CARB-X: Accelerating Innovation

Erin M Duffy, PhD
R&D Chief
emduffy@bu.edu

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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

* As of June 29, 2019; CARB-X was launched in July 2016
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
- PBPs – next-generation
  - Iterum (penem) 7/17 Ph1
- Novel PBPs
  - Entasis 10/17 LO
  - VenatoRx 7/17 LO
- BL/BLI
  - Entasis 4/17 Ph1
- LpxC
  - Forge 4/17 LO–PC
  - Forge 1/19 LO
- OMPTAs
  - Oppilotech 4/17 HtL
  - Polyphor 1/19 PC

DNA synthesis
- NBTI
  - Bugworks 7/17 LO–PC
  - Idorsia 4/18 PC

RNA synthesis
- 3OS – next-generation
  - Tetraphase 4/17 Ph1
- 5OS – next-generation
  - Zikani 2/18 LO–PC
- tRNA synthetase I
  - Oxford 5/19 HtL

Protein synthesis
- Peptides
  - Amicrobe (topical protein) 10/17 PC
  - Contrafect (amurin) 7/19 HtL
  - MicuRx (polymixin softdrug) 2/18 PC

Fatty-acid biosynthesis
- Debiopharm 7/17 LO–PC
- Debiopharm 3/19 LO

Other
- Summit 5/18 PC

Other
Portfolio: non-traditional

**Anti-Virulence**
- Antabio (elastase I) 7/17 LO→PC
- Microbiotix (T3SSi) 4/17 PC
- Bioversys (AgrAI) 10/19 LO

**Potentiators**
- Spero 4/17 Ph1

**Phage/Lysins**
- Contrafect 7/17 HtL→LO

**Microbiome**
- Vedanta 10/17 Ph1
- Seres 10/17 PC
- Procarta 9/19 LO
  - Techulon 11/19 HtL

**Other**
- ESKAPE
- ESKAPE

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**Anti-Virulence Potentiators Phage/Lysins Microbiome Other**
Portfolio: vaccines and immunotherapies

Vaccines

- IBT (multivalent) 10/17 LO→PC
- Sutrovax (conjug) 6/19 LO
- Vaxxilon (multivalent) 4/19 LO

- S. pneumoniae

- BB100 (monoclonal) 7/19 PC

Antibody-based

Portfolio: Dx

- T2 Biosystems
- Talis
- HelixBind
- Proteus
- Specific Dx
## Portfolio view at project initiation

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<thead>
<tr>
<th>Therapeutics</th>
<th>Preclinical Dev</th>
<th>Human Ph1</th>
<th>Graduate</th>
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Significant advances, including:

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<tr>
<th>Stage</th>
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<th>Optimization &amp; Prep</th>
<th>Product Dev</th>
<th>Sys Int/Testing</th>
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- Integrated Biotherapeutics
- Sutrovax
- Xavellion

- Prevention

- Diagnostics
- Helixbind
- Proteus
- Specific
- Talis
- T2 Biosystems
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

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

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/
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
• Gonorrhea 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/