

Did you know that E. coli can double in 5 just minutes?

Do you understand what trace elements, co-factors, macronutrients, and signaling molecules your cultures need to reach their biological maxima?

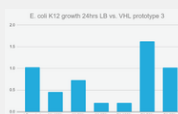
The answers are in the cells. *We know how to find them.*

Van Heron Labs provides the most advanced cellular intelligence available. We profile at depths greater than traditional methods, then translate those results into better processes, performance, and products.

PROGRAMS LIKE YOURS WHERE WE'VE ALREADY DONE IT

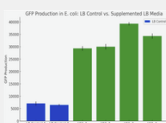
E. coli Case Study 3

- Optimal nutritional profile determined for recombinant E. coli strain.
- Fully CD de-novo basal culture media developed.
- VHL CD media achieves nearly 2X more cell density / proliferation than industry standard medium.**



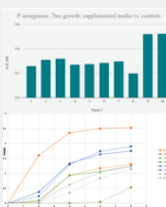
E. coli Case Study 5

- ~20 nutrients identified to create targeted E. coli expression feed.
- New CD supplement designed.
- Result: 4.4X increase in specific productivity/titer** compared to industry standard conditions.



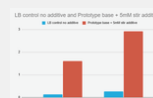
P. aeruginosa Case Study 1 + 2

- Optimal nutrient profile for P. aeruginosa determined > CD feed designed.
- CD feed achieves nearly 2X more cell density / proliferation than control.**
- CD feed + bioreactor additive results in ~20X greater cell density than control.**
- ~5 min doubling time.



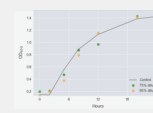
E. coli Case Study 4

- Universal bioreactor additive for obligate + fac. aerobes developed.
- Additive plus VHL CD basal medium combined.
- Combination results in ~15X greater cell density than control.**
- ~5 min doubling time.



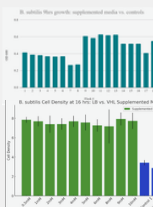
A. tumefaciens Case Study 1

- Optimal nutritional profile for A. tumefaciens determined.
- CD de-novo base media prototype developed.
- 95% of undefined components eliminated while matching control.**



B. subtilis Case Study 1 + 2

- Optimal nutrient profile for B. subtilis determined > CD feed designed.
- CD feed achieves nearly 2X more cell density / proliferation than controls.**



6

E. COLI STRAINS OPTIMIZED

7

SPECIES (EUK + PROK) OPTIMIZED

2

FULLY CD MEDIA CREATED

1

UNIVERSAL BIOREACTOR ADDITIVE FOR AEROBES

See our bioprocessing 1 pager for other E. coli case studies.

A data universe translated to results.

Our optimizations result in better outcomes, better costs, new products.

100 - 440%

Better proliferation

200 - 500%

Better titer

600%

More colonies

100%

Chemically defined

25+

PROJECTS SHIPPED

~50%

REPEAT CUSTOMERS

BACKED BY

NVIDIA Microsoft AWS

Cells are talking. Do you know what they're saying?

vanheronlabs.com

CONTACT@VANHERONLABS.COM

HOW WE DO IT: AN ADVANCED MULTI-NODAL ENGINE

LAYER 01

DEEP CHARACTERIZATION > FUNCTION

Data universe, deconvoluted — expression, full small molecule needs, metabolic status and pathway profile, reactome, function enrichment, cell status and stress diagnosis + prediction + more.

LAYER 02

CELLULAR BIOLOGICAL DIGITAL TWIN

Your cells, fully unified to a digital model. Understand your cultures/population without a bioinformatics team, months of work, and massive spend.

LAYER 03

AGENTIC QUERY ENGINE

Simulate, test hypotheses, and compare scenarios before making decisions or implementing them, using mechanism-backed reasoning from your data, not the literature [unless you want to].

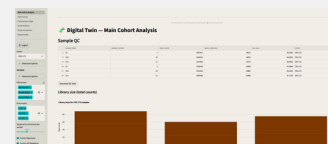
LAYER 04

PREDICTION MODULES

Predict mfg success from starting material, or upstream process data. Identify new biomarkers tied to optimal outcomes, KQAs + regulatory.



Months of work, instantly.



Target cells, fully simulated.



Ask anything, you now have a digital scientific team.



Predict BEFORE you mfg.

LAYER 05

THE HUMAN LAYER

VHL's team translates the platform outputs into optimized processes, media, and reagent formulations that improve the phenotypes that matter. We can handle discovery to cGMP-scaled clinic-compatible programs for you.

R&D + process + product development — in a single engagement.

Expertise in bioprocessing, PD, media, reagents, and chemically-defined systems. The best team to solve the biggest problems microbial culture, fermentation and bioprocessing.

WHAT OUR TECH COULD MEAN FOR YOU

PRECISION FERMENTATION / BIOLOGICS

Determine deep metabolic needs, bottlenecks, + sources of cellular stress and loss of viability. Reduce tradeoffs between growth and production. Increase titer and improve quality. Get chemically defined and eliminate expensive, nutritionally depleted extracts from your system. Reduce costs and improve margins. Create new IP assets.

NON-MOLECULAR DIAGNOSTICS

Deeply characterize strains of interest, create optimized culture conditions, and achieve faster time-to-result. Novel formulations serve as new IP assets around your technology.

MICROBIAL CULTURE / MICROBIOME / AG

Deeply assess your strains/population. Determine the optimal micro- and macronutrients to improve proliferation. Culture uncultivables, or hard-to-culture organisms. Prime your system for scaling and larger production. Reduce media costs.

MEDIA AND REAGENT COMPANIES

Use deep cellular intelligence to create new best-in-class microbial and bioprocessing media, feeds, and reagents to improve proliferation and titer, reduce costs, and create chemically-defined formulations.

Do you realize how much better microbial culture and fermentation could be? We do.