

CARB-X: Accelerating Innovation

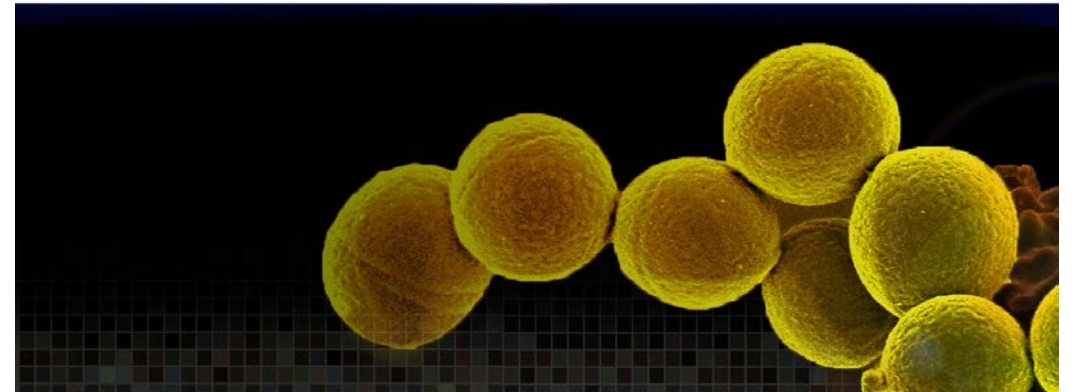
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FDA-IDSA-NIH-Pew Public Workshop, November 18, 2019

CARB-X
Combating Antibiotic Resistant Bacteria



CARB-X

Combating Antibiotic Resistant Bacteria

A global partnership accelerating science to fight drug resistant bacteria

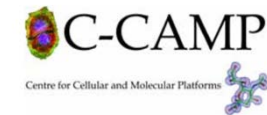
FUNDERS



ALLIANCE PARTNER

BILL & MELINDA
GATES foundation

ACCELERATORS



BOSTON
UNIVERSITY



CARB-X is investing > \$500 million in 2016-2021*

Supporting R&D from around the world to address the most serious drug-resistant bacteria

