Molecular Dimensions

MemAdvantage™ MD1-70

An additive screen developed exclusively for membrane proteins.
This screen targets all alpha helical types of Prokaryotic and Eukaryotic membrane proteins.

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Developed by Simon Newstead and Joanne Parker from University of Oxford, UK.

MD1-70 is presented as a 96 x 0.25 mL in a deep-well SBS block.

Features of MemAdvantage:

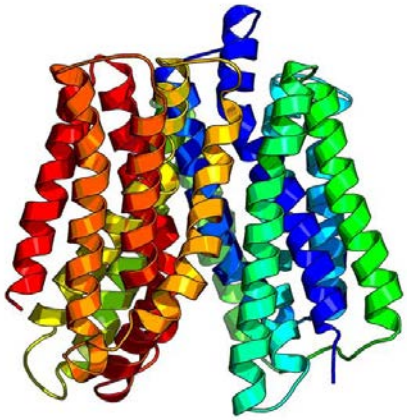
- A rational and intelligently designed additive screen targeted specifically for membrane proteins.
- Allows easy screening of 96 different additives (12 different classes of the following: polyalcohols, detergents, multivalent salts, non-volatile organics etc.) found to be the most successful* in membrane protein crystallization.
- Particularly suited for Prokaryotic and Eukaryotic alpha helical membrane proteins.
- For initial screening or optimization screening.
- Ready-to-use deep-well block.

MemAdvantage was developed from the identification of successful additives (using data mining) currently used in the crystallization of membrane proteins. It contains a novel set of chemicals presented as a 96-format screen for implementation in robotic screening pipelines. The kit is designed to help test the effect of 96 different compounds on membrane protein crystal growth.

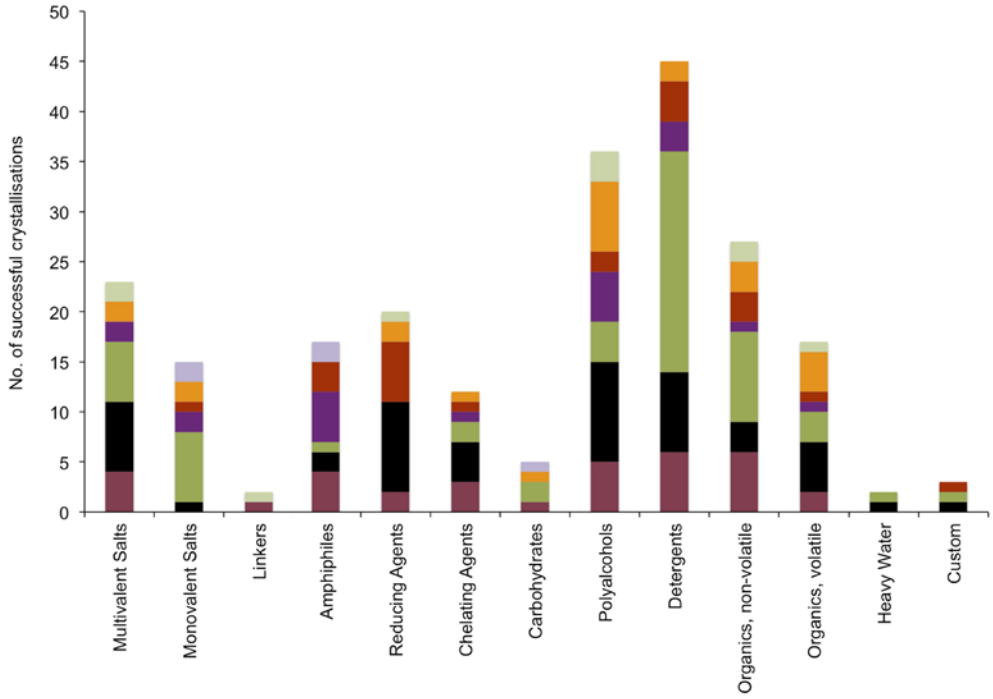
Detergent selection is a critical parameter for growing well-ordered, well diffracting crystals and with so many choices of detergents/ligands to choose it can be both time consuming and expensive to investigate all possibilities.

