First in Class Anti-Infectives for Life-Threatening, Drug Resistant Infections

Jefferies 2016 Healthcare Conference
June 8, 2016
Forward Looking Statements

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ContraFect Summary

First in Class Anti-Infectives for Life-Threatening, Drug Resistant Infections

Lysin Platform: A Novel Alternative to Conventional Antibiotics

• Bacteriophage-Derived Enzyme Biologics with Potent, Selective Antibacterial Activity
• Developed Internally and Collaboratively with The Rockefeller University
• Multiple Lysins Identified Targeting Gram Positive and Gram Negative Pathogens
• Lead program - CF-301
  • First and Only Lysin to Enter Clinical Trials in the U.S.
  • Fast Track Status Granted to CF-301 by FDA for *Staph aureus* Bacteremia
  • *In vitro* and Animal Data Show Rapid Killing of Bacteria and Improved Survival
  • Phase 1 Completed – No Clinical Adverse Safety Signals Observed
  • Phase 2 Anticipated to Begin 4Q16

Antibody Platform: Universal Influenza Therapy for Human Seasonal Strains

• Lead program - CF-404
  • Broad Spectrum Triple Antibody Cocktail for Serious Life-Threatening Influenza
  • Extends Treatment Window Compared to Small Molecules (e.g., Tamiflu)
  • IND Filing Anticipated Mid-2017
The Threat of Antibiotic Resistance...

“...the world is headed for a post-antibiotic era...”
- Dr. Keiji Fukuda, WHO

“...one of our most serious health threats.”
- Dr. Tom Frieden, CDC

“...back into the dark ages of medicine where treatable infections and injuries will kill once again.”
- David Cameron, UK Prime Minister
Drug Resistance is a Global Crisis Today

Significant Burden of Drug Resistant Infections

- United States, population 300m
  - >23,000 deaths
  - >2.0m illnesses
  - Overall societal costs
    - Up to $20 billion direct
    - Up to $35 billion indirect

- European Union, population 500m
  - 25,000 deaths per year
  - 2.5m extra hospital days
  - Overall societal costs
    - €900 million, hosp. days
    - Approx. €1.5 billion per year

Source: US CDC 2013
Source: ECDC 2007

Sharp Decline in Antibiotic Development

<table>
<thead>
<tr>
<th>Years</th>
<th>New Antibiotic Drug Approvals</th>
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<tbody>
<tr>
<td>83-87</td>
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<td>88-92</td>
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<td>93-97</td>
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<tr>
<td>13-15</td>
<td>4</td>
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</tbody>
</table>
The Right Time to Invest in Anti-Infectives

Predictive Efficacy

Favorable Climate

- Regulatory
- Legislation
  - GAIN Act
    - QIDP – Fast Track, Priority Review, Exclusivity
  - ADAPT/PATH Act*
    - Limited population pathway
    - Streamlined approval
  - DISARM Act*
    - Improved reimbursement
- Non-Dilutive Funding
  - BARDA (US)
  - IMI (EU)

- Legislation Pending

Acquisition Activity

Merck (2014) Cubist ($9.5 B)
Actavis (2014) Durata ($675 M)
Cubist (2013) Trius ($700 M)
Optimer ($550 M)
Medicines Co. REMPEX ($474 M) (2013)

*Legislation Pending
Lysin Technology

Lysin

- Enzyme Derived From Bacteriophage
- Cleaves Peptidoglycan Cell Wall of Bacteria
  - Used by Bacteriophage to Release New Phage Particles After Replication, Killing the Host Bacteria
- Molecular Weight ~20-30KD
- Synthetic, Recombinant Manufacture
- Not a Bacteriophage!
**Lysins: Breakthrough Alternative to Antibiotics**

**Unique Anti-Bacterial Action**
- Protein Therapeutic – Enzyme, NOT Inhibitor
- Potent, Rapidly Cidal
- Pathogen Targeted, not Broad Spectrum
  - Low propensity for Effects on Microbiome – e.g., *C. Difficile*
  - Active Against Biofilms – Currently no Approved Agents to Treat Biofilms

**Strong Resistance Profile**
- Active Against Strains Resistant to Conventional Antibiotics- No Cross Resistance
- Low Propensity for Resistance development

**Synergy with Conventional Antibiotics**
- Complementary Mechanism of Action
- Synergistic Activity *In vitro* and *In vivo*
- Reduces Resistance to SOC When Used in Combination