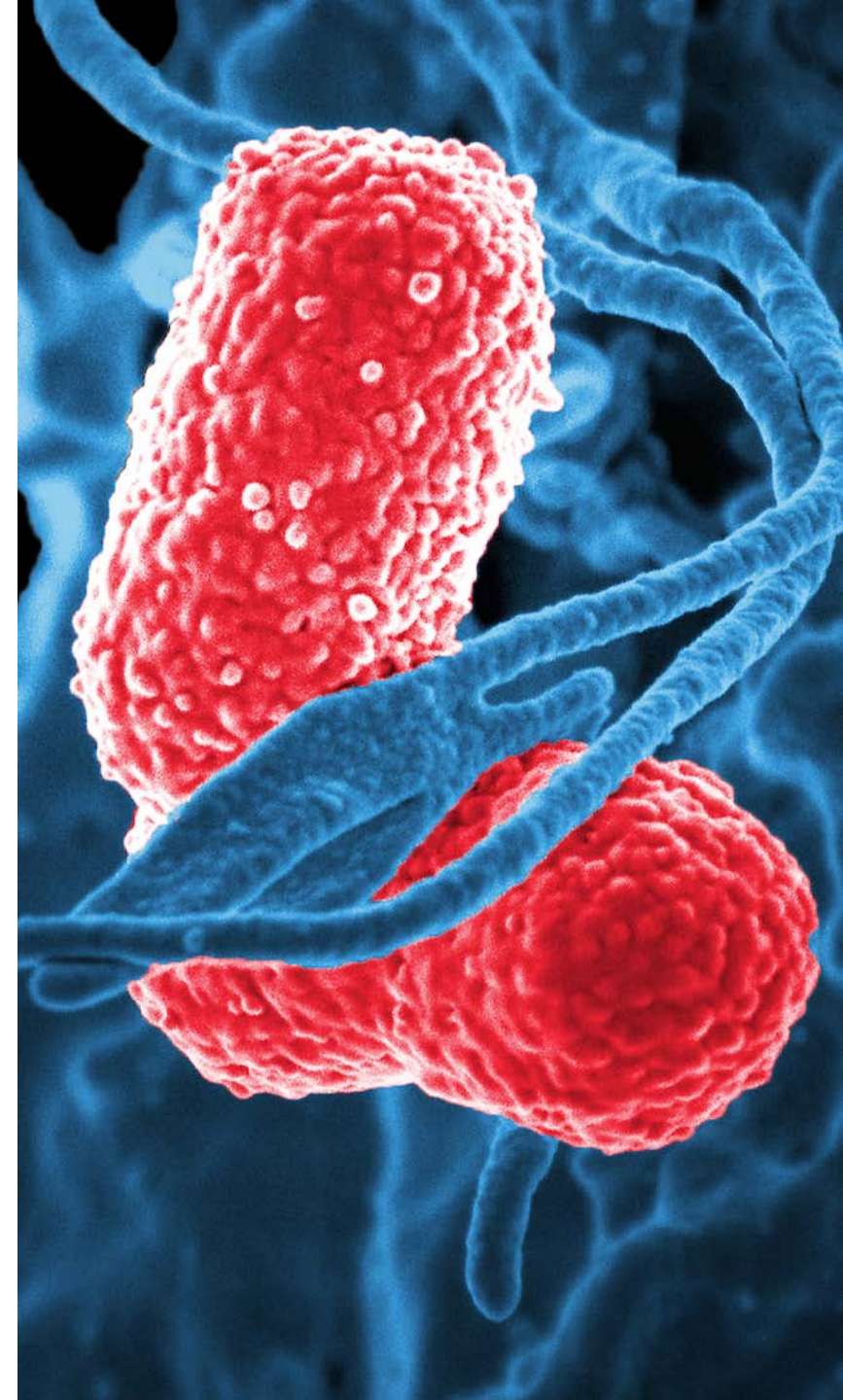
- 50 funded projects thus far, globally
- >\$150MM obligated to date
- >15 approved projects not yet announced
- Non-dilutive funding and accelerator support for the early development of antibiotics, rapid diagnostics, and vaccines



What CARB-X funds today

- Discovery and early development projects that address serious bacterial threats
 - Traditional and non-traditional therapeutics
 - prevention such as vaccines, microbiome, antibodies
 - rapid diagnostics (pathogen ID/AST)

Projects must target specific bacteria on the Antibiotic Resistance Threats List issued by the Centers for Disease Control and Prevention (CDC) in 2013 or on the Priority Bacterial Pathogens list published by the World Health Organization (WHO) in 2017



CARB-X supports Discovery and early Development



NB - scope definitions will be refined prior to the opening of each specific funding round

Portfolio: direct-acting Tx

Cell-wall synthesis	DNA synthesis	RNA synthesis	Protein synthesis	Fatty-acid biosynthesis
<p><u>PBPi – next-generation</u> Iterum (penem) 7/17 Ph1 ESKAPE</p>	<p><u>NBTI</u> Bugworks 7/17 LO→PC ESKAPE Idorsia 4/18 PC ESKAPE</p>		<p><u>30S – next-generation</u> Tetraphase 4/17 Ph1 ESKAPE</p>	<p>Debiopharm 7/17 LO→PC Ng Debiopharm 3/19 LO ESKAPE</p>
<p><u>Novel PBPi</u> Entasis 10/17 LO ESKAPE VenatoRx 7/17 LO ESKAPE</p>		<p><u>50S – next-generation</u> Zikani 2/18 LO→PC ESKAPE</p>		
<p><u>BL/BLI</u> Entasis 4/17 Ph1 ESKAPE</p>		<p><u>tRNA synthetase I</u> Oxford 5/19 HtL ESKAPE</p>		
<p><u>LpxC</u> Forge_{UTI} 4/17 LO→PC ESKAPE Forge_{RTI} 1/19 LO ESKAPE</p>				
<p><u>OMPTA</u> Oppilotech 4/17 HtL ESKAPE Polyphor 1/19 PC ESKAPE</p>		<p><u>Peptides</u> Amicrobe (topical protein) 10/17 PC ESKAPE Contrafect (amurin) 7/19 HtL ESKAPE MicuRx (polymixin softdrug) 2/18 PC ESKAPE</p>		
				<p>Other</p> <p>Summit 5/18 PC Ng</p>

