enveda®

HUMAN.
NATURE.
MACHINE.

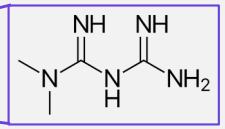
Transforming Small Molecule Drug Discovery with Machine Learning & Metabolomics

HighRes Automation at Enveda

Katie Heiser, Director of Platform Biology
SLAS 2026

Nature has been an incredible sources of medicines

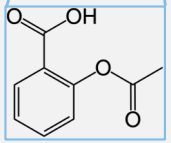
Galega officinalis



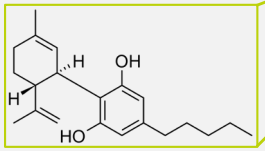
METFORMIN

Salix alba

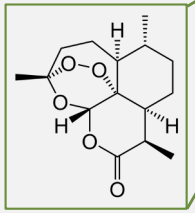
Cannabis sativa



ASPIRIN



CANNABIDIOL



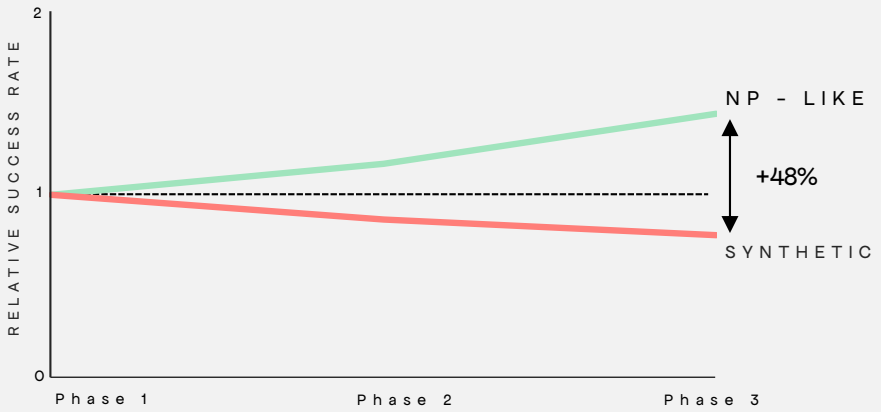
ARTEMISININ

Artemisia annua

Nature’s chemistry represents the most validated yet untapped idea in drug discovery

PROVEN SUCCESS

NP-like have a greater chance of clinical success:
+48% relative odds of reaching Phase 3[1]



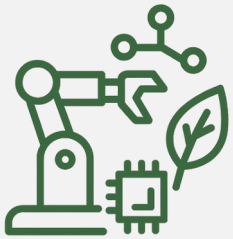
UNTAPPED POTENTIAL

[1] Domingo-Fernandez, et al. *Natural Products Have Increased Rates of Clinical Trial Success throughout the Drug Development Process.* Journal of Natural Products. 87, 7, 1844–1851 (2024). DOI.

Unlocking Nature's Chemistry at Enveda

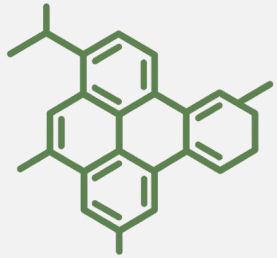
Nature's Chemistry

Samples from plants, microbes, fungi, etc. with 1000's of molecules in each



The Platform

Enveda is building a chemical sequencer for life. We annotate the strucutre and function of natural compounds



The Compound

Enveda's Pipeline team uses SAR to turn an active compound into a medicine

Translating nature’s dark chemistry into medicines at unprecedented speed, scale, and accuracy

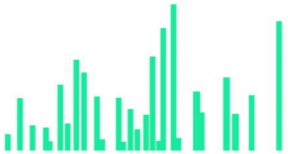
ChatGPT

Translate this poem to Hindi:
Mass spectrometry, an art of science,
A tool of precision, a drug hunter's reliance,
Molecules unknown, and their secrets untold,
Revealed in detail, to the scientists bold.

New drugs discovered, with promise and hope,
For patients in need, a way to cope,
From rare diseases to the common flu,
Mass spectrometry helps us break through.

A world without suffering, a dream to behold,
Mass spectrometry, the key to the mold,
A future of health, where all can thrive,
With the promise of new drugs, to keep us alive.

