



MELVIN AND BREN SIMON CANCER CENTER

INDIANA UNIVERSITY

CHEMICAL GENOMICS CORE FACILITY

Core Director: Zhong-Yin Zhang, Ph.D.

OVERVIEW

The Chemical Genomics Core Facility (CGCF) is a shared facility of the IU Simon Cancer Center and the IU School of Medicine. This facility has been in full operation since July 2006. The mission of CGCF is to provide IUSCC investigators with cost-effective access to high-throughput screening of structurally diverse, drug-like small molecules in biological assays provided by the investigators. This service enables the investigators to discover small molecule tools for basic research, therapeutic development and diagnostic applications. Facility staff work closely with each investigator through all stages of the screening process, providing an opportunity for students and fellows to gain experience and training in high throughput screening at the facility.

SERVICES PROVIDED

- Consultation for assay development
- Assistance in assay implementation and validation
- Assistance in carrying out high-throughput screening of chemical libraries
- Provide compound libraries pre-plated, available for use in a 96- or 384-well format
- Provide training in the use of facility-maintained instrumentation
- Assistance with data analysis and compound selection

COMPOUND COLLECTIONS

- A total of 170,000 structurally diverse, pharmacophore-rich collection of drug-like small molecules obtained from ChemDiv and ChemBridge.
- **Coming soon:** 50,000 new compounds selected from ChemBridge's most recent in-house designed Combinatorial Libraries which are produced from over 300 novel scaffolds synthesized by ChemBridge. This new library covers unique chemical space not available from our existing libraries.
- All library compounds are pre-plated in 384-well format and ready to use.

TYPE OF ASSAYS IMPLEMENTED

- Enzyme activity-based assay
- Affinity-based binding assay
- Protein-DNA interaction assay
- Cell proliferation assay
- Cell-based reporter gene assay

ASSAY DETECTION ABILITY

- Absorbance
- Fluorescence Intensity
- Fluorescence Polarization
- Time-Resolved Fluorescence
- Luminescence

Chemical Genomics Core Facility

Van Nuys Medical Science Building, Room 1005
635 Barnhill Drive, Indianapolis
(317)274-1553

www.chemicalgenomics.iu.edu

To initiate a collaboration, please contact:
Zhong-Yin Zhang, Ph.D., zyzhang@iupui.edu
For scheduling, please contact:
Lan Chen, Ph.D., lanchen@iupui.edu

MAJOR EQUIPMENT

LIQUID HANDLING ROBOTS

Multidrop 384 Dispenser with Titan Stackers (Titertek) (right)

- A fast plate filler with 8-channel pipettor;
- Accommodates 96- and 384-well microplates;
- Integrated with stackers.

Freedom EVO Workstations (Tecan) (below)

Flexible liquid handling robot and programmable workstation equipped with 96-channel MCA pipetting heads.

