

UCSF X-ray Crystallography Facility

Liam McKay, UCSF

This presentation

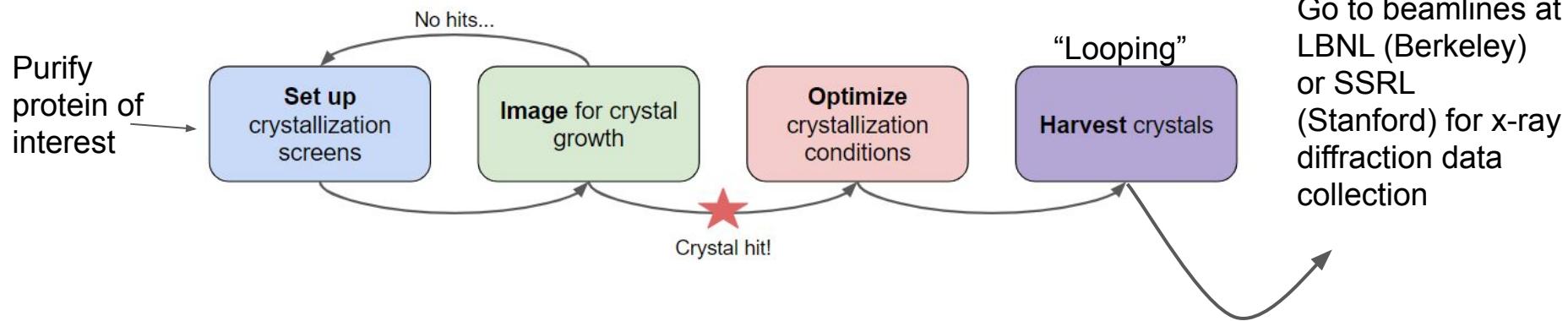
- Brief Introduction
- Workflows for X-ray Crystallography experiments
- Machines and automation
- More info
- Video tour!

Introduction

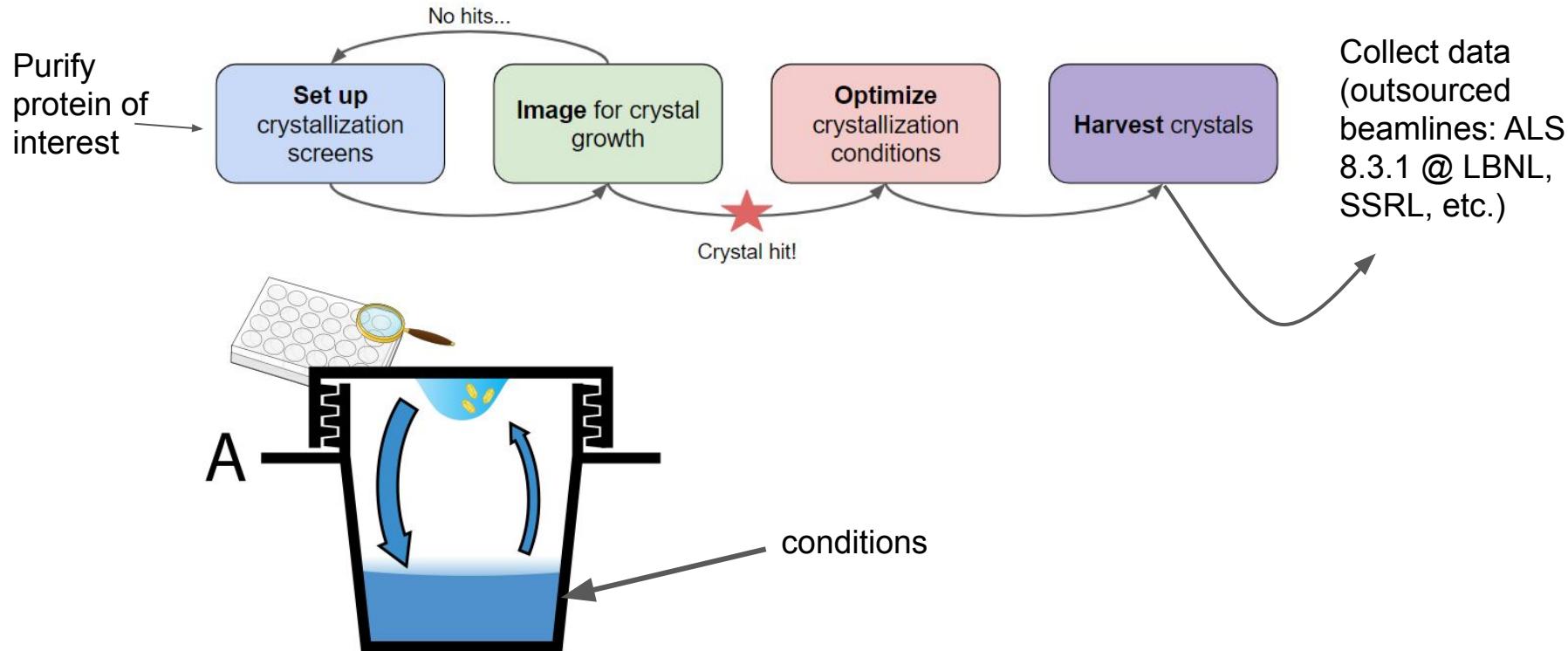
- Liam McKay UCSF Staff research associate since Sep 2020
 - Xray Crystallography Facility lab manager (train users, maintain machines and software)
 - UCSC BS in Bioinformatics 2019
- UCSF Mission Bay, Genentech Hall