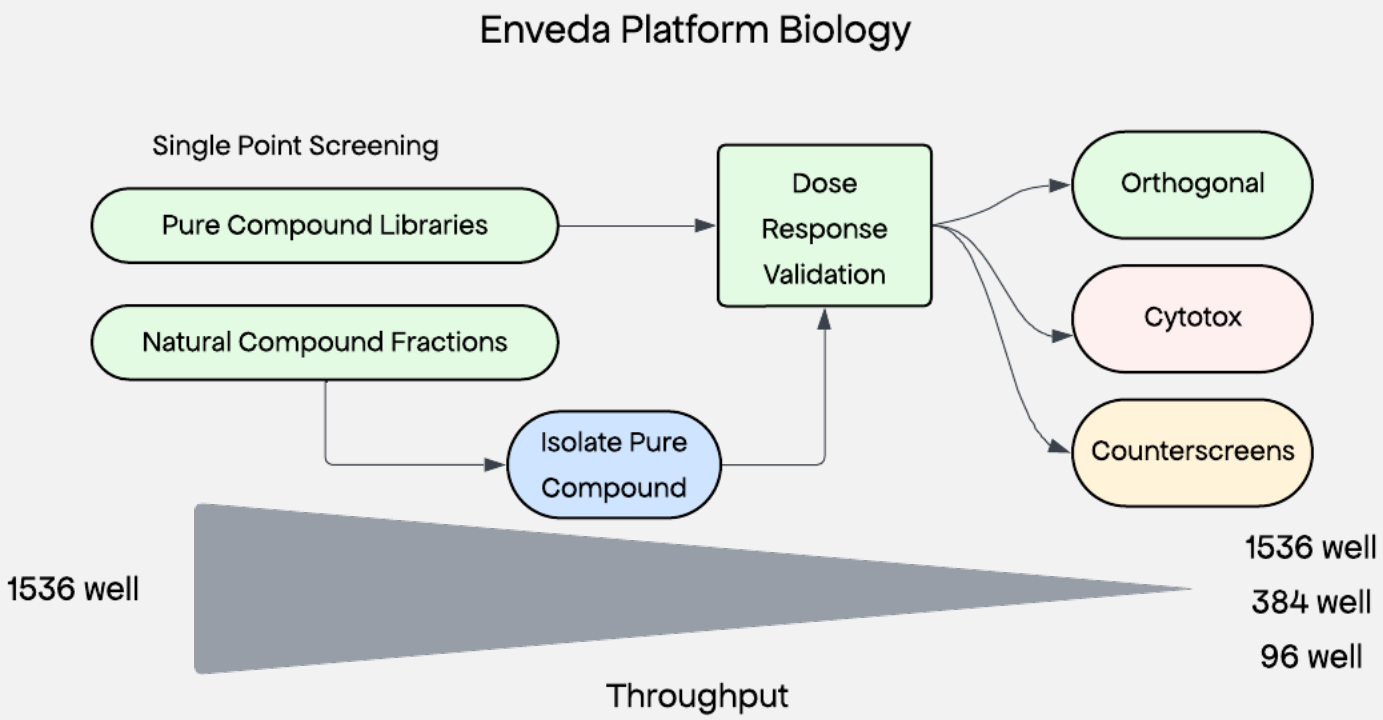
enveda



ML + Metabolomics: What are the molecules?

What is the function of the molecules?

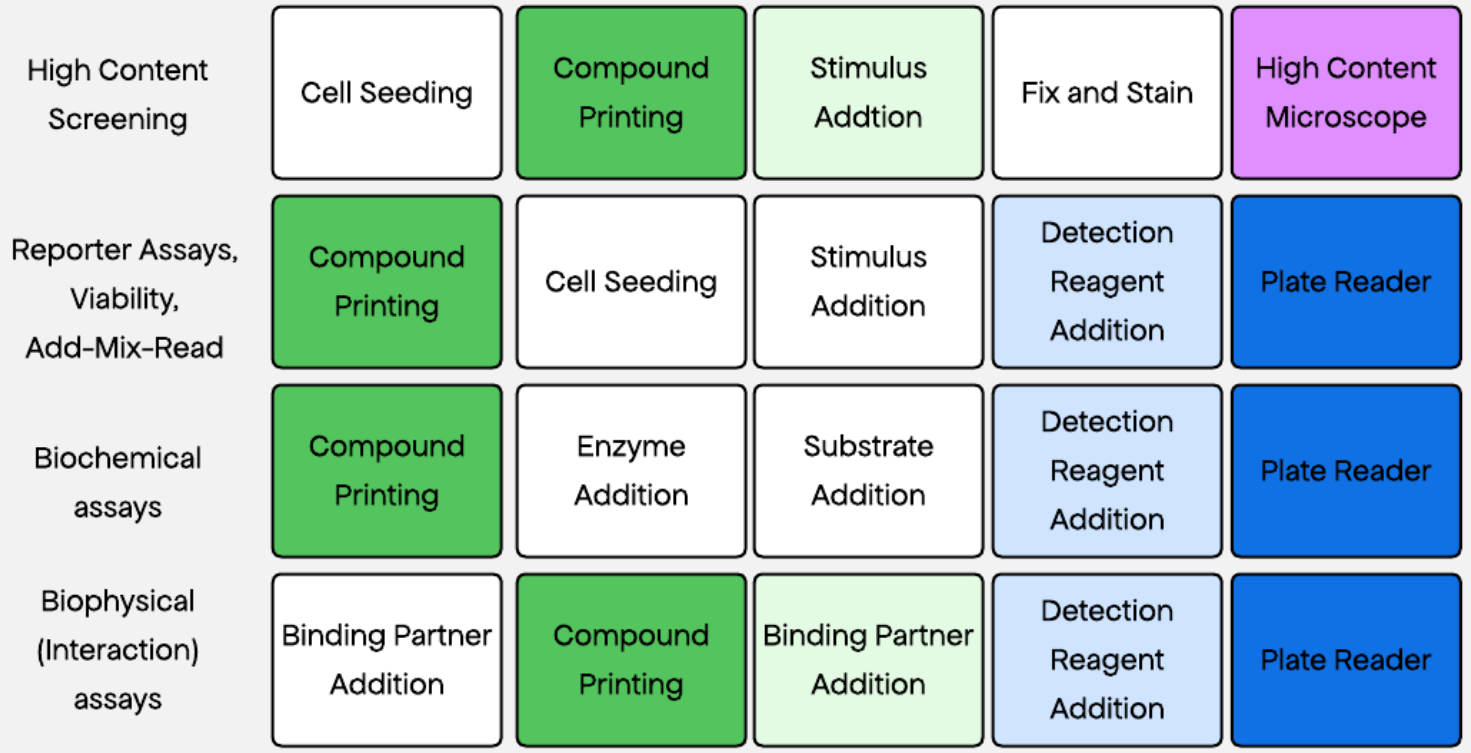
Annotating the Function of Nature's Chemistry