Portfolio: non-traditional

Anti-Virulence

Antabio (elastase I) 7/17 LO→PC ESKAPE
Microbiotix (T3SSi) 4/17 PC ESKAPE
Bioversys (AgrAi) 10/19 LO ESKAPE

Potentiators

Spero 4/17 Ph1 ESKAPE

Phage/Lysins

Contrafect 7/17 HtL→LO ESKAPE

Microbiome

Vedanta 10/17 Ph1 Cd
Seres 10/17 PC ESKAPE

Other

Procarta 9/19 LO ESKAPE
Techulon 11/19 HtL ESKAPE

Portfolio: vaccines and immunotherapies

Vaccines

IBT (multivalent) 10/17 LO→PC ESKAPE
SutroVax (cconjug) 6/19 LO *S. pneumoniae*
Vaxxilon (multivalent) 4/19 LO ESKAPE

Antibody-based

BB100 (monoclonal) 7/19 PC ESKAPE

Portfolio: Dx

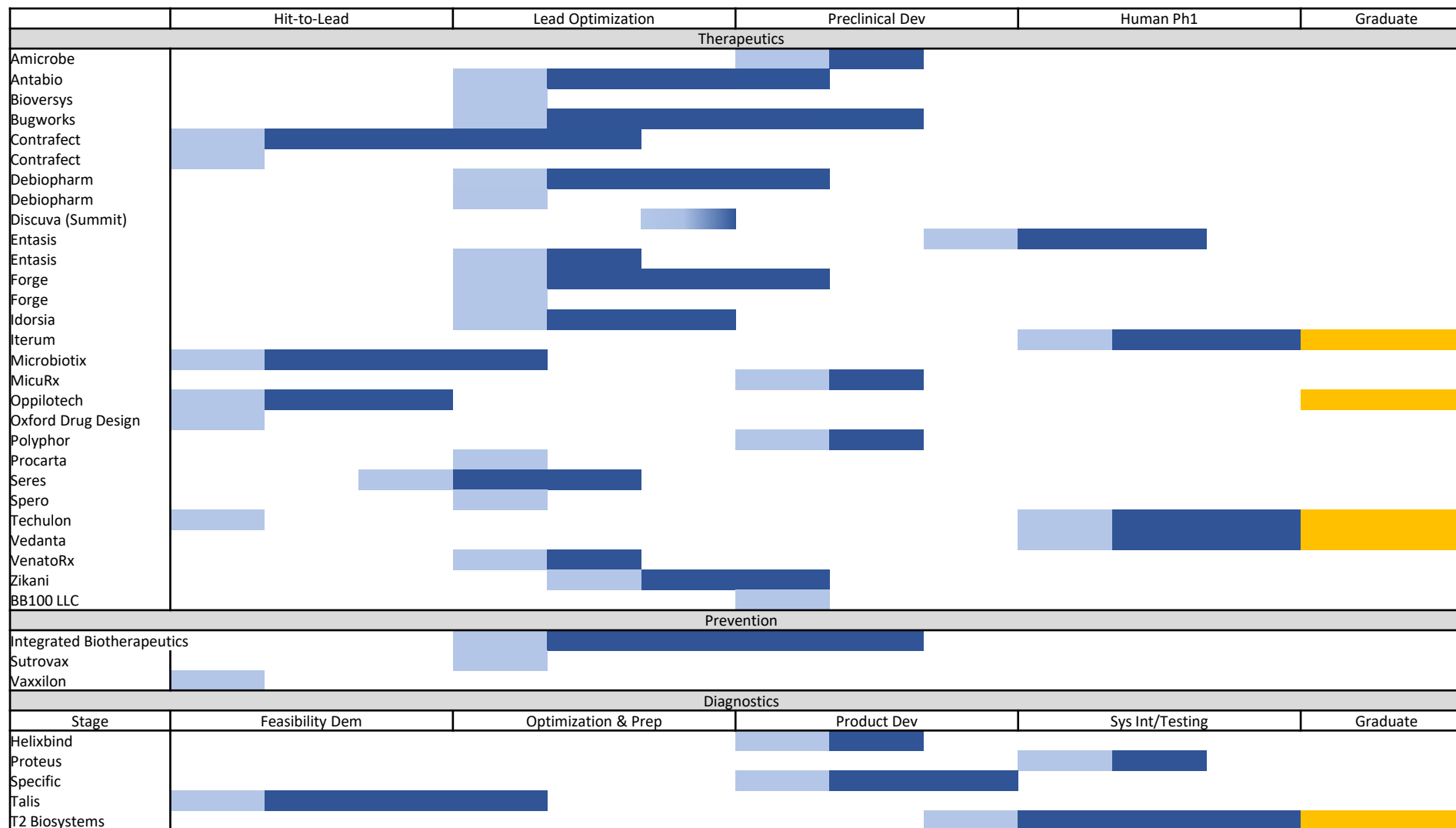
T2 Biosystems

Talis
HelixBind
Proteus
Specific Dx

Portfolio view at project initiation



Significant advances, including



2019: Four Funding Rounds



- Funding Round 1 – Non-traditional approaches
 - Open for applications: June 3 – June 10, 2019, 5 PM ET
- Funding Round 2 – Vaccines and biotherapeutics
 - Open for applications: **July 8 – July 15, 2019, 5 PM ET**
- Funding Round 3 – Diagnostics
 - Open for applications: **August 12 – August 19, 2019, 5 PM ET**
- Funding Round 4 – Direct-acting small molecule
 - Open for applications: **November 12 – November 19, 2019, 5 PM ET**

now closed

now closed

now closed

open for business!

The only way to apply

Applicants must complete and submit the online Expression of interest form at <https://carb-x.org/apply> during the periods specified for each round. The online application tool will be functional only during these periods.

CARB-X is more than funding (1)

Scientific and Business Expertise and Support



CARB-X
Global Accelerator Network



9 world-class accelerators in 5 countries supporting the development of new antibiotics and other life-saving products to fight drug-resistant bacteria

CARB-X is more than funding (2)

Scientific and Business Expertise and Support

CARB-X Support Team/Lead for each company

- Accelerator support tailored to company needs
- Specialized knowhow in antibacterial drug development, diagnostics, vaccines, business and legal strategy, regulatory affairs and other areas essential to product development
- No cost to product developers
- Streamlined access to NIAID preclinical services
- Benefits of CARB-X ecosystem

<https://carb-x.org/partners/global-accelerator-network/>

CARB-X

Global
Accelerator
Network



CARB-X is more than funding (3)

Internal R&D: cross-portfolio challenges & opportunities

- Several consistent threads have emerged across projects in CARB-X portfolio
 - Opportunity to establish best practices and guide developers
 - Enables a better baseline understanding of pipeline
 - Unique opportunity to lead the field in certain development areas
 - Provide data as “a collective” to leverage resources

CARB-X is more than funding (4)