Left: uses disposable tips

Right: uses fixed tips

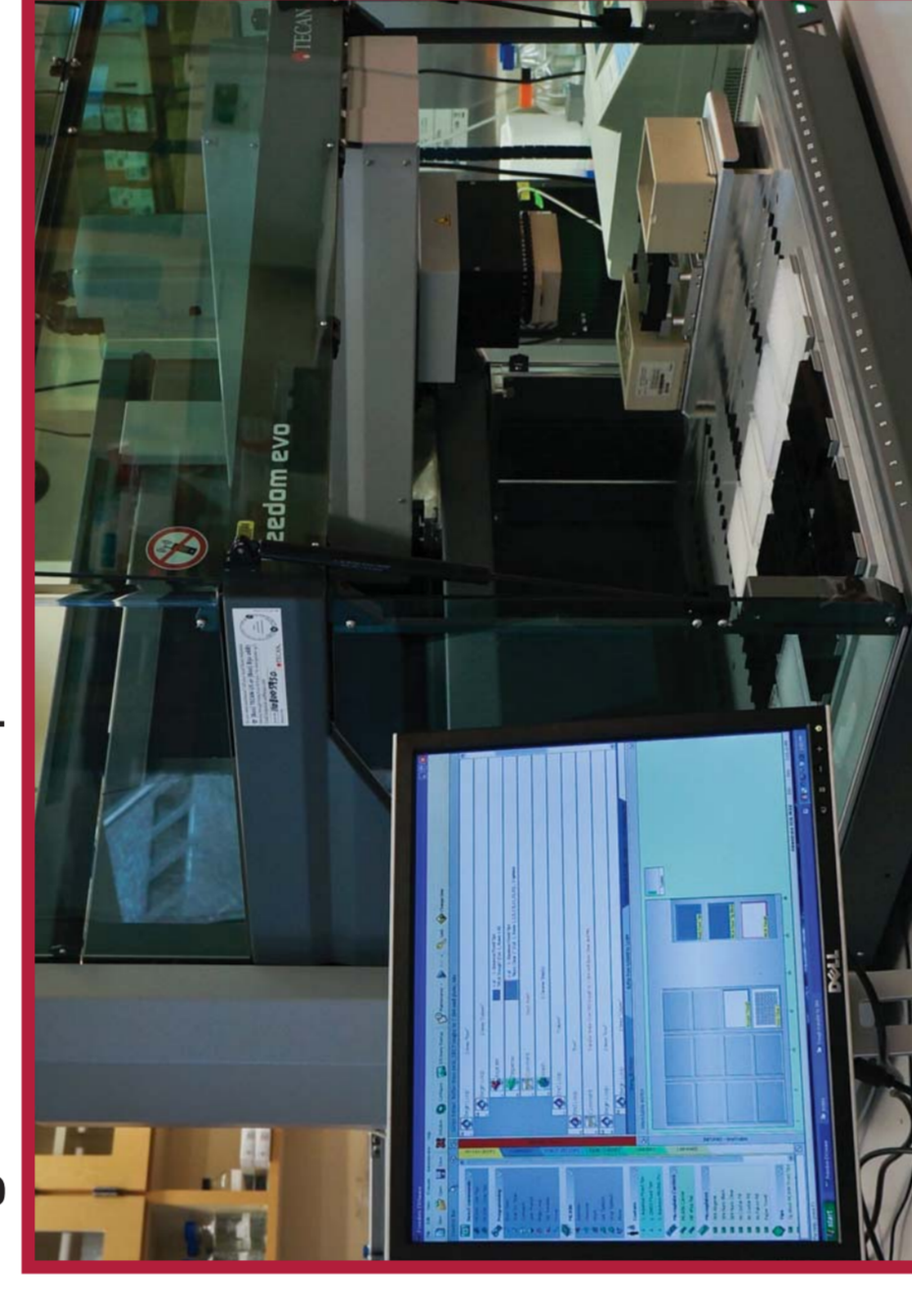


PLATE READERS



SpectraMax Plus 384 Spectrometer (Molecular Devices) (right)

- Tunable wavelength covers a full spectrum from 190-1000 nm

EnVision Multilabel Plate Reader (Perkin Elmer) (left)

- Absorbance
- Fluorescence
- Fluorescence polarization
- Time-resolved fluorescence
- Luminescence
- AlphaScreen /Alphascreen
- LANCE



Ultra 384 Multilabel Plate Reader (Tecan) (above)

