

# NU-HTA open to academia and industry

## *Service Mode*

- Provide robust automated solution
- Assist experimental design
- Provide access to robotics
- Provide grant preparation assistance
- Collaborate in grant application
  
- Full service: send material, receive data
- Facility use: you run the experiment
- Development: you bring a problem, we help to find an automated solution



## *Facilities*

- Hogan 4140: molecular and cellular screen
- Hogan 4130: cell culture and assay prep
- Class 100 clean room for primary cell screen

## *Screen works performed on*

**Protein**

*E. coli*

**Yeast**

**Insect cells**

**Mammalian cells**

*C. elegans*

# Liquid handlers & plate detection systems



Chemistry of  
Life Processes  
Institute

Science Without Boundaries  
Discoveries Without Limits



Center for Structural Genomics  
of Infectious Diseases

CSGID



ROBERT H. LURIE  
COMPREHENSIVE CANCER CENTER

## Assays and screens

- *Biochemical assays*
  - Enzyme assays
  - Protein-ligand binding by thermal shift and label-free
- *Cell-based assays*
  - Reporter (GFP or Luciferase)
  - proliferation, viability, toxicity
  - GPCR, ion channel, transporter
- *Molecular biology protocols*
- *RNAi Profiling*
- *Genetic synthesis*

## Screen Libraries

- Genomic RNAi : Human, Mouse
- Yeast genomic : 7 collections
- Small molecule : ~70,000 compounds

