



U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Agile BioFoundry Introduction

Jay Fitzgerald
Technology Manager
Peer Review 2019

Thursday March 8th, 2019

Welcome!

Our team:

Name	Affiliation	Peer Review Role
Jay Fitzgerald	BETO Technology Manager	Agile BioFoundry Review Chair
Clayton Rohman	AST Senior Project Engineer	Review Support

Reviewer Introductions

Name	Affiliation	Previous Peer Review Experience
Ben Gordon (Lead Reviewer)	MIT-Broad Foundry	New this year
Matt Tobin	Matthew B. Tobin Consulting	New this year
Farzaneh Rezaei	Pivot Bio	New this year
Chris Rao	University of Illinois at Urbana-Champaign	New this year
Steve Van Dien	Persephone Biome, Inc.	Reviewer



Ben



Matt



Farzaneh



Chris
U.S. DEPARTMENT OF
ENERGY



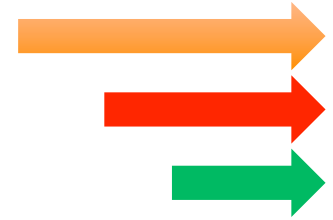
Steve
Energy Efficiency &
Renewable Energy

Goal Statement

Goal: Enable biorefineries to achieve 50% reductions in time to bioprocess scale-up as compared to the current average of around 10 years by establishing a distributed Agile BioFoundry that will productionize synthetic biology.

Outcomes: 10X improvement in Design-Build-Test-Learn cycle efficiency, new host organisms, new IP and manufacturing technologies effectively translated to U.S. industry ensuring market transformation.

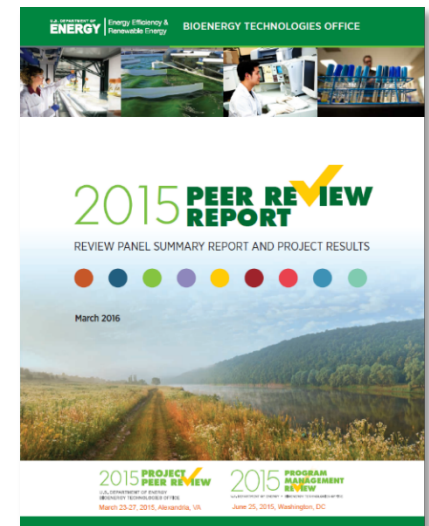
Relevance: Public infrastructure investment that increases U.S. industrial competitiveness and enables new opportunities for private sector growth and jobs.



A Note About Consortia

- 2015 Peer Reviewers noted that work across the National Labs was occasionally duplicative and could be better coordinated
- Starting in 2017, launched several multi-lab consortia, including the Agile BioFoundry Consortium
- 2017 Steering Committee Feedback:

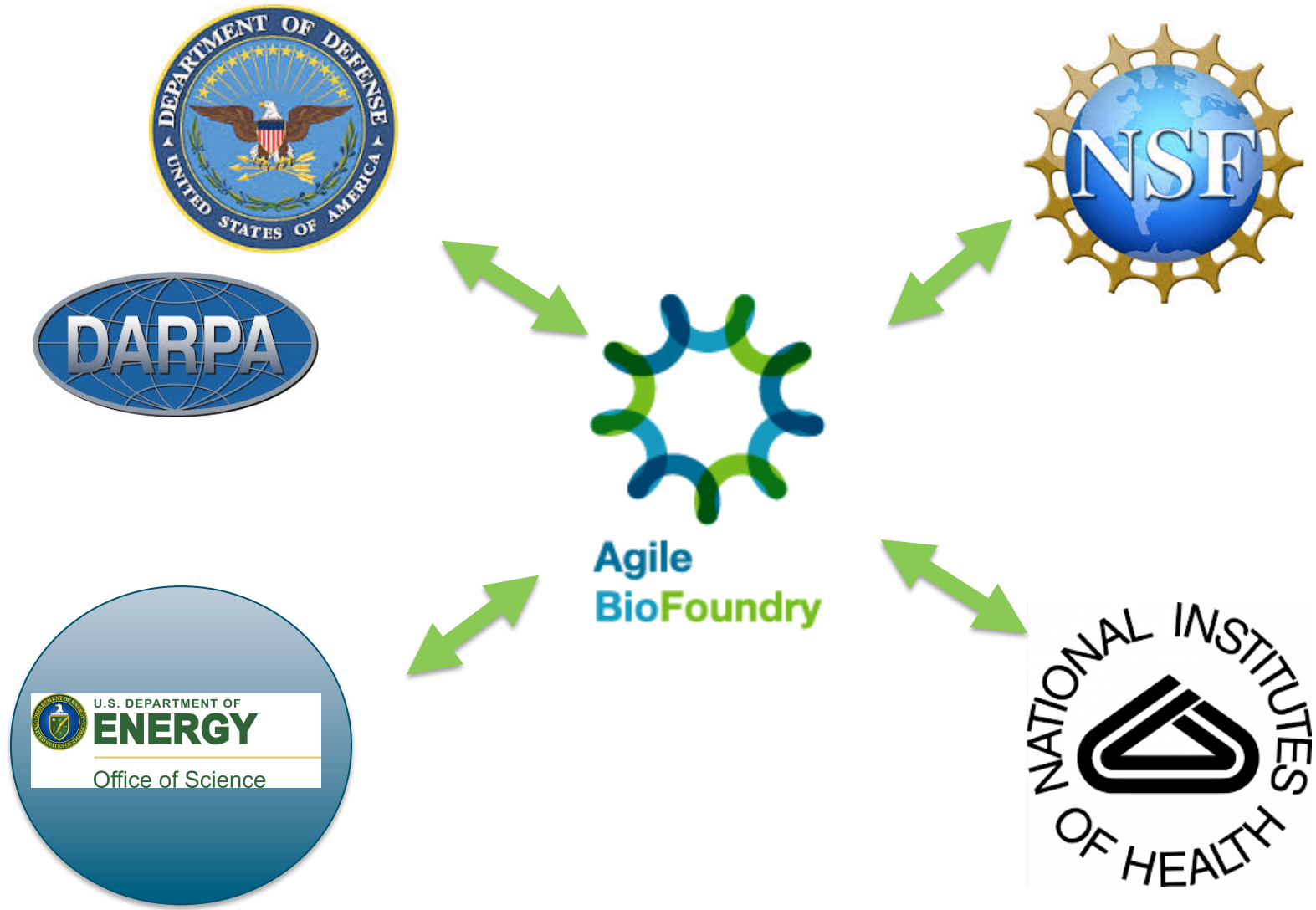
“The organization into consortia helps the national laboratories be **more efficient** in their research, **pooling expertise and avoiding** redundancy, while also **encouraging a broader perspective** on problem-solving across different processes and identification of common problems (particularly for the Separations Consortium). It also provides a **central point of contact for industry**, allowing companies to more easily find expertise across the national laboratories.”