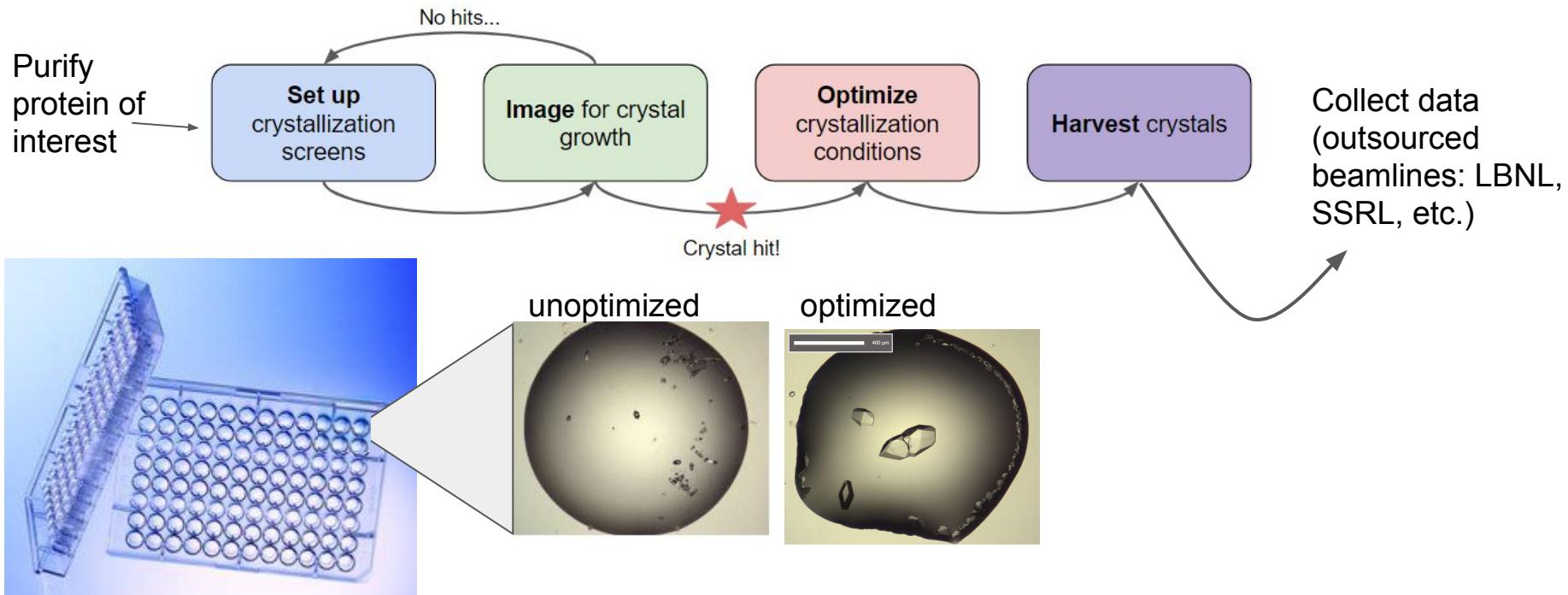
Workflow for X-ray Crystallography



Workflow for X-ray Crystallography

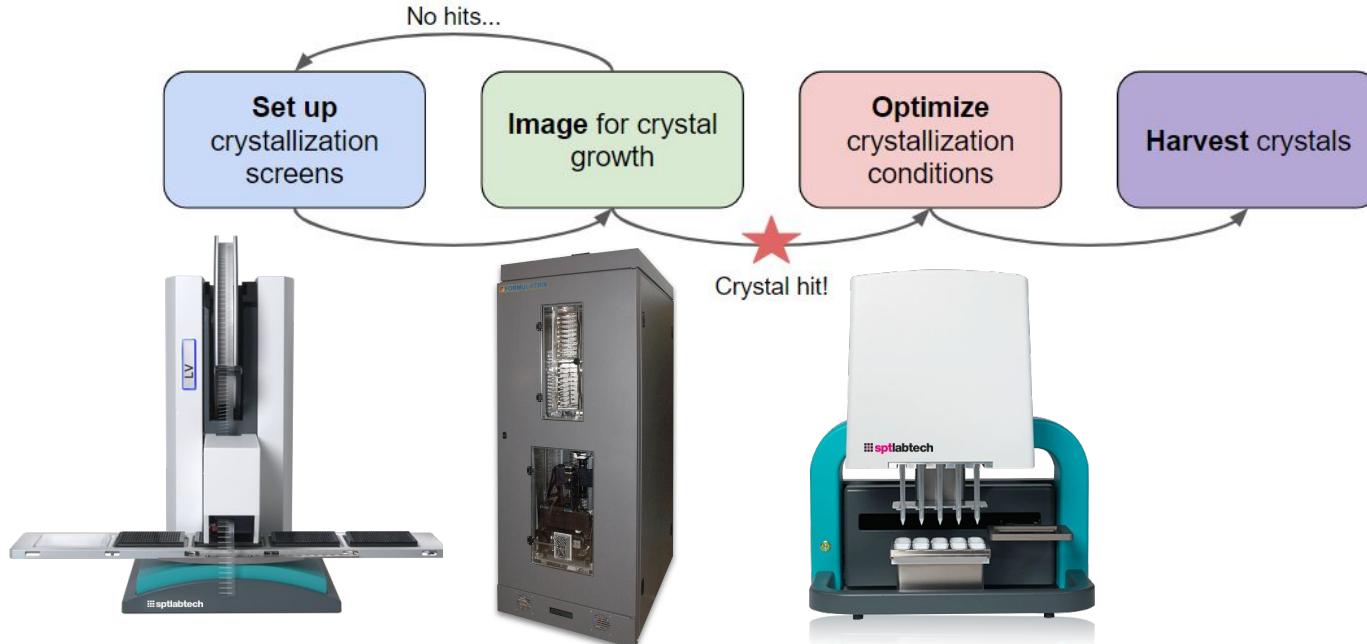


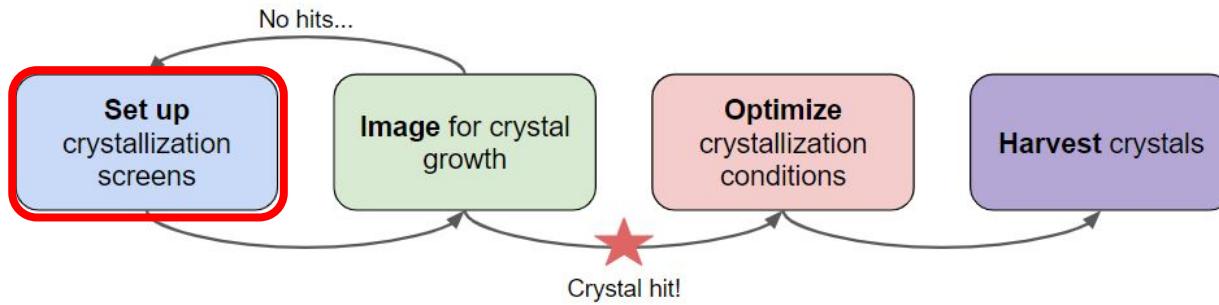