*SOC = Standard of Care Antibiotic*
Lysins: Rapid Bactericidal Action
CF-301

Breakthrough Alternative to Antibiotics for *Staph Aureus* Infections
CF-301: Targeting Invasive *Staph aureus* Infections Including MRSA

Indication: CF-301 for the Treatment of Staph aureus Bloodstream Infections, Including Endocarditis, Used in Combination with Standard of Care Antibiotics

- 119,000 Hospitalizations*
- Average Length of Stay - 21 days
- Average Hospital Cost - $114,000
- 30,000 Deaths

*Annual U.S. Statistics

CF-301 Is A Novel Anti-Staphylococcal Agent

- Bactericidal Cell Wall Hydrolase
- Produced Recombinantly
- 26 kDa
- Exclusive, World-Wide License for Therapeutic Use in Humans from The Rockefeller University
- Composition of Matter Patent Expires in 2032

*Staph aureus* Peptidoglycan

N-Acetylmuramic acid

N-Acetylglucosamine

Pentaglycine bridge

Peptide chain
CF-301 Is A Novel Anti-Staphylococcal Agent

- Rapid, Potent & Targeted Killing
- Active against MRSA, VRSA, DRSA Strains
- Low propensity for Resistance Development
- Clears Biofilms
- Synergistic with Antibiotics
CF-301 Is A Novel Anti-Staphylococcal Agent

Rapid, Potent & Targeted Killing

*LOD = Limit of Detection
Source: Schuch et al JID 2014:209

Rapidly Cidal; Efficacious *In vitro* and *In vivo*
**CF-301 Is A Novel Anti-Staphylococcal Agent**

**Rapid, Potent & Targeted Killing**

**Gram Positive**
- Staphylococcus aureus
  - MSSA (103)
  - MRSA (120)
- Streptococcus pyogenes (54)
- Streptococcus agalactiae (51)
- Staphylococcus lugdunensis (10)
- Staphylococcus epidermidis (11)
- Streptococcus pneumoniae (26)
- Streptococcus mutans (12)
- Listeria monocytogenes (12)
- Enterococcus faecalis (17)
- Enterococcus faecium (5)
- Bacillus cereus (10)
- Acinetobacter baumannii (8)

**Gram Negative**
- Escherichia coli (6)
- Pseudomonas aeruginosa (5)

- High MIC90 (µg/mL)
- Source: Schuch et al JID 2014:209

- Highly Targeted to Staph and Strep Pathogens
- No Effect on Gram Negative Pathogens (low C. Difficile risk)

Source: Schuch et al JID 2014:209
CF-301 Is A Novel Anti-Staphylococcal Agent

Active Against MRSA, VRSA, DRSA Strains

<table>
<thead>
<tr>
<th>Strain (n=147)</th>
<th>CF-301</th>
<th>Daptomycin</th>
<th>Vancomycin</th>
<th>Linezolid</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSA (120)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>DRSA (8)</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>VRSA (14)</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>LRSA (5)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

➢ No Cross-Resistance to Other Antibiotics

Source: Schuch et al JID 2014:209

CF-301 Activity
CF-301 Is A Novel Anti-Staphylococcal Agent

Low Propensity for Resistance Development

- Very Difficult to Find Resistant Mutants in Serial Passage
- Combination Reduces Resistance Emergence to SOC Antibiotic

Source: Schuch et al JID 2014:209
Biofilms: A Major Medical Problem

- Biofilms Complicate the Treatment of Invasive *Staph Aureus* Infections Including: Heart Valves, Catheters and Prosthetic Devices
- Composed of Bacterial Cells and Matrix
- Shields Bacteria From Immune System and Conventional Antibiotics
- Persister (Dormant) Bacteria Refractory to Conventional Antibiotics
- No Products Currently Indicated for the Treatment of Biofilms
CF-301 Is A Novel Anti-Staphylococcal Agent

Clears Biofilms

MRSA-Infected Catheter with Biofilm

Before Exposure to CF-301 15 min Exposure to CF-301

Source: ICAAC Poster 2013
**CF-301 Is A Novel Anti-Staphylococcal Agent**

**Synergistic with Antibiotics**

**In vitro Timekill (< 1x MIC)**

**In vivo Survival (mouse)**
(high inoculum model)

- **Growth**
- **DAP**
- **CF-301**
- **DAP+CF-301**

- **Combination with SOC Provides Maximum Killing**

Source: Schuch et al JID 2014:209
Synergistic with SOC Antibiotics

Rat Infectious Endocarditis Model (*S. aureus* Biofilm-Dependent Infection)

