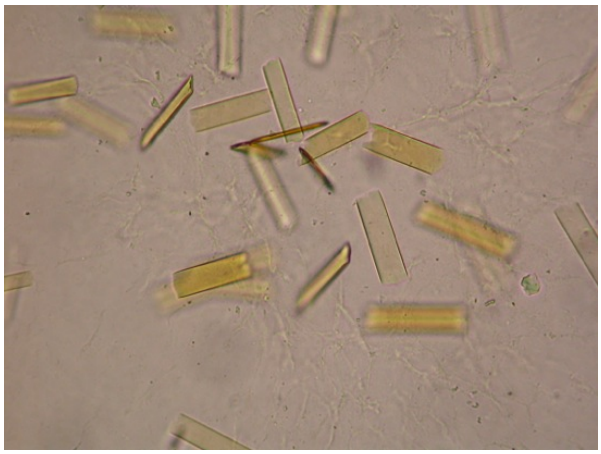
MemMeso reagents are formulated using ultrapure water (>18.0 MΩ) and are sterile-filtered using 0.22 µm filters. No preservatives are added.

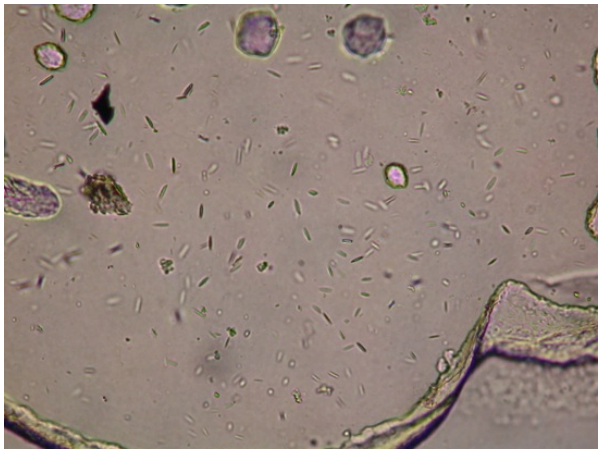
Final pH may vary from that specified on the datasheet. Molecular Dimensions will be happy to discuss the precise formulation of individual reagents.

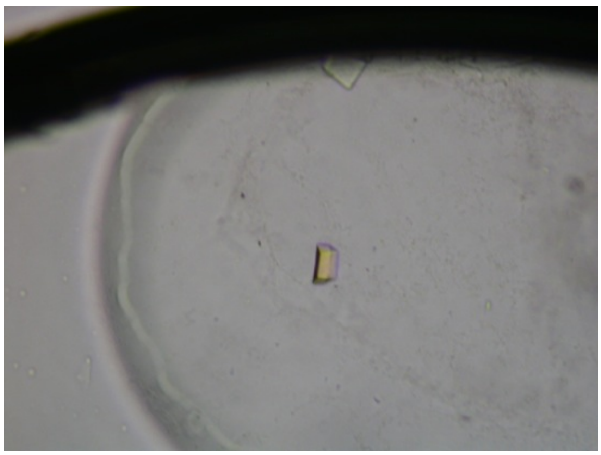
Individual reagents and stock solutions for optimization are available from Molecular Dimensions.

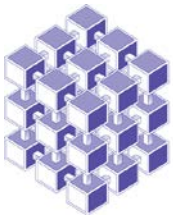
Enquiries regarding MemMeso formulation, interpretation of results or optimization strategies are welcome. Please e-mail, fax or phone your query to Molecular Dimensions.

