# **User Guide**

### Applications

Crystallization screen for proteins, peptides, nucleic acids and water soluble small molecules.

#### Features

Screens classic, contemporary and new crystallization reagent systems Compatible with Micro Batch, Vapor Diffusion and Liquid Diffusion methods. Samples pH 3.5 to 8.5. Specially formulated reagent zones include:

- Classic salts versus pH
- Neutralized organic acids
- High [salt] with low [polymer]
- High [polymer] with low [salt]
- Low ionic strength versus pH
- PEG & Salt versus pH
- PEG & Salt

### **General Description**

Index HT<sup>TM</sup> is supplied in a sterile, polypropylene 96 Deep Well block, each reservoir containing 1 ml of sterile filtered reagent. The block is heat sealed using a special polypropylene backed film.

Index is kit of 96 preformulated reagents designed to provide a rapid screening method for the crystallization of biological macromolecules including proteins, peptides, and nucleic acids. Index is a straightforward, effective, and practical kit for determining preliminary crystallization conditions. Index is also effective in determining the solubility of a macromolecule in a wide range of precipitants and pH.

#### Background

Index is designed as a 96 reagent crystallization screen than combines the strategies of the Grid Screen, Sparse Matrix, and Incomplete Factorial with classical, contemporary and new crystallization reagent systems into a highly effective and efficient format. Index was designed, developed and evaluated to: 1) be compatible with Micro Batch, Vapor Diffusion, and Liquid Diffusion crystallization methodologies, 2) evaluate classical, contemporary and new crystallization reagent systems, 3) efficiently sample crystallization reagent, concentration and pH space using 96 conditions, 4) combine the most effective features of the Grid Screen, Sparse Matrix and Incomplete Factorial methodologies, and 5) demonstrate that each condition is effective as producing crystals of biological macromolecules.

Index crystallization reagents are compatible with Paraffin (mineral) and Silicon based crystallization oils. Index is the first commercially available crystallization screen specifically designed and available to be compatible with Micro Batch, Vapor or Liquid Diffusion crystallization methodologies.

Index utilizes a broad, yet selective portfolio of crystallization reagent systems which encompasses the following: Classic reagents such as Ammo-



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nium sulfate and Sodium potassium phosphate. Contemporary reagents such as Polyethylene glycols and MPD. New crystallization reagent systems such as the neutralized Organic Acids Sodium malonate and Succinate along with Tacsimate and the Pentaerythritols. These reagent systems are formulated across a sparse matrix and incomplete factorial of concentration ranges, a pH range of 3.5 to 8.5, low ionic strength, high ionic strength, and mixed polymer/salt including halides for potential phasing.

Index samples the classical and often effective simple reagent Ammonium sulfate in a Grid Screen format across the pH range 3.5 to 8.5. Classical salts Sodium chloride, Phosphate and Formate are also sampled across a broad range of pH. Successful crystallization screening in this zone of Index might indicate a Grid Screen optimization using a simple salt versus pH approach might be useful for optimization and production of crystals.

Neutralized organic acids have recently been reported as highly effective crystallization reagents. These Index salts include Malonate, Citrate, Succinate, Malate, Formate, Acetate, Tartrate, and Tacsimate  $^{\text{TM}}$ .

Relatively high supersaturation levels of salts combined with low concentration of polymers are reported as effective crystallization reagent systems and are found in the Index reagents 30-36.

Some proteins, especially intact and fragmented antibodies respond well to low ionic strength crystallization reagent systems which are found in Index reagents 37-48.

Non-volatile organics such as MPD as well as polyols such as PEG 400 and low molecular weight PEG MME are frequently reported in the literature as useful reagents in the crystallization of nucleic acids and these reagents are also effective with proteins, especially when combined with salts. More recently, a class of reagents, pentaerythritols, has been reported as effective crystallization reagents.

Currently, if one were to select the most reported precipitant system successful in producing single crystals of biological macromolecules, it would be the combination of high purity Polyethylene glycols with salts. Between 1999 and 2002, 60% of the crystallization reported in the literature utilized a Polyethylene glycol / salt reagent formulation. More than 30 Index conditions evaluate this highly effective reagent combination across a broad pH range.

Index is formulated in zones. Classic salts versus pH. Neutralized organic acids. High [salt] with low [polymer]. High [polymer] with low [salt]. Low ionic strength versus pH. PEG & Salt versus pH. PEG & Salt. If one zone is more effective at producing crystals than another zone, then further crystallization screening and/or optimization could or should focus on this

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reagent system zone. Zone formulation makes interpretation of screen results a bit easier and much faster.

Many of the Index reagent formulations were selected from the literature based on the reagent's relative efficacy in producing crystals of biological macromolecular crystals. Other reagents were selected and in a single case, synthesized based on their unique chemical properties, their compatibility with Micro Batch, Vapor and Liquid Diffusion methods, and their ability to produce crystals where at times, the other reagent systems failed. These reagent systems, not strongly represented in the literature were evaluated at Hampton Research using a portfolio of more than 40 biological macromolecules. Finally, a sampling of the Index formulations were designed using the Incomplete Factorial approach and again evaluated at Hampton Research using a portfolio of more than 40 biological macromolecules. Further evaluation of Index was performed in collaboration with academic and industrial crystallography labs in order to test and refine the Index formulation. Each reagent formulation in Index has produced a crystal of a biological macromolecule.

#### **Sample Preparation**

The macromolecular sample should be homogenous, as pure as is practically possible (>95%) and free of amorphous and particulate material. Remove amorphous material by centrifugation or microfiltration prior to use.

The recommended sample concentration is 5 to 25 mg/ml in sterile filtered, dilute (25 mM or less) buffer. For initial screens, the sample should be free of unnecessary additives in order to observe the effect of the Index and Index 2 variables. However, agents that promote and preserve sample stability and homogeneity can and should be included in the sample. For additional sample preparation recommendation see Crystal Growth 101 - Preliminary Sample Preparation bulletin from Hampton Research.

#### Preparing the Deep Well Block for Use

It is recommended the Deep Well block be centrifuged before removing the sealing film. Centrifugation at 500 rpm for five minutes will remove stray reagent from the sealing film. Removing the reagent from the film prevents stray reagent droplets from falling into neighboring wells during film removal. After centrifugation the film can be removed by grasping a corner of the film and gently peeling the film from the plate. Alternatively, the film can be left intact and the pierced for reagent access.

#### Performing the Screen

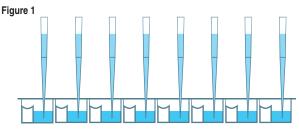
Manual Method - Sitting Drop Vapor Diffusion

1. Using a 96 well sitting drop vapor diffusion plate, pipet the recommended volume (typically 50 to 100 microliters) of crystallization reagent from the Deep Well block into the reservoirs of the crystallization plate. The Deep Well block is compatible with 8 and 12 channel pipets as well as many au-

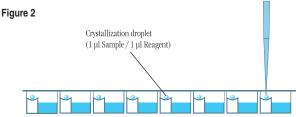


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tomated liquid handling systems. Use clean pipet tips for each reagent set transfer and change pipet tips when changing reagents. For an 8 channel pipet, transfer reagents A1-H1 to reservoirs A1-H1 of the crystallization plate. Repeat this procedure for reagent columns B through H. Change pipet tips when moving between reagent columns. For a 12 channel pipet, transfer reagents A1-A12 to reservoirs A1-A12 of the crystallization plate. Repeat this procedure for reagent rows 1 through 12. See Figure 1. Time and pipet tips can be conserved by batch pipetting multiple plates with the same (row or column) of reagent before changing reagent and pipet tips.



2. Using clean pipet tips, pipet 0.05 to 2 microliters of crystallization reagent from the crystallization plate reservoir to the sitting drop well. Some 96 well crystallization plates allow this procedure to be performed using a multichannel pipet where other plates require the use of a single channel pipet. Change the pipet tip between reagents. See Figure 2.



3. Using a clean pipet tip, pipet 0.05 to 2 microliters of sample to the reagent drop in the sitting drop well. One may choose to simply dispense the sample with no mixing or dispense with mixing by gently aspirating and dispensing the sample several times, keeping the tip in the drop during mixing to avoid foaming. Work carefully but quickly to minimize evaporation from the crystallization plate. See Figure 2 above.

4. Seal the crystallization plate as per the manufacturer's recommendation. Most 96 well crystallization plates are sealed using a clear sealing tape or film. View and score the experiment as desired. See Hampton Research technical bulletin Crystal Growth 101 - Viewing Crystallization Experiments for additional information on viewing drops.

5. Seal the remaining reagent in the Deep Well block using either clear sealing tape, film, or cap mat.

#### Manual Method - Micro Batch 96 well format

1. Using a 96 well clear polystyrene microplate (U-bottom recommended



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#### Figure 6

Typical observations in a crystallization experiment



Figure 3



Skin / Precipitate



Precipitate





Crystals



Microcrystals



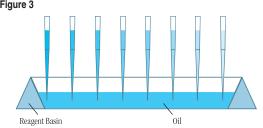




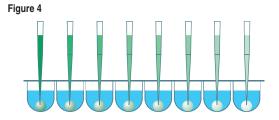




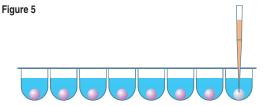
for best drop centering, flat-bottom recommended for best optics) pipet 50 to 150 microliters of microbatch compatible oil into each of the 96 reservoirs. This can be accomplished using an 8 or 12 channel pipet and pipetting the oil from a reagent basin. See Figure 3.



2. Once the plate is oiled, use an 8 or 12 channel pipet to aspirate reagent from the Deep Well block and dispense the reagent under the oil in the MicroBatch plate. Change tips when changing reagent to prevent cross reagent contamination. To save time and pipet tips, set multiple plates at one time. See Figure 4.



<sup>s</sup> 3. Using a single channel pipet, aspirate the sample and dispense the sample under oil in the MicroBatch plate. It is not necessary to dispense the sample drop into the reagent drop or mix the drops. See Figure 5.



4. After all reagent and sample drops have been dispensed to the MicroBatch plate, place the loose fitting clear cover on the MicroBatch plate and centrifuge the plate for 10 minutes at 500 rpm. Centrifugation will cause the drops to coalesce into a single drop.

Note: If the drops appear flat or is fragmented into multiple drops, the centrifugation speed is too high and the centrifugation time is too long - adjust to obtain a spherical single drop in the center of the well.

5. Store the plates with the loose fitting clear polystyrene cover and observe for crystals. See Hampton Research technical bulletin Crystal Growth 101 - Viewing Crystallization Experiments for additional information on viewing drops.

### Index HT Deep Well Block and Automated Liquid Handling Systems

The polypropylene Deep Well block is designed to be compatible with the SBS standard 96 microwell format and is therefore compatible with numerous automated liquid handling systems that accept 8x12 96 well assay blocks. Follow the manufacturer's recommendation for handling deep well microplates.

#### Examine the Drop

Carefully examine the drops under a stereo microscope (10 to 100x magnification) immediately after setting up the screen. Record all observations and be particularly careful to scan the focal plane for small crystals. Observe the drops once each day for the first week, then once a week there after. Records should indicate whether the drop is clear, contains precipitate, and or crystals. It is helpful to describe the drop contents using descriptive terms. Adding magnitude is also helpful. Example: 4+ yellow/brown fine precipitate, 2+ small bipyramid crystals, clear drop, 3+ needle shaped crystals in 1+ white precipitate. One may also employ a standard numerical scoring scheme (Clear = 0, Precipitate = 1, Crystal = 10, etc). Figure 6, on the left side of page 3 shows typical examples of what one might observe in a crystallization experiment.

#### Interpreting Index HT

Clear drops indicate that either the relative supersaturation of the sample and reagent is too low or the drop has not yet completed equilibration. If the drop remains clear after 3 to 4 weeks consider repeating the screen condition and doubling the sample concentration. If more than 70 of the 96 screen drops are clear consider doubling the sample concentration and repeating the entire screen.

Drops containing precipitate indicate either the relative super saturation of the sample and reagent is too high, the sample has denatured, or the sample is heterogeneous. To reduce the relative supersaturation, dilute the sample twofold and repeat the screen condition. If more than 70 of the 96 screen drops contain precipitate and no crystals are present, consider diluting the sample concentration in half and repeating the entire screen. If sample denaturation is suspect, take measures to



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stabilize the sample (add reducing agent, ligands, glycerol, salt, or other stabilizing agents). If the sample is impure, aggregated, or heterogeneous take measures to pursue homogeneity. It is possible to obtain crystals from precipitate so do not discard nor ignore a drop containing precipitate. If possible, examine drops containing precipitate under polarizing optics to differentiate precipitate from microcrystalline material.

If the drop contains a macromolecular crystal the relative supersaturation of the sample and reagent is appropriate for crystal nucleation and growth. The next step is to optimize the preliminary conditions (pH, salt type, salt concentration, precipitant type, precipitant concentration, sample concentration, temperature, additives, and other crystallization variables) which produced the crystal in order to improve crystal size and quality.

Compare the observations between the 4°C and room temperature incubation to determine the effect of temperature on sample solubility. Different results in the same drops at different temperatures indicate that sample solubility is temperature dependent and that one should include temperature as a variable in subsequent screens and optimization experiments.

Retain and observe plates until the drops are dried out. Crystal growth can occur within 15 minutes or one year.

#### Index HT Formulation

Crystallization reagents are formulated using the highest purity chemicals, ultrapure water (18.2 Megohm-cm, 5 ppb TOC) and are sterile filtered using 0.22 micron filters into sterile Deep Well blocks (no preservatives added).

Crystallization reagents are readily reproduced using Hampton Research Optimize<sup>™</sup> and StockOptions<sup>™</sup> stock solutions of salts, polymers and buffers. Optimize and StockOptions stock reagents make reproducing crystallization screen reagents accurate, precise, fast, convenient and easy. Dilutions can be performed directly into the crystallization plate using Optimize and StockOptions stock reagents.

Crystallization reagents containing buffers are formulated by creating a 1.0 M stock buffer, titrated to the desired pH using Hydrochloric acid or Sodium hydroxide. The buffer is then diluted with the other reagent components and water. No further pH adjustment is required.

Crystallization reagents are stable at room temperature and are best if used within 12 months of receipt. To enhance reagent stability it is strongly recommended that crystallization reagents be stored at 4°C or -20°C. Avoid ultraviolet light to preserve reagent stability.

If the sample contains phosphate, borate, or carbonate buffers it is possible to obtain inorganic crystals (false positives) when using crystallization reagents containing divalent cations such as magnesium, calcium, or zinc. To avoid false positives use phosphate, borate, or carbonate buffers at concentrations of 10 mM or less or exchange the phosphate, borate, or carbonate buffer with a more soluble buffer that does not complex with divalent cations.

