Molecular Dimensions

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MemGold2™ MD1–63

MemGold2™- The latest innovation for crystallization of membrane proteins.

This screen targets all alpha helical types of Prokaryotic and Eukaryotic membrane proteins.

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Developed by Dr. Simon Newstead from University of Oxford, UK.

MD1-63 is a targeted sparse matrix presented as a two box (96 x 10 mL conditions) kit.

Features of MemGold2:

- A brand new set of 96 of the most recent alpha helical membrane protein crystallization conditions.
- Particularly suited for Prokaryotic and Eukaryotic alpha helical membrane proteins.
- A great addition to any membrane protein lab.
- Works great in conjunction with MemGold, MemStart & MemSys & MemPlus.
- Screening over a wider range of pH's (4 - 10).
- Addition of small MW PEGs.
- Can be used in conjunction with Lipidic Sponge Phase and/or Lipidic Cubic Phases.

Introduction:

In 2008 Molecular Dimensions released MemGold[(1)] - a rationalized sparse matrix type membrane protein crystallization screen. MemGold was based on the crystallization conditions for 121 alpha helical Membrane Proteins deposited in the PDB.

Since MemGold, the number of structures has more than doubled. In response to this, MemGold2[(2)] has been developed. Memgold2 includes a further 96 crystallization conditions from unique alpha helical Membrane Protein structures including channel and transporter structures, GPCRs and ATPases.

It is suitable for both Prokaryotic and Eukaryotic alpha helical membrane proteins.

Formulation Notes:

MemGold2 reagents are formulated using ultrapure water (>18.0 MW) 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 MemGold2 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

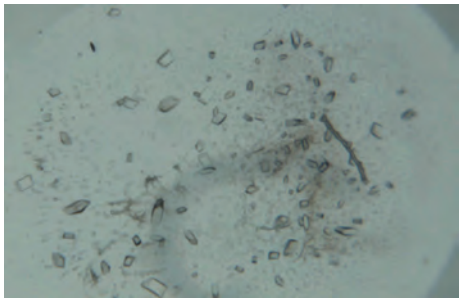
Manufacturer's safety data sheets are available to download from our website.

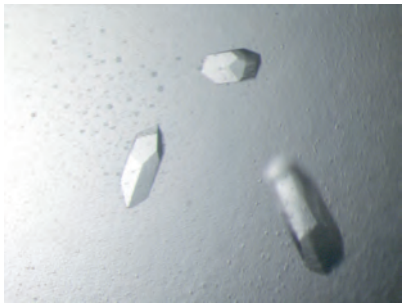
***References**:

(1) Newstead, S., Ferrandon, S., and Iwata, *S. 'Rationalizing alpha-helical membrane protein crystallization'* Volume 17, Issue 3, pages 466–472, March 2008 - Protein Science, 2008 - Wiley Online Library.

(2) Parker, J. and Newstead, S. '*Current trends in alpha helical membrane protein crystallization: an update'*, Protein Science, 2012, *In Press.*

Examples of membrane protein crystals grown using MemGold2 and the structure of a membrane transport protein (previously solved using MemGold).





