

The ANGSTROM Additive Screen™

MD1-100/MD1-100-FX

A 96 condition additive screen incorporating 30 different polyols to aid protein crystallization optimization and flash-cooling of protein crystals.

MD1-100 is presented as 96 x 1 mL conditions and MD1-100-FX is presented as 96 x 100 μ L.

Features of the ANGSTROM Additive Screen:

- For easy optimization of crystal conditions.
- Contains 30 different polyols at three different concentrations.
- Cryoprotect and enhance the stability of your protein and improve crystal quality.
- Suitable for both hand and robotic dispensing.

Introduction

The **ANGSTROM Additive Screen** provides an easy way to optimize your crystallization condition. Once initial hits have been obtained, test out an extensive array of 30 polyols facilitated to improve the quality of your crystals and give you optimum control over your optimization experiment.

The traditional method of cryoprotection by soaking a crystal in cryoprotectant can result in damaged or lost crystals; **The ANGSTROM Additive Screen** contains derivatives of glycols (Figure 1, a), carbohydrates and PEGs that will be integrated to the condition early to help with cryoprotection. The concentrations of cryoprotectant required to provide adequate cryoprotection have been marked on the Table of screen contents (pages 4 &5). Some cryoprotectants found in the ANGSTROM screen are as potent as glycerol (Figure 1).

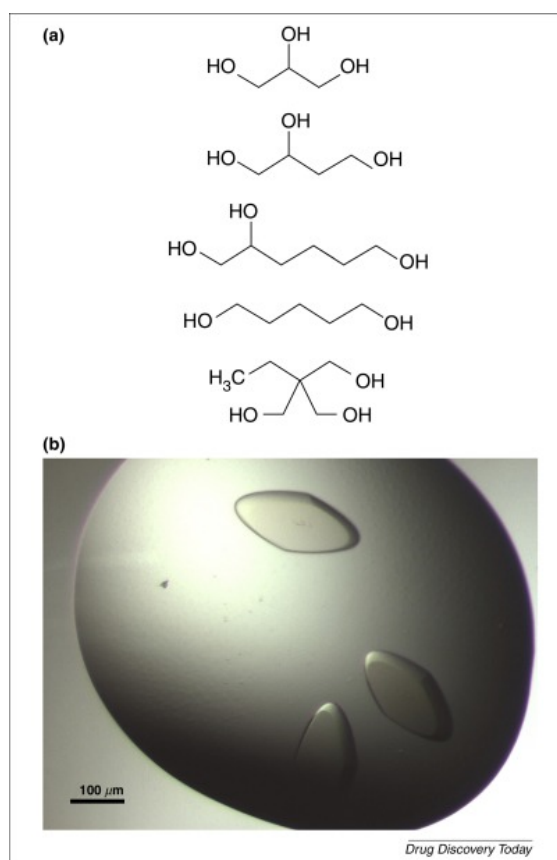
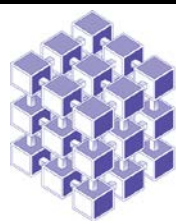


Figure 1

(a) Glycol derivatives. From top to bottom: 1,2,3-propanetriol (glycerol), 1,2,4-butanetriol, 1,2,6-hexanetriol, 1,5-pentanediol and 1,1,1-tris(hydroxymethyl)propane. In addition to being well-suited as crystallization reagents, these five polyols are cryo-protectants when used at concentrations as low as 20–25% (w/v). **(b)** Crystals of endosomal sorting complex required for transport (ESCRT)-I. Ten percent of the ANGSTROM screen was added to the reservoirs of a crystallization plate pre-filled with 96 repeats of the initial condition. Several hits were observed including the one shown here with glucose as additive (final conc. 3%, w/v). Unpublished results obtained during the early stage of the ANGSTROM screen development. Work of Nicolas Soler (LMB).



Molecular
Dimensions



Tips for Use:

The ANGSTROM Additive Screen is stored frozen at - 20°C. Thaw additive screen prior to use and spin down ~1000G.

Use The ANGSTROM Additive Screen from either the deep-well block or the Costar (FX) plates.

The deep-well blocks contain approx. 1mL of additive screen and the Costar FX plates contain 100 µL of additive screen.

We recommend aliquoting from the deep-well block into smaller volumes or directly into the reservoirs of MRC plates for example. This is to avoid repeated freeze-thaw cycles and contamination (especially if working in a multi-user lab).

Use of the ANGSTROM additive MD1-100 Deep-well block screen.

Dispense directly from the deep-well block into a storage plate to use on your robot, or directly from the block if using by hand.