Platform Biology

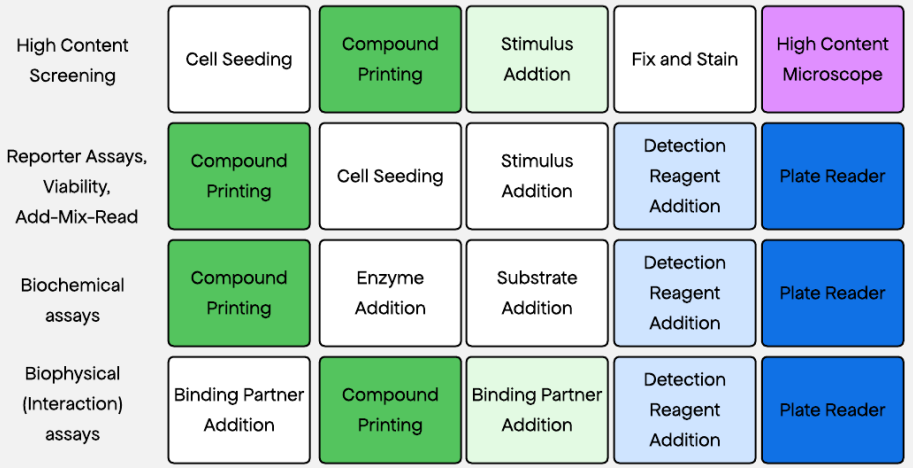
Automating Assay Workflows

Fully Automated Work Cells
Compound Printing
High Content Imaging
Add-Mix-Read



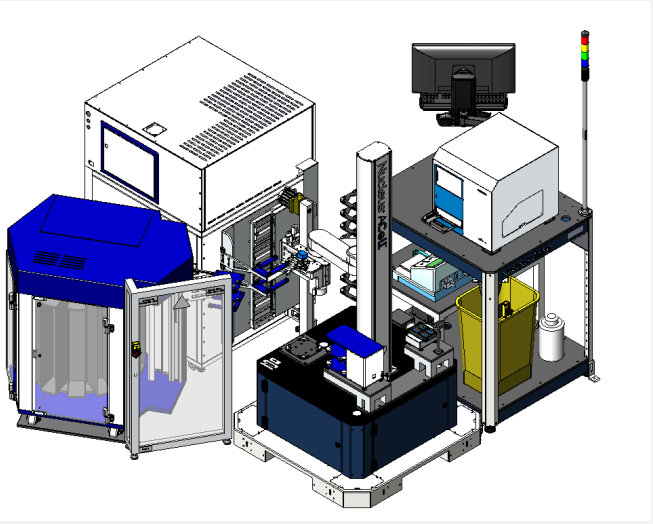
HighRes Automation in Platform Biology

- Strategy
  - Automate **low-complexity, time-intensive tasks**
    - **Compound Printing**
    - **High Content Imaging**
    - **Add-Mix-Read**
  - High capacity, **fit for purpose**
    - Three systems with broad applicability
    - High robustness
    - Low scheduling complexity

