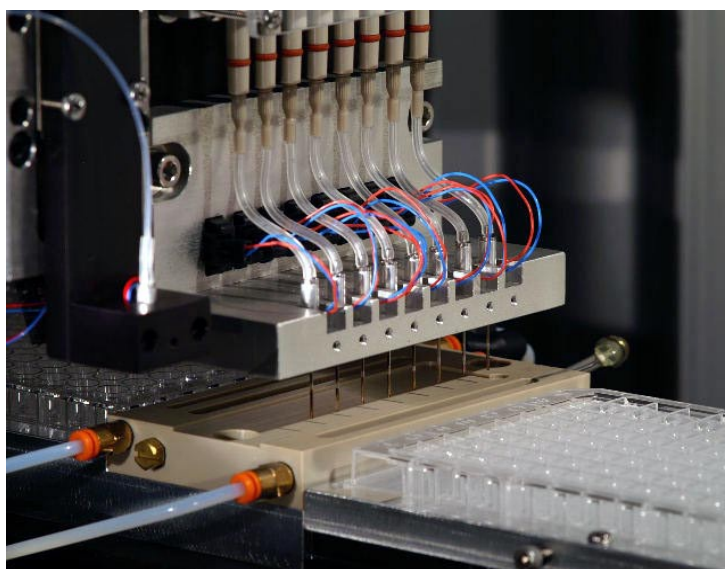


Protein Crystallization Screening Platform

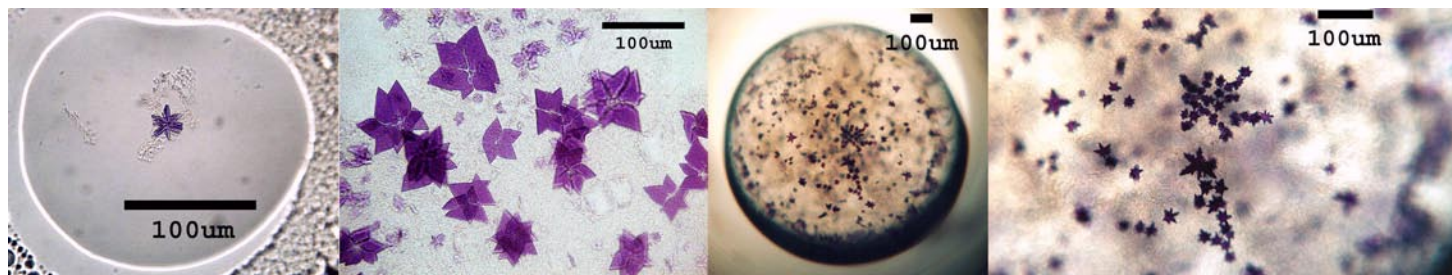
Technology Description

CrystalJet™ is a prototype ink-jet based platform to perform small fluid volume high-throughput initial protein crystallization screening to identify parameters for subsequent scale-up to diffraction quality crystals. The system can also be used to explore the potential generation of micro-sized diffraction quality crystals.

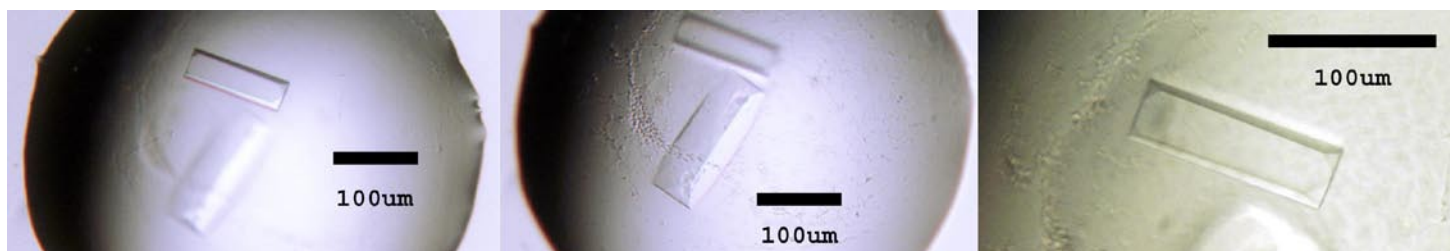
CrystalJet™ provides for decreased protein consumption and reduction of the sampling of crystal growth conditions by using smaller screening volumes. The CrystalJet™ screening platform will operate in microbatch and vapor diffusion modes to offer experimental flexibility. The system utilizes a dip-n-sip technology to perform the aspiration of the crystallization precipitant solutions and piezoelectric dispensing at volumes of 100pL to 1000nL via drop accretion. A separate disposable ink-jet dispensing device is used to deliver the protein solution alleviating cross contamination issues. The platform includes a plate sealer to seal crystal screening plates and environmental control to maintain temperature and humidity.



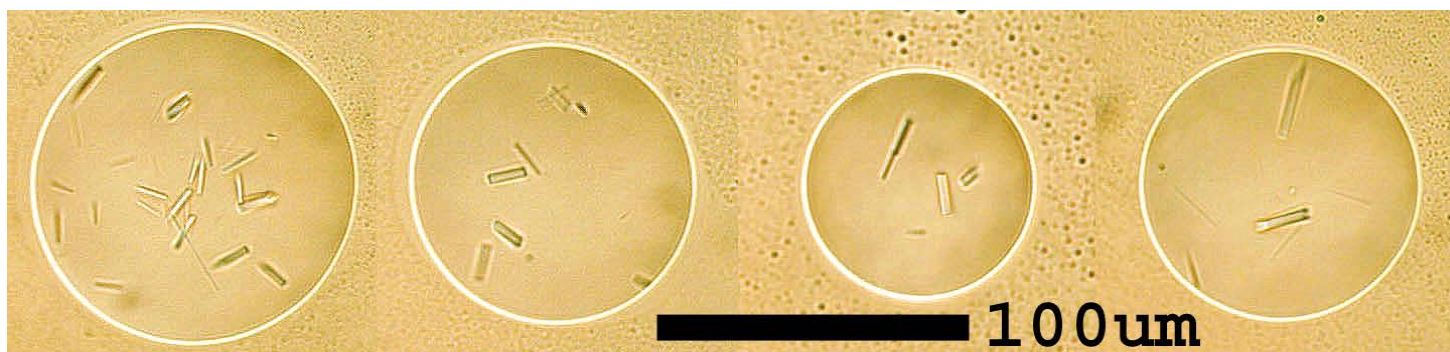
Crystallization Examples



Left: Bacteriorhodopsin (BR) crystal formation after 2 weeks during a hanging drop vapor diffusion experiment in a 1.0nL drop (5.0ng BR/drop) of BR/bicelle crystallization solution deposited by a cooled ink-jet device. Maximum crystal size was 20 μ m. *Second:* BR crystal morphology in control sample (5.0 μ g BR/drop). Maximum crystal size was 121 μ m. *Third:* BR crystal formation in a microbatch setting under paraffin oil. *Far Right:* Magnified view of 300nL of BR/bicelle printed into a lipid droplet and subsequently mixed with a 25% concentration of the precipitant.



Crystals of Hsp90 in 16nL drops after 4 days of incubation at 4°C.



Crystals of FepA in (left to right) 150pL, 100pL, 50pL and 100pL drops after three weeks at 4°C.