MemAdvantage takes the most successful ligands, detergents, multivalent salts, polyalcohols, non-volatile organics, organics, amphiphiles and puts them all together in one easy-to-use additive screen.

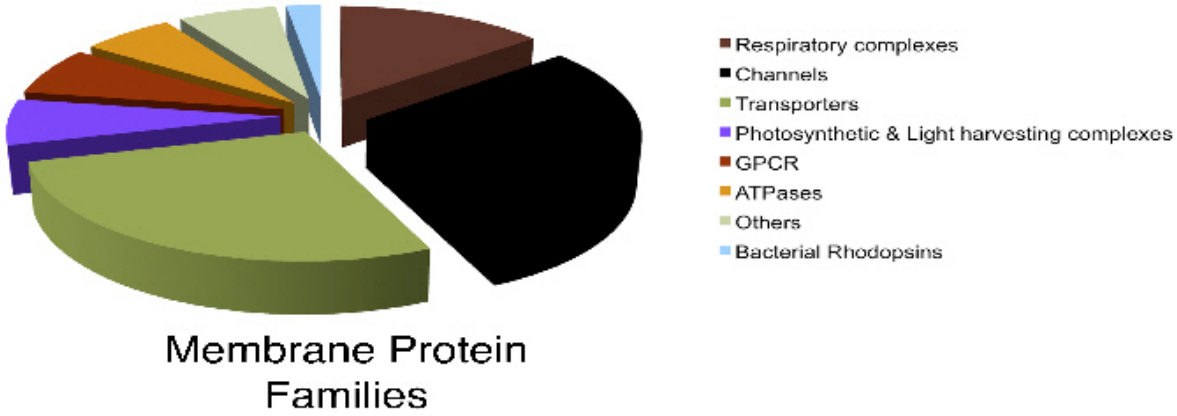
Additives may affect hydration and intermolecular interactions between protein molecules or between protein molecule and solvent and even ligands.
This kit is a screen and results may need to be interpreted with a view to designing further additive experiments using different compounds of the same type as the kit reagent that gave a promising result.



***References**:
Parker, J. and Newstead, S. '*Current trends in alpha helical membrane protein crystallization: an update'*, Protein Science, 2012, *21 (9):1358-1365.*



Additives found in MemAdvantage and their successfulness in crystallization of membrane proteins - see pie chart below.



Molecular Dimensions

Membrane Proteins

Additive Screens

Instructions for Use:

We recommend you use a 1/10 dilution of additive to your crystallization screen. You can either place the additive straight into the mother liquor (easiest option) or pipette the screen into another plate and aspirate from this during set-up.
As the screen does contain volatiles it is recommended that the additives are placed in the mother liquor as well.

Recommended storage for MemAdvantage is -20°C. Allow block to equilibrate to room temperature prior to use. If any of the reagents have precipitated just warm your block up at 37°C for 20 mins.

Formulation Notes:

MemAdvantage 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 MemAdvantage 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.