#### **References and Readings**

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13. Chayen, N. et al, J. Appl. Cryst. (1990) 23, 297.

#### **Technical Support**

Inquiries regarding Index HT reagent formulation, interpretation of screen results, optimization strategies and general inquiries regarding crystallization are welcome. Please e-mail, fax, or telephone your request to Hampton Research. Fax and e-mail Technical Support are available 24 hours a day. Telephone technical support is available 8:00 a.m. to 4:30 p.m. USA Pacific Standard Time. Hampton Research

34 Journey Aliso Viejo, CA 92656-3317 U.S.A. Tel: (949) 425-1321 • Fax: (949) 425-1611 Technical Support e-mail: tech@hrmail.com Website: www.hamptonresearch.com

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# **Index HT Fundamentals**

### How to Reproduce Index HT Reagents

Index HT reagents and optimization conditions based on Index HT hits can be formulated using volumetric methods and carefully prepared reagent stocks (Table 1). Note the examples below.

**Example 1**. To prepare 1.0 milliliter of Index HT reagent 4 (A4) in a crystallization plate.

Solution Composition: 0.1 M BIS-TRIS pH 6.5 2.0 M Ammonium sulfate

- 329 µl water <sup>3</sup>
- 100 μl 1.0 M BIS-TRIS pH 6.5 (CAS # 6976-37-0, Catalog # HR2-783)
- 571 µl 3.5 M Ammonium sulfate (CAS # 7783-20-2, Catalog # HR2-541)

Make no pH adjustments. Mix well by aspirating and dispensing the solution multiple times.

**Example 2**. To prepare 1.0 milliliter of Index HT reagent 17 (B5). <u>Solution Composition</u>: 1.26 M Sodium phosphate monobasic monohydrate, 0.14 M Potassium phosphate dibasic, pH 5.6

- 650 µl water <sup>3</sup>
- 35 µl 4.0 M Potassium phosphate dibasic (CAS # 7758-11-4, Catalog # HR2-635)
- 315 µl 4.0 M Sodium phosphate monobasic monohydrate (CAS # 10049-21-5, Catalog # HR2-551)

Make no pH adjustments. Mix well. Final pH will be 5.6

**Example 3**. To prepare 10 milliliters of Index HT reagent 25 (C1). Solution Composition: 3.5 M Sodium formate pH 7.0

- 3.0 ml water <sup>3</sup>
- 7.0 ml 5.0 M Sodium formate pH 7.0 (CAS # 141-53-7, Catalog # HR2-765)

Make no pH adjustments. Mix well.

<sup>3</sup> ASTM Type II (laboratory grade) or Type III (analytical grade) water.

# Formulation Notes for Index HT Reagents

- 1. No additional pH adjustment is made to any reagent after formulation. Use the buffers in Table 1 to reproduce an Index HT reagent.
- 2. All Optimize solutions and screen reagents are sterile filtered using 0.22  $\,\mu m$  filters into sterile containers.

- 3. <u>Add water first</u> as this will help maintain the solubility of subsequently added reagents.
- 4. When formulating reagents using a pipet, add the largest volume last (except water). Use this larger volume setting to aspirate and dispense the reagent until the solution is mixed.
- 5. When formulating reagents using a pipet, use a clean, sterile pipet tip for <u>each</u> reagent added to the solution.
- 6. Use the buffers in Table 2 to systematically vary the pH as a crystallization variable.

### pH as a Crystallization Variable

The buffers listed in Table 2, can be used to vary the pH as a crystallization variable and are recommended when optimizing a crystal grown from an Index HT kit.

Optimize TM buffer stocks are supplied as a 100 milliliters sterile filtered solution. Optimize buffers are available as an acid-base pair or titrated to a specific pH.

StockOptions <sup>TM</sup> buffer kits contain 10 milliliters each of ready to pipet buffers, titrated in 0.1 pH increments over the indicated pH range. The number of reagents offered in a StockOptions buffer kit depends upon the pH range of the buffer. The broader the pH range, the more buffers in the kit.

### **Online Information**

Visit <u>www.hamptonresearch.com</u> and enter one of the following:

- Reagent Catalog Number
- Kit Catalog Number
- CAS Number
- Reagent Name

To obtain reagent specifications, pH titration tables, user guides, certificates of analysis, material safety data sheets (MSDS), and any other additional information.

# <u>MakeTray</u>™

MakeTray is a free, web based program at <u>www.hamptonresearch.com</u> which generates both a pipetting worksheet and a reagent formulation document for crystallization set ups. MakeTray allows one to enter general information about the sample and experiment, which is then printed on the pipet worksheet and the reagent formulation document. The plate size can be customized for any number of wells, so MakeTray works for: 24, 48, and 96 well plates. MakeTray is especially useful for the design and formulation of crystal optimization experiments.



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Table 1. Recommended reagents for the formulation of Index HT and Optimization reagents.

Each of these reagents are available as an Optimize<sup>TM</sup> crystallization grade reagent from Hampton Research. Table 1 provides the common chemical name, the Hampton Research catalog number, supplied stock concentration, the supplied volume, and the CAS number for each reagent. For more information on a specific Optimize reagent, go to

<u>www.hamptonresearch.com</u>. Using Search, enter either the catalog number, CAS number, or chemical name to obtain additional information for the Optimize reagent, including a Certificate of Analysis and MSDS (where applicable).

Salts	Hampton Research Catalog #	Supplied [ Stock ]	Supplied Volume	CAS #
Ammonium acetate	HR2-565	1.0 M	100 ml	631-61-8
	HR2-799	8.0 M	200 ml	631-61-8
Ammonium citrate tribasic pH 7.0	HR2-759	2.5 M	200 ml	3458-72-8
Ammonium sulfate	HR2-541	3.5 M	200 ml	7783-20-2
Ammonium tartrate dibasic pH 7.0	HR2-767	1.6 M	200 ml	3164-29-2
Cadmium chloride hydrate	HR2-715	1.0 M	100 ml	654054-66-7
Calcium chloride dihydrate	HR2-557	2.0 M	100 ml	10035-04-8
Cobalt(II) chloride hexahydrate	HR2-713	1.0 M	100 ml	7791-13-1
Lithium sulfate monohydrate	HR2-545	2.0 M	200 ml	10102-25-7
Magnesium chloride hexahydrate	HR2-559	2.0 M	100 ml	7791-18-6
	HR2-803	5.0 M	200 ml	7791-18-6
Magnesium formate dihydrate	HR2-537	1.0 M	200 ml	557-39-1
DL-Malic acid pH 7.0	HR2-761	3.0 M	200 ml	6915-15-7
Nickel(II) chloride hexahydrate	HR2-687	4.0 M	200 ml	7791-20-0
Potassium bromide	HR2-779	4.0 M	100 ml	7758-02-3
Potassium chloride	HR2-649	4.0 M	200 ml	7447-40-7
Potassium phosphate dibasic	HR2-635	4.0 M	200 ml	7758-11-4
Potassium sodium tartrate tetrahydrate	HR2-539	1.5 M	200 ml	6381-59-5
Potassium thiocyanate	HR2-695	8.0 M	200 ml	333-20-0
L-Proline	HR2-775	1.0 M	100 ml	147-85-3
Sodium acetate trihydrate pH 7.0	HR2-763	4.0 M	200 ml	6131-90-4
Sodium chloride	HR2-637	5.0 M	200 ml	7647-14-5
Sodium citrate tribasic dihydrate	HR2-549	1.6 M	200 ml	6132-04-3
Sodium formate	HR2-547	7.0 M	200 ml	141-53-7
Sodium formate pH 7.0	HR2-765	5.0 M	200 ml	141-53-7
Sodium malonate pH 7.0	HR2-707	3.4 M	200 ml	141-82-2
Sodium phosphate monobasic monohydrate	HR2-551	4.0 M	200 ml	10049-21-5
Succinic acid pH 7.0	HR2-709	1.2 M	200 ml	110-15-6
Tacsimate pH 7.0	HR2-755	100%	200 ml	N/A
Trimethylamine N-oxide dihydrate	HR2-777	1.0 M	100 ml	62637-93-8
Zinc acetate dihydrate	HR2-563	1.0 M	100 ml	5970-45-6





# **Index HT Fundamentals**

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Table 1 (Continued).	Recommended reagents for the formulation of Index HT and Optimization reagents.

Polymers	Hampton Research Catalog #	Supplied [Stock]	Supplied Volume	CAS #
Jeffamine ® M-600 ® pH 7.0	HR2-501	50% v/v	200 ml	77110-54-4
Jeffamine ® ED-2001 pH 7.0	HR2-597	50% w/v	200 ml	65605-36-9
Pentaerythritol propoxylate (5/4 PO/OH)	HR2-739	50% v/v	200 ml	9051-49-4
Pentaerythritol ethoxylate (15/4 EO/OH)	HR2-745	50% v/v	200 ml	30599-15-6
Polyethylene glycol P 400	HR2-771	100%	200 ml	25322-69-4
Poly(acrylic acid sodium salt) 5,100	HR2-773	50% w/v	200 ml	9003-04-7
Polyethylene glycol 1,500	HR2-525	50% w/v	200 ml	25322-68-3
Polyethylene glycol 3,350	HR2-527	50% w/v	200 ml	25322-68-3
Polyethylene glycol 8,000	HR2-535	50% w/v	200 ml	25322-68-3
Polyethylene glycol 10,000	HR2-607	50% w/v	200 ml	25322-68-3
Polyethylene glycol monomethyl ether 550	HR2-611	100%	200 ml	9004-74-4
Polyethylene glycol monomethyl ether 2,000	HR2-613	50% w/v	200 ml	9004-74-4
Polyethylene glycol monomethyl ether 5,000	HR2-615	50% w/v	200 ml	9004-74-4
Polyvinylpyrrolidone K 15	HR2-769	5% w/v	200 ml	9003-39-8
Organics (non-volatile)	Hampton Research Catalog #	Supplied [ Stock ]	Supplied Volume	CAS #
(+/-)-2-Methyl-2,4-pentanediol	HR2-627	100%	200 ml	107-41-5
Buffers	Hampton Research Catalog #	Supplied [Stock]	Supplied Volume	CAS #
BIS-TRIS pH 5.5 <sup>1</sup>	HR2-781	1.0 M	100 ml	6976-37-0
BIS-TRIS pH 6.5 <sup>1</sup>	HR2-783	1.0 M	100 ml	6976-37-0
Citric acid pH 3.5 <sup>2</sup>	HR2-757	1.0 M	100 ml	77-92-9
HEPES pH 7.0 <sup>2</sup>	HR2-785	1.0 M	100 ml	7365-45-9
HEPES pH 7.5 <sup>2</sup>	HR2-729	1.0 M	100 ml	7365-45-9
Sodium acetate trihydrate pH 4.5 <sup>1</sup>	HR2-789	1.0 M	100 ml	6131-90-4
Tris pH 8.5 <sup>1</sup>	HR2-725	1.0 M	100 ml	77-86-1
1	ng Hydrochloric acid g Sodium hydroxide			

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# **Index HT Fundamentals**

### Table 2. Recommended buffers for screening the pH of Index HT and Optimization reagents.

Buffer Solution <u>or</u> Kit	Hampton Research Catalog #	Supplied [ Stock ]	Supplied Volume	CAS #	pH range
StockOptions™ Bis-Tris kit <sup>4</sup>	HR2-106	1.0 M	10 ml each	6976-37-0	5.5 - 7.5
StockOptions™ Citric Acid kit <sup>4</sup>	HR2-104	1.0 M	10 ml each	77-92-9	2.2 - 6.5
HEPES <u>untitrated</u>	HR2-585	1.0 M	100 ml	7365-45-9	6.6 - 8.5
Titrate with NaOH	HR2-583	1.0 M	100 ml	1310-73-2	
StockOptions <sup>TM</sup> Hepes kit <sup>4</sup>	HR2-102	1.0 M	10 ml each	7365-45-9	6.8 - 8.2
Sodium acetate trihydrate <u>untitrated</u>	HR2-569	1.0 M	100 ml	6131-90-4	3.6 - 5.6
Titrate with HCl	HR2-581	1.0 M	100 ml	7647-01-0	
StockOptions™ Sodium Acetate kit <sup>4</sup>	HR2-233	1.0 M	10 ml each	6131-90-4	3.6 - 5.6
Tris <u>untitrated</u>	HR2-589	1.0 M	100 ml	77-86-1	7.0 - 9.0
Titrate with HCl	HR2-581	1.0 M	100 ml	7647-01-0	
StockOptions™ Tris kit <sup>4</sup>	HR2-100	1.0 M	10 ml each	77-86-1	7.0 - 9.0

<sup>4</sup> Individual StockOptions buffers titrated to any pH within the kit's pH range are available in 185 ml volumes from the Hampton Research Custom Shop

# Technical Support

Inquiries regarding Index HT Fundamentals, interpretation of screen results, optimization strategies and general inquiries regarding crystallization are welcome. Please e-mail, fax, or telephone your request to Hampton Research. Fax and e-mail Technical Support are available 24 hours a day. Telephone technical support is available 8:00 a.m. to 4:30 p.m. USA Pacific Standard Time.