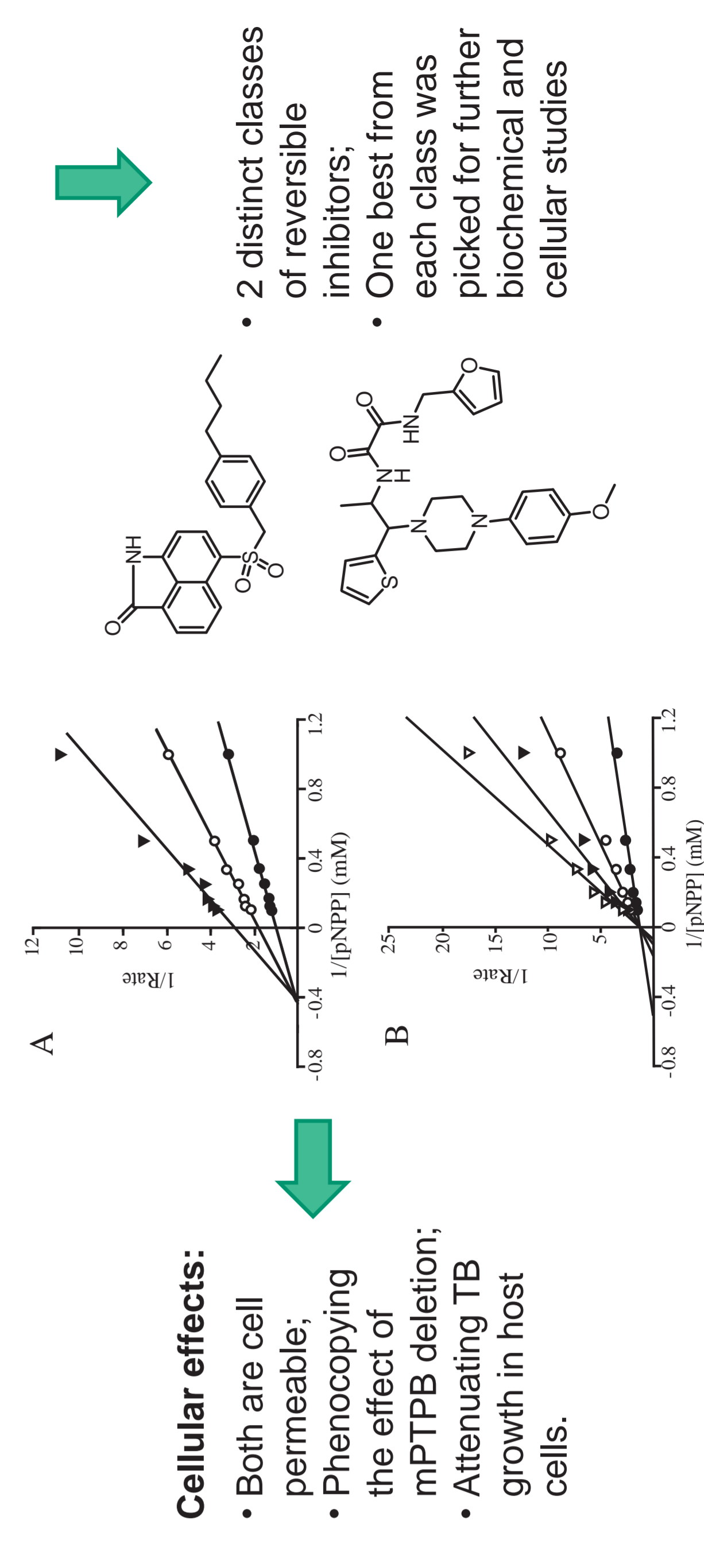
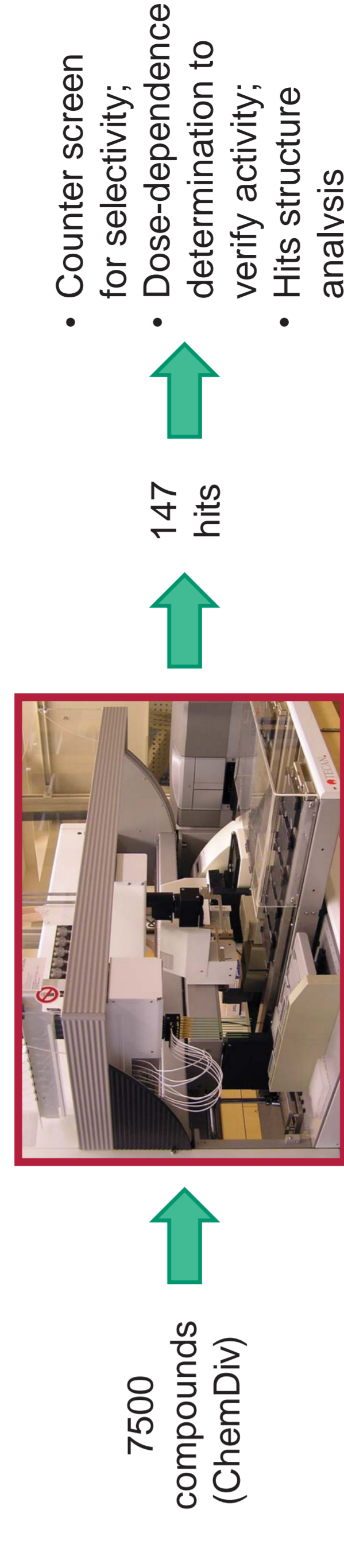
- Absorbance
- Fluorescence
- Fluorescence polarization
- Time-resolved fluorescence
- Luminescence

CURRENT AND FUTURE USERS

INVESTIGATOR	PROJECT	PROGRAM
Rebecca Chan	SHP2	HIMHI
Tim Corson	Retinoblastoma	EDT
Melissa Fishel	Ape 1	EDT
Millie Georgiadis	APEs	EDT
Johnny He	HIV	Affiliate
Tom Hurley	ALDH and Glycogen Synthase	EDT
Mark Kelley	APEs	EDT
Hyun-Suk Lim	SCFSkp2 Ubiquitin Ligase	EDT
Samy Meroueh	uPAR and sortase	EDT, BC
Samisubbu Naidu	malignant melanoma	TMM
Claire Walczak	MCAK	BC
Mu Wang	SOD1	EDT
Yan Xu	Phospholipase A2 in ovarian	TBM
Qizhuang Ye	methyltransferases	EDT
Xiao-Ming Yin	Caspase inhibitor	EDT, TBM
Jianting Zhang	STAT3 inhibitor	BC, EDT
Zhong-Yin Zhang	SHP2 and PRL1/3.	EDT
Adam Zlotnick	Diverting retrovirus assembly	EDT
Joseph Bidwell	Nmp4	Nonmember
Dan Kearns	CsrA	Nonmember
Randall Roper	Dyrk1a	Nonmember
Stanley Spinolar	Bacterial two component system	Nonmember
Val Watts	Aadp2	Nonmember