Workflow for X-ray Crystallography



Workflow for X-ray Crystallography

Automation! From SPT Labtech and Formulatrix

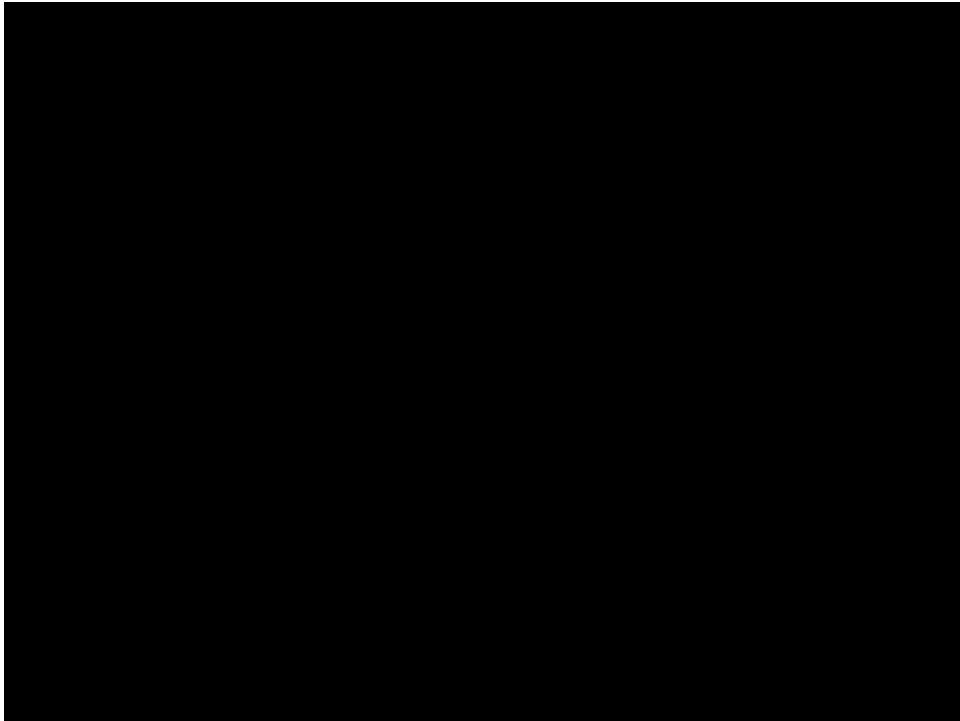