Timeline and History

- 2015
 - National Laboratory visioning meeting
- 2016
 - Pilot project with LBNL, NREL, PNNL, SNL
 - Industry listening days in San Francisco and Washington DC
- 2017
 - Consortium kickoff
 - Directed funding opportunity partnerships (7 projects)
 - IAB founded
- 2018
 - FOA partnerships (3 projects)
- 2019
 - Merit review for FY20 cycle

Synthetic Biology Funding Space



DOE Resources Are Available to the ABF

Systems and Synthetic Biology



Analytics



Sequencing



High-performance computing



Scale-up



2017 Peer Review Feedback

- Relevance: “There is a real benefit to having a publicly funded effort developing core tools, engaging with a range of internal and external partners, and being relatively open-source about the tools that are developed. “
- Strengths: “The consortium represents a very timely effort that could allow companies to reduce strain development costs, increase speed to market, and de-risk adoption of new technology.”
- Weaknesses: “Geographic separation of resources may create problems in communication, sample transfers, and disconnects in technology adaptation (e.g., organism onboarding).”



Partnerships

Directed Funding Opportunities

LYGOS



Agilent Technologies



Department of Microbiology

Franklin College of Arts and Sciences

UNIVERSITY OF GEORGIA

teselagen
BIOTECHNOLOGY

LanzaTech 
capturing carbon fueling growth



VISOLIS
10 | Bioenergy Technologies Office
CARBON NEGATIVE MATERIALS



Kiverdi

FOA Partnerships

LYGOS

ZYMOCHEM

NEXT-GENERATION MICROBES
FOR INDUSTRIAL CHEMICALS



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Agile BioFoundry Consortium Presentations

Day 4: THURSDAY, MARCH 7, 2019

START TIME	END TIME	AGILE BIOFOUNDRY		
		Presentation	Organization	Presenter
8:30 a.m.	8:40 a.m.	Agile BioFoundry: Session Introduction	BETO	Jay Fitzgerald
8:40 a.m.	9:30 a.m.	Agile BioFoundry Overview	LBNL	Nathan Hillson
9:30 a.m.	10:00 a.m.	BREAK		
10:00 a.m.	10:40 a.m.	Pseudomonas putida	NREL	Gregg Beckham
10:40 a.m.	11:20 a.m.	Rhodospiridium toruloides	SNL	John Gladden
11:20 a.m.	12:00 a.m.	Aspergillus pseudoterreus	PNNL	Jon Magnuson
12:00 p.m.	1:00 p.m.	LUNCH		
1:00 p.m.	1:50 p.m.	Design-Build-Test-Learn Infrastructure	LBNL	Nathan Hillson
1:50 p.m.	2:20 p.m.	Integrated Analysis	NREL	Mary Biddy
2:20 p.m.	2:50 p.m.	Host Onboarding	ORNL	Adam Guss
2:50 p.m.	3:15 p.m.	BREAK		
3:15 p.m.	3:45 p.m.	Process Integration and Scale-Up	LBNL	Deepti Tanjore
3:45 p.m.	4:15 p.m.	Industry Outreach	ANL	Phil Laible
4:15 p.m.	4:45 p.m.	Directed Funding Opportunities and Partnerships	LBNL	Blake Simmons
4:45 p.m.	5:15 p.m.	REVIEWER/LEAD REVIEWER DEBRIEFING		