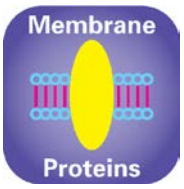
Contact and product details can be found at www.moleculardimensions.com











MemMeso Conditions 1- 48 (Box 1) MD1–86

Tube #	Conc	Salt	Conc	Buffer	pH	Conc	Precipitate
1-1	0.1 M	Magnesium chloride hexahydrate	0.1 M	Sodium citrate tribasic dihydrate	5	40 % v/v	PEG 200
1-2	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	40 % v/v	PEG 200
	0.1 M	Lithium sulfate					
1-3	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	40 % v/v	PEG 200
1-4			0.1 M	Sodium citrate tribasic dihydrate	5	40 % v/v	PEG 200
1-5	0.1 M	Sodium chloride	0.1 M	MES	6	40 % v/v	PEG 200
	0.1 M	Magnesium chloride hexahydrate					
1-6	0.1 M	Sodium chloride	0.1 M	MES	6	40 % v/v	PEG 200
	0.1 M	Lithium sulfate					
1-7	0.1 M	Sodium chloride	0.1 M	MES	6	40 % v/v	PEG 200
	0.1 M	Calcium chloride dihydrate					
1-8	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	40 % v/v	PEG 200
1-9	0.1 M	Sodium chloride	0.1 M	HEPES	7	40 % v/v	PEG 200
	0.1 M	Magnesium chloride hexahydrate					
1-10	0.1 M	Lithium sulfate	0.1 M	HEPES	7	40 % v/v	PEG 200
1-11	0.1 M	Sodium chloride	0.1 M	HEPES	7	40 % v/v	PEG 200
	0.1 M	Calcium chloride dihydrate					
1-12			0.1 M	HEPES	7	40 % v/v	PEG 200
1-13	0.1 M	Sodium chloride	0.1 M	Tris	8	40 % v/v	PEG 200
	0.1 M	Magnesium chloride hexahydrate					
1-14	0.1 M	Sodium chloride	0.1 M	Tris	8	40 % v/v	PEG 200
	0.1 M	Lithium sulfate					
1-15	0.1 M	Sodium chloride	0.1 M	Tris	8	40 % v/v	PEG 200
	0.1 M	Calcium chloride dihydrate					
1-16	0.2 M	Ammonium sulfate	0.1 M	Tris	8	40 % v/v	PEG 200
1-17	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 300
	0.1 M	Magnesium chloride hexahydrate					
1-18	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 300
	0.1 M	Lithium sulfate					
1-19	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 300
1-20			0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 300
1-21	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 300
	0.1 M	Magnesium chloride hexahydrate					
1-22	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 300
	0.1 M	Lithium sulfate					
1-23	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 300
	0.1 M	Calcium chloride dihydrate					
1-24	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	30 % v/v	PEG 300
1-25	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 300
	0.1 M	Magnesium chloride hexahydrate					
1-26	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 300
	0.1 M	Lithium sulfate					
1-27	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 300
	0.1 M	Calcium chloride dihydrate					
1-28			0.1 M	HEPES	7	30 % v/v	PEG 300
1-29	0.1 M	Magnesium chloride hexahydrate	0.1 M	Tris	8	30 % v/v	PEG 300
1-30	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 300
	0.1 M	Lithium sulfate					
1-31	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 300
	0.1 M	Calcium chloride dihydrate					
1-32	0.2 M	Ammonium sulfate	0.1 M	Tris	8	30 % v/v	PEG 300
1-33	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 400
	0.1 M	Magnesium chloride hexahydrate					
1-34	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 400
	0.1 M	Lithium sulfate					
1-35	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 400
1-36			0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 400
1-37	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 400
	0.1 M	Magnesium chloride hexahydrate					
1-38	0.1 M	Lithium sulfate	0.1 M	MES	6	30 % v/v	PEG 400
1-39	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 400
	0.1 M	Calcium chloride dihydrate					
1-40	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	30 % v/v	PEG 400
1-41	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 400
	0.1 M	Magnesium chloride hexahydrate					
1-42	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 400
	0.1 M	Lithium sulfate					
1-43	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 400
	0.1 M	Calcium chloride dihydrate					
1-44			0.1 M	HEPES	7	30 % v/v	PEG 400
1-45	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 400
	0.1 M	Magnesium chloride hexahydrate					
1-46	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 400
	0.1 M	Lithium sulfate					
1-47	0.1 M	Calcium chloride dihydrate	0.1 M	Tris	8	30 % v/v	PEG 400
1-48	0.2 M	Ammonium sulfate	0.1 M	Tris	8	30 % v/v	PEG 400