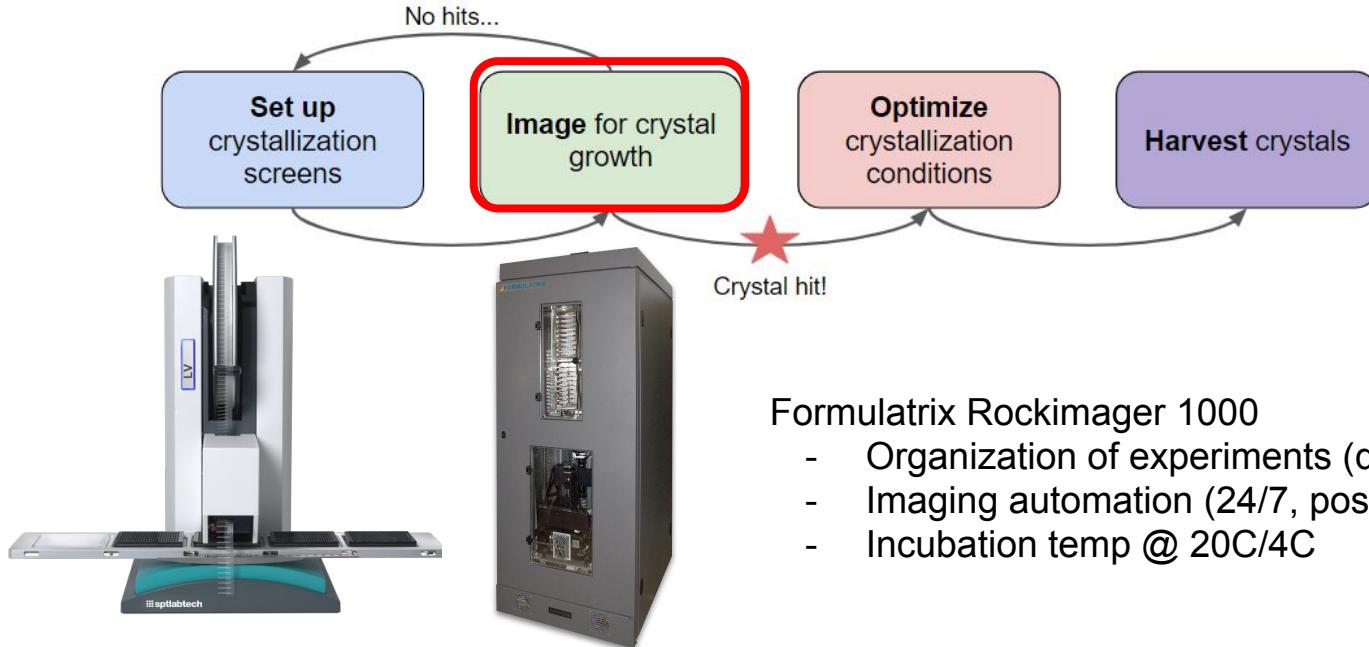


SPT Labtech Mosquito:

- Automated nanoliter pipetting (fast, low vol.)
- Programmable (advanced crystallography protocols e.g. seeding)

