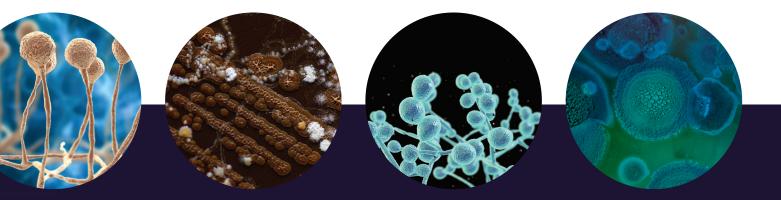


### Biolog for Characterizing Diversity

Get relevant data you need faster with Phenotype MicroArrays

### Biolog for Cellular Insights

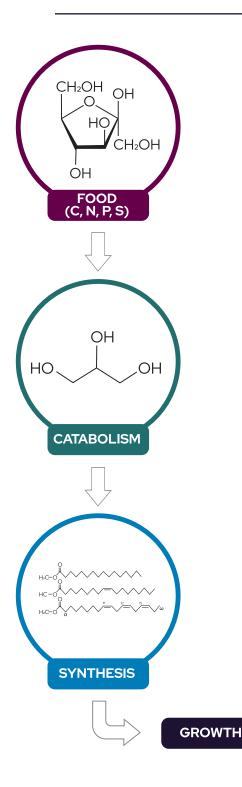
Phenotype MicroArrays enable researchers to quickly gain cellular insights, by growing cells in thousands of culture conditions simultaneously.



Phenotype MicroArray<sup>™</sup> technology is a proven method of phenotypic cellular screening that is extremely beneficial in a wide range of research applications:

- Uncover functional effects of gene editing
- Measure changes in cell metabolism over time or under different environmental conditions
- Evaluate drug/antibiotic candidates in toxicological profiling and mode of action studies
- Monitor phenotypic drift and QC of cell line passages
- Optimize efficacy in bioprocessing production

### How Phenotype MicroArrays Work



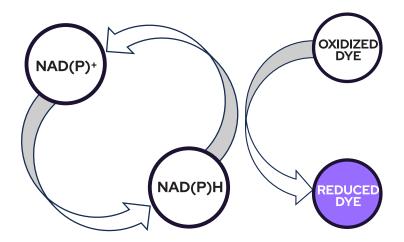
Explore nutrient preferences for your cells with pre-plated panels of substrates.

The intensity of the redox dye color change reflects how much substrate is consumed.

Kinetic measurements establish how quickly substrates are consumed.

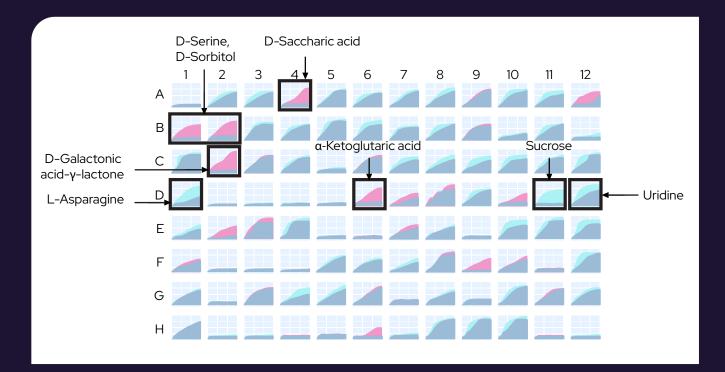
Phenotype MicroArrays are preconfigured microplates, each containing up to 95 different small-molecule substrates. Each substrate is intended to interrogate different cellular properties, including metabolic uptake, stress response, drug sensitivity, etc.

You can monitor growth of your cells under all conditions at once. You can also monitor cellular respiration by utilizing Biolog's patented redox dye technology, which amplifies the signal from NADPH/NADH production.



# Phenotyping to measure growth

Effortlessly evaluate multiple conditions simultaneously and determine growth rates.