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Membrane Proteins

Additive Screens

MemAdvantage™ HT Rows A - D MD1-70

Well #	Reagent	Type	Conc	Units
A1	HEGA-10	Detergent	70	mM
A2	HEGA 11	Detergent	14	mM
A3	C-HEGA-11	Detergent	11.5	mM
A4	CHAPS	Detergent	60	mM
A5	BigCHAP, deoxy	Detergent	14	mM
A6	ONG (octyl glucose neopentyl glycol)	Detergent	10.2	mM
A7	DNG (decyl maltose neopentyl glycol)	Detergent	3.6	mM
A8	LNG (lauryl maltose neopentyl glycol)	Detergent	1	mM
A9	UDTM (n-undecyl-B-D-thiomaltopyranoside)	Detergent	2.1	mM
A10	NDM (n-nonyl-β-D-maltopyranoside)	Detergent	60	mM
A11	DSM (n-decyl-β-d-thiomaltopyranoside)	Detergent	9	mM
A12	OG (n-octyl-β-D-glucoside)	Detergent	190	mM
B1	DM (n-decyl-β-D-maltopyranoside)	Detergent	18	mM
B2	NG (n-nonyl-β-D-glycopyranoside)	Detergent	65	mM
B3	DDM (n-dodecyl-β-D-maltopyranoside)	Detergent	1.7	mM
B4	HTG (n-heptyl-β-D-thioglucopyranoside)	Detergent	290	mM
B5	LAPAO (3-laurylamido-N,N'-dimethylpropyl amino oxide	Detergent	15.6	mM
B6	LDAO (n-dodecyl-N,N-dimethylamine-N-oxide)	Detergent	15	mM
B7	CYMAL®-1	Detergent	340	mM
B8	CYMAL®-2	Detergent	120	mM
B9	CYMAL®-4	Detergent	76	mM
B10	CYMAL®-5	Detergent	37	mM
B11	CYMAL®-6	Detergent	5.6	mM
B12	CYMAL®-7	Detergent	1.9	mM
C1	Fos-Choline-9	Detergent	39.5	mM
C2	Fos-Choline-12	Detergent	15	mM
C3	C8E4 (tetraethylene glycol monooctyl ether)	Detergent	80	mM
C4	C12E8 (octaethylene glycol monododecyl ether)	Detergent	0.9	mM
C5	Anzergent® 3-12	Detergent	30	mM
C6	OM-fluorinated (octyl maltoside flourinated)	Detergent	10.2	mM
C7	UDM (n-undecyl-β-D-maltoside)	Detergent	5.9	mM
C8	Tri DM (n-tridecyl-β-D-maltoside)	Detergent	0.3	mM
C9	sucrose monocaprate (Sucrose monodecanoate)	Detergent	25	mM
C10	Sucrose monododecanoate	Detergent	3	mM
C11	TRIPAO	Detergent	45	mM
C12	MERPOL® HCS surfactant	Detergent	5	% w/v
D1	DMG (n-dodecyl-N,N-dimethylglycine)	Detergent	15	mM
D2	Potassium Chloride	Monovalent	100	mM
D3	Potassium Fluoride	Monovalent	100	mM
D4	Potassium Silicate	Monovalent	100	mM
D5	Sodium Acetate	Monovalent	100	mM
D6	Sodium Azide	Monovalent	100	mM
D7	Sodium Chloride	Monovalent	100	mM
D8	Sodium Fluoride	Monovalent	100	mM
D9	Sodium Phosphate dibasic	Monovalent	100	mM
D10	Lithium Citrate tribasic tetrahydrate	Monovalent	100	mM
D11	Lithium Sulfate	Monovalent	100	mM
D12	Rubidium Chloride	Monovalent	100	mM