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Well	Salt	Well	Buffer ◊	Well	Precipitant
#		#		#	
1. (A1)	None	1. (A1)	0.1 M Citric acid pH 3.5	1. (A1)	2.0 M Ammonium sulfate
2. (A2)	None	. ,	0.1 M Sodium acetate trihydrate pH 4.5	2. (A2)	2.0 M Ammonium sulfate 2.0 M Ammonium sulfate
3. (A3)	None	3. (A3)	0.1 M BIS-TRIS pH 5.5 0.1 M BIS-TRIS pH 6.5	3. (A3)	2.0 M Ammonium sulfate
4. (A4)	None None		0.1 M HEPES pH 7.5	4. (A4) 5. (A5)	2.0 M Ammonium sulfate
5. (A5) 6. (A6)	None	5. (A5) 6. (A6)	0.1 M Tris pH 8.5	5. (A5) 6. (A6)	2.0 M Ammonium sulfate
7. (A7)	None		0.1 M Citric acid pH 3.5	0. (A0) 7. (A7)	3.0 M Sodium chloride
8. (A8)	None		0.1 M Sodium acetate trihydrate pH 4.5	8. (A8)	3.0 M Sodium chloride
9. (A9)	None	. ,	0.1 M BIS-TRIS pH 5.5	9. (A9)	3.0 M Sodium chloride
10. (A10)		· · ·	0.1 M BIS-TRIS pH 6.5		3.0 M Sodium chloride
11. (A11)		. ,	0.1 M HEPES pH 7.5		3.0 M Sodium chloride
12. (A12)		, ,	0.1 M Tris pH 8.5		3.0 M Sodium chloride
13. (B1)			0.1 M BIS-TRIS pH 5.5	13. (B1)	
14. (B2)	None		0.1 M BIS-TRIS pH 6.5	14. (B2)	0.5 M Magnesium formate dihydrate
15. (B3)	None	. ,	0.1 M HEPES pH 7.5	15. (B3)	0.5 M Magnesium formate dihydrate
16. (B4)	None	, ,	0.1 M Tris pH 8.5	16. (B4)	0.3 M Magnesium formate dihydrate
17. (B5)	None	( )	None - pH 5.6	17. (B5)	1.26 M Sodium phosphate monobasic monohydrate,
		()		(=•)	0.14 M Potassium phosphate dibasic
18. (B6)	None	18. (B6)	None - pH 6.9	18. (B6)	0.49 M Sodium phosphate monobasic monohydrate,
		- ( - )		- ( - )	0.91 M Potassium phosphate dibasic
19. (B7)	None	19. (B7)	None - pH 8.2	19. (B7)	0.056 M Sodium phosphate monobasic monohydrate,
		- ( )		- ( )	1.344 M Potassium phosphate dibasic
20. (B8)	None	20. (B8)	0.1 M HEPES pH 7.5	20. (B8)	1.4 M Sodium citrate tribasic dihydrate
21. (B9)	None	21. (B9)		21. (B9)	1.8 M Ammonium citrate tribasic pH 7.0
22. (B10)		22. (B10)			0.8 M Succinic acid pH 7.0
23. (B11)		23. (B11)			2.1 M DL-Malic acid pH 7.0
24. (B12)		24. (B12)	None		2.8 M Sodium acetate trihydrate pH 7.0
25. (C1)		25. (C1)		25. (C1)	
26. (C2)	None	26. (C2)	None	26. (C2)	1.1 M Ammonium tartrate dibasic pH 7.0
27. (C3)	None	27. (C3)	None	27. (C3)	2.4 M Sodium malonate pH 7.0
28. (C4)	None	28. (C4)	None	28. (C4)	35% v/v Tacsimate pH 7.0
29. (C5)	None	29. (C5)	None	29. (C5)	60% v/v Tacsimate pH 7.0
30. (C6)	0.1 M Sodium chloride	30. (C6)	0.1 M BIS-TRIS pH 6.5	30. (C6)	1.5 M Ammonium sulfate
31. (C7)	0.8 M Potassium sodium tartrate tetrahydrate	31. (C7)	0.1 M Tris pH 8.5	31. (C7)	0.5% w/v Polyethylene glycol monomethyl ether 5,000
32. (C8)	1.0 M Ammonium sulfate	32. (C8)	0.1 M BIS-TRIS pH 5.5	32. (C8)	1% w/v Polyethylene glycol 3,350
33. (C9)	1.1 M Sodium malonate pH 7.0	33. (C9)	0.1 M HEPES pH 7.0	33. (C9)	0.5% v/v Jeffamine® ED-2001 pH 7.0
	1.0 M Succinic acid pH 7.0	· · ·	0.1 M HEPES pH 7.0	· · ·	1% w/v Polyethylene glycol monomethyl ether 2,000
	1.0 M Ammonium sulfate	35. (C11)	0.1 M HEPES pH 7.0		0.5% w/v Polyethylene glycol 8,000
36. (C12)	15% v/v Tacsimate pH 7.0	36. (C12)	0.1 M HEPES pH 7.0	36. (C12)	2% w/v Polyethylene glycol 3,350
37. (D1)	None	37. (D1)		37. (D1)	25% w/v Polyethylene glycol 1,500
38. (D2)	None	· · /	0.1 M HEPES pH 7.0	38. (D2)	30% v/v Jeffamine <sup>®</sup> M-600 <sup>®</sup> pH 7.0
39. (D3)	None	( )	0.1 M HEPES pH 7.0	39. (D3)	30% v/v Jeffamine® ED-2001 pH 7.0
40. (D4)		. ,	0.1 M Citric acid pH 3.5	40. (D4)	25% w/v Polyethylene glycol 3,350
41. (D5)	None	, ,	0.1 M Sodium acetate trihydrate pH 4.5	41. (D5)	25% w/v Polyethylene glycol 3,350
42. (D6)	None	. ,	0.1 M BIS-TRIS pH 5.5	42. (D6)	25% w/v Polyethylene glycol 3,350
43. (D7)	None		0.1 M BIS-TRIS pH 6.5	43. (D7)	25% w/v Polyethylene glycol 3,350
44. (D8)	None	, ,	0.1 M HEPES pH 7.5	44. (D8)	25% w/v Polyethylene glycol 3,350
45. (D9)	None	, ,	0.1 M Tris pH 8.5	45. (D9)	25% w/v Polyethylene glycol 3,350
46. (D10)		, ,	0.1 M BIS-TRIS pH 6.5		20% w/v Polyethylene glycol monomethyl ether 5,000
47. (D11)		, ,	0.1 M BIS-TRIS pH 6.5		28% w/v Polyethylene glycol monomethyl ether 2,000
48. (D12)	0.2 M Calcium chloride dihydrate	48. (D12)	0.1 M BIS-TRIS pH 5.5	48. (D12)	45% v/v (+/-)-2-Methyl-2,4-pentanediol

 Buffer pH is that of a 1.0 M stock prior to dilution with other reagent components: pH with HCl or NaOH.

Index HT contains ninety-six unique reagents. To determine the formulation of each reagent, simply read across the page.



