**ProPlex HT-96 Screen**  
*ProPlex* is formulated for the crystallization of *Protein complexes*.

MD1-42 is presented as a 96 x 1 mL condition targeted sparse matrix screen.

**Features of ProPlex HT-96:**
- Helps maintain protein-protein interactions
- Reduces solubility of complex.
- Medium and High MW PEGs and lower concentrations specifically for protein complexes.
- pH range from 4.0 – 8.5 promote stabilization of complexes.

**Introduction**

**Crystallization of protein complexes**

Successful crystallization of protein-protein complexes requires conditions to satisfy two independent criteria: solubility of the complex and stability of the complex. Protein-protein interactions are often weak or transient and their satisfaction precludes a number of reagent zones, thus constricting boundaries around which conditions for crystallization of the complex may be found. Compared to comprehensive crystallization databases containing all proteins, fewer complexes crystallize at extreme pH values due to the destabilisation of protein-protein interactions. Protein complexes were also found to crystallize at lower concentrations of precipitant than is generally observed. As a consequence, traditional sparse matrix screens contain many conditions which fall outside these boundaries and therefore can never crystallize intact protein complexes.

**Types of precipitants used for protein-protein complex crystallization.**

**Typical PEG Molecular Weights used in protein-protein complex crystallization.**

**Typical pH conditions used for protein-protein complex crystallization.**
The protein-complex crystallization database
The protein-complex crystallization database (PCCD) was established by Radaev et al (2006). All published protein-protein complex structures were extracted from the PDB, and multi-subunit proteins, such as free antibodies, were excluded. The resulting PCCD contained 659 unique, dissociable protein-protein complexes. They included 155 enzyme-inhibitor complexes, 121 receptor-ligand complexes, 117 cellular protein complexes, 74 antibody-antigen complexes, 71 signal transduction complexes, 52 large, multi-protein complexes such as ribosomes, and 69 other types of protein-protein complexes. Analysis of crystallization conditions in the PCCD enabled the definition of crystallization boundaries specific to protein complexes.

The Development of ProPlex
This Protein Complex Screen is a sparse matrix screen containing conditions obtained by cluster-analysis of data from the PCCD. The number of conditions containing each precipitant type is proportional to the number of observed crystallizations in the PCCD: 66 PEG-based, 24 salt-based and 6 organics-based.

Conditions included, contain precipitants at concentrations representative of those within the crystallization space identified from the PCCD. These are on average, lower than the concentrations found in general sparse matrix screens.

Screening for crystallization of protein complexes
Analysis of the PCCD revealed that 96% of the crystallizations used the vapour diffusion method. Crystallization experiments should be set-up in parallel at 4 °C and 23 °C, since the strength of interactions at protein-protein interfaces are temperature dependent. Most protein complexes were crystallized at a concentration between 5 and 20 mg/ml, with 10 mg/ml being the most successful starting concentration.

Careful biophysical characterisation of the sample is recommended in order to confirm the nature and stability of the complex.

Formulation Notes
ProPlex reagents are formulated using ultrapure water (>18.0 MΩ) and are sterile-filtered using 0.22 μm filters. No preservatives are added. Final pH may vary from that specified on the datasheet.

Contact Us
Molecular Dimensions will be happy to discuss the precise formulation of individual reagents.

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

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

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

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

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**Eco Screen versions**

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**Single Reagents**

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For ProPlex ™ stock reagents visit our Optimization page on our website.