Phenotype MicroArrays, when used in conjunction with an Odin<sup>™</sup> platform, measures optical density at 590 nm (OD 590) over time. The kinetic information can be used to make comparisons between strain differences that may not be readily apparent from a single endpoint read.

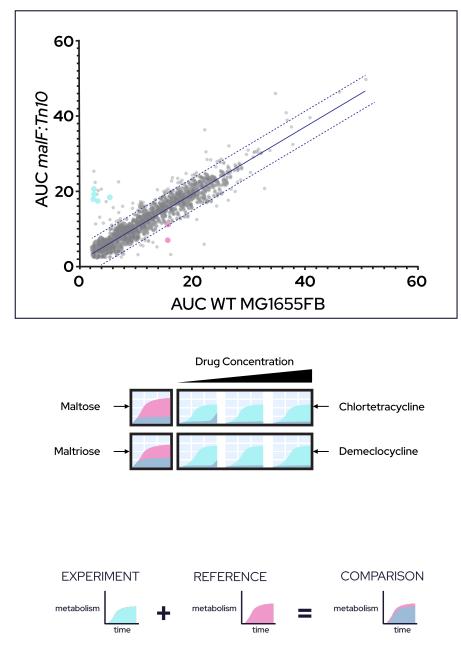
*E. coli* O157:H7 and CGSC6300 strains are compared on PM1, a carbon source utilization plate. OD measurements representing metabolic activity are represented on the y-axis, and time (0-24 hours) is represented on the x-axis. O157:H7 shows loss of function for the ability to metabolize several carbon sources including D-saccharic acid, D-serine, D-sorbitol, D-galactonic acid- $\gamma$ -lactone,  $\alpha$ -ketoglutaric acid, and shows a gain of function relative to CGSC6300 for metabolism of D-sucrose.

### Phenotyping to understand metabolism

Efficiently compare metabolic differences between two or more strains or cell lines. The Odin platform makes it easy to collect and analyze all the data.

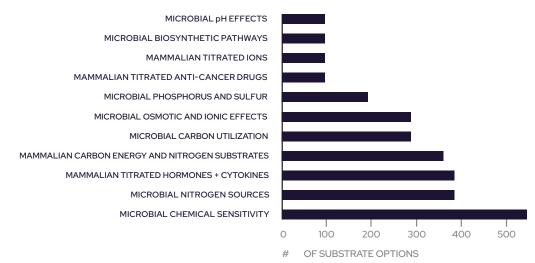
By measuring redox dye production, differences in cellular metabolism can also be established. An E. coli cell line was engineered to lose the ability to metabolize maltose. The same cell line was engineered to gain resistance to tetracycline. With Phenotype MicroArrays and the Odin platform, up to 50 plates can be run concurrently, so thousands of conditions can be assayed easily at the same time. We can quickly confirm loss of function in similar compounds (such as maltotriose) and gain of function in resistance to similar drugs (such as demeclocycline).

With Phenotype MicroArrays, it's efficient to screen many conditions at once, and other, unexpected phenotypic changes may be apparent when comparing the conditions.



### Custom Solutions for Easy Efficiency

Customizable Phenotype MicroArray options offer an easy way to tailor your experiments by selecting a unique set of substrates from over 1,200 chemicals in Biolog's library, to each well of a 96-well microplate.



### CUSTOMIZABLE SUBSTRATE OPTIONS

Interrogate 1,000s of metabolic pathways and chemical sensitivity properties of microbial, mammalian, yeast and fungal cells.

### Select from 5 categories to create your own Customized Phenotype MicroArrays:

- Bacterial metabolic (659 chemicals)
- Bacterial inhibitor (426 chemicals, multiple concentrations)
- Fungal inhibitor (120 chemicals, multiple concentrations)
- Mammalian metabolic (409 chemicals)
- Mammalian inhibitor (22 chemicals, multiple concentrations)

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