Vin         Salt         Vini         Buffer         Vini         Precipitat           4511         0.2.1.4.Cabium chloride singlotate         51.0.2         0.1.1.4.BISTR105 / 15.5.         50.0.2         45.0.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4	паех п	1				HR2-134 Reagent Formulation
501E0         0.2 M Ammonium acetate         501E3         511E3         621 w/u (+r)-2-thermatedia           511E3         0.2 M Ammonium acetate         511E3         611E         611E<		Salt		Buffer ◊		Precipitant
501E0         0.2 M Ammonium acetate         501E3         511E3         621 w/u (+r)-2-thermatedia           511E3         0.2 M Ammonium acetate         511E3         611E         611E<	49.(E1)	0.2 M Calcium chloride dihvdrate	49.(E1)	0.1 M BIS-TRIS pH 6.5	49.(E1)	45% v/v (+/-)-2-Methvl-2.4-pentanediol
51.E3       0.2 M Ammonium acetate       51.E3       0.1 M BIS-TRIS pH 6.5       51.E3       04% wt (+;-2-Adethy-2-Apentanediol         52.E4       0.2 M Ammonium acetate       52.E5       0.1 M Tise pH 8.5       52.E6       0.5 % wt (+;-2-Adethy-2-Apentanediol         54.E5       0.05 M Magnesium chioride havahydrate       54.E5       0.5 M Magnesium chioride havahydrate       54.E5       0.5 M Magnesium chioride       56.E7       0.1 M HEPES PH 7.5       58.E7       0.9 % wt Polyterphylica disodium satist       57.E9       0.05 % wt Polyterphylica disodium satist       57.E9       0.05 % wt Polyterphylica disodium satist       51.07       98.E11       0.02 M Magnesium chioride havahydrate       60.1F1       0.1 M Tise PH 8.5       58.E10       95% wt Polyterphylica disodium satist       5.00         60.E17       0.0 M Cobalt(1) chioride havahydrate       61.F7       0.1 M Tise PH 8.5       62.F7       20% wt Polyterphylica diyodi aloxine their 2.000         62.F7       0.2 M Timetrylamine Noxide diydrate       63.F6       0.1 M HEPES PH 7.5       64.F4       12% wt Polyterphylica glycol nononnethyl ether 2.000       64.F4       12% wt Pol		,				
52 (E9)         0.2 M Ammonium aostatie         52, (E9)         0.4 SW, Wi (+2)-AdMith/2.4-pentanediol           53 (E9)         0.2 M Ammonium aostatie         53, (E9)         0.1 M Tisp H 8.5         53, (E9)         0.3 SW, Wi Polyshylane glycol monomethyl ether 550           56, (E7)         0.05 M Galsium chloride haxahydrate         56, (E7)         0.1 M HEPES pH 7.5         56, (E7)         0.05 W Ammonium aostatie         57, (E7)         0.05 M Ammonium aostatie         57, (E7)         0.05 W Ammonium aostatie         57, (E7)         0.05 M Ammonium aostatie         57, (E7)         0.05 M Ammonium aostatie         57, (E7)         0.05 W Polytopylore glocal adsodim anally 5, 100           59, (E11)         0.02 M Magnesium chloride heaxhydrate         50, (E11)         0.1 M HEPES pH 7.5         50, (E11)         0.25 W VPolytopylore glocal adsodim anally 5, 100           50, (E12)         0.04 M Poline         61, (F1)         0.1 M HEPES pH 7.5         50, (E11)         0.25 W VPolytopylore glocal adsodim anally 5, 100           51, (F1)         0.04 M Poline         61, (F1)         0.1 M HEPES pH 7.5         61, (F1)         0.05 W No         No         No         No         No         No         No         No         No <t< td=""><td></td><td>0.2 M Ammonium acetate</td><td>. ,</td><td></td><td>( )</td><td></td></t<>		0.2 M Ammonium acetate	. ,		( )	
53. [E)         0.2 M Ammonium acetate         53. [E)         0.4 M Ammonium acetate         54. [E)         0.1 M Mispersity of M Signal Signa Signal Signal Signal Signal Signal Signal Signal Signal						
94.163         0.05 M Cabicum chloride dihydrate         54.169         0.05 M Magnesium chloride hearlydrate         56.17         0.05 M Magnesium chloride hearlydrate         56.17         0.05 M Magnesium chloride hearlydrate         56.17         0.05 M Ammonium sultate         57.129         0.05 M IEPES pH 7.5         56.180         35%. vv Polytetylene glycol monomethyl ether 550           56.17         0.05 M Ammonium sultate         57.129         0.05 M IEPES pH 7.5         56.180         35%. vv Polytetylene glycol Monomethyl ether 550           56.17         0.24 M Agnesium chloride hearlydrate         66.121         0.1 M BIS-TRIS pH 6.5         58.1210         20%. vv Polytetylene glycol Monomethyl ether 550           56.17         0.24 M L-Poilane         60.1210         0.1 M BIS-TRIS pH 5.5         66.121         20%. vv Polytetylene glycol monomethyl ether 500           67.17         0.24 M L-Poilane         62.123         0.1 M HEPES pH 7.5         66.171         10%. vv Polytetylene glycol monomethyl ether 500           67.167         0.24 M L-Poilane         62.171         0.1 M HEPES pH 7.5         66.171         10%. vv Polytetylene glycol 3.350           67.167         0.24 M L-Poilane         62.171         0.1 M HEPES pH 7.5         66.1761         10%. vv Polytetylene glycol 3.350           67.167         0.24 M Ammonium sultate         66.1761         0.1 M HIST PH 5.5						
55       CP       0.1 M HEPES pH 7.5       55       CP       0.1 M HEPES pH 7.5       55       CP       0.05 M Amonium sulfate       56       CF       0.1 M HEPES pH 7.5       56       CF       0.05 M Amonium sulfate       57       CF       0.05 M Amonium sulfate       57       CF       0.05 M HEPES pH 7.5       58       CF       0.01 M HEPES pH 7.5       68       CF       0.00 M Loging phyrrolitonid solutian with 61 monitor mitorid headshydrate       CC       CF       0.01 M HEPES pH 7.5       CF       CF       0.01 M HEPES pH 7.5       CF       CF       0.01 M HEPES pH 7.5       CF       CF       CF       CF       CF       CF       0.1 M HEPES pH 7.5       CF       CF       CF       CF       CF       CF       C						
66 (E9)         0.4 M Potassium chloride         56 (E9)         0.05 M LEPES pH 7.5         56 (E9)         0.05 W Pertaerythritic jeroopytale (54 POO(H)           57 (E9)         0.05 M Ammonium sultate         57 (E9)         0.05 W Pertaerythritic jeroopytale (54 POO(H)           58 (E10)         0.1 M BIS-TRIS pH 6.5         57 (E9)         0.05 W Pertaerythritic jeroopytale (54 POO(H)           58 (E11)         0.24 M Agnesium chloride hexalrydrate         60 (E12)         0.1 M Tisp Hs 5         58 (E11)         22% W Polyatrythica et JS 00           61 (F1)         0.2 M L-Poline         60 (E12)         0.1 M Tisp Hs 5         67 (F3)         20% W Polyatrythica glycol 3.350           62 (F2)         0.2 M Timethylamine N-oxide dihydrate,         64 (F4)         0.1 M HEPES pH 7.5         66 (F3)         10% W Polyatrytine glycol 3.350           64 (F4)         0.005 M Cabatility chloride hexalrytrate,         0.01 M HEPES pH 7.5         66 (F5)         11 M BiS-TRIS pH 5.5         66 (F5)         17% W Polyatrytine glycol 3.350           66 (F5)         0.1 M Ammonium sultate         67 (F7)         0.1 M BIS-TRIS pH 5.5         67 (F7)         25% W Polyatrytine glycol 3.350           67 (F7)         0.2 M Ammonium sultate         67 (F7)         0.1 M BIS-TRIS pH 5.5         67 (F7)         25% W Polyatrytine glycol 3.350           67 (F7)         0.2 M Ammonium sulta						
57. (E9)         0.05 M Ammonium sultate         57. (E9)         0.06 M BIS-TRIS pH 6.5         57. (E9)         0.05 W Polymopying glycal P 40           58. (E10)         0.02 M Magnesium chloride hexahydrate         58. (E10)         0.1 M BIS-TRIS pH 6.5         58. (E11)         22% wV Polytacrylic acid sodium sall) 5.100           60. (E12)         0.1 M M EPES pH 7.5         59. (E11)         10% wV Polytacrylic acid sodium sall) 5.100           61. (F10)         0.2 M Vinzening P 4.0         61. (F1)         0.1 M HEPES pH 7.5         61. (F1)         10% wV Polytacrylic acid sodium sall) 5.100           62. (F2)         0.1 M HIEPES pH 7.5         62. (F2)         20% WV Polytacrylic aglycal monomethyl ether 5.000           64. (F4)         0.005 M Cadmium chloride havalrydrate         63. (F3)         0.1 M HEPES pH 7.5         66. (F5)         17% wV Polytacryline glycal 3.350           65. (F5)         0.2 M Ammonium sultate         66. (F6)         0.1 M HEPES pH 7.5         66. (F5)         17% wV Polytacryline glycal 3.350           66. (F6)         0.2 M Ammonium sultate         67. (F7)         0.1 M BIS-TRIS pH 5.5         66. (F5)         17% wV Polytacryline glycal 3.350           67. (F7)         0.2 M Ammonium sultate         67. (F7)         0.1 M BIS-TRIS pH 5.5         77. (F1)         25% wV Polytacryline glycal 3.350           71. (F1)         0.1 M BIS-TRIS pH	,			-	( )	
58. (E10)         None         58. (E10)         0.02 M Agnesium childs backhydrate         59. (E11)         0.14 M EPES pH 7.5         59. (E11)         22% wiV Poly(acg)(ac add acdum salt) 5.100           50. (E12)         0.01 M Cobatt(II) childs backhydrate         50. (E11)         0.14 M EPES pH 7.5         60. (E12)         20% wiV Poly(acg)(ac add acdum salt) 5.100           60. (E12)         0.01 M Tics pH 6.5         60. (E12)         20% wiV Poly(acg)(ac add acdum salt) 5.100           60. (E12)         0.01 M Tics pH 6.5         60. (E12)         20% wiV Poly(acg)(ac add acdum salt) 5.100           60. (F12)         0.05 M Nockel III) childs backhydrate         62. (F2)         0.1 M HEPES pH 7.5         61. (F1)         10% wiV Poly(acg)(ac add acdum salt) 5.100           60. (F5)         0.1 M Ammonium sultate         65. (F5)         0.1 M HEPES pH 7.5         64. (F4)         12% wiV Poly(acg)(ac add acdum salt) 5.100           66. (F5)         0.1 M Marchilds hackhydrate         65. (F5)         0.1 M HEPES pH 7.5         65. (F5)         25% wiV Poly(acg)(ac add acdum salt) 5.100           66. (F7)         0.2 M Armonium sultate         66. (F6)         0.1 M HEPES pH 7.5         68. (F8)         25% wiV Poly(acg)(ac add acdum salt) 5.100           66. (F7)         0.2 M Armonium sultate         68. (F9)         0.1 M HEPES pH 7.5         76. (F7)         25% wiV Poly(acg)(ac add acdum				-		
59. [E11]         0.22 M Magnesium chloride hexahydrate         69. [E12]         0.1 M Tirs pH 8.5         60. [E12]         20% wV Polycinylepyrrolidone K 15           60. [E12]         0.2 M Linerollydine R 10% or 20% wV Polycinylepyrrolidone K 15         60. [E12]         20% wV Polycinylepyrrolidone K 15           62. [F2]         0.2 M Tirnertylamine N-oxide dihydrate         60. [E12]         0.1 M Tirs pH 8.5         62. [F2]         0.05 W Polycinylepyrrolidone K 15           63. [F3]         5% vV Toscimate pH 7.0         63. [F4]         0.1 M HEPES pH 7.5         64. [F4]         0.005 M Cobalt(II) chloride hexahydrate, 0.005 M Magnesium chloride hexahydrate, 0.005 M Magnesium chloride hexahydrate         64. [F4]         0.1 M HEPES pH 7.5         64. [F4]         1.0 M Ammonium sultate         65. [F5]         0.1 M BIS-TRIS pH 5.5         65. [F5]         17% wV Polyethylene glycol 3.350           66. [F6]         0.2 M Armonium sultate         66. [F6]         0.1 M BIS-TRIS pH 5.5         67. [F7]         25% wV Polyethylene glycol 3.350           67. [F7]         0.2 M Armonium sultate         66. [F6]         0.1 M BIS-TRIS pH 5.5         67. [F7]         25% wV Polyethylene glycol 3.350           68. [F9]         0.2 M Armonium sultate         68. [F9]         0.1 M BIS-TRIS pH 5.5         77. [F1]         25% wV Polyethylene glycol 3.350           71. [F11]         0.2 M Sodium chloride         77. [F1]						
60. [E12]         0.01 M Cobalt(II) chirdle hexalydrate         60. [E12]         0.1 M Tis pH 8.5         60. [E12]         20% w/ Polyethylene glycol 3,350           61. [F1]         0.2 M Trimethylamine N-oxide dihydrate         62. [F2]         0.1 M Tis pH 8.5         61. [F1]         10% w/ Polyethylene glycol monomethyl ether 2,000           63. [F3]         5% w/ Tassimate pH 7.0         63. [F3]         10% w/ Polyethylene glycol monomethyl ether 2,000           64. [F4]         0.005 M Cobalt(II) chirolde hexalydrate,         63. [F3]         10% w/ Polyethylene glycol 3,350           60. [F5]         0.01 M Amnonium acetate         66. [F6]         0.1 M BIS-TRIS pH 5.5         66. [F6]         25% w/ Polyethylene glycol 3,350           66. [F6]         0.2 M Amnonium sultate         66. [F6]         0.1 M BIS-TRIS pH 5.5         67. [F7]         25% w/ Polyethylene glycol 3,350           67. [F7]         0.2 M Amnonium sultate         69. [F9]         0.1 M HIS-TRIS pH 5.5         70. [F10]         25% w/ Polyethylene glycol 3,350           68. [F9]         0.2 M Amnonium sultate         69. [F9]         0.1 M HIS-TRIS pH 5.5         70. [F10]         25% w/ Polyethylene glycol 3,350           70. [F10]         0.2 M Sodium chioride         71. [F11]         0.1 M BIS-TRIS pH 5.5         71. [F11]         25% w/ Polyethylene glycol 3,350           72. [F12]         0.2 M Sodiu						
61.(F1)         0.2 M L-Polina <sup>1</sup> 61.(F1)         0.1 M HEPES pH 7.5         61.(F1)         0.1 M HEPES pH 7.5         62.(F2)         20% wV Polyethylene glycol 3.350           62.(F2)         0.2 M Trimethylamine N-oxide dihydrate         62.(F2)         0.1 M HEPES pH 7.5         62.(F2)         20% wV Polyethylene glycol monomethyl ether 5.000           64.(F4)         0.05 M Coball(I) chloride hexathydrate, 0.005 M Kokel(I) chloride hexathydrate, 0.005 M Magnesium chloride hydrate, 0.005 M Magnesium chloride hexathydrate         66.(F5)         0.1 M HEPES pH 7.5         66.(F6)         12% wV Polyethylene glycol 3.350           66.(F6)         0.1 M Ammonium sulfate         66.(F5)         0.1 M BIS-TRIS pH 5.5         66.(F6)         17% wV Polyethylene glycol 3.350           67.(F7)         0.2 M Ammonium sulfate         69.(F9)         0.1 M HEPES pH 7.5         68.(F6)         25% wV Polyethylene glycol 3.350           68.(F8)         0.2 M Ammonium sulfate         69.(F9)         0.1 M HEPES pH 7.5         68.(F9)         25% wV Polyethylene glycol 3.350           70.(F10)         0.1 M HEPES pH 7.5         68.(F9)         25% wV Polyethylene glycol 3.350         3350           71.(F11)         0.1 M HEPES pH 7.5         68.(F9)         25% wV Polyethylene glycol 3.350         3350           71.(F11)         0.1 M HEPES pH 7.5         77.(F10)         25% wV Polyethylene glycol 3.350 </td <td></td> <td></td> <td></td> <td></td> <td>. ,</td> <td></td>					. ,	
