

Fabrice Gorrec¹, Olga Perisic¹, Daniela Stock^{1, 2}, Michael Magerstädt³, Paul Reardon³, Jan Löwe¹¹Medical Research Council Laboratory of Molecular Biology, Cambridge CB2 0QH, UK, jyl@mrc-lmb.cam.ac.uk²present address: The Victor Chang Cardiac Research Institute, Darlinghurst NSW 2010, Australia³Swissci, Neuhoferstrasse 74, 6345 Neuheim, Switzerland, info@swissci.com**MRC compatible hanging-drop seal**
hanging-drop experiments using MRC plates

- hanging drop vapour diffusion (0.05-5 μ l)
- seal that fits MRC maxi and MRC original
- works with Innovadyne Screenmaker, TTP Mosquito, Cartesian and others that allow inversion of dispensing order
- very low evaporation rate

How to use:

- remove protective film on underside and flip over
- put in custom bracket for alignment
- use robot or manually dispense reservoir solution and protein to underside of sheet (inverted order)
- flip sheet over and apply to MRC original or maxi plate
- press to seal
- remove top protective film for maximum clarity
- individual crystals can easily be retrieved by cutting the film with a scalpel

MRC maxi

sitting-drop optimisation and production in large volumes

- optimised for large drops
- sitting-drop vapour diffusion (0.1 - 10 μ l)
- 48 reservoirs with 1 shallow round well each
- works with TTP Mosquito robot
- very easy crystal retrieval through large, shallow wells
- superior crystal visibility through lens design
- zero evaporation (UVP, not PS)
- UV compatible (UVP, not PS)
- large sealing surface

How to use:

- reservoir holds 200 μ l
- use robot or manually dispense 0.1 - 10 μ l of reservoir and protein
- seal with CrystalClear tape
- mount individual wells by cutting the tape

Trough for Caliper i1000
rapid production of optimisation matrices from four corner solutions

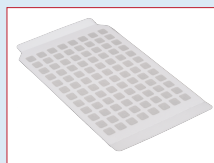
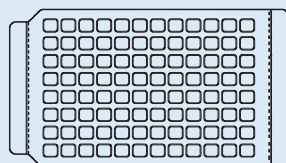
- 96-well optimisation gradients in 3 min with the Caliper i1000
- requires 96-channel pipettor with 96 independent channels (i1000)
- also useful for 8/12-channel robots/pipettes (Tecan, etc)
- can be sealed using CrystalClear tape for storage
- stackable
- SBS footprint for robotics

How to use:

- add 10 ml of the four corner solutions A to D
- the 96-channel head is moved so that two rows of tips enter each solution
- 6 movements are needed so that all tips have access to all solutions
- all 96 solutions are dispensed into MRC plate at once
- this also works with maxi (48 wells) by attaching only 48 tips to the machine

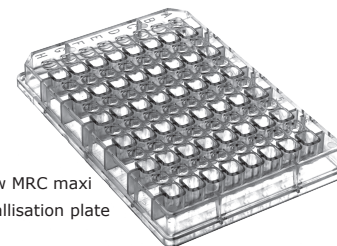
Tips & tricks:

- when mounting crystals from volatiles (such as alcohols), add some silicone oil to stop evaporation and crystal movement
- some liquids allow the original MRC plate to be turned upside down for hanging drop
- polystyrene plates allow for slow evaporation (over weeks)
- when stuck to the bottom of the well, crystals can be removed by cutting and/or bending the plastic surface underneath the crystal with a scalpel
- a plastic applicator (3M) is useful for making sure CrystalClear tape sticks properly to all wells
- a custom aluminium bracket is useful for sealing/un-sealing plates so no splashing occurs (works with all SBS standard plates)
- we recommend a Brandel plate sealer: a cost effective and reliable solution using CrystalClear tape (www.brandel.com, RS-3000)

hanging drops

fits on all MRC plates

seal



New MRC maxi crystallisation plate

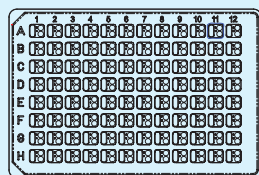
MRC original (2-drop)

sitting-drop screening, optimisation and production in small volumes

- sitting-drop vapour diffusion (50 - 500 nl)
- 96 reservoirs with 2 shallow round wells each
- works with all robots
- very easy crystal retrieval through raised well design
- superior crystal visibility through micro lens design
- zero evaporation (UVP, not PS)
- UV compatible (UVP, not PS)
- large sealing surface

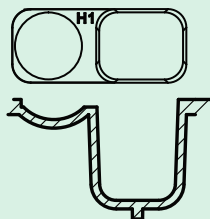
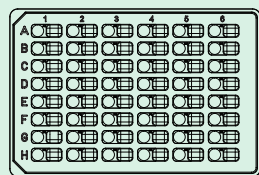
How to use:

- reservoir holds 85 μ l
- use robot to dispense 50 - 500 nl of reservoir and protein
- seal with CrystalClear tape
- mount individual wells by cutting the tape

screening

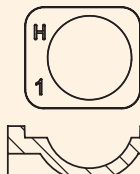
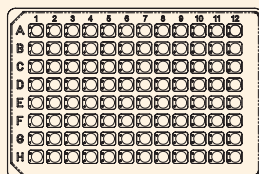
2 raised, shallow wells

original

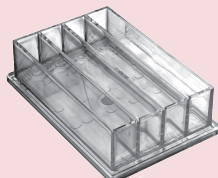
large drops & crystals

48 large, shallow wells

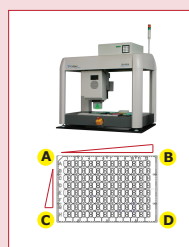
maxi

microbatch μ -batch & LCP

under-oil

4-corner optimisation

96 conditions in 3 min



trough

Availability

MRC hanging-drop seal, UVP

MRC original, UVP and PS

MRC maxi, UVP and PS

MRC under-oil, UVP
silicone oil 250 ml

Caliper i1000 trough, PS

All plates adhere to SBS standard.PS: polystyrene (water permeable)
UVP: cyclic olefin (impermeable, UV transparent)

The range of plates and seals are IP protected by Swissci and produced in Switzerland in collaboration with the MRC.

More on the MRC-LMB high-throughput crystallisation facility: www2.mrc-lmb.cam.ac.uk/groups/JYL/WWWrobots/robot.html
Stock, D., Perisic O., Löwe J., "Robotic nanolitre protein crystallisation at the MRC Laboratory of Molecular Biology", *Prog. Biophys. Mol. Biol.* **88**, 311-327 (2005)