Antibiotics to Treat Multidrug-Resistant Bacterial Infections
Forward-Looking Statements and Other Important Cautions

Any statement in this presentation about our future expectations, plans and prospects, including statements regarding our strategy, future operations, prospects, plans and objectives, and other statements containing the words "anticipates," "believes," "expects," "plans," "will" and similar expressions, constitute forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. Actual results may differ materially from those indicated by such forward-looking statements as a result of various important factors, including: whether our cash resources will be sufficient to fund our continuing operations for the period we anticipate; whether additional clinical trials or other studies will be required prior to any submission for regulatory approval; whether the results from such trials or studies will be sufficient to warrant submission for regulatory approval; whether submissions will be made and approvals will be received from the United States Food and Drug Administration or equivalent foreign regulatory agencies on a timely basis or at all; whether, if eravacycline obtains approval, it will be successfully distributed and marketed; and other factors discussed in the "Risk Factors" section of our most recent filings with the Securities and Exchange Commission. The forward-looking statements contained in this presentation reflect Tetraphase’s current views with respect to future events, and Tetraphase assumes no obligation to update any forward-looking statements except as required by applicable law.
Deadly Multidrug-Resistant (MDR) Gram-Negative Infections Are A Growing Threat

Drug-Resistant Superbugs Are a 'Fundamental Threat', WHO Says
by Maggie Fox
September 21, 2016

CDC announces 4th superbug case in US patient
By Susan Scutti
September 9, 2016

‘Superbug’ scourge spreads as U.S. fails to track rising human toll
By Ryan McNeill, Deborah J. Nelson and Yasmine Abutaleb
September 7, 2016

Superbug Explosion Triggers U.N. General Assembly Meeting
Antibiotic resistance has grown so dire that it will be the subject of a dedicated global summit later this month
September 7, 2016

Infectious Disease News: Emergence of colistin resistance represents ‘threatening development’
October 2016

Why Can’t We Find New Antibiotics? Research gaps lead to dearth of much needed drugs
October 26, 2016
Improving Environment for Antibiotic Development

**GRAM-NEGATIVE MARKET OPPORTUNITY**

**Combined Forces to Address Antibiotic Resistance**

- Review on AMR 2015-16 Reports
- CDC 2013 resistance threat report and solutions initiative
- WHO AMR report and 2015 global action plan
- President’s Council on Science and Technology (PCAST)
- UN General Assembly

**Global Awareness and Programs**

- Gain Act, passed July 2012
- Pending DISARM ACT
- 21st Century Cures Act

**Legislative Initiatives**

- FDA updated guidance
- LPAD, ADAPT Pathway
- PATH Initiative

**Regulatory Pathways**
Tetraphase Pharmaceuticals: Corporate Highlights

NOVEL ANTIBIOTICS FOR SERIOUS AND LIFE-THREATENING MDR INFECTIONS

Late-Stage

Eravacycline in phase 3
Seeking regulatory approval first in cIAI, then in cUTI

Pipeline

Portfolio of differentiated antibiotics
Two phase 1 trials underway with data expected in 2017

Platform Technology

Innovation licensed from Harvard
Proprietary chemistry enables the creation of novel tetracycline derivatives to treat MDR infections

Strong Balance Sheet

Cash runway into 2H 2018
$128M in cash and cash equivalents as of March 31, 2017

Strong Leadership

Experienced management team
Track record of success in anti-infective development, regulatory approval and commercialization

