



EERE NATIONAL LAB IMPACT SUMMIT



MAY 4, 2016
GOLDEN, COLORADO

Introduction to Lygos

Engineering yeast to convert sugar into high-value chemicals

Eric Steen

*CEO, PhD UCB
Bioengineering*

jbei
Joint BioEnergy Institute

Berkeley
UNIVERSITY OF CALIFORNIA

UCSF



- Founded 2010
- 15 Employees
- Located in Emeryville, CA
- Funding from DOE, NSF, and USDA

Jeffrey Dietrich

CTO, PhD UCB Bioengineering

jbei
Joint BioEnergy Institute

Berkeley
UNIVERSITY OF CALIFORNIA



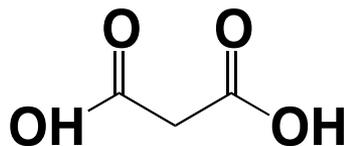
Lygos produces “bio-advantaged” chemicals

Lygos' Biological Process



SUGAR

Malonic Acid



Conventional Process



CHLOROACETIC
ACID
CYANIDE

- ≈\$250MM market today; \$1B opportunity
- Bio-tech is less expensive than petro raw materials cost
- Bio-tech provides higher quality product

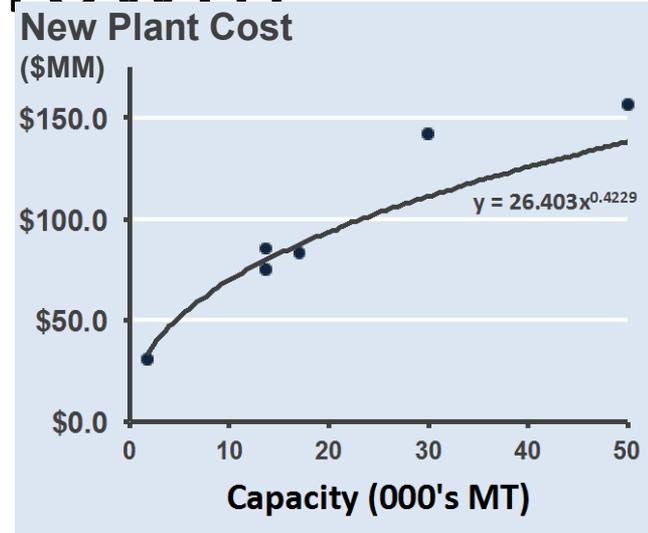
Lygos' status and current needs

- **01/16:** Delivered first sample product
- **Today:** Shipping 1 kg batches
- **Problem:** Customers requesting metric ton lots



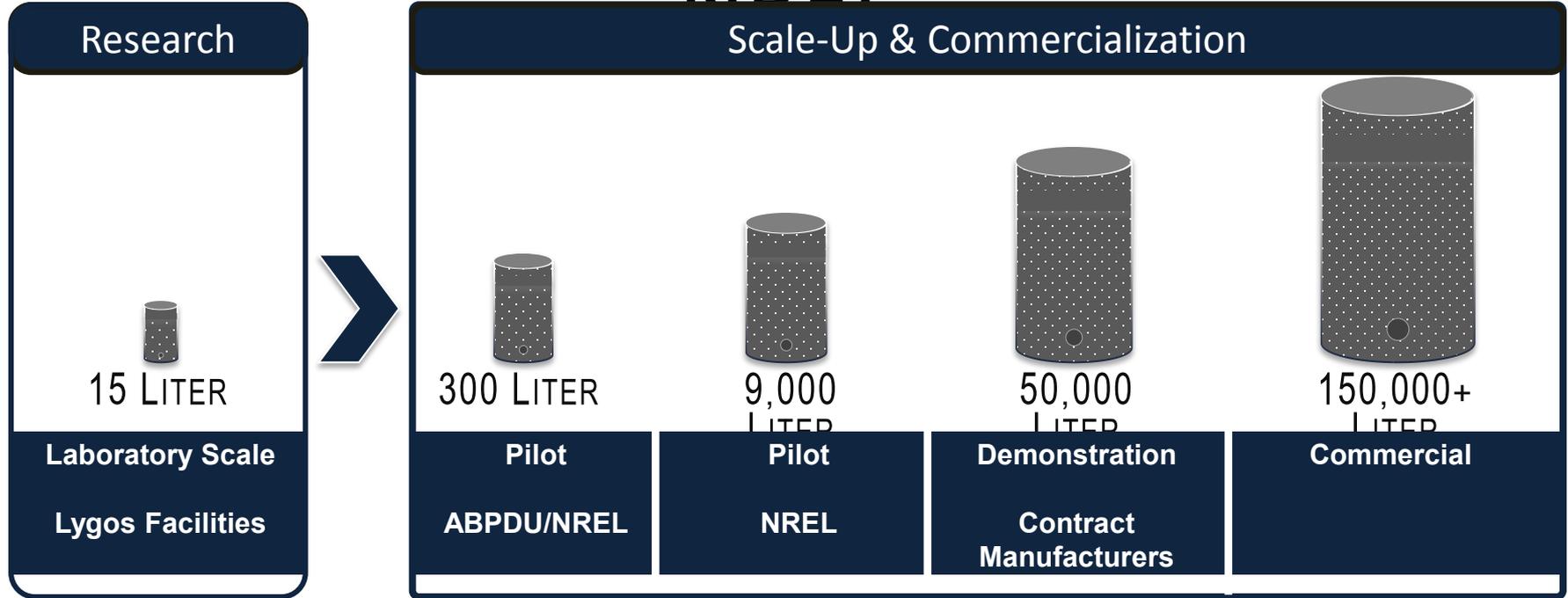
Scaleup: The barrier to bio-economy growth

	New Plant Construction	Contract Production
Cost	>\$30MM	\$10-\$50K/run
Time	Years	Months
Funding Sources	Few	Numerous



Small Business Voucher helps minimize the “valley of death” for industrial biotechnology: process scaleup

Scaleup of Lygos' fermentation at NREL



Voucher accelerates production at pilot scale, Lygos purifies final product