High Throughput Research Resources at the Chemical Screening Center
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Why do one experiment when you could do hundreds? The UCSC Chemical Screening Center (CSC) is a shared research facility providing screening technologies that aid in the discovery of therapeutic agents and biomedical research tools. The CSC is dedicated to improving human health, pushing the limit of scientific knowledge, and educating the next generation of biomedical scientists.

Dr. R. Scott Lokey
Professor of Chemistry
CSC Faculty Director

Dr. Beverley M. Rabbitts
CSC Director of Operations

*New lab space* 465 Physical Sciences Building (CSC Office is 456 PSB)

*New logo* and *New website* https://ucsccsc.sites.ucsc.edu/

Attention all users: please cite RRID SCR_021114 in your acknowledgements.

From commercial and government sources:
100,000 natural product extracts - NCI library
20,000 diversity compounds - ChemDiv
2,000 FDA approved bioactives - Selleck Chem
1,000 known bioactives - Spectrum
500 fragments - Life Chemicals
20,000 diversity compounds - ChemDiv
100,000 marine and terrestrial natural products - a unique growing collection

Plus we accumulate reference database of results collected for our compounds in a variety of assays, including cytological profiling, e.g. for guilt-by-association mechanism of action identification of a novel compound.

Cytological Profiling (and immuno-CP with macrophages):
- Plate adherent mammalian cells
- Dose with compounds, activate macrophages with LPS, incubate
- EdU incorporation, mitotracker live stains
- Fix, permeabilize, block, click reaction, antibody staining
- High throughput multichannel microscopy
- Quantify images for 100s of parameters
- Compare phenoype fingerprint with reference database

Bioactivity-guided natural product fractionation:
- Field work to harvest source plant, microbe, etc.
- Grow source cells and collect secretion or lyse
- Fractionate by solubility partitioning
- Treat live cells with fractions, incubate
- Microscopy or plate reader assays on cells
- Select which fractions contain desired activity
- Subfractionate by chromatography and repeat

Cytotoxicity screen of commercial library by fluorescent assay in adherent mammalian cell cancer model:
- Plate adherent mammalian cells
- Dose with compounds, incubate
- Apply "Cell Titer Glo" reagent
- Measure fluorescence intensity by plate reader
- Serial dilution series plates of cherry picked "hit" compounds
- Repeat cytotoxicity assay and compare ED50 with reference database

Cytotoxic/cytoplastic antimicrobial screen by liquid culture or agar plate:
- Seed rectangular agar plate with lawn of bacteria
- Dose with compounds, incubate
- Measure OD595 at a series of timepoints
- Calculate doubling time in the presence of drug
- Serial dilution series plates of cherry picked "hit" compounds
- Identify center point of each circular zone of death
- Compare toxicity based on diffusion of the drug in agar

From collaborators:
10,000 marine and terrestrial natural products - a unique growing collection
400 natural product-inspired cell-permeable cyclic peptide library - Lokey

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Funding
Susan Carpenter
Scott Lokey
David Haussler
Melissa Jurica
Victoria Auerbuch Stone
Phil Crews
Seth Rubin
Bill Sullivan
Anouk van den Bout
Finnat Yildiz

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