mosquito LCP®

A fast and fully automated solution for Lipidic Cubic Phase screening

Joby Jenkins, Product Manager

innovative laboratory solutions • storage • pipetting • screening • automation
mosquito LCP: Key Elements

- spool of disposable mosquito pipette tips
- mosquito pipetting head
- LCP syringe
- dispensing pump
- 2 or 4 position plate
- X/Y stage
mosquito: Pipette Tips

- volume range: 25 – 1,200nL
- disposable: zero cross-contamination
- true positive displacement
- accurate for solvents and viscous liquids
- negligible dead volume
- cannot get blocked
- ability to mix
- ability to pierce foil plate seals
- multi-aspirate/multi-dispense capability
mosquito LCP: Syringe Dispenser

- syringe types: 50µL or 100µL
- dispense range: 25nL – 2µL
- true positive displacement
- accurate for highly viscous LCP material
- low dead volume
- precise drop positioning
- simple syringe changing mechanism
- well proven LCP dispensing technology

High precision syringe pump driver
Gas tight positive displacement syringe
Dispense needle
mosquito LCP: Features

- Developed in collaboration with The MRC, Cambridge, UK
- Enables the automated set-up of *In meso* crystallisation experiments
- Compact bench top instrument
- Positive displacement syringe for accurate, low volume LCP dispense
- Auto calibrating syringe needle for highly accurate LCP drop placement
- Disposable, positive displacement mosquito tips for accurate screen addition
- High throughput, <4 minutes per 96-well plates
- Quick and easy creation of protocols using intuitive, user-friendly software wizards
mosquito LCP: Auto-Calibration

- LCP needle tip position is automatically measured and calibrated.
- High precision photoelectric sensors detect position in X, Y and Z axes.
- Positioning to within ± 5 µm is achieved, resulting in:
  - Precise placement of LCP drops
  - Accurate overlay of screen solutions
  - Known drop position for repeatable automated imaging
- Facilitates quick and easy syringe changing with no manual recalibration.
mosquito LCP: Drop Set-up

mosquito LCP syringe pipetting 100nL of highly viscous LCP sample on to an LCP Sandwich Plate

- High precision Z axis control for accurate contact dispensing and sample ‘touch of’
- Automatic Z height dispense offsets throughout LCP dispense volume range
mosquito LCP: Drop Set-up

mosquito tips pipetting 800nL of screen buffers directly on to LCP drops on an LCP Sandwich Plate

- Screen solutions are quickly pipetted on to LCP drops, minimising exposure time
- High precision Z axis control ensures LCP drops are not touched by the pipette tips
- Precise X/Y positioning ensures screen buffer drops surround the LCP drops
mosquito LCP: Crystals

LCP drop imaged in Sandwich Plate

High magnification LCP drop with crystals

Image supplied by Pat Edwards/Tony Warne, MRC Cambridge, UK
mosquito LCP: Crystals

LCP drops with crystals imaged in Sandwich Plate

Images supplied by Jim Fairman/Susan Buchanan, NIDDK, NIH, USA
mosquito LCP: Crystals

LCP drops with crystals imaged in Sandwich Plate

Images supplied by Jim Fairman/Susan Buchanan, NIDDK, NIH, USA
mosquito LCP: Crystals

LCP Hanging Drop

High magnification LCP drop with crystals

Image supplied by Reinhard Grisshammer, NINDS, NIH, USA
mosquito LCP: Accessories
mosquito LCP: Key Benefits

- specifically designed for automated, low volume, LCP screening
- based on mosquito – extremely reliable and very low maintenance
  - proven in many, many, crystallography labs around the world
- simple and robust technology
- positive displacement, disposable tips for screen buffer dispensing
- volumetrically precise and accurate throughout volume and viscosity ranges
- highly accurate drop placement
- self calibrating LCP syringe
- compact bench-top instrument
- versatile; Hanging Drop, Sitting Drop & Microbatch and LCP set ups
- multi-aspirate and mixing options give added flexibility (seeding, additives etc)
- very easy to use, user friendly software and hardware
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