62. (F2)         0.2 M Timetrylamine N-oxide dihydrate         62. (F2)         0.1 M Tris pH 8.5         62. (F2)         20% wV Polyethylene glycol monomethyl ether 2,000           63. (F3)         0.005 M Cobattill chloride hexahydrate,         0.005 M Cobattill chloride hexahydrate,         0.005 M Magnesium chloride hydrate,         0.1 M HEPES pH 7.5         63. (F3)         10% wV Polyethylene glycol 10,000           66. (F5)         0.1 M Amnonium acetate         65. (F5)         0.1 M BIS-TRIS pH 5.5         66. (F6)         25% wV Polyethylene glycol 3,350           66. (F7)         0.2 M Amnonium sulfate         66. (F7)         0.1 M BIS-TRIS pH 5.5         66. (F6)         25% wV Polyethylene glycol 3,350           68. (F7)         0.2 M Amnonium sulfate         67. (F7)         0.1 M BIS-TRIS pH 5.5         77. (F1)         25% wV Polyethylene glycol 3,350           68. (F7)         0.2 M Amnonium sulfate         69. (F9)         0.1 M HEPES pH 7.5         68. (F6)         25% wV Polyethylene glycol 3,350           70. (F10)         0.2 M Sodium chloride         71. (F11)         0.1 M HEPES pH 7.5         72. (F12)         25% wV Polyethylene glycol 3,350           72. (F12)         0.2 M Sodium chloride         72. (F12)         0.1 M HEPES pH 7.5         72. (F12)         25% wV Polyethylene glycol 3,350           73. (G1)         0.2 M Sodium chloride         72. (F12)         0	. ,				, ,	
63. (F3)         5% w/ Tassimate pH 7.0         63. (F3)         0.1 M HEPES pH 7.0         63. (F3)         10% w/v Polyethylene glycol monomethyl ether 5,000           64. (F4)         0.005 M Cobalt(II) chloride hexahydrate, 0.005 M Cadmium chloride hexahydrate         64. (F4)         0.1 M HEPES pH 7.5         64. (F5)         12% w/v Polyethylene glycol 1,350           65. (F5)         0.1 M Ammonium aceltate         66. (F7)         0.1 M BIS-TRIS pH 5.5         65. (F5)         12% w/v Polyethylene glycol 1,350           66. (F6)         0.2 M Ammonium sulfate         66. (F7)         0.1 M BIS-TRIS pH 5.5         66. (F6)         25% w/v Polyethylene glycol 3,350           68. (F8)         0.2 M Ammonium sulfate         69. (F7)         0.1 M BIS-TRIS pH 6.5         70. (F7)         25% w/v Polyethylene glycol 3,350           68. (F8)         0.2 M Ammonium sulfate         69. (F9)         0.1 M Tis pH 8.5         69. (F9)         25% w/v Polyethylene glycol 3,350           70. (F10)         0.2 M Sodium chloride         71. (F11)         0.1 M MIS TRIS pH 6.5         71. (F11)         22% w/v Polyethylene glycol 3,350           72. (F12)         0.2 M Sodium chloride         73. (G1)         0.1 M HEPES pH 7.5         72. (F12)         25% w/v Polyethylene glycol 3,350           73. (G1)         0.2 M Sodium chloride         73. (G1)         0.1 M HEPES pH 7.5         73. (G1)				-		
64. (F4)         0.005 M Cobalt(I) chloride hexahydrate, 0.005 M Nickel(II) chloride hexahydrate, 0.005 M Magnesium chloride hydrate, 0.005 M Ammonium acetate         65. (F5)         1.1 M HEPES pH 7.5         66. (F5)         1.7% wiv Polyethylene glycol 10,000           66. (F6)         0.2 M Ammonium acetate         66. (F6)         0.1 M BIS-TRIS pH 5.5         66. (F5)         25% wiv Polyethylene glycol 3,350           67. (F7)         0.2 M Ammonium sulfate         67. (F7)         0.1 M BIS-TRIS pH 5.5         66. (F6)         25% wiv Polyethylene glycol 3,350           68. (F8)         0.2 M Ammonium sulfate         67. (F7)         0.1 M BIS-TRIS pH 5.5         77. (F1)         25% wiv Polyethylene glycol 3,350           69. (F9)         0.2 M Ammonium sulfate         69. (F9)         0.1 M Tisp H 8.5         70. (F10)         25% wiv Polyethylene glycol 3,350           70. (F10)         0.2 M Sodium chloride         71. (F11)         0.1 M BIS-TRIS pH 5.5         70. (F10)         25% wiv Polyethylene glycol 3,350           74. (G2)         0.2 M Sodium chloride         72. (F12)         0.1 M BIS-TRIS pH 5.5         71. (F11)         25% wiv Polyethylene glycol 3,350           74. (G2)         0.2 M Lithium sulfate monohydrate         74. (G2)         0.1 M HEPES pH 7.5         72. (F12)         25% wiv Polyethylene glycol 3,350           74. (G2)         0.2 M Lithium sulfate monohydrate         73.					. ,	
0.005 M Mickel(III) chloride hexahydrate,         0.005 M Cadmium chloride hydrate,           65.(F5)         0.1 M Ammonium acetate         65.(F5)         0.1 M Ammonium acetate         65.(F5)         1.1 M BIS-TRIS pH 5.5         66.(F5)         25% wiv Polyethylene glycol 3,350           66.(F6)         0.2 M Ammonium sulfate         67.(F7)         0.1 M BIS-TRIS pH 5.5         66.(F6)         25% wiv Polyethylene glycol 3,350           67.(F7)         0.2 M Ammonium sulfate         68.(F6)         0.1 M HEPES pH 7.5         68.(F8)         25% wiv Polyethylene glycol 3,350           68.(F8)         0.2 M Ammonium sulfate         68.(F6)         0.1 M HEPES pH 7.5         60.(F9)         25% wiv Polyethylene glycol 3,350           70.(F10)         0.2 M Sodium chloride         70.(F10)         0.1 M BIS-TRIS pH 5.5         70.(F10)         25% wiv Polyethylene glycol 3,350           73.(G1)         0.2 M Sodium chloride         71.(F11)         0.1 M BIS-TRIS pH 5.5         73.(G1)         25% wiv Polyethylene glycol 3,350           73.(G1)         0.2 M Sodium chloride         73.(G1)         0.1 M HIS-TRIS pH 5.5         73.(G1)         25% wiv Polyethylene glycol 3,350           73.(G1)         0.2 M Lithium sulfate monohydrate         74.(G2)         0.1 M HIS-TRIS pH 5.5         73.(G1)         25% wiv Polyethylene glycol 3,350           74.(G2)         0.2 M						
0.005 M Cadmium chloride hydrate           0.005 M Magnesium chloride hydrate           65.(F5)         0.1 M BIS-TRIS pH 5.5         65.(F5)         1.7% wiv Polyethylene glycol 3.350           66.(F6)         0.2 M Ammonium sulfate         66.(F6)         0.1 M BIS-TRIS pH 5.5         66.(F6)         25% wiv Polyethylene glycol 3.350           67.(F7)         0.2 M Ammonium sulfate         67.(F7)         0.1 M BIS-TRIS pH 5.5         60.(F6)         25% wiv Polyethylene glycol 3.350           68.(F8)         0.2 M Ammonium sulfate         69.(F9)         0.1 M HEPES pH 7.5         62.(F9)         25% wiv Polyethylene glycol 3.350           70.(F10)         0.2 M Ammonium sulfate         69.(F9)         0.1 M BIS-TRIS pH 5.5         70.(F10)         25% wiv Polyethylene glycol 3.350           70.(F10)         0.2 M Sodium chloride         71.(F11)         0.1 M BIS-TRIS pH 5.5         72.(F21)         25% wiv Polyethylene glycol 3.350           73.(G1)         0.2 M Sodium chloride         73.(G1)         0.1 M BIS-TRIS pH 5.5         73.(G2)         25% wiv Polyethylene glycol 3.350           74.(G2)         0.2 M BIS-TRIS pH 5.5         74.(G2)         25% wiv Polyethylene glycol 3.350           74.(G2)         0.2 M BIS-TRIS pH 5.5         74.(G2)         25% wiv Polyethylene glycol 3.350           73.(G3)         0.2 M Lithium sulfate monohydrate <td>01.(11)</td> <td></td> <td>01.(1-1)</td> <td></td> <td>01.(1-1)</td> <td>12 /8 W/V T Olyettiylene giycol 3,000</td>	01.(11)		01.(1-1)		01.(1-1)	12 /8 W/V T Olyettiylene giycol 3,000
0.005 M Magnesium chloride hexahydrate         65. (F5)         0.1 M Ammonium acetate         65. (F6)         0.1 M BIS-TRIS pH 5.5         65. (F6)         25% w/v Polyethylene glycol 3,350           66. (F6)         0.2 M Ammonium sulfate         66. (F6)         0.1 M BIS-TRIS pH 6.5         67. (F7)         25% w/v Polyethylene glycol 3,350           68. (F8)         0.2 M Ammonium sulfate         68. (F8)         0.1 M HEPES pH 7.5         68. (F8)         25% w/v Polyethylene glycol 3,350           70. (F10)         0.2 M Sodium chloride         70. (F10)         0.1 M BIS-TRIS pH 6.5         71. (F11)         25% w/v Polyethylene glycol 3,350           70. (F10)         0.2 M Sodium chloride         70. (F10)         0.1 M BIS-TRIS pH 6.5         71. (F11)         25% w/v Polyethylene glycol 3,350           72. (F12)         0.1 M BIS-TRIS pH 8.5         70. (F10)         25% w/v Polyethylene glycol 3,350           73. (G1)         0.2 M Sodium chloride         72. (F12)         0.1 M BIS-TRIS pH 5.5         74. (G2)         25% w/v Polyethylene glycol 3,350           74. (G2)         0.2 M Lithium sulfate monohydrate         76. (G3)         0.1 M BIS-TRIS pH 5.5         74. (G2)         25% w/v Polyethylene glycol 3,350           76. (G4)         0.2 M Lithium sulfate monohydrate         76. (G4)         0.1 M BIS-TRIS pH 5.5         77. (G3)         25% w/v Polyethylene glycol 3,350 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
66. (F5)       0.1 M Ammonium acetate       66. (F5)       0.1 M BIS-TRIS pH 5.5       66. (F5)       17% w/v Polyethylene glycol 10,000         67. (F7)       0.2 M Ammonium sulfate       66. (F6)       0.2 M Ammonium sulfate       67. (F7)       0.1 M BIS-TRIS pH 5.5       67. (F7)       0.5% w/v Polyethylene glycol 3,350         68. (F8)       0.2 M Ammonium sulfate       68. (F8)       0.1 M HEPES pH 7.5       68. (F8)       25% w/v Polyethylene glycol 3,350         70. (F10)       0.2 M Sodium chloride       70. (F10)       0.1 M BIS-TRIS pH 5.5       70. (F11)       25% w/v Polyethylene glycol 3,350         71. (F11)       0.2 M Sodium chloride       71. (F11)       0.1 M BIS-TRIS pH 5.5       71. (F11)       25% w/v Polyethylene glycol 3,350         72. (F12)       0.2 M Sodium chloride       72. (F12)       0.1 M HEPES pH 7.5       72. (F12)       25% w/v Polyethylene glycol 3,350         73. (G1)       0.2 M Sodium chloride       73. (G1)       0.1 M HEPES pH 7.5       73. (G1)       25% w/v Polyethylene glycol 3,350         74. (G2)       0.2 M Lithium sulfate monohydrate       74. (G2)       0.1 M BIS-TRIS pH 6.5       77. (G2)       25% w/v Polyethylene glycol 3,350         76. (G4)       0.1 M HEPES pH 7.5       76. (G4)       25% w/v Polyethylene glycol 3,350       350         76. (G3)       0.2 M Lithium sulfate monohydra						
66.(F6)         0.2 M Ammonium sultate         66.(F6)         0.1 M BIS-TRIS pH 5.5         66.(F6)         25% wiv Polyethylene glycol 3,350           67.(F7)         0.2 M Ammonium sultate         67.(F7)         0.1 M BIS-TRIS pH 6.5         67.(F7)         25% wiv Polyethylene glycol 3,350           68.(F6)         0.2 M Ammonium sultate         68.(F8)         0.1 M HEPES pH 7.5         68.(F6)         25% wiv Polyethylene glycol 3,350           70.(F10)         0.2 M Sodium chloride         70.(F10)         0.1 M BIS-TRIS pH 6.5         71.(F11)         25% wiv Polyethylene glycol 3,350           71.(F11)         0.2 M Sodium chloride         72.(F12)         0.1 M BIS-TRIS pH 6.5         71.(F11)         25% wiv Polyethylene glycol 3,350           73.(G1)         0.2 M Sodium chloride         73.(G1)         0.1 M Tis pH 8.5         73.(G1)         25% wiv Polyethylene glycol 3,350           74.(G2)         0.2 M Lithium sultate monohydrate         76.(G3)         0.1 M BIS-TRIS pH 5.5         73.(G1)         25% wiv Polyethylene glycol 3,350           76.(G4)         0.2 M Lithium sultate monohydrate         76.(G3)         0.1 M BIS-TRIS pH 5.5         76.(G4)         25% wiv Polyethylene glycol 3,350           76.(G4)         0.2 M Lithium sultate monohydrate         77.(G5)         0.1 M BIS-TRIS pH 5.5         78.(G6)         25% wiv Polyethylene glycol 3,350	65 (E5)		65 (E5)	0.1 M BIS-TRIS pH 5.5	65 (F5)	17% w/v Polvethylene alvcol 10 000
67. (F7)         0.2 M Ammonium sulfate         67. (F7)         0.1 M BIS-TRIS pH 6.5         67. (F7)         25% w/v Polyethylene glycol 3,350           68. (F8)         0.2 M Ammonium sulfate         68. (F8)         0.1 M HEPES pH 7.5         68. (F8)         25% w/v Polyethylene glycol 3,350           70. (F10)         0.2 M Sodium chloride         70. (F10)         0.1 M BIS-TRIS pH 5.5         70. (F10)         25% w/v Polyethylene glycol 3,350           71. (F11)         0.2 M Sodium chloride         71. (F11)         0.1 M BIS-TRIS pH 5.5         70. (F10)         25% w/v Polyethylene glycol 3,350           73. (G1)         0.2 M Sodium chloride         71. (F11)         0.1 M HEPES pH 7.5         72. (F12)         25% w/v Polyethylene glycol 3,350           73. (G1)         0.2 M Sodium chloride         73. (G1)         0.1 M HEPES pH 7.5         74. (G2)         25% w/v Polyethylene glycol 3,350           74. (G2)         0.2 M Lithium sulfate monohydrate         76. (G3)         0.1 M BIS-TRIS pH 5.5         76. (G3)         25% w/v Polyethylene glycol 3,350           76. (G4)         0.2 M Lithium sulfate monohydrate         76. (G4)         0.1 M Tis pH 8.5         77. (G5)         25% w/v Polyethylene glycol 3,350           77. (G5)         0.2 M Ammonium acetate         78. (G6)         0.1 M BIS-TRIS pH 5.5         78. (G6)         25% w/v Polyethylene glycol 3,350					. ,	
68.(F8)         0.2 M Ammonium sulfate         68.(F8)         0.1 M HEPES pH 7.5         68.(F8)         25% w/v Polyethylene glycol 3,350           69.(F9)         0.2 M Sodium chloride         70.(F10)         0.1 M Dirs pH 8.5         69.(F9)         25% w/v Polyethylene glycol 3,350           70.(F10)         0.2 M Sodium chloride         70.(F10)         0.1 M DIS-TRIS pH 5.5         70.(F10)         25% w/v Polyethylene glycol 3,350           71.(F11)         0.2 M Sodium chloride         71.(F11)         0.1 M DIS-TRIS pH 5.5         71.(F11)         25% w/v Polyethylene glycol 3,350           73.(G1)         0.2 M Sodium chloride         73.(G1)         0.1 M DIS-TRIS pH 5.5         73.(G1)         25% w/v Polyethylene glycol 3,350           74.(G2)         0.2 M Lithium sulfate monohydrate         73.(G3)         0.1 M DIS-TRIS pH 6.5         73.(G2)         25% w/v Polyethylene glycol 3,350           75.(G3)         0.2 M Lithium sulfate monohydrate         76.(G4)         0.2 M Lithium sulfate monohydrate         76.(G4)         0.2 M Lithium sulfate monohydrate         76.(G6)         0.1 M DIS-TRIS pH 6.5         78.(G6)         25% w/v Polyethylene glycol 3,350           76.(G4)         0.2 M Lithium sulfate monohydrate         78.(G6)         0.1 M DIS-TRIS pH 6.5         78.(G6)         25% w/v Polyethylene glycol 3,350           78.(G6)         0.2 M Ammonium acetate <td>. ,</td> <td></td> <td>. ,</td> <td>-</td> <td>, ,</td> <td></td>	. ,		. ,	-	, ,	
69.(F9)       0.2 M Ammonium sulfate       69.(F9)       0.1 M Tris pH 8.5       69.(F9)       25% w/v Polyethylene glycol 3,350         70.(F10)       0.2 M Sodium chloride       70.(F10)       0.1 M BIS-TRIS pH 5.5       70.(F10)       25% w/v Polyethylene glycol 3,350         71.(F11)       0.2 M Sodium chloride       71.(F11)       0.1 M BIS-TRIS pH 5.5       71.(F11)       25% w/v Polyethylene glycol 3,350         73.(G1)       0.2 M Sodium chloride       73.(G1)       0.1 M HEPES pH 7.5       72.(F12)       25% w/v Polyethylene glycol 3,350         73.(G1)       0.2 M Lithium sulfate monohydrate       73.(G1)       0.1 M HIS-TRIS pH 5.5       74.(G2)       25% w/v Polyethylene glycol 3,350         75.(G3)       0.2 M Lithium sulfate monohydrate       75.(G3)       0.1 M HIS-TRIS pH 5.5       76.(G4)       25% w/v Polyethylene glycol 3,350         77.(G5)       0.2 M Lithium sulfate monohydrate       76.(G4)       0.1 M HEPES pH 7.5       76.(G4)       25% w/v Polyethylene glycol 3,350         76.(G4)       0.2 M Ammonium acetate       79.(G7)       0.1 M BIS-TRIS pH 5.5       78.(G6)       25% w/v Polyethylene glycol 3,350         70.(G5)       0.2 M Ammonium acetate       79.(G7)       0.1 M BIS-TRIS pH 5.5       78.(G6)       25% w/v Polyethylene glycol 3,350         80.(G8)       0.1 M HEPES pH 7.5       80.(G8)					, ,	
