

Douglas Instruments response to COVID-19

We hope that you have stayed safe during the COVID-19 pandemic. Douglas Instruments is now back to normal operations and we look forward to continuing to support our customers.

Please don't hesitate to contact us for information or support.
info@douglas.co.uk support@douglas.co.uk



Douglas Instruments

Success in protein crystallization

Screening for Nano or Micro-Crystals and Scaling Up!

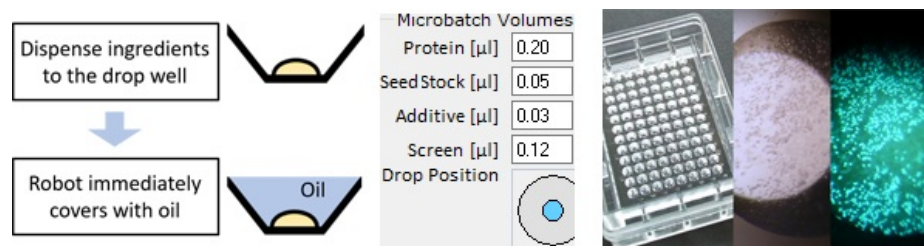
Dear Crystallographer

The following methods have some important advantages that can help with production of micro or nano-crystals. Once identified, suitable conditions can be harvested or scaled up for experiments including serial crystallography and micro electron diffraction.

Microbatch-under-oil:

X-ray free-electron laser and other serial crystallography experiments may require large volumes of micro-crystals. **Microbatch** allows screening of very small volumes of protein, with drop volumes of say 100 + 100 nl, which are then covered by a layer of paraffin oil.

The paraffin oil prevents evaporation so the concentration of the drop remains almost constant. Microbatch crystallization conditions can therefore be scaled up more reproducibly without the need to adjust the concentration for the final sample preparation.



Microbatch under oil suggested work flow for identification of micro-crystals:

1. Screen in microbatch (100 + 100 nl)
2. Optimize in microbatch if necessary
3. Scale up - maintain original concentration

For more information please see the link below to a poster:

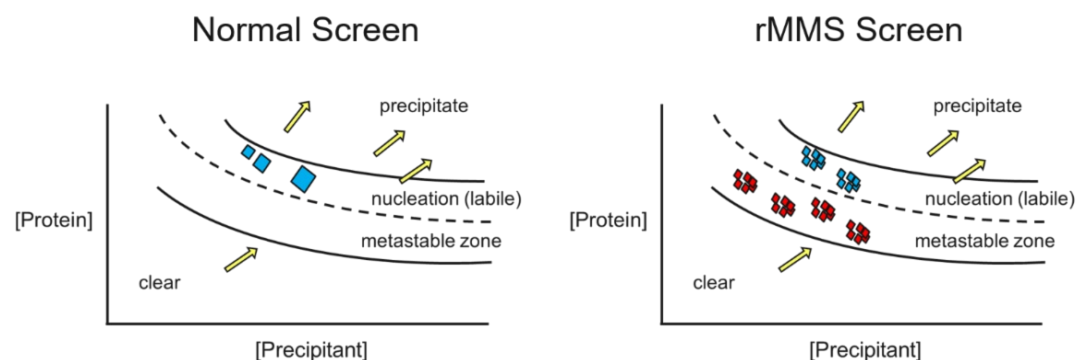
www.douglas.co.uk/posters/XFEL_Microbatch-under-oil_optimization.pdf

rMMS microseeding:

Seed stocks used for rMMS typically contain hundreds of thousands of crystalline fragments, or seeds, which provide points of nucleation in a drop. Screening with highly concentrated seed stock (**rMMS microseeding**) can increase the chance of identifying conditions where micro or nano-crystals form.

Metastable conditions can be identified - these are conditions where there is a nucleation problem and crystal growth occurs only when seeds are added to the drop.

We recommend producing a highly concentrated **seed stock**, possibly from multiple drops containing crystals. The seed stock should be prepared by vortexing with a seed bead. If required the seed stock can be homogenised by centrifugation.



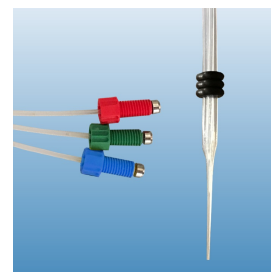
Douglas Instruments Products



Oryx Robots



Crystallization Plates



Microtips

Impaired folate binding of serine hydroxymethyltransferase 8 from soybean underlies resistance to the soybean cyst nematode

Korasick, D.A., Kandoth, P.K., Tanner, J.J., Mitchum, M.G. and Beamer, L.J.

Journal of Biological Chemistry 295.11 (2020): 3708-3718

Analysis of a Therapeutic Antibody Cocktail Reveals Determinants for Cooperative and Broad Ebolavirus Neutralization

Gilchuk, P., Murin, C.D., Milligan, J.C., Cross, R.W., Mire, C.E., Ilinykh, P.A., Huang, K., Kuzmina, N., Altman, P.X., Hui, S. and Gunn, B.M.

Immunity 52.2 (2020): 388-403