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MemGold2™ Box 1 of 2 MD1-63

Tube No.	% Conc.	Precipitant	Conc. (M)	Salt 1	Conc. (M)	Salt 2	Conc. (M)	Buffer	pH
1-1	14 %	PEG 550 MME	0.2	magnesium chloride	0.005	cadmium chloride	0.1	Tris	7.5
1-2	44%	PEG 3000	0.1	potassium acetate	0.01	potassium chloride	0.02	Tris	7
1-3	10%	PEG 1450	0.08	magnesium sulfate	0.02	sodium chloride	0.02	MES	6
1-4	8%	PEG 1450	0.02	calcium chloride	0.04	magnesium sulfate	0.02	MES	6.5
1-5	32%	PEG 400	0.05	nickel sulfate	0.05	lithium chloride	0.05	Tris	8.5
1-6	10%	PEG 3350	0.1	sodium phosphate	0.1	potassium phosphate	0.1	Bis-Tris Propane	7.5
1-7	11.5%	PEG 4000	0.1	sodium chloride	0.1	lithium sulfate	0.1	ADA	6.5
1-8	30%	PEG 400	0.1	cadmium chloride	0.1	lithium chloride	0.1	Sodium Acetate	4.5
1-9	20%	PEG 2000	0.2	ammonium sulfate	0.1	sodium chloride	0.1	Sodium Citrate	6
1-10	31%	PEG 400	0.2	lithium sulfate	0.1	sodium chloride	0.1	HEPES	7.0
1-11	32%	PEG 400	0.2	ammonium phosphate	0.1	ammonium sulfate	0.1	Sodium Citrate	4.5
1-12	14%	PEG 4000	0.05	sodium citrate	0.12	potassium chloride	0.08	Bis-Tris	6.0
1-13	19%	PEG 1000	0.1	sodium chloride	0.15	ammonium sulfate	0.01	MES	6.5
1-14	18%	PEG 2000 MME	0.01	nickel sulfate	-	none	0.1	Sodium Citrate	6.0
1-15	3.5%	PEG 3350	0.02	magnesium chloride	-	none	0.02	MES	6.0
1-16	14%	PEG 350 MME	0.02	sodium chloride	-	none	0.05	MES	5.5
1-17	35%	PEG 550 MME	0.025	magnesium chloride	-	none	0.02	MOPS	7.0
1-18	28%	PEG 400	0.03	magnesium chloride	-	none	0.1	MES	6.5
1-19	25%	PEG 350 MME	0.04	sodium chloride	-	none	0.04	Tris	8
1-20	36%	MPD	0.04	magnesium acetate	-	none	0.1	MES	6
1-21	11%	PEG 8000	0.05	zinc acetate	-	none	0.05	ADA	6.3
1-22	26%	PEG 400	0.05	magnesium acetate	-	none	0.1	MES	6.5
1-23	32%	PEG 400	0.05	magnesium acetate	-	none	0.1	Glycine	9.5
1-24	3%	PEG 4000	0.066	sodium chloride	-	none	0.02	Tris	7.5
1-25	30%	PEG 2000 MME	0.075	magnesium chloride	-	none	0.1	Sodium Cacodylate	6.5
1-26	14%	PEG 5000 MME	0.08	magnesium acetate	-	none	0.1	Sodium Citrate	6.0
1-27	2.0 M	Ammonium Sulfate	0.05	zinc acetate	-	none	0.1	MES	6
1-28	22%	PEG 250 DME	0.087	ammonium sulfate	-	none	0.5	Tris	7.0
1-29	13%	PEG 8000	0.1	magnesium chloride	-	none	0.1	Tris	7.5
1-30	17%	PEG 3350	0.1	magnesium formate	-	none	0.1	MOPS	7
1-31	18%	PEG 4000	0.1	potassium chloride	-	none	0.1	Bis-Tris	6
1-32	18%	PEG 200	0.1	potassium chloride	-	none	0.1	Potassium Phosphate	7.5
1-33	22%	PEG 4000	0.1	magnesium acetate	-	none	0.1	MES	6.0
1-34	22%	PEG 8000	0.1	calcium acetate	-	none	0.1	MES	6
1-35	23%	PEG 3350	0.1	ammonium sulfate	-	none	0.1	HEPES	8.5
1-36	32%	PEG 400	0.1	potassium chloride	-	none	0.1	MES	6
1-37	36%	PEG 300	0.1	sodium chloride	-	none	0.1	MES	6.5
1-38	45%	PEG 550 MME	0.1	sodium chloride	-	none	0.1	Bicine	9
1-39	35%	PEG 400	0.15	calcium chloride	-	none	0.1	Glycine	9.0
1-40	13%	PEG 4000	0.2	ammonium sulfate	-	none	0.5	ADA	6.5
1-41	14%	PEG 2000 MME	0.2	choline chloride	-	none	0.1	Tris	7.5
1-42	19%	PEG 6000	0.2	sodium chloride	-	none	0.05	MOPS	7.0
1-43	19%	PEG 6000	0.05	sodium chloride	-	none	0.05	MOPS	7.0
1-44	19%	PEG 3350	0.2	magnesium formate	-	none	0.05	Tris	8
1-45	20%	PEG 350 MME	0.2	calcium chloride	-	none	0.1	MES	5
1-46	20%	PEG 3350	0.2	ammonium nitrate	-	none	0.05	HEPES	7.0
1-47	33%	PEG 1000	0.5	magnesium chloride	0.02	lithium chloride	0.02	Glycine	10
1-48	24%	PEG 400	0.2	calcium acetate	-	none	0.1	HEPES	7