June 2017
# Antibiotics Pipeline from Proprietary Platform

<table>
<thead>
<tr>
<th>Product candidate</th>
<th>Route of administration</th>
<th>Discovery</th>
<th>Preclin</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
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<tbody>
<tr>
<td><strong>Eravacycline</strong></td>
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<tr>
<td><em>Complicated Intra-abdominal Infections</em></td>
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<td>IGNITE1</td>
<td>IV</td>
<td></td>
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</tr>
<tr>
<td>IGNITE4</td>
<td>IV</td>
<td></td>
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<tr>
<td><em>Complicated Urinary Tract Infections</em></td>
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<tr>
<td>IGNITE2</td>
<td>IV-to-oral</td>
<td></td>
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<tr>
<td>IGNITE3</td>
<td>IV</td>
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<tr>
<td><em>Oral development Program</em></td>
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<tr>
<td><strong>TP-271</strong></td>
<td>IV, Oral</td>
<td></td>
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<tr>
<td><em>Respiratory infections, CABP</em></td>
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<tr>
<td><strong>TP-6076</strong></td>
<td>IV</td>
<td></td>
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<tr>
<td><em>Multidrug-resistant infections</em></td>
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*June 2017*
Market Opportunity
clAI: New Drugs Needed for Resistant Infections

Current Paradigm

clAI needs early, rapid treatment
- Pip/tazo, quinolones, cephalosporin combinations and carbapenems used primarily

Broad spectrum antibiotics needed
- Many infections are polymicrobial
- 50% treated with combination of drugs to achieve desired bacterial coverage

Eravacycline Opportunity
- Empiric monotherapy solution
- Active against all CRE resistance
- Novel MOA
- No dose adjustment needed
- Convenient dosing regimen

1. Internal market research

June 2017
Gram-Negative Market Opportunity: US and EU

Complicated Intra-abdominal Infections

Overall Market

40 MM Days of Therapy (DOT) IV & Oral
88% is IV treatment

High-Risk Segment

10 MM DOT

20%

Product Opportunity

2 MM DOT

First-line/ Empiric
Second-line Empiric
Confirmed

Target: High-Risk Patient

- Empiric treatment for high-risk patients
- Patients who need combination therapy for Gram-negative, Gram-positive and anaerobic pathogens
- Patients with renal or hepatic-impairment
- Patients that have failed first-line therapy
- Patients with confirmed resistant pathogen (ESBLs, CREs, CRAB, VRE, MRSA, MCR-1 mutation)

2014 and 2015 Decision Resources AMR Hospital Database
cUTI: New Drugs Needed for Resistant Infections

- Gram-negative pathogens primary cause
- Quinolones and ceftriaxone primarily used
- Antibiotics needed with MDR activity
  - Quinolone resistance rates (20-60%) increasing
  - Combination therapy used 30%
- Dosing convenience is important

**Current Paradigm**

- 85% treated empirically
- 20% fail first-line treatment

**Eravacycline Opportunity**

- Empiric solution for high-risk patients
- Active against all CRE resistance
- Novel MOA
- No dose adjustment needed
- Convenient once-daily dosing with no monitoring

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2. Internal company estimates
3. WHO April 2014 Global Resistance Report
4. 2014 Decision Resources AMR Hospital Data base
Gram-Negative Market Opportunity: US and EU
Complicated Urinary Tract Infections

Target: High-Risk Patient

- Empiric treatment for high-risk patients
- Patients who need combination therapy for Gram-negative, Gram-positive and anaerobic pathogens
- Patients with renal or hepatic impairment
- Patients that have failed first-line therapy
- Patients with confirmed resistant pathogen (ESBLs, CREs, CRAB, VRE, MRSA, MCR-1 mutation)