Video of mosquito in action

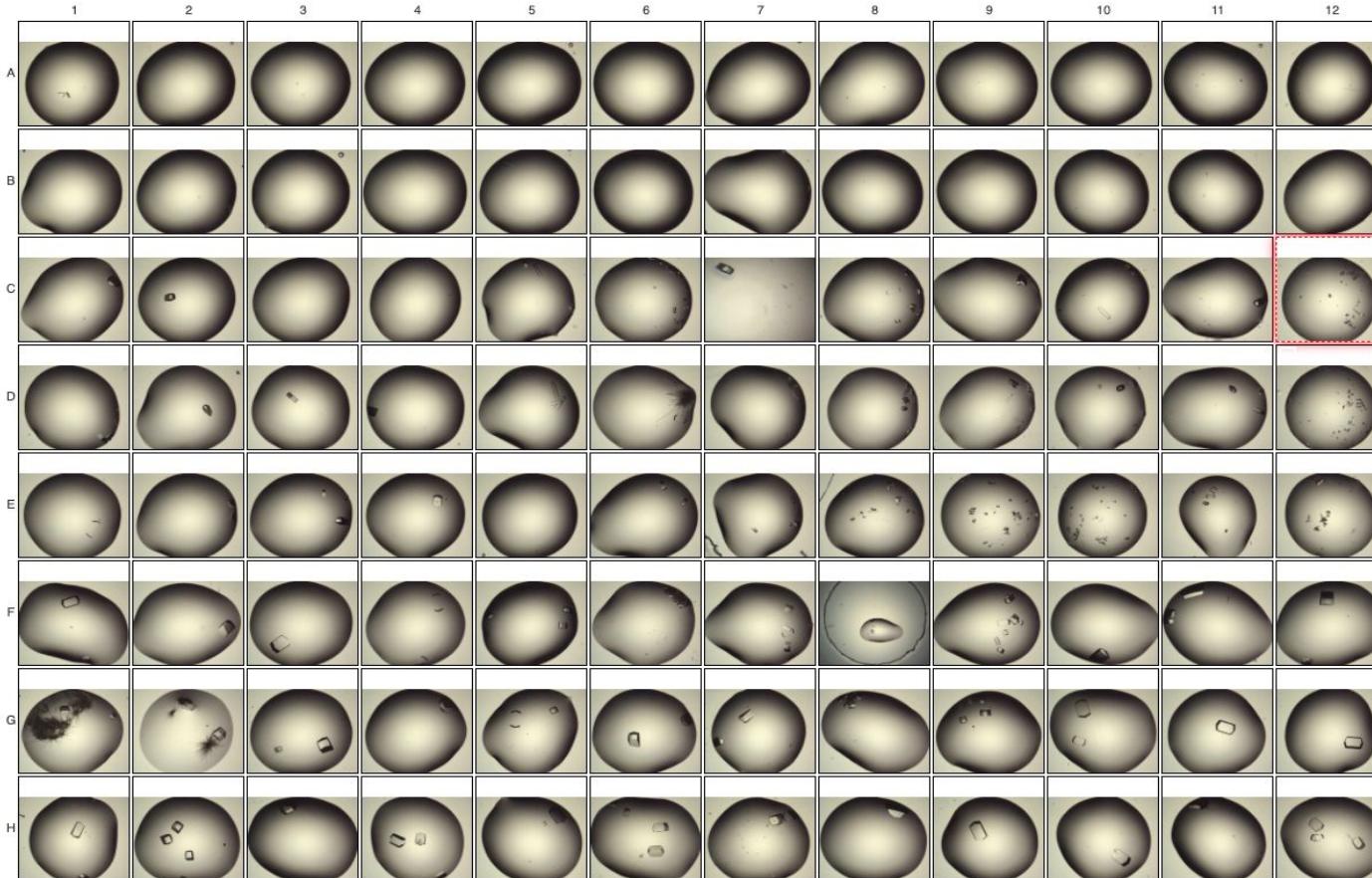




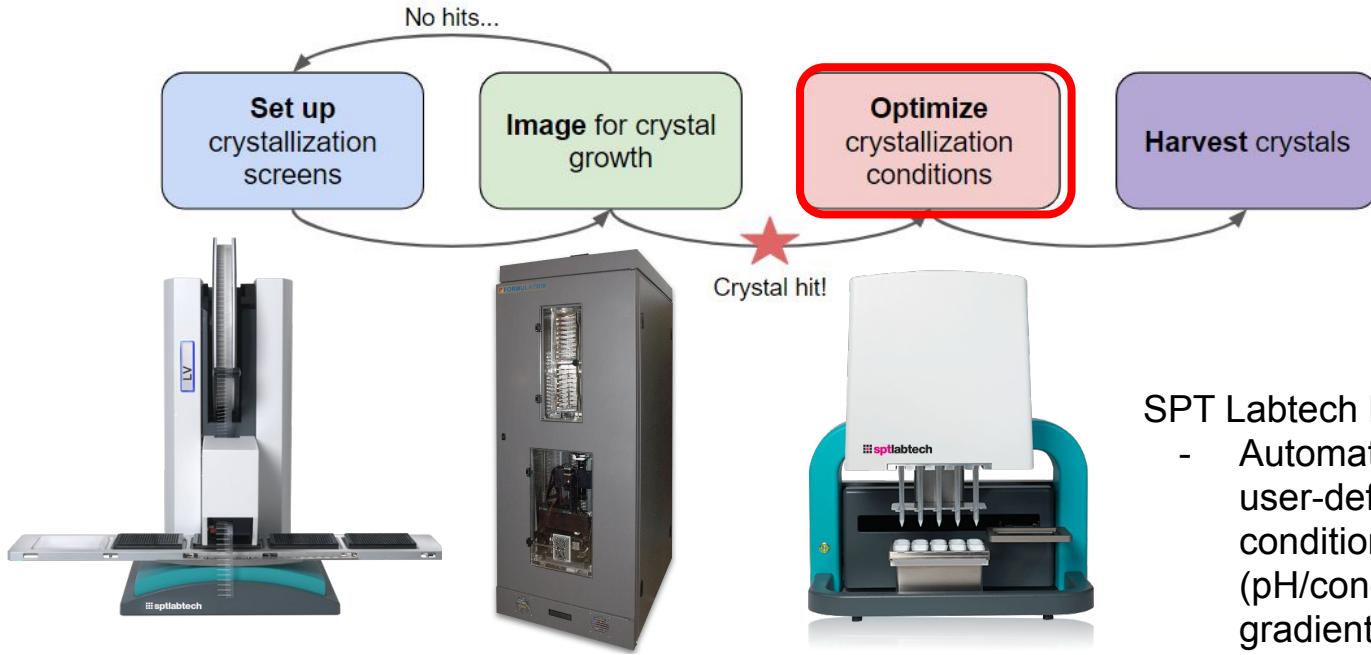