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Additive Screens

MemAdvantage™ HT Rows E - H MD1-70

Well #	Reagent	Type	Conc	Units
E1	Ammonium Citrate tribasic	Multivalent	100	mM
E2	Ammonium Sulfate	Multivalent	100	mM
E3	Cadmium Chloride hemi(pentahydrate)	Multivalent	100	mM
E4	Calcium Chloride dihydrate	Multivalent	100	mM
E5	Chromium (III) Chloride hexahydrate	Multivalent	100	mM
E6	Cobalt (II) Chloride hexahydrate	Multivalent	100	mM
E7	Copper(II) Chloride	Multivalent	100	mM
E8	Gadolinium(III) Chloride hexahydrate	Multivalent	100	mM
E9	Magnesium Chloride hexahydrate	Multivalent	100	mM
E10	Magnesium sulfate heptahydrate	Multivalent	100	mM
E11	Manganese(II) chloride tetrahydrate	Multivalent	100	mM
E12	Osmium(III) Chloride hydrate	Multivalent	100	mM
F1	Samarium(III) chloride hexahydrate	Multivalent	100	mM
F2	Strontium Chloride hexahydrate	Multivalent	100	mM
F3	Zinc Nitrate hexahydrate	Multivalent	100	mM
F4	Zinc Sulfate heptahydrate	Multivalent	100	mM
F5	1,3-propanediol	Organic, volatile	0.2	% v/v
F6	1,4-butanediol	Organic, volatile	0.2	% v/v
F7	1-butanol	Organic, volatile	7	% v/v
F8	Ethanol	Organic, volatile	10	% v/v
F9	2-Propanol	Organic, volatile	5	% v/v
F10	*tert*-Butanol	Organic, volatile	10	% v/v
F11	Triethylammonium Phosphate	Organic, volatile	10	% v/v
F12	Deuterium Oxide	Heavy water	1	mM
G1	L-Glutathione reduced	Organic, non volatile	100	mM
G2	MPD	Organic, non volatile	15	% v/v
G3	PEG 400	Organic, non volatile	15	% v/v
G4	Polyvinylpyrrolidone	Organic, non volatile	5	% w/v
G5	Spermidine	Organic, non volatile	0.16	% v/v
G6	Taurine	Organic, non volatile	0.2	% w/v
G7	Jeffamine® M-600 pH 7.0	Organic, non volatile	10	% v/v
G8	PEG 600	Organic, non volatile	15	% w/v
G9	1,6-Hexanediol	Organic, non volatile	0.2	% v/v
G10	Dimethyl sulfoxide (DMSO)	Organic, non volatile	30	% v/v
G11	Foscarnet (phosphoformic acid)	Organic, non volatile	80	mM
G12	Glutaric Acid	Organic, non volatile	0.2	% w/v
H1	1,2,3-Heptanetriol	Amphiphiles	0.2	% w/v
H2	Benzamidine hydrochloride	Amphiphiles	20	% w/v
H3	Ethylene Glycol	Polyalcohol	30	% v/v
H4	Glycerol	Polyalcohol	30	% v/v
H5	EDTA	Chelating agent	100	mM
H6	EGTA	Chelating agent	10	mM
H7	sucrose	Carbohydrate	40	% w/v
H8	D-Trehalose	Carbohydrate	30	% w/v
H9	Dithiothreitol (DTT)	Reducing agent	100	mM
H10	2-Mercaptoethanol (β-ME)	Reducing agent	30	mM
H11	TCEP	Reducing agent	100	mM
H12	Gly-Gly-Gly	Linker	300	mM

Abbreviations:
MPD: 2-methyl, 2,4-pentanediol, **PEG**: Poly Ethylene Glycol, **DMSO**:Dimethyl Sulfoxide, **EDTA**: Ethylenediaminetetraacetic acid, **EGTA**: ethylene glycol tetraacetic acid, DTT: TCEP: **HEGA-10:** Decanoyl-N-Hydroxyethylglucamide, **HEGA-11**; Undecanoyl-N-Hydroxyethylglucamide, **C-HEGA-11:** Cyclohexylpentanoyl-N-Hydroxyethylglucamide **CHAPS:** 3-[(3-Cholamidopropyl)-Dimethylammonio]-1-Propane Sulfonate/N,N-Dimethyl-3-Sulfo-N-[3-[[3α,5β,7α,12α)-3,7,12-Trihydroxy-24-Oxocholan-24-yl]Amino]propyl]-1-Propanaminium Hydroxide, Inner Salt**,** **Deoxy BIG CHAP**: N,N'-bis-(3-D Gluconamidopropyl)Deoxycholamide, **CYMAL®-1**,: Cyclohexyl-Methyl-β-D-Maltoside, **CYMAL® 2:** 2-Cyclohexyl-1-Ethyl-β-D-Maltoside, **CYMAL® 4:** 4-Cyclohexyl-1-Butyl-β-D-Maltoside**, CYMAL® 5:** 5-Cyclohexyl-1-Pentyl-β-D-Maltoside**, CYMAL® 6:** 6-Cyclohexyl-1-Hexyl-β-D-Maltoside, **CYMAL® 7:** 7-Cyclohexyl-1-Heptyl-β-D-Maltoside, **Anzergent® 3-12**: n-Dodecyl-N,N-Dimethyl-3-Ammonio-1-Propanesulfonate / N,N-Dimethyl-1-N-(3-Sulfopropyl)-1-Dodecanaminium Hydroxide, Inner Salt, **TRIPAO**: ((3-(3 Butyl-3-Phenylheptanamido)-N,N-Dimethylpropan-1-Amine Oxide))**.**

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

Ordering details:

Catalogue Description	**Catalogue Code**
MemAdvantage™	MD1-70
MemAdvantage™ single reagents	MDSR-70-well number

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