Add The ANGSTROM Additive Screen into the reservoir of a crystallization plate.

If starting from a crystallization plate (e.g. MRC plate) it is recommended that you pre-dispense 8 µL of The Angstrom Additive Screen into the reservoir and then dispense 72 µL of your crystallization screen on top. Place plate on orbital shaker to mix prior to setting protein. Then continue with dispensing your protein etc.

Add The ANGSTROM Additive Screen directly into the drop.

Dispense directly into the sample well of a crystallization plate, for example, 500 nL of protein + 500 nL crystallization condition + 100 nL of the additive screen. You can vary the ratios of protein drop to crystallization drop and additive drop.

Formulation Notes:

The Angstrom Additive Screen 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 The ANGSTROM Additive Screen 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

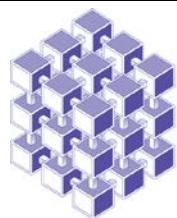
Manufacturer's safety data sheets are available from our website

References

1. Gorrec, F. Protein crystallization screens developed at the MRC Laboratory of Molecular Biology, Drug Discov Today (2016), <http://dx.doi.org/10.1016/j.drudis.2016.03.008>

The ANGSTROM Additive Screen has been designed and developed by Fabrice GORREC, in collaboration with the scientists at the Medical Research Council Laboratory of Molecular Biology (LMB) at Cambridge and is manufactured exclusively under license by Molecular Dimensions Limited.

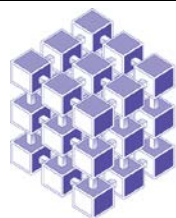
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Re-Ordering details:

Catalogue Description	Pack size	Catalogue Code
The ANGSTROM Additive Screen HT	96 x 1 mL	MD1-100
The ANGSTROM Additive Screen FX	96 x 100 μ L	MD1-100-FX
The LMB Crystallization Screen	96 x 10 mL	MD1-98
The LMB Crystallization Screen	96 x 1 mL	MD1-99
Morpheus [®]	96 x 10 mL	MD1-46
Morpheus [®] HT-96	96 x 1 mL	MD1-47
Morpheus [®] FX-96	96 x 100 μ L	MD1-47-FX
Morpheus [®] II	96 x 10 mL	MD1-91
Morpheus [®] II HT-96	96 x 1 mL	MD1-92
Morpheus [®] II FX-96	96 x 100 μ L	MD1-92-FX
The Morpheus [®] Additive Screen	96 x 100 μ L	MD1-93
Single Reagents		
Morpheus [®] single reagents	100 mL	MDSR-46-tube number
Morpheus [®] HT-96 single reagents	100 mL	MDSR-47-well number
Morpheus [®] II single reagents	100 mL	MDSR-91-tube number
Morpheus [®] II HT-96 single reagents	100 mL	MDSR-92-well number
The ANGSTROM Additive Screen	100 mL	MDSR-100-well number

For Morpheus[®] mixes and stock solutions please visit the Optimization section on our website.