Formulatrix Rockimager 1000

- Organization of experiments (database)
- Imaging automation (24/7, posted online)
- Incubation temp @ 20C/4C

Rockimager 1000 imaging example

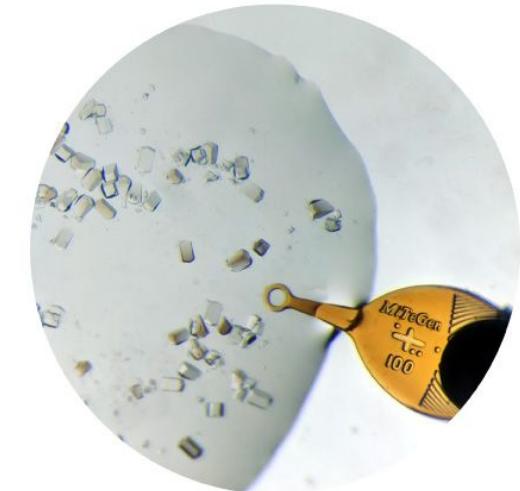
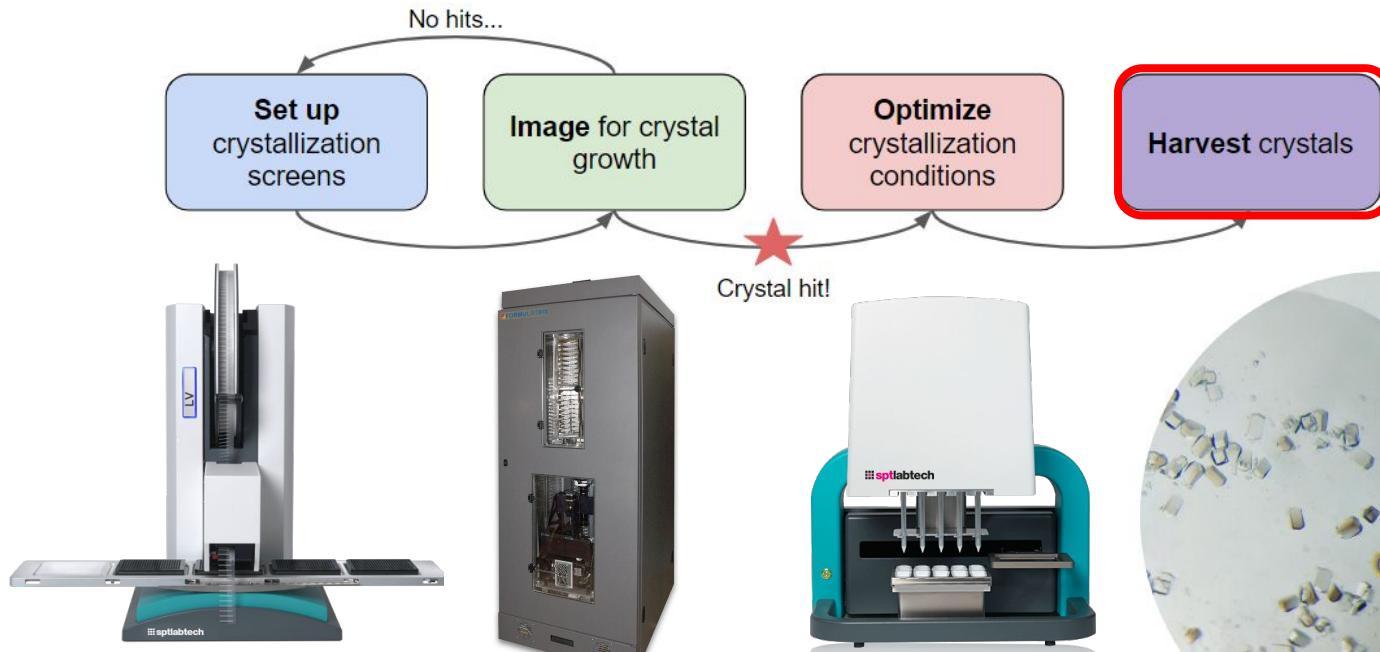