70. (F10)       0.2 M Sodium chloride       70. (F10)       0.1 M BISTRIS pH 5.5       70. (F10)       25% w/v Polyethylene glycol 3,350         71. (F11)       0.2 M Sodium chloride       71. (F11)       0.1 M BISTRIS pH 6.5       71. (F11)       25% w/v Polyethylene glycol 3,350         72. (F12)       0.2 M Sodium chloride       72. (F12)       0.1 M HEPES pH 7.5       72. (F12)       25% w/v Polyethylene glycol 3,350         73. (G1)       0.2 M Sodium chloride       73. (G1)       0.1 M BISTRIS pH 6.5       73. (G2)       25% w/v Polyethylene glycol 3,350         74. (G2)       0.2 M Lithium sulfate monohydrate       76. (G3)       0.2 M Lithium sulfate monohydrate       76. (G4)       0.1 M BISTRIS pH 6.5       77. (G5)       25% w/v Polyethylene glycol 3,350         76. (G4)       0.2 M Ammonium acetate       78. (G6)       0.1 M BISTRIS pH 6.5       78. (G6)       25% w/v Polyethylene glycol 3,350         78. (G6)       0.2 M Ammonium acetate       78. (G6)       0.1 M BISTRIS pH 6.5       78. (G6)       25% w/v Polyethylene glycol 3,350         79. (G7)       0.2 M Ammonium acetate       79. (G7)       0.1 M BISTRIS pH 6.5       78. (G6)       25% w/v Polyethylene glycol 3,350         80. (G8)       0.2 M Ammonium acetate       80. (G8)       0.1 M BISTRIS pH 6.5       80. (G8)       25% w/v Polyethylene glycol 3,350         80					. ,	
71. (F11)       0.2 M Sodium chloride       71. (F11)       0.1 M BIS-TRIS pH 6.5       71. (F11)       25% w/v Polyethylene glycol 3,350         72. (F12)       0.2 M Sodium chloride       72. (F12)       0.1 M HEPES pH 7.5       72. (F12)       25% w/v Polyethylene glycol 3,350         73. (G1)       0.2 M Sodium chloride       73. (G1)       0.1 M HIS-TRIS pH 6.5       73. (G1)       25% w/v Polyethylene glycol 3,350         74. (G2)       0.2 M Lithium sulfate monohydrate       76. (G4)       0.1 M HIS-TRIS pH 6.5       75. (G3)       25% w/v Polyethylene glycol 3,350         75. (G3)       0.2 M Lithium sulfate monohydrate       76. (G4)       0.1 M HIS-TRIS pH 6.5       77. (G5)       25% w/v Polyethylene glycol 3,350         76. (G4)       0.2 M Lithium sulfate monohydrate       76. (G6)       0.1 M HIS-TRIS pH 6.5       77. (G5)       25% w/v Polyethylene glycol 3,350         77. (G5)       0.2 M Ammonium acetate       70. (G7)       0.1 M BIS-TRIS pH 6.5       79. (G7)       25% w/v Polyethylene glycol 3,350         79. (G7)       0.2 M Ammonium acetate       80. (G8)       0.1 M HIS-TRIS pH 6.5       79. (G7)       25% w/v Polyethylene glycol 3,350         81. (G8)       0.2 M Ammonium acetate       81. (G9)       0.1 M HIS-TRIS pH 6.5       79. (G7)       25% w/v Polyethylene glycol 3,350         82. (G10)       0.1 M HIS-TRIS pH 6.5<						
72. (F12)       0.2 M Sodium chloride       72. (F12)       0.1 M HEPES pH 7.5       72. (F12)       25% w/v Polyethylene glycol 3,350         73. (G1)       0.2 M Lithium sulfate monohydrate       74. (G2)       0.1 M BIS-TRIS pH 5.5       74. (G2)       25% w/v Polyethylene glycol 3,350         75. (G3)       0.2 M Lithium sulfate monohydrate       75. (G3)       0.1 M BIS-TRIS pH 5.5       74. (G2)       25% w/v Polyethylene glycol 3,350         76. (G4)       0.2 M Lithium sulfate monohydrate       76. (G4)       0.1 M BIS-TRIS pH 5.5       76. (G4)       25% w/v Polyethylene glycol 3,350         77. (G5)       0.2 M Lithium sulfate monohydrate       77. (G5)       0.1 M BIS-TRIS pH 5.5       78. (G6)       25% w/v Polyethylene glycol 3,350         78. (G6)       0.2 M Ammonium acetate       78. (G6)       0.1 M BIS-TRIS pH 5.5       78. (G6)       25% w/v Polyethylene glycol 3,350         79. (G7)       0.2 M Ammonium acetate       80. (G8)       0.1 M BIS-TRIS pH 5.5       78. (G6)       25% w/v Polyethylene glycol 3,350         81. (G4)       0.2 M Magnesium chloride hexahydrate       82. (G10)       0.1 M BIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         82. (G10)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M BIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         83.				-		
73. (G1)       0.2 M Sodium chloride       73. (G1)       0.1 M Tris pH 8.5       73. (G1)       25% w/v Polyethylene glycol 3,350         74. (G2)       0.2 M Lithium sulfate monohydrate       74. (G2)       0.1 M BIS-TRIS pH 6.5       74. (G2)       25% w/v Polyethylene glycol 3,350         76. (G3)       0.2 M Lithium sulfate monohydrate       76. (G4)       0.1 M HEPES pH 7.5       76. (G3)       25% w/v Polyethylene glycol 3,350         77. (G5)       0.2 M Lithium sulfate monohydrate       77. (G5)       0.1 M Tris pH 8.5       77. (G5)       25% w/v Polyethylene glycol 3,350         78. (G6)       0.2 M Ammonium acetate       78. (G6)       0.1 M Tris pH 8.5       77. (G5)       25% w/v Polyethylene glycol 3,350         79. (G7)       0.2 M Ammonium acetate       79. (G7)       0.1 M BIS-TRIS pH 5.5       78. (G6)       25% w/v Polyethylene glycol 3,350         80. (G8)       0.2 M Ammonium acetate       81. (G9)       0.1 M Tris pH 8.5       80. (G8)       25% w/v Polyethylene glycol 3,350         81. (G9)       0.2 M Magnesium chloride hexahydrate       82. (G10)       0.1 M BIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         83. (G11)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M BIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         84. (G12)       0.2 M Mag						
74. (G2)       0.2 M Lithium sulfate monohydrate       74. (G2)       0.1 M BIS-TRIS pH 5.5       74. (G2)       25% w/v Polyethylene glycol 3,350         75. (G3)       0.2 M Lithium sulfate monohydrate       75. (G3)       0.1 M BIS-TRIS pH 6.5       75. (G3)       25% w/v Polyethylene glycol 3,350         76. (G4)       0.2 M Lithium sulfate monohydrate       77. (G5)       0.1 M HEPES pH 7.5       76. (G4)       25% w/v Polyethylene glycol 3,350         77. (G5)       0.2 M Ammonium acetate       78. (G6)       0.1 M HEPES pH 7.5       78. (G6)       25% w/v Polyethylene glycol 3,350         79. (G7)       0.2 M Ammonium acetate       78. (G6)       0.1 M BIS-TRIS pH 6.5       78. (G6)       25% w/v Polyethylene glycol 3,350         80. (G8)       0.2 M Ammonium acetate       79. (G7)       0.1 M BIS-TRIS pH 8.5       80. (G8)       25% w/v Polyethylene glycol 3,350         81. (G9)       0.2 M Ammonium acetate       80. (G8)       0.1 M HEPES pH 7.5       80. (G8)       25% w/v Polyethylene glycol 3,350         82. (G10)       0.2 M Magnesium chloride hexahydrate       81. (G9)       0.1 M Tirs pH 8.5       81. (G9)       25% w/v Polyethylene glycol 3,350         83. (G11)       0.2 M Magnesium chloride hexahydrate       84. (G12)       0.1 M HEPES pH 7.5       82. (G10)       25% w/v Polyethylene glycol 3,350         84. (G12)       0.2 M						
75. (G3)       0.2 M Lithium sulfate monohydrate       75. (G3)       0.1 M BIS-TRIS pH 6.5       75. (G3)       25% w/v Polyethylene glycol 3,350         76. (G4)       0.2 M Lithium sulfate monohydrate       76. (G4)       0.1 M HEPES pH 7.5       76. (G4)       25% w/v Polyethylene glycol 3,350         77. (G5)       0.2 M Lithium sulfate monohydrate       77. (G5)       0.1 M Tris pH 8.5       77. (G5)       25% w/v Polyethylene glycol 3,350         78. (G6)       0.2 M Ammonium acetate       78. (G6)       0.1 M BIS-TRIS pH 6.5       78. (G6)       25% w/v Polyethylene glycol 3,350         80. (G8)       0.2 M Ammonium acetate       79. (G7)       0.1 M BIS-TRIS pH 6.5       78. (G6)       25% w/v Polyethylene glycol 3,350         80. (G8)       0.2 M Ammonium acetate       80. (G8)       0.1 M BIS-TRIS pH 6.5       78. (G7)       25% w/v Polyethylene glycol 3,350         81. (G9)       0.2 M Ammonium acetate       81. (G9)       0.1 M Tris pH 8.5       81. (G9)       25% w/v Polyethylene glycol 3,350         82. (G10)       0.2 M Magnesium chloride hexahydrate       82. (G10)       0.1 M BIS-TRIS pH 6.5       83. (G11)       25% w/v Polyethylene glycol 3,350         83. (G11)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M HEPES pH 7.5       84. (G12)       25% w/v Polyethylene glycol 3,350         86. (H2)       0.2				-		
76. (G4)       0.2 M Lithium sulfate monohydrate       76. (G4)       0.1 M HEPES pH 7.5       76. (G4)       25% w/v Polyethylene glycol 3,350         77. (G5)       0.2 M Ammonium acetate       77. (G5)       0.1 M BIS-TRIS pH 5.5       77. (G5)       25% w/v Polyethylene glycol 3,350         78. (G6)       0.2 M Ammonium acetate       70. (G7)       0.1 M BIS-TRIS pH 5.5       78. (G6)       25% w/v Polyethylene glycol 3,350         80. (G8)       0.2 M Ammonium acetate       79. (G7)       0.1 M BIS-TRIS pH 6.5       79. (G7)       25% w/v Polyethylene glycol 3,350         80. (G8)       0.2 M Ammonium acetate       80. (G8)       0.1 M HEPES pH 7.5       80. (G8)       25% w/v Polyethylene glycol 3,350         81. (G9)       0.2 M Ammonium acetate       81. (G9)       0.1 M Tris pH 8.5       81. (G9)       0.1 M MIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         82. (G10)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M BIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         83. (G11)       0.2 M Magnesium chloride hexahydrate       84. (G12)       0.1 M HEPES pH 7.5       84. (G12)       25% w/v Polyethylene glycol 3,350         84. (G12)       0.2 M Magnesium chloride hexahydrate       86. (H1)       0.1 M Tris pH 8.5       83. (G11)       25% w/v Polyethylene glycol 3,350		-				
77. (G5)       0.2 M Lithium sulfate monohydrate       77. (G5)       0.1 M Tris pH 8.5       77. (G5)       25% w/v Polyethylene glycol 3,350         78. (G6)       0.2 M Ammonium acetate       78. (G6)       0.1 M BIS-TRIS pH 5.5       78. (G6)       25% w/v Polyethylene glycol 3,350         79. (G7)       0.2 M Ammonium acetate       79. (G7)       0.1 M BIS-TRIS pH 5.5       78. (G6)       25% w/v Polyethylene glycol 3,350         80. (G8)       0.2 M Ammonium acetate       80. (G8)       0.1 M HEPES pH 7.5       80. (G8)       25% w/v Polyethylene glycol 3,350         81. (G9)       0.2 M Ammonium acetate       81. (G9)       0.1 M HEPES pH 7.5       80. (G8)       25% w/v Polyethylene glycol 3,350         82. (G10)       0.2 M Magnesium chloride hexahydrate       82. (G10)       0.1 M BIS-TRIS pH 5.5       81. (G9)       25% w/v Polyethylene glycol 3,350         83. (G11)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M BIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         84. (G12)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M HEPES pH 7.5       84. (G12)       25% w/v Polyethylene glycol 3,350         85. (H1)       0.2 M Potassium sodium tartrate tetrahydrate       86. (H2)       None       86. (H2)       20% w/v Polyethylene glycol 3,350         86. (H2)       0.2						
78. (G6)       0.2 M Ammonium acetate       78. (G6)       0.1 M BIS-TRIS pH 5.5       78. (G6)       25% w/v Polyethylene glycol 3,350         79. (G7)       0.2 M Ammonium acetate       79. (G7)       0.1 M BIS-TRIS pH 6.5       79. (G7)       25% w/v Polyethylene glycol 3,350         80. (G8)       0.2 M Ammonium acetate       80. (G8)       0.1 M HEPES pH 7.5       80. (G8)       25% w/v Polyethylene glycol 3,350         81. (G9)       0.2 M Ammonium acetate       81. (G9)       0.1 M Tirs pH 8.5       81. (G9)       25% w/v Polyethylene glycol 3,350         82. (G10)       0.2 M Magnesium chloride hexahydrate       82. (G10)       0.1 M BIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         83. (G11)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M BIS-TRIS pH 6.5       83. (G11)       25% w/v Polyethylene glycol 3,350         84. (G12)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M HEPES pH 7.5       84. (G12)       25% w/v Polyethylene glycol 3,350         86. (H1)       0.2 M Magnesium chloride hexahydrate       85. (H1)       0.1 M Tirs pH 8.5       85. (H1)       25% w/v Polyethylene glycol 3,350         86. (H2)       0.2 M Potassium sodium tartrate tetrahydrate       86. (H2)       None       86. (H2)       20% w/v Polyethylene glycol 3,350         87. (H3)				-		
79. (G7)       0.2 M Ammonium acetate       79. (G7)       0.1 M BIS-TRIS pH 6.5       79. (G7)       25% w/v Polyethylene glycol 3,350         80. (G8)       0.2 M Ammonium acetate       80. (G8)       0.1 M HEPES pH 7.5       80. (G8)       25% w/v Polyethylene glycol 3,350         81. (G9)       0.2 M Ammonium acetate       81. (G9)       0.1 M Tris pH 8.5       81. (G9)       25% w/v Polyethylene glycol 3,350         82. (G10)       0.2 M Magnesium chloride hexahydrate       82. (G10)       0.1 M BIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         83. (G11)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M BIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         84. (G12)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M HEPES pH 7.5       84. (G12)       25% w/v Polyethylene glycol 3,350         85. (H1)       0.2 M Magnesium chloride hexahydrate       84. (G12)       0.1 M HEPES pH 7.5       84. (G12)       25% w/v Polyethylene glycol 3,350         86. (H2)       0.2 M Potassium sodium tartrate tetrahydrate       85. (H1)       0.1 M Tris pH 8.5       85. (H1)       25% w/v Polyethylene glycol 3,350         87. (H3)       0.2 M Sodium malonate pH 7.0       87. (H3)       None       87. (H3)       20% w/v Polyethylene glycol 3,350         88. (H4)		-				
80. (G8)         0.2 M Ammonium acetate         80. (G8)         0.1 M HEPES pH 7.5         80. (G8)         25% w/v Polyethylene glycol 3,350           81. (G9)         0.2 M Ammonium acetate         81. (G9)         0.1 M Tris pH 8.5         81. (G9)         25% w/v Polyethylene glycol 3,350           82. (G10)         0.2 M Magnesium chloride hexahydrate         82. (G10)         0.1 M BIS-TRIS pH 5.5         82. (G10)         25% w/v Polyethylene glycol 3,350           83. (G11)         0.2 M Magnesium chloride hexahydrate         83. (G11)         0.1 M BIS-TRIS pH 6.5         83. (G11)         25% w/v Polyethylene glycol 3,350           84. (G12)         0.2 M Magnesium chloride hexahydrate         84. (G12)         0.1 M HEPES pH 7.5         84. (G12)         25% w/v Polyethylene glycol 3,350           85. (H1)         0.2 M Magnesium chloride hexahydrate         85. (H1)         0.1 M HEPES pH 7.5         84. (G12)         25% w/v Polyethylene glycol 3,350           86. (H2)         0.2 M Potassium sodium tartrate tetrahydrate         86. (H2)         None         86. (H2)         20% w/v Polyethylene glycol 3,350           87. (H3)         0.2 M Ammonium citrate tribasic pH 7.0         87. (H3)         None         86. (H2)         20% w/v Polyethylene glycol 3,350           88. (H4)         0.2 M Ammonium citrate tribasic pH 7.0         88. (H4)         None         89. (H5)						