Internal R&D: cross-portfolio challenges & opportunities

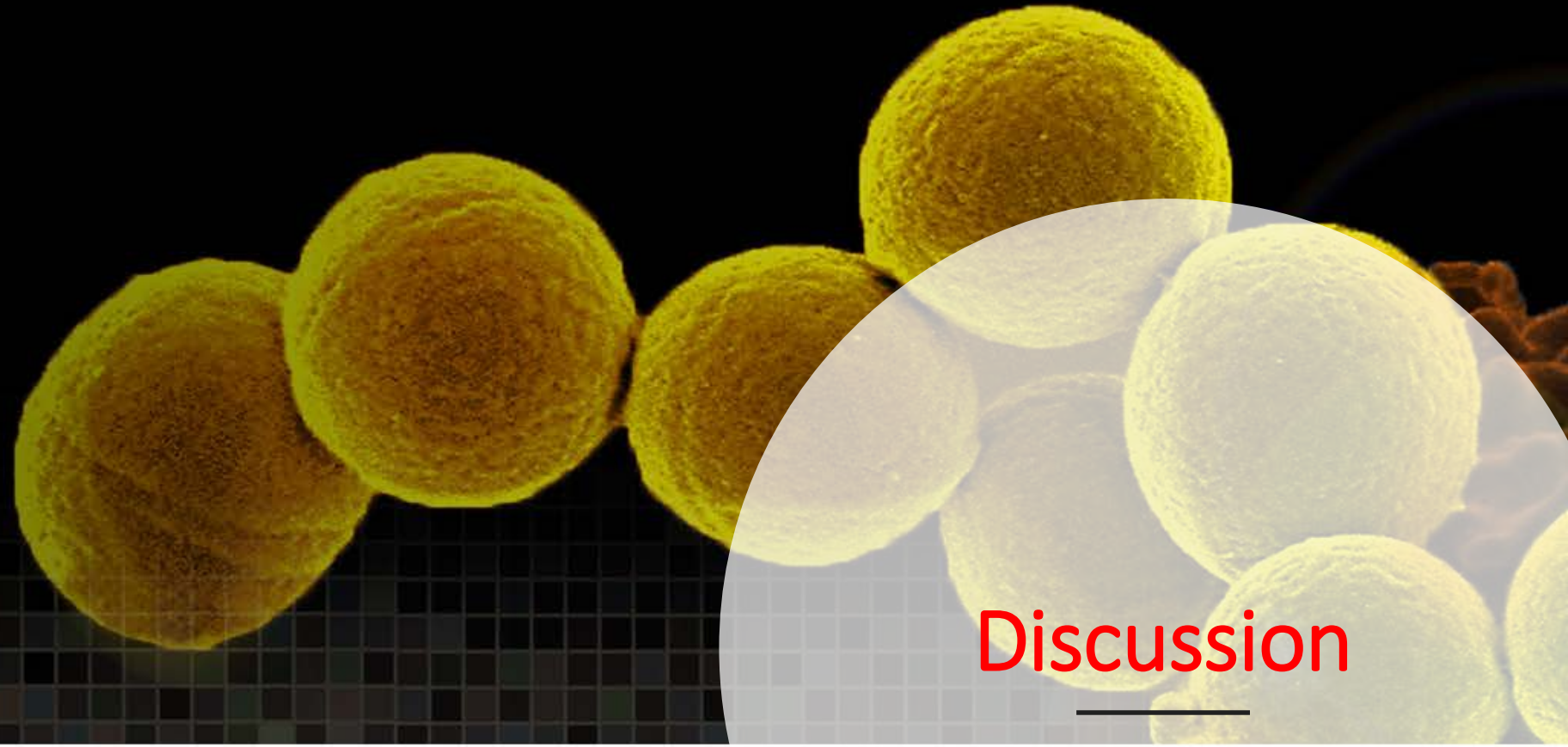
- Nephrotoxicity models and translation to clinic
- Translation of preclinical data to clinic for cystic fibrosis programs
- Gonorrhoea models and regulatory development
- Anti-virulence animal models and regulatory path
- Examination of global pre-existing resistance trends
- Toolbox to assess lack of antibacterial activity, particularly due to influx and efflux, and to afford SAR to enhance activity
- Best practices PK/PD to bolster product dossier
- Ways to leverage Dx across portfolio

Shameless plug: we're building our R&D team!



- What? Alliance Directors & Managers
- Areas?
 - Small-molecule therapeutics
 - Large-molecule therapeutics
 - Prevention
 - Diagnostics
- More info?
 - <https://carb-x.org/about/careers/>





Discussion