EXAMPLE 3 OF SCREENING PROJECTS

Identification and Characterization of Novel Inhibitors of mPTPB, an Essential Virulent Phosphatase from *Mycobacterium tuberculosis* (PI: Zhong-Yin Zhang)



Biochemical characterization
Ref.: ACS Med. Chem. Lett. 1 (2010), 355-359

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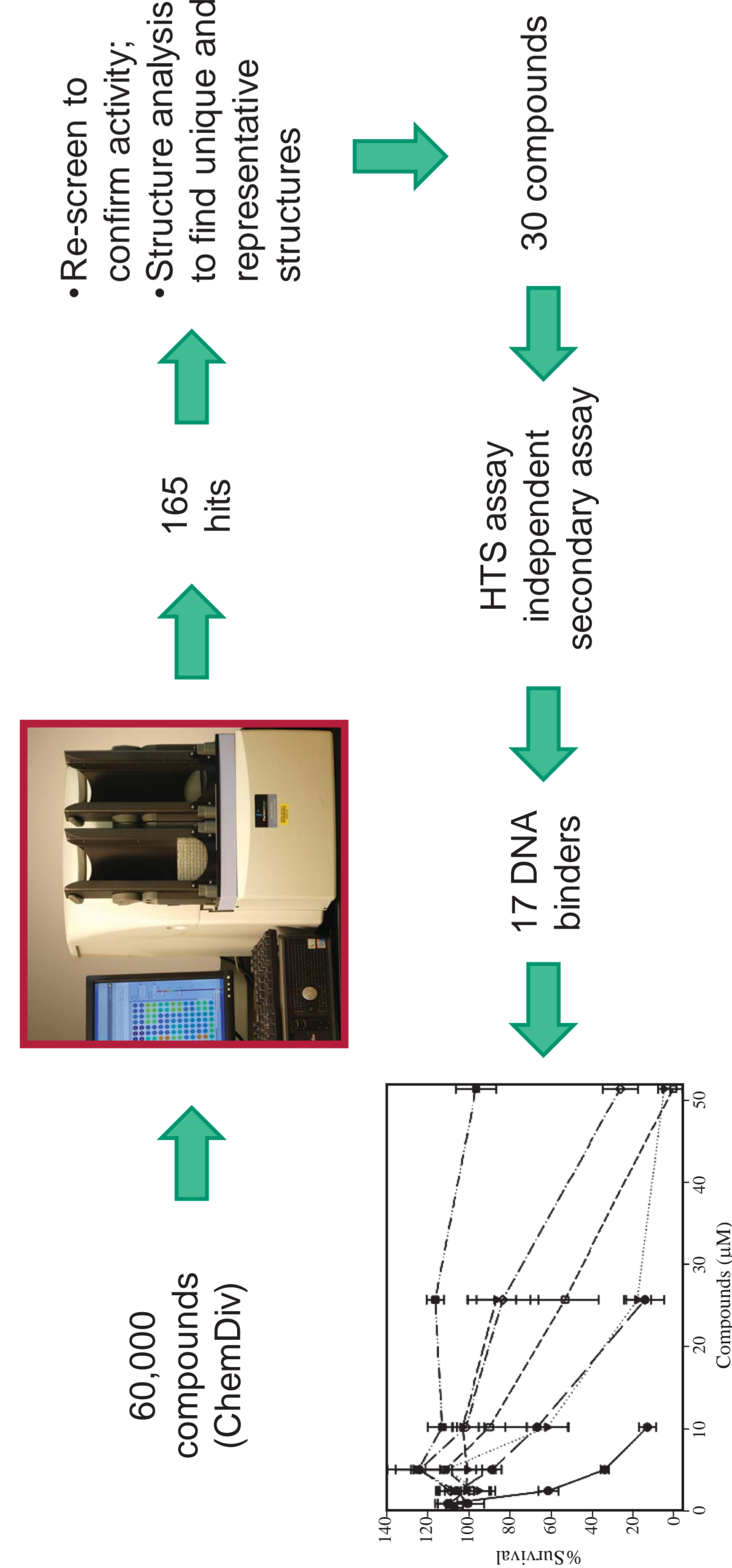
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EXAMPLE 1 OF SCREENING PROJECTS