Overall Market

60 MM Days of Therapy (DOT)
IV & Oral
56% is IV treatment

High-Risk Segment

10 MM DOT

Product Opportunity

1.5 MM DOT

First-line/Empiric
Second-line Empiric
Confirmed

60 MM Days of Therapy (DOT)
IV & Oral
56% is IV treatment

15%
Eravacycline – Broad Market Opportunity

First-line Empiric in High-Risk Patients

Second-line Empiric

Confirmed Infections

Eravacycline Opportunity in cIAI

Eravacycline Opportunity in cUTI

Spectrum of Coverage

Pursuing Broad Label

Convenience and Safety

GRAM-NEGATIVE MARKET OPPORTUNITY
Eravacycline Profile Provides Differentiation

<table>
<thead>
<tr>
<th>Pathogens</th>
<th>Eravacycline</th>
<th>Plazomicin</th>
<th>Meropenem/ Vaborbactam</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MDR Enterobacteriaceae</strong></td>
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<tr>
<td>(ESBL-expressing or Carbapenemase-Resistant, OXAs, Metallo-Beta lactamases)</td>
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<td>Carbapenemases - inactive; Some ESBLs - modest activity</td>
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<tr>
<td>Anaerobes</td>
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<tr>
<td>Acinetobacter (Including Carbapenemase-Resistant)</td>
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<tr>
<td>Pseudomonas</td>
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<td></td>
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<tr>
<td>VRE</td>
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<td></td>
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<tr>
<td>VRE</td>
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<tr>
<td><strong>Dosing convenience</strong></td>
<td></td>
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<tr>
<td>IV, QD or BID</td>
<td>TID, 60 mins</td>
<td>TID, 120 mins</td>
<td>TID, 3 hours</td>
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<tr>
<td>60 mins without monitoring</td>
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</tbody>
</table>

- **Active/convenient/broad usage**
- **Limited or no activity/convenience/usage**

Source: Prescribing information for approved products; Public data presentations for investigational products
Eravacycline:
Potent Activity Against Bacteria Causing Serious Infections
Eravacycline – Novel Antibiotic in Phase 3 Trials

- Novel, fully-synthetic tetracycline being developed for serious infections
  - IV and oral formulations

- Potent activity against broad spectrum of bacteria:
  - Gram-negative and Gram-positive
  - Anaerobic and atypical
  - MDR: ESBLs, CREs, CRAB, MCR1, VRE, MRSA

- In phase 3 clinical trials
  - First indication: complicated intra-abdominal infections (cIAI)
  - Second indication: complicated urinary tract infections (cUTI)

- Received QIDP and Fast Track designation from U.S. FDA
Potent Activity Against 4000+ MDR Gram-Negative Patient Isolates from New York City

In Vitro MIC$_{90}$ Comparison

Source: Abdallah et al; AAC December 2014

June 2017
IV Eravacycline Registration Pathway

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tbody>
<tr>
<td><strong>cIAI</strong></td>
<td></td>
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<tr>
<td>ignite1</td>
<td></td>
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<td>Complete</td>
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<td>MAA submission (IGNITE1)</td>
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<tr>
<td>ignite4</td>
<td></td>
<td></td>
<td></td>
<td>Top-line data 3Q17</td>
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<tr>
<td>ignite2</td>
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<td></td>
<td>Complete*</td>
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<tr>
<td>ignite3</td>
<td></td>
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<td>Initiated 1Q17</td>
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*Primary endpoint not met

June 2017
Phase 3 IGNITE Program (cIAI)
Investigating Gram-Negative Infections Treated with Eravacycline

Complicated Intra-abdominal Infections

**ignite1** *(complete)*

- IV eravacycline vs. IV ertapenem; 536 patients; 10% non-inferiority margin
- Met primary efficacy endpoint; well tolerated
- Achieved high cure rates in patients with Gram-negative pathogens, including resistant isolates
- Data to support MAA submission in 3Q 2017

**ignite4** *(ongoing)*

- IV eravacycline vs. IV meropenem, ~450 patients; 12.5% non-inferiority margin
- Top-line data expected 3Q 2017
- Data from IGNITE1 and IGNITE4 to support NDA submission
## Complicated Urinary Tract Infections

### ignite2 *(complete)*
- IV-to-oral eravacycline vs. IV-to-oral levofloxacin; 908 patients
- 10% non-inferiority margin
- Did not meet primary efficacy endpoint; well tolerated
- Superior to levofloxacin in patients with quinolone-resistant pathogens
- Longer IV treatment associated with improved response rates; oral formulation underperformed

### ignite3 *(ongoing)*
- Once-daily IV eravacycline vs. once-daily IV ertapenem, transition to approved oral therapy; ~1000 patients
- 10% non-inferiority margin
- Data to support sNDA submission for IV eravacycline in cUTI
Oral Eravacycline