Lysozyme
crystallized



SPT Labtech Dragonfly

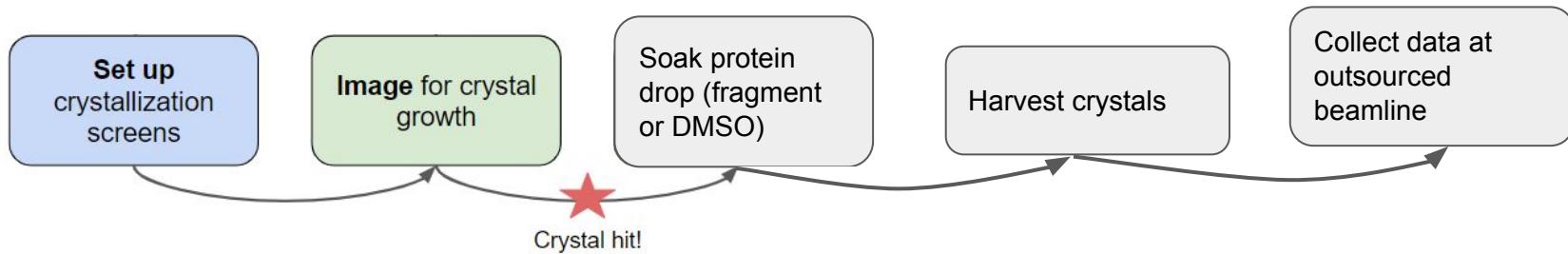
- Automates pipetting user-defined optimization conditions (pH/concentration gradients)



100 μ m!

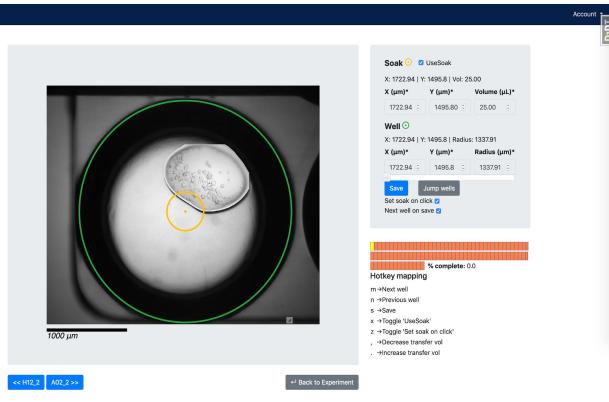
Looping and cryocooling is done
by hand

Fragment soaking workflow



Fragment soaking workflow

hitsDB - internal web application



Echo 650



OLT Shifter



Set target for soak (DMSO)

Soak using Echo 650

Loop crystals using OLT Shifter

Freeze crystals using Mitegen NANUQ

More Info

Links

[UCSF MSG Xray Crystallography Website](#)

- [Techniques](#)

[msg-xtal-internal](#)