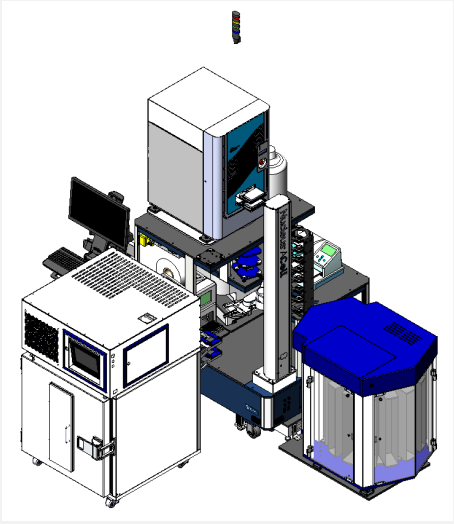


HighRes Automation in Platform Biology

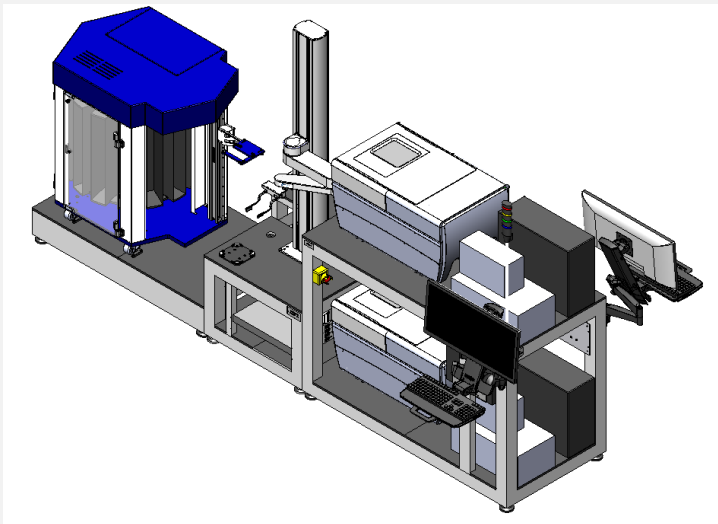
Add-Mix-Read



Compound Printing



High Content Imaging



All systems:
UniFi web cameras for remote recovery and troubleshooting
Intentionally designed for future upgrades

HighRes

Compound Printing

- Dispense compounds and mixtures to assay plates via Echo
- Devices:
  - AmbiStore
  - SteriStore (new!)
  - PlateLoc
  - XPeel
  - LidValet
  - Echo
  - Multidrop Combi (new!)

High Content Screening	Cell Seeding	Compound Printing	Stimulus Addtion	Fix and Stain	High Content Microscope
Reporter Assays, Viability, Add-Mix-Read	Compound Printing	Cell Seeding	Stimulus Addition	Detection Reagent Addition	Plate Reader
Biochemical assays	Compound Printing	Enzyme Addition	Substrate Addition	Detection Reagent Addition	Plate Reader
Biophysical (Interaction) assays	Binding Partner Addition	Compound Printing	Binding Partner Addition	Detection Reagent Addition	Plate Reader

High Content Screening

- Load plates to high-content microscopes for imaging
- Devices:
  - AmbiStore
  - PlateOrient
  - ImageXpress Micro 4 (2X)

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Add-Mix-Read

- Dispense reagent and read out plate-reader based assays
  - Luminescence
  - Fluorescence
  - HTRF
  - Absorbance
- Devices:
  - AmbiStore
  - SteriStore
  - PlateOrient
  - LidValet
  - LidDiscard
  - Multidrop Combi
  - Plate Reader

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Conclusions

Enveda is translating nature's chemistry to medicines

- Pure compound screening
- Semi-pure fraction screening

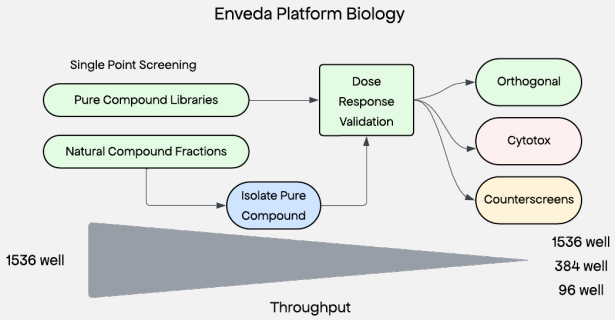
Automate low complexity, high-capacity tasks

- Wide variety of supported assays
- Mid to ultra HTS support

Small agile team, limited overhead

Flexible design for system upgrades

- Future proofing



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