

## Request an online demo or webinar

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For other information or support please don't

hesitate to email us:

[carolyn@douglas.co.uk](mailto:carolyn@douglas.co.uk)

or

[support@douglas.co.uk](mailto:support@douglas.co.uk)



# Douglas Instruments

Success in protein crystallization

## Optimization experiments with Oryx8

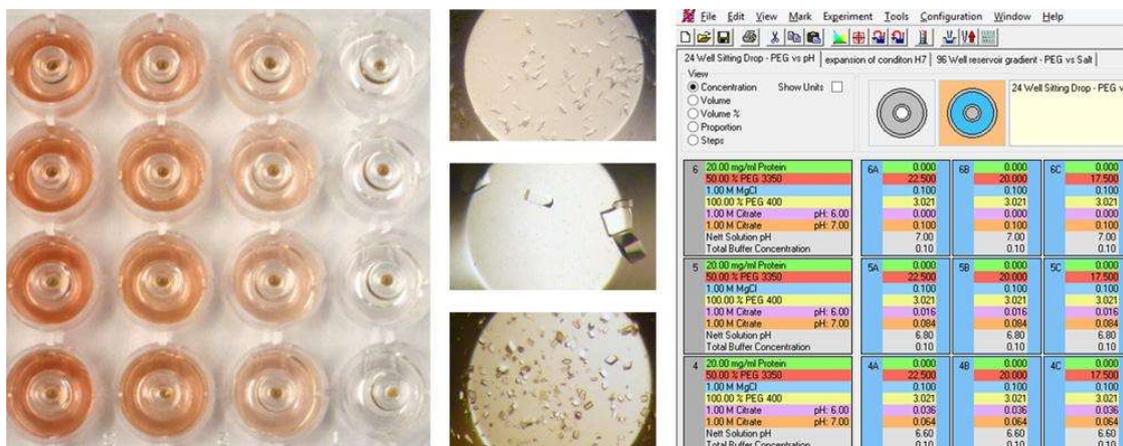
Dear Stefan

### Optimization capability

Oryx8 robots have a dedicated program for optimization experiments called XStep. The software allows **automatic optimization** with an 'autodesign' function that uses up to 7 ingredients per experiment. Oryx8 optimization capability:

### Oryx8 dispensing modes for optimization

1. Drop only (typically this method is used for microbatch-under-oil optimization). Drops are dispensed with a 7-bore multi channel microtip and then automatically covered with 10.0 uL of paraffin oil.
2. Reservoir well only (used for vapor diffusion reservoir filling and stock plate preparation). Wells are filled using the large volume tip. The robot typically dispenses a total volume of 20 - 500 µl to each reservoir well.
3. Reservoir and drop dispensing (used for vapor diffusion experiments). The reservoir wells are filled using the large volume tip and drops are dispensed using the 7-bore multi channel microtip.

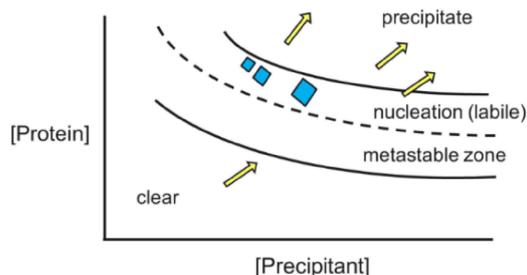


### Experiment design

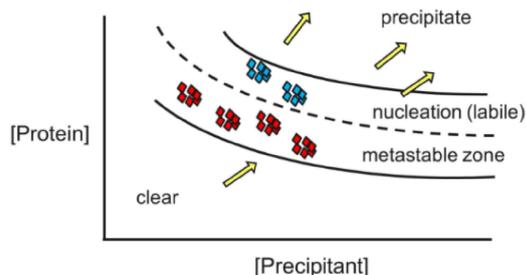
There are two experiment design tools in the XStep software:

1. Gradient design. Users specify a high and low concentration or pH to define a gradient.
2. Autodesign. The software features a **7-d multivariate experiment design** wizard. Users specify a central 'hit' condition and define the experimental limits as a percentage.

### Without seed-stock



### With seed-stock



### Optimization with microseeding:

For XStep optimization experiments with microseeding, we recommend to run a two stage experiment:

1. Fill the reservoir wells of a vapor diffusion plate using XStep.
2. Dispense the drops with protein and seed-stock using the [WaspRun \(screening\)](#) software.

To find the correct dilution of seed-stock we recommend to use the '[Cross-Matrix](#)' experiment. A dilution series of seed-stock e.g. from 1 to 1/1,000,000 is systemically tested against a range of precipitant or pH.

### Oryx4

[Oryx4 robots](#) can dispense [simple 2D gradient optimization experiments](#) for sitting drop, hanging drop, microbatch and LCP. To enable more powerful optimization with the XStep software it is possible to [upgrade Oryx4 robots to Oryx8](#).

[Request more information \(via our contact form\)](#)

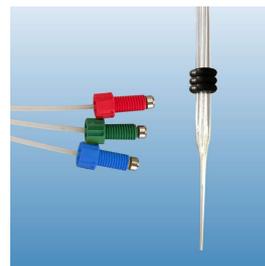
## Douglas Instruments Products



Oryx Robots



Crystallization Plates



Oryx Microtips

Recently published research using Oryx protein crystallization robots:

### [Structure of an anti-PEG antibody reveals an open ring that captures highly flexible PEG polymers](#)

Huckaby, J.T., Jacobs, T.M., Li, Z., Perna, R.J., Wang, A., Nicely, N.I. and Lai, S.K..

*Communications Chemistry* 3.1 (2020): 1-8

## Bump-and-Hole Engineering Identifies Specific Substrates of Glycosyltransferases in Living Cells

Schumann, B., Malaker, S.A., Wisnovsky, S.P., Debets, M.F., Agbay, A.J., Fernandez, D., Wagner, L.J.S., Lin, L., Li, Z., Choi, J. and Fox, D.M.

*Molecular cell (2020)*



Douglas Instruments | Douglas House, East Garston, Hungerford, Berkshire RG177HD United Kingdom

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