81. (G9)       0.2 M Ammonium acetate       81. (G9)       0.1 M Tris pH 8.5       81. (G9)       25% w/v Polyethylene glycol 3,350         82. (G10)       0.2 M Magnesium chloride hexahydrate       82. (G10)       0.1 M BIS-TRIS pH 5.5       82. (G10)       25% w/v Polyethylene glycol 3,350         83. (G11)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M BIS-TRIS pH 6.5       83. (G11)       25% w/v Polyethylene glycol 3,350         84. (G12)       0.2 M Magnesium chloride hexahydrate       84. (G12)       0.1 M HEPES pH 7.5       84. (G12)       25% w/v Polyethylene glycol 3,350         85. (H1)       0.2 M Magnesium chloride hexahydrate       85. (H1)       0.1 M Tris pH 8.5       85. (H1)       25% w/v Polyethylene glycol 3,350         86. (H2)       0.2 M Potassium sodium tartrate tetrahydrate       85. (H1)       0.1 M Tris pH 8.5       85. (H1)       25% w/v Polyethylene glycol 3,350         86. (H2)       0.2 M Sodium malonate pH 7.0       87. (H3)       None       86. (H2)       20% w/v Polyethylene glycol 3,350         88. (H4)       0.2 M Ammonium citrate tribasic pH 7.0       88. (H4)       None       88. (H4)       20% w/v Polyethylene glycol 3,350         90. (H6)       0.1 M Succinic acid pH 7.0       89. (H5)       None       89. (H5)       15% w/v Polyethylene glycol 3,350         91. (H7)       0.15 M DL						
82. (G10)         0.2 M Magnesium chloride hexahydrate         82. (G10)         0.1 M BIS-TRIS pH 5.5         82. (G10)         25% w/v Polyethylene glycol 3,350           83. (G11)         0.2 M Magnesium chloride hexahydrate         83. (G11)         0.1 M BIS-TRIS pH 6.5         83. (G11)         25% w/v Polyethylene glycol 3,350           84. (G12)         0.2 M Magnesium chloride hexahydrate         84. (G12)         0.1 M HEPES pH 7.5         84. (G12)         25% w/v Polyethylene glycol 3,350           85. (H1)         0.2 M Magnesium chloride hexahydrate         85. (H1)         0.1 M Tris pH 8.5         85. (H1)         25% w/v Polyethylene glycol 3,350           86. (H2)         0.2 M Potassium sodium tartrate tetrahydrate         86. (H2)         None         86. (H2)         20% w/v Polyethylene glycol 3,350           87. (H3)         0.2 M Sodium malonate pH 7.0         87. (H3)         None         87. (H3)         20% w/v Polyethylene glycol 3,350           88. (H4)         0.2 M Ammonium citrate tribasic pH 7.0         88. (H4)         None         88. (H4)         20% w/v Polyethylene glycol 3,350           90. (H6)         0.1 M Succinic acid pH 7.0         89. (H5)         None         89. (H5)         15% w/v Polyethylene glycol 3,350           91. (H7)         0.15 M DL-Malic acid pH 7.0         91. (H7)         None         90. (H6)         20% w/v Polyethylene gly						
83. (G11)       0.2 M Magnesium chloride hexahydrate       83. (G11)       0.1 M BIS-TRIS pH 6.5       83. (G11)       25% w/v Polyethylene glycol 3,350         84. (G12)       0.2 M Magnesium chloride hexahydrate       84. (G12)       0.1 M HEPES pH 7.5       84. (G12)       25% w/v Polyethylene glycol 3,350         85. (H1)       0.2 M Magnesium chloride hexahydrate       85. (H1)       0.1 M Tris pH 8.5       85. (H1)       25% w/v Polyethylene glycol 3,350         86. (H2)       0.2 M Potassium sodium tartrate tetrahydrate       86. (H2)       None       86. (H2)       20% w/v Polyethylene glycol 3,350         87. (H3)       0.2 M Sodium malonate pH 7.0       87. (H3)       None       87. (H3)       20% w/v Polyethylene glycol 3,350         88. (H4)       0.2 M Ammonium citrate tribasic pH 7.0       88. (H4)       None       88. (H4)       20% w/v Polyethylene glycol 3,350         89. (H5)       0.1 M Succinic acid pH 7.0       88. (H4)       None       88. (H4)       20% w/v Polyethylene glycol 3,350         90. (H6)       0.2 M Sodium formate       90. (H6)       None       89. (H5)       15% w/v Polyethylene glycol 3,350         91. (H7)       0.15 M DL-Malic acid pH 7.0       91. (H7)       None       91. (H7)       20% w/v Polyethylene glycol 3,350         92. (H8)       0.1 M Magnesium formate dihydrate       92. (H8)						
84. (G12)       0.2 M Magnesium chloride hexahydrate       84. (G12)       0.1 M HEPES pH 7.5       84. (G12)       25% w/v Polyethylene glycol 3,350         85. (H1)       0.2 M Magnesium chloride hexahydrate       85. (H1)       0.1 M Tris pH 8.5       85. (H1)       25% w/v Polyethylene glycol 3,350         86. (H2)       0.2 M Potassium sodium tartrate tetrahydrate       86. (H2)       None       86. (H2)       20% w/v Polyethylene glycol 3,350         87. (H3)       0.2 M Sodium malonate pH 7.0       87. (H3)       None       87. (H3)       20% w/v Polyethylene glycol 3,350         88. (H4)       0.2 M Ammonium citrate tribasic pH 7.0       88. (H4)       None       87. (H3)       20% w/v Polyethylene glycol 3,350         89. (H5)       0.1 M Succinic acid pH 7.0       88. (H4)       None       88. (H4)       20% w/v Polyethylene glycol 3,350         90. (H6)       0.2 M Sodium formate       90. (H6)       None       89. (H5)       15% w/v Polyethylene glycol 3,350         91. (H7)       0.15 M DL-Malic acid pH 7.0       91. (H7)       None       91. (H7)       20% w/v Polyethylene glycol 3,350         92. (H8)       0.1 M Magnesium formate dihydrate       92. (H8)       None       92. (H8)       15% w/v Polyethylene glycol 3,350         93. (H9)       0.05 M Zinc acetate dihydrate       92. (H8)       None	. ,		. ,		( )	
85. (H1)       0.2 M Magnesium chloride hexahydrate       85. (H1)       0.1 M Tris pH 8.5       85. (H1)       25% w/v Polyethylene glycol 3,350         86. (H2)       0.2 M Potassium sodium tartrate tetrahydrate       86. (H2)       None       86. (H2)       20% w/v Polyethylene glycol 3,350         87. (H3)       0.2 M Sodium malonate pH 7.0       87. (H3)       None       87. (H3)       20% w/v Polyethylene glycol 3,350         88. (H4)       0.2 M Ammonium citrate tribasic pH 7.0       88. (H4)       None       88. (H4)       20% w/v Polyethylene glycol 3,350         89. (H5)       0.1 M Succinic acid pH 7.0       88. (H4)       None       88. (H4)       20% w/v Polyethylene glycol 3,350         90. (H6)       0.2 M Sodium formate       90. (H6)       None       89. (H5)       15% w/v Polyethylene glycol 3,350         91. (H7)       0.15 M DL-Malic acid pH 7.0       91. (H7)       None       91. (H7)       20% w/v Polyethylene glycol 3,350         92. (H8)       0.1 M Magnesium formate dihydrate       92. (H8)       None       91. (H7)       20% w/v Polyethylene glycol 3,350         93. (H9)       0.05 M Zinc acetate dihydrate       92. (H8)       None       93. (H9)       20% w/v Polyethylene glycol 3,350         93. (H9)       0.2 M Sodium citrate tribasic dihydrate       93. (H9)       None       93. (H9)						
86. (H2)       0.2 M Potassium sodium tartrate tetrahydrate       86. (H2)       None       86. (H2)       20% w/v Polyethylene glycol 3,350         87. (H3)       0.2 M Sodium malonate pH 7.0       87. (H3)       None       87. (H3)       20% w/v Polyethylene glycol 3,350         88. (H4)       0.2 M Ammonium citrate tribasic pH 7.0       88. (H4)       None       87. (H3)       20% w/v Polyethylene glycol 3,350         88. (H4)       0.2 M Ammonium citrate tribasic pH 7.0       88. (H4)       None       88. (H4)       20% w/v Polyethylene glycol 3,350         90. (H6)       0.1 M Succinic acid pH 7.0       89. (H5)       None       89. (H5)       15% w/v Polyethylene glycol 3,350         90. (H6)       0.2 M Sodium formate       90. (H6)       None       90. (H6)       20% w/v Polyethylene glycol 3,350         91. (H7)       0.15 M DL-Malic acid pH 7.0       91. (H7)       None       91. (H7)       20% w/v Polyethylene glycol 3,350         92. (H8)       0.1 M Magnesium formate dihydrate       92. (H8)       None       92. (H8)       15% w/v Polyethylene glycol 3,350         93. (H9)       0.05 M Zinc acetate dihydrate       93. (H9)       None       93. (H9)       20% w/v Polyethylene glycol 3,350         94. (H10)       0.2 M Sodium citrate tribasic dihydrate       94. (H10)       None       93. (H9) <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td></td<>						
87. (H3)       0.2 M Sodium malonate pH 7.0       87. (H3)       None       87. (H3)       20% w/v Polyethylene glycol 3,350         88. (H4)       0.2 M Ammonium citrate tribasic pH 7.0       88. (H4)       None       88. (H4)       20% w/v Polyethylene glycol 3,350         89. (H5)       0.1 M Succinic acid pH 7.0       89. (H5)       None       89. (H5)       15% w/v Polyethylene glycol 3,350         90. (H6)       0.2 M Sodium formate       90. (H6)       None       89. (H5)       15% w/v Polyethylene glycol 3,350         90. (H6)       0.2 M Sodium formate       90. (H6)       None       90. (H6)       20% w/v Polyethylene glycol 3,350         91. (H7)       0.15 M DL-Malic acid pH 7.0       91. (H7)       None       91. (H7)       20% w/v Polyethylene glycol 3,350         92. (H8)       0.1 M Magnesium formate dihydrate       92. (H8)       None       92. (H8)       15% w/v Polyethylene glycol 3,350         93. (H9)       0.05 M Zinc acetate dihydrate       93. (H9)       None       93. (H9)       20% w/v Polyethylene glycol 3,350         94. (H10)       0.2 M Sodium citrate tribasic dihydrate       94. (H10)       None       94. (H10)       20% w/v Polyethylene glycol 3,350         95. (H11)       0.1 M Potassium thiocyanate       95. (H11)       None       95. (H11)       30% w/v Polyethylene glycol 3,	,		. ,		. ,	
88. (H4)       0.2 M Ammonium citrate tribasic pH 7.0       88. (H4)       None       88. (H4)       20% w/v Polyethylene glycol 3,350         89. (H5)       0.1 M Succinic acid pH 7.0       89. (H5)       None       89. (H5)       15% w/v Polyethylene glycol 3,350         90. (H6)       0.2 M Sodium formate       90. (H6)       None       90. (H6)       20% w/v Polyethylene glycol 3,350         91. (H7)       0.15 M DL-Malic acid pH 7.0       91. (H7)       None       91. (H7)       20% w/v Polyethylene glycol 3,350         92. (H8)       0.1 M Magnesium formate dihydrate       92. (H8)       None       92. (H8)       15% w/v Polyethylene glycol 3,350         93. (H9)       0.05 M Zinc acetate dihydrate       93. (H9)       None       93. (H9)       20% w/v Polyethylene glycol 3,350         94. (H10)       0.2 M Sodium citrate tribasic dihydrate       94. (H10)       None       94. (H10)       20% w/v Polyethylene glycol 3,350         95. (H11)       0.1 M Potassium thiocyanate       95. (H11)       None       95. (H11)       30% w/v Polyethylene glycol 3,350			. ,			
89. (H5)       0.1 M Succinic acid pH 7.0       89. (H5)       None       89. (H5)       15% w/v Polyethylene glycol 3,350         90. (H6)       0.2 M Sodium formate       90. (H6)       None       90. (H6)       20% w/v Polyethylene glycol 3,350         91. (H7)       0.15 M DL-Malic acid pH 7.0       91. (H7)       None       91. (H7)       20% w/v Polyethylene glycol 3,350         92. (H8)       0.1 M Magnesium formate dihydrate       92. (H8)       None       92. (H8)       15% w/v Polyethylene glycol 3,350         93. (H9)       0.05 M Zinc acetate dihydrate       93. (H9)       None       93. (H9)       20% w/v Polyethylene glycol 3,350         94. (H10)       0.2 M Sodium citrate tribasic dihydrate       94. (H10)       None       94. (H10)       20% w/v Polyethylene glycol 3,350         95. (H11)       0.1 M Potassium thiocyanate       95. (H11)       None       95. (H11)       30% w/v Polyethylene glycol 3,350		•				
90. (H6)         0.2 M Sodium formate         90. (H6)         None         90. (H6)         20% w/v Polyethylene glycol 3,350           91. (H7)         0.15 M DL-Malic acid pH 7.0         91. (H7)         None         91. (H7)         20% w/v Polyethylene glycol 3,350           92. (H8)         0.1 M Magnesium formate dihydrate         92. (H8)         None         92. (H8)         15% w/v Polyethylene glycol 3,350           93. (H9)         0.05 M Zinc acetate dihydrate         93. (H9)         None         93. (H9)         20% w/v Polyethylene glycol 3,350           94. (H10)         0.2 M Sodium citrate tribasic dihydrate         94. (H10)         None         94. (H10)         20% w/v Polyethylene glycol 3,350           95. (H11)         0.1 M Potassium thiocyanate         95. (H11)         None         95. (H11)         30% w/v Polyethylene glycol 3,350		•				
91. (H7)0.15 M DL-Malic acid pH 7.091. (H7)None91. (H7)20% w/v Polyethylene glycol 3,35092. (H8)0.1 M Magnesium formate dihydrate92. (H8)None92. (H8)15% w/v Polyethylene glycol 3,35093. (H9)0.05 M Zinc acetate dihydrate93. (H9)None93. (H9)20% w/v Polyethylene glycol 3,35094. (H10)0.2 M Sodium citrate tribasic dihydrate94. (H10)None94. (H10)20% w/v Polyethylene glycol 3,35095. (H11)0.1 M Potassium thiocyanate95. (H11)None95. (H11)30% w/v Polyethylene glycol 3,350						
92. (H8)0.1 M Magnesium formate dihydrate92. (H8)None92. (H8)15% w/v Polyethylene glycol 3,35093. (H9)0.05 M Zinc acetate dihydrate93. (H9)None93. (H9)20% w/v Polyethylene glycol 3,35094. (H10)0.2 M Sodium citrate tribasic dihydrate94. (H10)None94. (H10)20% w/v Polyethylene glycol 3,35095. (H11)0.1 M Potassium thiocyanate95. (H11)None95. (H11)30% w/v Polyethylene glycol 3,350					. ,	
93. (H9)0.05 M Zinc acetate dihydrate93. (H9)None93. (H9)20% w/v Polyethylene glycol 3,35094. (H10)0.2 M Sodium citrate tribasic dihydrate94. (H10)None94. (H10)20% w/v Polyethylene glycol 3,35095. (H11)0.1 M Potassium thiocyanate95. (H11)None95. (H11)30% w/v Polyethylene glycol 3,350						
94. (H10)0.2 M Sodium citrate tribasic dihydrate94. (H10)None94. (H10)20% w/vPolyethylene glycol 3,35095. (H11)0.1 M Potassium thiocyanate95. (H11)None95. (H11)30% w/vPolyethylene glycol monomethyl ether 2,000		· ·				
95. (H11) 0.1 M Potassium thiocyanate 95. (H11) None 95. (H11) 30% w/v Polyethylene glycol monomethyl ether 2,000		•				
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	(112)		55. (i i i i i i i i i i i i i i i i i i i	NOID	(() () () () () () () () () () () () ()	or a way rongentylene grycor monometryl etter 2,000