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MemGold2™ Box 2 of 2 MD1-63

Tube No.	% Conc.	Precipitant	Conc. (M)	Salt 1	Conc. (M)	Salt 2	Conc. (M)	Buffer	pH
2-1	28%	PEG 400	0.2	sodium acetate	-	none	0.1	MES	6.5
2-2	29%	PEG 400	0.2	sodium chloride	-	none	0.05	Calcium Acetate	5.0
2-3	29%	PEG 400	0.2	sodium chloride	-	none	0.1	HEPES	7
2-4	31%	pentaerythritol ethoxylate 15/04	0.2	ammonium formate	-	none	0.1	Tris	7
2-5	35%	PEG 3350	0.2	ammonium sulfate	-	none	0.1	Tris	8.5
2-6	38%	PEG 400	0.2	calcium acetate	-	none	0.1	Sodium Acetate	5.0
2-7	38%	PEG 400	0.2	sodium chloride	-	none	0.1	MOPS	7.5
2-8	2.0 M	Ammonium Sulfate	0.2	sodium chloride	-	none	0.1	Sodium Cacodylate	6.5
2-9	12%	PEG 4000	0.225	ammonium sulfate	-	none	0.05	Sodium Acetate	4
2-10	33%	PEG 400	0.23	sodium chloride	-	none	0.05	Sodium Acetate	4.5
2-11	22%	PEG 3000	0.25	magnesium formate	-	none	0.1	Sodium Cacodylate	6.5
2-12	40%	PEG 1000	0.25	magnesium chloride	-	none	0.1	Tris	8.5
2-13	25%	PEG 400	0.3	lithium sulfate	-	none	0.1	MES	6.5
2-14	33%	PEG 550 MME	0.3	ammonium formate	-	none	0.05	Tris	9.0
2-15	34%	PEG 400	0.3	barium chloride	-	none	0.1	MES	6
2-16	14%	PEG 4000	0.32	lithium chloride	-	none	0.1	Sodium Citrate	5.5
2-17	12%	PEG 4000	0.34	ammonium sulfate	-	none	0.1	Sodium Citrate	5.5
2-18	11%	PEG 600	0.35	lithium sulfate	-	none	0.1	Sodium Acetate	4.5
2-19	22%	PEG 400	0.37	potassium nitrate	-	none	0.1	MES	6.5
2-20	10%	PEG 3350	0.4	ammonium sulfate	-	none	0.1	MES	6.5
2-21	32%	PEG 400	0.05	sodium chloride	0.04	magnesium chloride	0.1	HEPES	7.5
2-22	12%	PEG 400	0.4	potassium chloride	-	none	0.05	HEPES	7.5
2-23	15%	PEG 4000	0.4	ammonium thiocyanate	-	none	0.1	Sodium Acetate	4.5
2-24	16%	PEG 4000	0.4	sodium thiocyanate	-	none	0.1	Sodium Acetate	4
2-25	20%	PEG 400	0.5	potassium chloride	-	none	0.05	HEPES	6.5
2-26	21%	PEG 350 MME	0.5	magnesium chloride	-	none	0.05	Tris	7.5
2-27	11%	PEG 4000	0.8	potassium formate	-	none	0.1	Sodium Acetate	5.0
2-28	9%	PEG 8000	-	none	-	none	0.1	MOPS	7
2-29	11%	PEG 20000	-	none	-	none	0.1	MES	6.0
2-30	13%	PEG 400	-	none	-	none	0.1	MES	6.5
2-31	14%	PEG 6000	-	none	-	none	0.1	ADA	5.5
2-32	17%	PEG 350 MME	-	none	-	none	0.05	Tris	7.5
2-33	22%	PEG 300	-	none	-	none	0.07	Sodium Citrate	4.5
2-34	24%	PEG 400	-	none	-	none	0.05	ADA	6.5
2-35	24%	PEG 1500	-	none	-	none	0.1	Sodium Cacodylate	6.5
2-36	28%	PEG 600	-	none	-	none	0.1	HEPES	7.5
2-37	28%	PEG 400	-	none	-	none	0.05	Tris	8.5
2-38	30%	PEG 400	-	none	-	none	0.1	Bicine	9
2-39	31%	PEG 600	-	none	-	none	0.1	ADA	7.0
2-40	32%	PEG 550 MME	-	none	-	none	0.10	Tris	8.5
2-41	33%	PEG 400	-	none	-	none	0.1	HEPES	7.5
2-42	34%	PEG 3350	-	none	-	none	0.18	Sodium Citrate	4.0
2-43	44%	PEG 200	-	none	-	none	0.1	Tris	8.5
2-44	65%	MPD	-	none	-	none	0.1	Tris	8
2-45	2.75M	Ammonium Chloride	-	none	-	none	0.025	Bis-Tris	7
2-46	2.8M	Ammonium Chloride	-	none	-	none	0.075	HEPES	7.5
2-47	3.0M	Ammonium Sulfate	-	none	-	none	0.1	MES	5.5
2-48	3.25M	1,6 Hexanediol	-	none	-	none	0.01	HEPES	7.5

Abbreviations:
ADA; N-(2-Acetamido)iminodiacetic Acid, **Bicine**; N,N-Bis(2-hydroxyethyl)glycine, **Bis-Tris**; 2,2'-(Propane-1,3-diyldiimino)bis[2-(hydroxymethyl)propane-1,3-diol]. **CHES**; 2-(N-Cyclohexylamino)ethane sulfonic Acid, **HEPES**; N-(2-hydroxyethyl)-piperazine-N'-2-ethanesulfonic acid, **KMES**; 2-(N-morpholino)ethanesulfonic acid potassium salt, **MES**; 2-(N-morpholino)ethanesulfonic acid, **MME**; Monomethylether, **MOPS**; 3-morpholinopropane-1-sulfonic acid, **PEG**; Polyethylene glycol, **PEG DME**; Poly(ethylene glycol) bis(carboxymethyl) ether, **Tricine**; N-[Tris(hydroxymethyl)methyl]glycine, **Tris**; 2-Amino-2-(hydroxymethyl)propane-1,3-diol.

Ordering details:

Catalogue Description	Catalogue Code
MemGold2™ 10 mL screen	MD1-63
MemGold2™ HT-96 screen	MD1-64
MemGold2™ 10 mL screen single reagents	MDSR-63-tube number
MemGold2™ HT-96 screen single reagents	MDSR-64-well number

For MemGold2™ stock reagents go to Optimization on our website.