Molecular Dimensions

LCP

Membrane Proteins

MemMeso Conditions 1- 48 (Box 2) MD1–86

Well #	Conc	Salt 1	Conc	Buffer	pH	Conc	Precipitate
2-1	0.1 M	Magnesium chloride hexahydrate	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 DME
2-2	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 DME
	0.1 M	Lithium sulfate					
2-3	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 DME
2-4			0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 DME
2-5	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 DME
	0.1 M	Magnesium chloride hexahydrate					
2-6	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 DME
	0.1 M	Lithium sulfate					
2-7	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 DME
	0.1 M	Calcium chloride dihydrate					
2-8	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	30 % v/v	PEG 500 DME
2-9	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 500 DME
	0.1 M	Magnesium chloride hexahydrate					
2-10	0.1 M	Lithium sulfate	0.1 M	HEPES	7	30 % v/v	PEG 500 DME
2-11	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 500 DME
	0.1 M	Calcium chloride dihydrate					
2-12			0.1 M	HEPES	7	30 % v/v	PEG 500 DME
2-13	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 500 DME
	0.1 M	Magnesium chloride hexahydrate					
2-14	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 500 DME
	0.1 M	Lithium sulfate					
2-15	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 500 DME
	0.1 M	Calcium chloride dihydrate					
2-16	0.2 M	Ammonium sulfate	0.1 M	Tris	8	30 % v/v	PEG 500 DME
2-17	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					
2-18	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 MME
	0.1 M	Lithium sulfate					
2-19	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 MME
2-20			0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 500 MME
2-21	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 MME
	0.1 M	Magnesium chloride hexahydrate					
2-22	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 MME
	0.1 M	Lithium sulfate					
2-23	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 500 MME
	0.1 M	Calcium chloride dihydrate					
2-24	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	30 % v/v	PEG 500 MME
2-25	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 500 MME
	0.1 M	Magnesium chloride hexahydrate					
2-26	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 500 MME
	0.1 M	Lithium sulfate					
2-27	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 500 MME
	0.1 M	Calcium chloride dihydrate					
2-28			0.1 M	HEPES	7	30 % v/v	PEG 500 MME
2-29	0.1 M	Magnesium chloride hexahydrate	0.1 M	Tris	8	30 % v/v	PEG 500 MME
2-30	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 500 MME
	0.1 M	Lithium sulfate					
2-31	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 500 MME
	0.1 M	Calcium chloride dihydrate					
2-32	0.2 M	Ammonium sulfate	0.1 M	Tris	8	30 % v/v	PEG 500 MME
2-33	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 600
	0.1 M	Magnesium chloride hexahydrate					
2-34	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 600
	0.1 M	Lithium sulfate					
2-35	0.1 M	Sodium chloride	0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 600
2-36			0.1 M	Sodium citrate tribasic dihydrate	5	30 % v/v	PEG 600
2-37	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 600
	0.1 M	Magnesium chloride hexahydrate					
2-38	0.1 M	Lithium sulfate	0.1 M	MES	6	30 % v/v	PEG 600
2-39	0.1 M	Sodium chloride	0.1 M	MES	6	30 % v/v	PEG 600
	0.1 M	Calcium chloride dihydrate					
2-40	0.01 M	Zinc acetate dihydrate	0.1 M	MES	6	30 % v/v	PEG 600
2-41	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 600
	0.1 M	Magnesium chloride hexahydrate					
2-42	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 600
	0.1 M	Lithium sulfate					
2-43	0.1 M	Sodium chloride	0.1 M	HEPES	7	30 % v/v	PEG 600
	0.1 M	Calcium chloride dihydrate					
2-44			0.1 M	HEPES	7	30 % v/v	PEG 600
2-45	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 600
	0.1 M	Magnesium chloride hexahydrate					
2-46	0.1 M	Sodium chloride	0.1 M	Tris	8	30 % v/v	PEG 600
	0.1 M	Lithium sulfate					
2-47	0.1 M	Calcium chloride dihydrate	0.1 M	Tris	8	30 % v/v	PEG 600
2-48	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) bis(carboxymethyl) 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.