The ANGSTROM Additive Screen

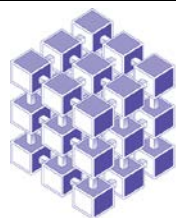
Cryo test Key

- = no cryoprotection
- + = cryoprotected
- +/- = some cryoprotection

Conditions A1-D12

MD1-100/MD1-100-FX

Well No.	Conc.	Units	Reagent	Cryo test
A1	100 %		Ultrapure water	-
A2	100 %		Ultrapure water	-
A3	100 %		Ultrapure water	-
A4	0.5 M		Lithium sulfate	-
A5	1 M		Lithium sulfate	-
A6	2 M		Lithium sulfate	+/-
A7	20 % v/v		Ethylene glycol	-
A8	40 % v/v		Ethylene glycol	+
A9	80 % v/v		Ethylene glycol	+
A10	15 % v/v		1,2-Propanediol	-
A11	30 % v/v		1,2-Propanediol	+/-
A12	60 % v/v		1,2-Propanediol	+
B1	15 % v/v		Glycerol	-
B2	30 % v/v		Glycerol	+/-
B3	60 % v/v		Glycerol	+
B4	15 % v/v		1,5-Pentanediol	-
B5	30 % v/v		1,5-Pentanediol	+/-
B6	60 % v/v		1,5-Pentanediol	+
B7	20 % v/v		1,2,4-Butanetriol	-
B8	40 % v/v		1,2,4-Butanetriol	+
B9	80 % v/v		1,2,4-Butanetriol	+
B10	20 % v/v		1,2-Hexanediol	-
B11	40 % v/v		1,2-Hexanediol	-
B12	80 % v/v		1,2-Hexanediol	+
C1	20 % w/v		1,6-Hexanediol	-
C2	40 % w/v		1,6-Hexanediol	+/-
C3	80 % w/v		1,6-Hexanediol	+
C4	20 % v/v		MPD	-
C5	40 % v/v		MPD	+
C6	80 % v/v		MPD	+
C7	12 % w/v		<i>meso</i> -Erythritol	-
C8	25 % w/v		<i>meso</i> -Erythritol	-
C9	50 % w/v		<i>meso</i> -Erythritol	+
C10	20 % w/v		Trimethylolpropane	-
C11	40 % w/v		Trimethylolpropane	+
C12	80 % w/v		Trimethylolpropane	+
D1	20 % w/v		1,2,6-Hexanetriol	-
D2	40 % w/v		1,2,6-Hexanetriol	+
D3	80 % w/v		1,2,6-Hexanetriol	+
D4	20 % w/v		D-Lyxose	-
D5	40 % w/v		D-Lyxose	-
D6	80 % w/v		D-Lyxose	+
D7	10 % w/v		Xylitol	-
D8	20 % w/v		Xylitol	-
D9	40 % w/v		Xylitol	+
D10	20 % w/v		D-Fructose	-
D11	40 % w/v		D-Fructose	+
D12	80 % w/v		D-Fructose	+



The ANGSTROM Additive Screen

Cryo test Key

- = no cryoprotection
- + = cryoprotected
- +/- = some cryoprotection

Conditions E1-H12

MD1-100/MD1-100-FX

Well No.	Conc.	Units	Reagent	Cryo test
E1	15 % w/v		D-Glucose	-
E2	30 % w/v		D-Glucose	-
E3	60 % w/v		D-Glucose	+
E4	2.5 % w/v		<i>myo</i> -Inositol	-
E5	5 % w/v		<i>myo</i> -Inositol	-
E6	10 % w/v		<i>myo</i> -Inositol	-
E7	6 % w/v		L-Rhamnose monohydrate	-
E8	12 % w/v		L-Rhamnose monohydrate	-
E9	25 % w/v		L-Rhamnose monohydrate	-
E10	20 % v/v		Tetraethylene glycol (TTEG)	-
E11	40 % v/v		Tetraethylene glycol (TTEG)	+/-
E12	80 % v/v		Tetraethylene glycol (TTEG)	+
F1	20 % v/v		PEG 200	-
F2	40 % v/v		PEG 200	+
F3	80 % v/v		PEG 200	+
F4	20 % v/v		Pentaethylene glycol	-
F5	40 % v/v		Pentaethylene glycol	+
F6	80 % v/v		Pentaethylene glycol	+
F7	20 % v/v		Pentaerythritol ethoxylate (3/4 EO/OH)	-
F8	40 % v/v		Pentaerythritol ethoxylate (3/4 EO/OH)	-
F9	80 % v/v		Pentaerythritol ethoxylate (3/4 EO/OH)	+
F10	20 % v/v		Hexaethylene glycol	-
F11	40 % v/v		Hexaethylene glycol	-
F12	80 % v/v		Hexaethylene glycol	+
G1	20 % v/v		PEG 300	-
G2	40 % v/v		PEG 300	+/-
G3	80 % v/v		PEG 300	+
G4	15 % w/v		Sucrose	-
G5	30 % w/v		Sucrose	-
G6	60 % w/v		Sucrose	+
G7	20 % w/v		Maltitol	-
G8	40 % w/v		Maltitol	-
G9	80 % w/v		Maltitol	+
G10	12 % w/v		D-Trehalose	-
G11	25 % w/v		D-Trehalose	-
G12	50 % w/v		D-Trehalose	+
H1	20 % v/v		PEG 400	-
H2	40 % v/v		PEG 400	+/-
H3	80 % v/v		PEG 400	+
H4	20 % v/v		Pentaerythritol propoxylate (5/4 PO/OH)	-
H5	40 % v/v		Pentaerythritol propoxylate (5/4 PO/OH)	+/-
H6	80 % v/v		Pentaerythritol propoxylate (5/4 PO/OH)	+
H7	15 % v/v		PEG 500 MME	-
H8	30 % v/v		PEG 500 MME	-
H9	60 % v/v		PEG 500 MME	+
H10	15 % v/v		PEG 600	-
H11	30 % v/v		PEG 600	+/-
H12	60 % v/v		PEG 600	+