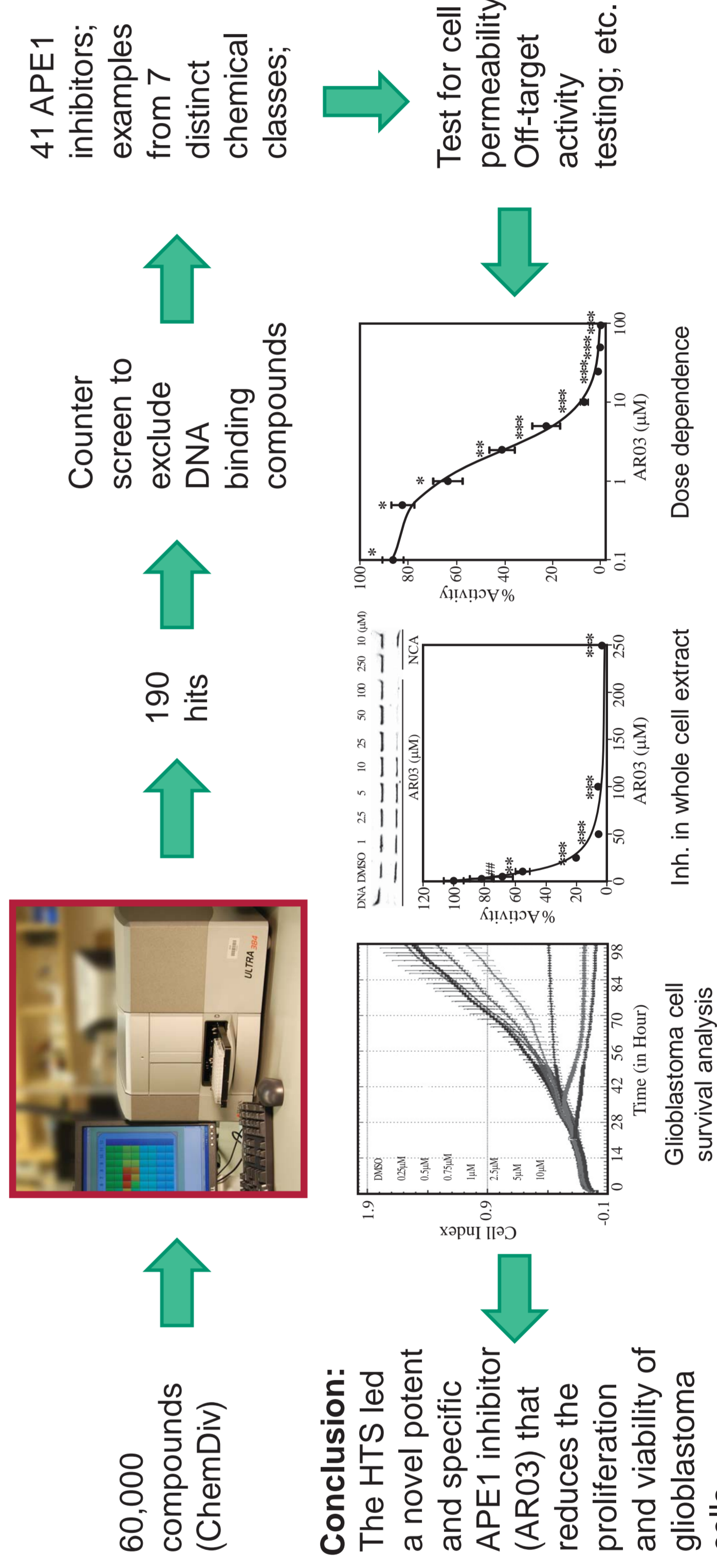
High-throughput Fluorescent Intercalator Displacement-based Discovery of Cytotoxic DNA Binding Agents from a Large Compound Library (PI: Millie Georgiadis and Eric Long)



Ref.: Bioorg. Med. Chem. Lett. 20 (2010), 1685-1688

EXAMPLE 2 OF SCREENING PROJECTS

Novel Small Molecule Inhibitor of Ape1 Endonuclease Blocks Proliferation and Reduces Viability of Glioblastoma Cells (PI: Mark Kelley)



Ref.: J. Pharmacol. Exp. Ther. 334 (2010), 988-998