- Continuing oral formulation development separately
- Ongoing phase 1 program
- Early phase 1 data suggest:
  - Oral dosing regimen used in IGNITE2 leads to lower systemic levels of eravacycline than expected
  - Administration of oral eravacycline in a fasted state results in increased drug exposure
- Further phase 1 testing underway to evaluate several additional variables associated with optimizing the oral formulation and dosing regimen
- Update on program findings and next steps planned in Q3 2017
Pipeline Programs
Tetraphase Chemistry Technology Offers Novel Development Opportunities

- Fully synthetic chemistry that is commercially scalable
- Over 3,000 novel analogs synthesized
TP-271: Targeting Respiratory Infections

- Potent activity \textit{in vitro} against Gram-negative and Gram-positive pathogens associated with respiratory tract infections

- Development program targets respiratory disease caused by bacterial biothreats and antibiotic-resistant public health pathogens

- NIAID funding supports preclinical development, manufacturing and phase 1 clinical, safety and pharmacokinetic evaluation of TP-271

- Qualified Infectious Disease Product and Fast Track designation by FDA for both IV and oral formulations

- Positive safety and pharmacokinetic data from IV single-ascending dose study; multiple-ascending dose study to begin in 2017

- Oral single-ascending dose study ongoing
TP-6076: Targeting MDR Gram-Negative Infections

- Novel, fully-synthetic antibiotic of the tetracycline class
- Potent activity *in vitro* against multidrug-resistant Gram-negative pathogens

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>MIC$_{50/90}$ µg/mL</th>
</tr>
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<tbody>
<tr>
<td>TP-6076</td>
<td>0.016/0.063</td>
</tr>
<tr>
<td>Tigecycline</td>
<td>2/4</td>
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<tr>
<td>Minocycline</td>
<td>8/16</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>&gt;32</td>
</tr>
<tr>
<td>Colistin</td>
<td>0.5/4</td>
</tr>
<tr>
<td>Meropenem</td>
<td>&gt;32</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>&gt;32</td>
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**55 XDR *Acinetobacter baumannii***

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<tr>
<th>Antibiotic</th>
<th>MIC$_{50/90}$ µg/mL</th>
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<tbody>
<tr>
<td>TP-6076</td>
<td>0.063/0.5</td>
</tr>
<tr>
<td>Tigecycline</td>
<td>0.5/2</td>
</tr>
<tr>
<td>Minocycline</td>
<td>8/&gt;32</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>16/&gt;32</td>
</tr>
<tr>
<td>Colistin</td>
<td>0.25/&gt;32</td>
</tr>
<tr>
<td>Meropenem</td>
<td>8/&gt;32</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>8/&gt;32</td>
</tr>
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- Positive safety and pharmacokinetic data in single-ascending dose study; multiple-ascending dose study ongoing
- Selected to receive $4 million CARB-X funding to support development
## Financial Highlights

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<th>$128.2M</th>
<th>$0</th>
<th>37.7M</th>
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<td>CASH AND EQUIVALENTS</td>
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<td>31-March-2017</td>
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<td>SHARES OUTSTANDING</td>
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<table>
<thead>
<tr>
<th>Non-dilutive U.S. Government funding to support pipeline program development</th>
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<tr>
<td>up to $67M (under contract initiated in 2012)</td>
</tr>
<tr>
<td>up to $39.8M (under contract initiated in 2011)</td>
</tr>
<tr>
<td>up to $4M (over 18 months)</td>
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</table>

**BARDA** (eravacycline)  
**NIAID** (TP-271)  
**CARB-X** (TP-6076)
Key Near-Term Milestones

**Eravacycline**

- **Initiate IGNITE3 trial (cUTI)**  
  - **1Q 2017**
- **MAA filing for cIAI**  
  - **3Q 2017**
- **IGNITE4 (cIAI) top-line data**  
  - **3Q 2017**
- **Oral development update**  
  - **3Q 2017**

**Pipeline Programs**

- **Present TP-271 phase 1 data**  
  - **Mid-2017**
- **Present TP-6076 phase 1 data**  
  - **Mid-2017**

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