## Unique instrument in Chicago



FLIPR Tetra



nanoliter dispensers

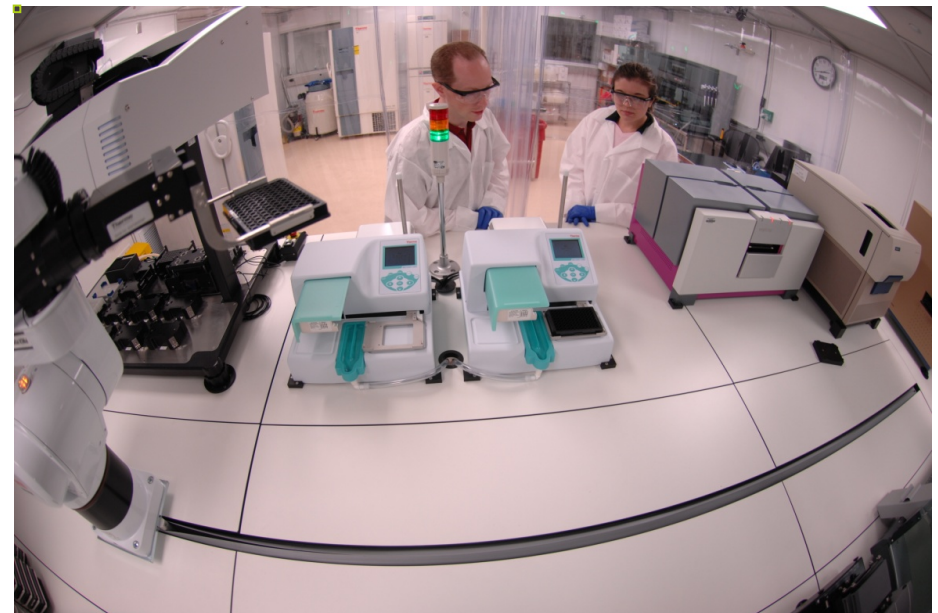


Colony picker



# High-Throughput Screening at the University of Chicago

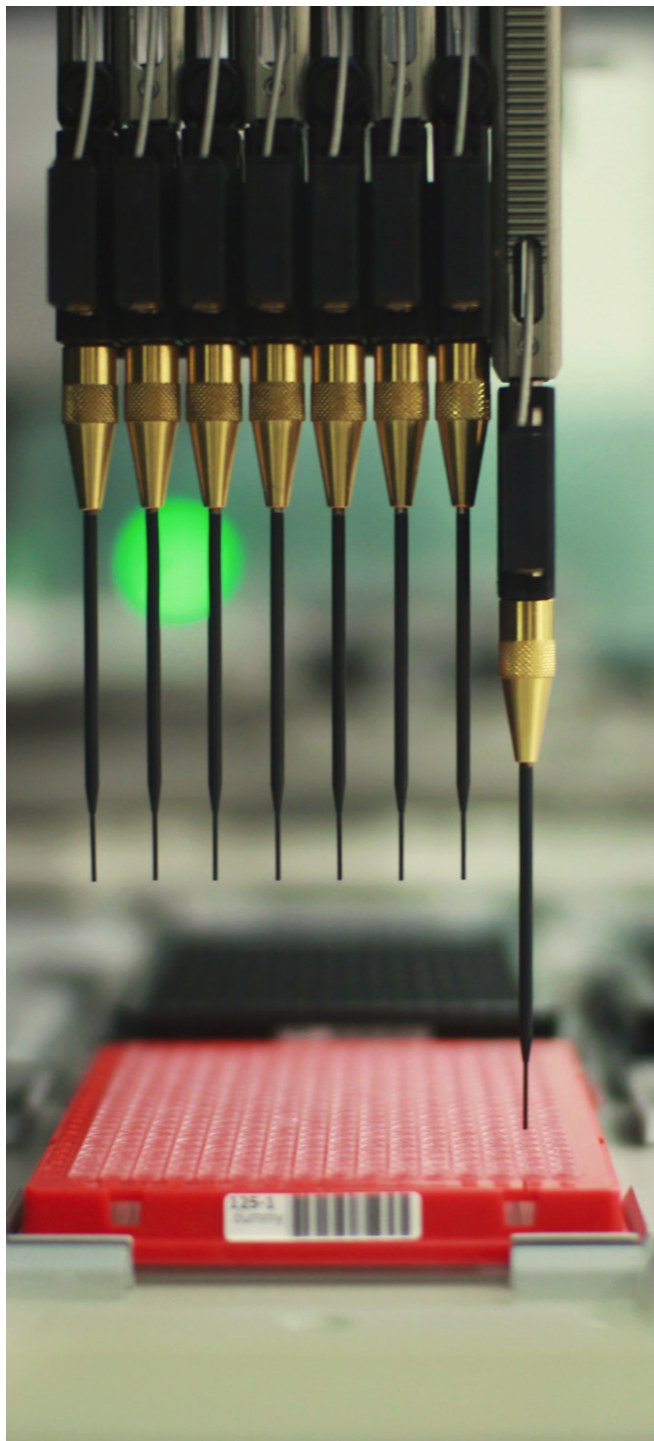
- ❑ Cellular Screening Center (CSC):  
Opened in January of 2007
  - ❑ In five and a half years the CSC has run over 60 high-throughput screens
- ❑ Perform small molecule and siRNA screens for investigators throughout Chicago
  - ❑ Over 160,000 small molecules
  - ❑ Whole genome siRNA library (ThermoFisher Dharmacon)
- ❑ 900 ft<sup>2</sup> of cleanroom lab space: All screening areas are Class 100
- ❑ 8 liquid handlers and 3 readers (two high-content) with a multi-axis arm on a 3m rail





# CSC Workflow

- ❑ Meet with Technical Director to go over project goals, assay technologies, and a rough estimate of costs and timing
- ❑ Submit protocol for review including all miniaturized volumes (95% of assays are run in 384-well format)
- ❑ Written estimate provided to the PI
- ❑ Timeline established
- ❑ Point person from PI's lab works with CSC staff member to automate the assay and ensure all sides are satisfied
- ❑ Screen run by CSC staff members and results delivered immediately

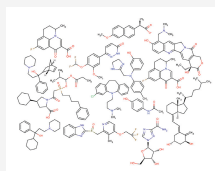


# The RRC High-Throughput Screening Facility

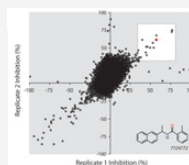
Assists researchers through the steps of hit discovery



**pre-screen:**  
assay development  
assay optimization



**high-throughput screening (primary assay)**  
compound libraries  
robotic workstations  
multimode detectors  
data collection



**post-screen**  
data analysis  
cherry pick hit compounds  
confirmatory assays (dose response curves)  
counter-screening & secondary assays

target - > hit - > lead - > pre-clinic - > clinic - > FDA - > post-approval



## The RRC High-Throughput Screening Facility

**UIC** RESEARCH  
UNIVERSITY OF ILLINOIS  
AT CHICAGO RESOURCES CENTER

### Robotic workstations:

Tecan Freedom EVO 200: 96-channel dispensing + 8-channel liquid handling arm. Customizable deck.

Perkin Elmer Janus: enclosed in bio-safety cabinet. 384/96-channel dispensing.

### Microplate readers:

Tecan Infinite F200 Pro

Perkin Elmer Envision (with Alpha Screen module)

### Commercial compound collections:

Diverse, drug-like sets:  
Chembridge DiverSet (75,000+ compounds)

Maybridge HitFinder (14,400 compounds)

FDA-approved drugs:

Prestwick Library (1,200 compounds)

targeted libraries:

Enzo Kinase Inhibitor library

Enzo Nuclear Receptor Ligand library

### siRNA library:

Ambion Silencer® Select Human

Druggable Genome siRNA Library V4