◊ Buffer pH is that of a 1.0 M stock prior to dilution with other reagent components: pH with HCl or NaOH.

Index HT contains ninety-six unique reagents. To determine the formulation of each reagent, simply read across the page.

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Solutions for Crystal Growth

Sampl Reserv	le: le Buffer: voir Volume:μ Sampleμ Reser	_ Date: Temperature:	<ol> <li>Clear Drop</li> <li>Phase Separation</li> <li>Regular Granular Precipitate</li> <li>Birefringent Precipitate or Microcrystals</li> </ol>	<ol> <li>6 Needles (</li> <li>7 Plates (20</li> <li>8 Single Cr</li> </ol>	,	1
			Willow ystais	Date:	Date:	Date:
	Index HT <sup>™</sup> - HR2-134 Scoring S	heet		Date.	Date.	Date.
	1. (A1) 0.1 M Citric acid pH 3.5, 2.0 M Ammonium	n sulfate				
	2. (A2) 0.1 M Sodium acetate trihydrate pH 4.5, 2	2.0 M Ammonium sulfate				
	3. (A3) 0.1 M BIS-TRIS pH 5.5, 2.0 M Ammonium	n sulfate				
	4. (A4) 0.1 M BIS-TRIS pH 6.5, 2.0 M Ammonium	n sulfate				
	5. (A5) 0.1 M HEPES pH 7.5, 2.0 M Ammonium s	sulfate				
HAMPTON	6. (A6) 0.1 M Tris pH 8.5, 2.0 M Ammonium sulfat	te				
MP	7. (A7) 0.1 M Citric acid pH 3.5, 3.0 M Sodium ch	loride				
TO	8. (A8) 0.1 M Sodium acetate trihydrate pH 4.5, 3	8.0 M Sodium chloride				
IŽ	9. (A9) 0.1 M BIS-TRIS pH 5.5, 3.0 M Sodium ch	loride				
	10. (A10) 0.1 M BIS-TRIS pH 6.5, 3.0 M Sodium ch	loride				
	11. (A11) 0.1 M HEPES pH 7.5, 3.0 M Sodium chlor	ride				
	12. (A12) 0.1 M Tris pH 8.5, 3.0 M Sodium chloride					
	13. (B1) 0.1 M BIS-TRIS pH 5.5, 0.3 M Magnesium	n formate dihydrate				
	14. (B2) 0.1 M BIS-TRIS pH 6.5, 0.5 M Magnesiun	n formate dihydrate				
	15. (B3) 0.1 M HEPES pH 7.5, 0.5 M Magnesium f	formate dihydrate				
	16. (B4) 0.1 M TRIS pH 8.5, 0.3 M Magnesium for	nate dihydrate				
	17. (B5) 1.26 M Sodium phosphate monobasic mo	nohydrate, 0.14 M Potassium phosphate dibasic,	pH 5.6			
	18. (B6) 0.49 M Sodium phosphate monobasic mo	nohydrate, 0.91 M Potassium phosphate dibasic,	pH 6.9			
Al Tel: ()	19. (B7) 0.056 M Sodium phosphate monobasic m	onohydrate, 1.344 M Potassium phosphate dibas	c, pH 8.2			
liso V 949) -	20. (B8) 0.1 M HEPES pH 7.5, 1.4 M Sodium citrat	(B8) 0.1 M HEPES pH 7.5, 1.4 M Sodium citrate tribasic dihydrate				
3 iejo, ( 425-1	21. (B9) 1.8 M Ammonium citrate tribasic pH 7.0					
94 Jou DA 92 321 ●	22. (B10) 0.8 M Succinic acid pH 7.0					
irney 2656-: Fax:	23. (B11) 2.1 M DL-Malic acid pH 7.0					
3317 (949)	24. (B12) 2.8 M Sodium acetate trihydrate pH 7.0			1		
34 Journey Aliso Viejo, CA 92656-3317 U.S.A. Tel: (949) 425-1321 • Fax: (949) 425-1611	25. (C1) 3.5 M Sodium formate pH 7.0					
k. 1611	26. (C2) 1.1 M Ammonium tartrate dibasic pH 7.0					
	27. (C3) 2.4 M Sodium malonate pH 7.0			1		
	28. (C4) 35% v/v Tacsimate pH 7.0					
	29. (C5) 60% v/v Tacsimate pH 7.0			1		
	30. (C6) 0.1 M Sodium chloride, 0.1 M BIS-TRIS p	H 6.5, 1.5 M Ammonium sulfate		1		
	31. (C7) 0.8 M Potassium sodium tartrate tetrahyd	rate, 0.1 M Tris pH 8.5, 0.5% w/v Polyethylene glyv	col monomethyl ether 5,000	1	1	1
	32. (C8) 1.0 M Ammonium sulfate, 0.1 M BIS-TRIS	pH 5.5, 1% w/v Polyethylene glycol 3,350		1		
	33. (C9) 1.1 M Sodium malonate pH 7.0, 0.1 M HE	PES pH 7.0, 0.5% v/v Jeffamine® ED-2001 pH 7	.0	1		
	34. (C10) 1.0 M Succinic acid pH 7.0, 0.1 M HEPES	pH 7.0, 1% w/v Polyethylene glycol monomethyl	ether 2,000	1	1	1
	35. (C11) 1.0 M Ammonium sulfate, 0.1 M HEPES p	oH 7.0, 0.5% w/v Polyethylene glycol 8,000		1		
	36. (C12) 15% v/v Tacsimate pH 7.0, 0.1 M HEPES	pH 7.0, 2% w/v Polyethylene glycol 3,350		1		
	37. (D1) 25% w/v Polyethylene glycol 1,500			1		
	38. (D2) 0.1 M HEPES pH 7.0, 30% v/v Jeffamine	<sup>®</sup> M-600 <sup>®</sup> pH 7.0		1		
	39. (D3) 0.1 M HEPES pH 7.0, 30% v/v Jeffamine	<sup>®</sup> ED-2001 pH 7.0		1	1	1
	40. (D4) 0.1 M Citric acid pH 3.5, 25% w/v Polyeth	ylene glycol 3,350		1		
	41. (D5) 0.1 M Sodium acetate trihydrate pH 4.5, 2	25% w/v Polyethylene glycol 3,350			1	
	42. (D6) 0.1 M BIS-TRIS pH 5.5, 25% w/v Polyethy	/lene glycol 3,350			1	
	43. (D7) 0.1 M BIS-TRIS pH 6.5, 25% w/v Polyethy	lene glycol 3,350			1	1
	44. (D8) 0.1 M HEPES pH 7.5, 25% w/v Polyethyle	••		1	1	1
	45. (D9) 0.1 M Tris pH 8.5, 25% w/v Polyethylene g			1	1	1
	46. (D10) 0.1 M BIS-TRIS pH 6.5, 20% w/v Polyethy			1	1	1
	47. (D11) 0.1 M BIS-TRIS pH 6.5, 28% w/v Polyethy			1	1	1
	48. (D12) 0.2 M Calcium chloride dihydrate, 0.1 M B		nediol		1	
	· · · · · · · · · · · · · · · · · · ·					

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Reservoir Volume:       Temperature:       3       Regular Granular Precipitate       7       Plates (2D Growth)         Drop Volume:       Total       μl       Sample       μl       Additive       μl       Birefringent Precipitate       8       Single Crystals (3D Growth < 0.2 mm)         Microcrystals       9       Single Crystals (3D Growth > 0.2 mm)	Sample:Sample Buffer:	_ Sample Concentration:	1 Clear Drop 2 Phase Separation	<ul><li>5 Posettes or Spherulites</li><li>6 Needles (1D Growth)</li></ul>
Dron Volumo: Total ul Samplo ul Posorizoir ul Additivo ul	Reservoir Volume:	Temperature:	3 Regular Granular Precipitate	7 Plates (2D Growth)
	 Drop Volume: Totalμl Sampleμl Reserv	voirμl Additiveμl	<b>o</b> 1	0, (

volume. Tota	Microcr	/stals	9 Single Crys	stals (3D Growth	> 0.2 mm)
Index	HT <sup>™</sup> - HR2-134 Scoring Sheet		Date:	Date:	Date:
49. (E1)	0.2 M Calcium chloride dihydrate, 0.1 M BIS-TRIS pH 6.5, 45% v/v (+/-)-2-Methyl-2,4-pentanediol		1	1	
50. (E2)	0.2 M Ammonium acetate, 0.1 M BIS-TRIS pH 5.5, 45% v/v (+/-)-2-Methyl-2,4-pentanediol		1		1
51. (E3)	0.2 M Ammonium acetate, 0.1 M BIS-TRIS pH 6.5, 45% v/v (+/-)-2-Methyl-2,4-pentanediol				1
52. (E4)	0.2 M Ammonium acetate, 0.1 M HEPES pH 7.5, 45% v/v (+/-)-2-Methyl-2,4-pentanediol				
53. (E5)	0.2 M Ammonium acetate, 0.1 M Tris pH 8.5, 45% v/v (+/-)-2-Methyl-2,4-pentanediol				
54. (E6)	0.05 M Calcium chloride dihydrate, 0.1 M BIS-TRIS pH 6.5, 30% v/v Polyethylene glycol monomethyl ether 55	50		+	
55. (E7)	0.05 M Magnesium chloride hexahydrate, 0.1 M HEPES pH 7.5, 30% v/v Polyethylene glycol monomethyl ethol ethol				
56. (E8)	0.2 M Potassium chloride, 0.05 M HEPES pH 7.5, 35% v/v Pentaerythritol propoxylate (5/4 PO/OH)				
<u> </u>	0.05 M Ammonium sulfate, 0.05 M BIS-TRIS pH 6.5, 30% v/v entaerythritol ethoxylate (3/41 O/Off)				
57. (E9)				+	
<u> </u>	0.1 M BIS-TRIS pH 6.5, 45% v/v Polypropylene glycol P 400				
<u> </u>	0.02 M Magnesium chloride hexahydrate, 0.1 M HEPES pH 7.5, 22% w/v Poly(acrylic acid sodium salt) 5,100				
<u> </u>	0.01 M Cobalt(II) chloride hexahydrate, 0.1 M Tris pH 8.5, 20% w/v Polyvinylpyrrolidone K 15				
61. (F1)	0.2 M L-Proline, 0.1 M HEPES pH 7.5, 10% w/v Polyethylene glycol 3,350				
62. (F2)	0.2 M Trimethylamine N-oxide dihydrate, 0.1 M Tris pH 8.5, 20% w/v Polyethylene glycol monomethyl ether 2,0	000	ļ		
63. (F3)	5% v/v Tacsimate pH 7.0, 0.1 M HEPES pH 7.0, 10% w/v Polyethylene glycol monomethyl ether 5,000			-	
64. (F4)	0.005 M Cobalt(II) chloride hexahydrate, 0.005 M Nickel(II) chloride hexahydrate, 0.005 M Cadmium chloride	hydrate,	ļ	ļ	<u> </u>
	0.005 M Magnesium chloride hexahydrate, 0.1 M HEPES pH 7.5, 12% w/v Polyethylene glycol 3,350				
65. (F5)	0.1 M Ammonium acetate, 0.1 M BIS-TRIS pH 5.5, 17% w/v Polyethylene glycol 10,000		ļ		
66. (F6)	0.2 M Ammonium sulfate, 0.1 M BIS-TRIS pH 5.5, 25% w/v Polyethylene glycol 3,350				
67. (F7)	0.2 M Ammonium sulfate, 0.1 M BIS-TRIS pH 6.5, 25% w/v Polyethylene glycol 3,350				
68. (F8)	0.2 M Ammonium sulfate, 0.1 M HEPES pH 7.5, 25% w/v Polyethylene glycol 3,350				
69. (F9)	0.2 M Ammonium sulfate, 0.1 M Tris pH 8.5, 25% w/v Polyethylene glycol 3,350				
70. (F10)	0.2 M Sodium chloride, 0.1 M BIS-TRIS pH 5.5, 25% w/v Polyethylene glycol 3,350				
71. (F11)	0.2 M Sodium chloride, 0.1 M BIS-TRIS pH 6.5, 25% w/v Polyethylene glycol 3,350				
72. (F12)	0.2 M Sodium chloride, 0.1 M HEPES pH 7.5, 25% w/v Polyethylene glycol 3,350		1		1
73. (G1)	0.2 M Sodium chloride, 0.1 M Tris pH 8.5, 25% w/v Polyethylene glycol 3,350		Ì	1	İ
74. (G2)	0.2 M Lithium sulfate monohydrate, 0.1 M BIS-TRIS pH 5.5, 25% w/v Polyethylene glycol 3,350		1	1	1
75. (G3)	0.2 M Lithium sulfate monohydrate, 0.1 M BIS-TRIS pH 6.5, 25% w/v Polyethylene glycol 3,350				1
76. (G4)	0.2 M Lithium sulfate monohydrate, 0.1 M HEPES pH 7.5, 25% w/v Polyethylene glycol 3,350				1
77. (G5)	0.2 M Lithium sulfate monohydrate, 0.1 M Tris pH 8.5, 25% w/v Polyethylene glycol 3,350				1
78. (G6)	0.2 M Ammonium acetate, 0.1 M BIS-TRIS pH 5.5, 25% w/v Polyethylene glycol 3,350		1	1	
79. (G7)	0.2 M Ammonium acetate, 0.1 M BIS-TRIS pH 6.5, 25% w/v Polyethylene glycol 3,350				1
80. (G8)	0.2 M Ammonium acetate, 0.1 M HEPES pH 7.5, 25% w/v Polyethylene glycol 3,350				
81. (G9)	0.2 M Ammonium acetate, 0.1 M Tris pH 8.5, 25% w/v Polyethylene glycol 3,350				
· · · ·	0.2 M Magnesium chloride hexahydrate, 0.1 M BIS-TRIS pH 5.5, 25% w/v Polyethylene glycol 3,350		1	+	+
<u> </u>	0.2 M Magnesium chloride hexahydrate, 0.1 M BIS-TRIS pH 6.5, 25% w/v Polyethylene glycol 3,350				
· · · · ·	0.2 M Magnesium chloride hexahydrate, 0.1 M HEPES pH 7.5, 25% w/v Polyethylene glycol 3,350				
· · · · · ·					
85. (H1)	0.2 M Magnesium chloride hexahydrate, 0.1 M Tris pH 8.5, 25% w/v Polyethylene glycol 3,350			<u> </u>	
86. (H2)	0.2 M Potassium sodium tartrate tetrahydrate, 20% w/v Polyethylene glycol 3,350				
87. (H3)	0.2 M Sodium malonate pH 7.0, 20% w/v Polyethylene glycol 3,350				
88. (H4)	0.2 M Ammonium citrate tribasic pH 7.0, 20% w/v Polyethylene glycol 3,350				<u> </u>
89. (H5)	0.1 M Succinic acid pH 7.0, 15% w/v Polyethylene glycol 3,350				
90. (H6)	0.2 M Sodium formate, 20% w/v Polyethylene glycol 3,350		ļ	ļ	<u> </u>
91. (H7)	0.15 M DL-Malic acid pH 7.0, 20% w/v Polyethylene glycol 3,350		ļ	ļ	<u> </u>
92. (H8)	0.1 M Magnesium formate dihydrate, 15% w/v Polyethylene glycol 3,350		ļ		<u> </u>
93. (H9)	0.05 M Zinc acetate dihydrate, 20% w/v Polyethylene glycol 3,350		ļ		
94. (H10)	0.2 M Sodium citrate tribasic dihydrate, 20% w/v Polyethylene glycol 3,350				$\downarrow$
95. (H11)	0.1 M Potassium thiocyanate, 30% w/v Polyethylene glycol monomethyl ether 2,000				
96. (H12)	0.15 M Potassium bromide, 30% w/v Polyethylene glycol monomethyl ether 2,000				