Daptomycin Alone at Human Therapeutic Equivalent Dose Daily x 4 Days
- 3 log reduction in CFUs

Single Dose of CF-301 Plus Daptomycin Daily Dose x 4 Days
- 6 log reduction in CFUs
- \( p \leq 0.001 \) vs. Dap alone

4/9 Rats Tested Culture-Negative Tissues with CF-301/DAP Combo
- Vegetations, Kidney, Spleen

Source: Oral Presentation at ICAAC, 2014
CF-301 Phase 1 Clinical Trial

Study Design

- Evaluated Safety, Tolerability, and Pharmacokinetics (PK) of CF-301
- Healthy Volunteers – Four Dosing Cohorts
- Placebo-controlled, Double-blind, Dose-escalating Study
- Single Dose Administered as a 2-hour IV Infusion
CF-301 Phase 1 Clinical Trial

Results

- 20 Subjects Enrolled Across 4 Dosing Cohorts (0.04, 0.12, 0.25, 0.40 mg/kg)
- Well behaved pharmacokinetic (PK) profile
  - Linear and Intra-subject Variability Was Low
- Well Tolerated
  - No Serious AEs, No Study Stopping Rules Met, No CF-301-related Hypersensitivity AEs
  - 5 Non-Serious AEs; All Mild and Resolved by End of Study
    - 3 CF-301 - headache, contact dermatitis, allergic rhinitis
    - 2 Placebo - viral upper respiratory tract infection, viral infection
- 9 of 13 Subjects Dosed with CF-301 Developed Anti-Drug Antibodies
  - Waning or Absent by Day 180
  - Not Correlated With Markers of Allergic Immune Response
- Estimated Effective Exposures Attained at the 0.25mg/kg Dose
CF-301 Phase 2 Study

Indication

- For the Treatment of Adults with Complicated Bacteremia, Including Endocarditis, Caused by MRSA or MSSA, Used in Combination with Conventional Antibacterial Therapy

Design

- Superiority Comparison: CF-301 + Standard of Care (SOC) vs Placebo + SOC
- International, Multicenter, Randomized, Double-Blind, Placebo Controlled
- 115 Patients Randomized 3:2 to Receive a Single Dose of 0.25 mg/kg of CF-301 Administered via 2 hr IV Infusion or Placebo

Endpoints

- Primary Endpoint: Early Clinical Response
- Safety, Tolerability, Pharmacokinetics (PK)
- Additional Exploratory Clinical and Health Economic Endpoints
CF-301 Phase 2 Study

Interim Analysis

- Interim Efficacy/Futility Analysis After At Least 40% of Patients have Completed
  - To Be Performed by Independent DSMB

Projected Timing

- Initiate in 4Q16
- Interim Analysis 4Q17
- Topline Result 4Q18
CF-404

Triple Antibody Cocktail for Serious Influenza Infection
CF-404 MAb Cocktail for Influenza

- Substantial Market Opportunity
- Targets Unchanging Regions of Hemagglutinin
- Combination Antibody Therapy
- Extends Time-to-Treat Window
- Targeting IND Submission in Mid-2017
CF-404 MAb Cocktail for Influenza

Substantial Market Opportunity

High Unmet Medical Need: Up to 49,000 Deaths/Yr*

* Most Recent Data ‘06/’07 Flu Season
Source: CDC Estimates
CF-404 MAb Cocktail for Influenza

Targets Unchanging Regions of Hemagglutinin

H1 - 1918

H1 - 2009

Indicates Point of Mutation

Indicates Conserved Target Region
CF-404 MAb Cocktail for Influenza

Extends Time to Treat Window

Mice with H1N1 Influenza
(Survival at 14 Days)

% Survival

<table>
<thead>
<tr>
<th>Time to Initiate Therapy</th>
<th>CF-404 (Single Dose)</th>
<th>Tamiflu (Twice Daily x 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 HR</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>48 HR</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>72 HR</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>96 HR</td>
<td></td>
<td>80%</td>
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Source: ContraFect Unpublished Data
Team Track Record of Creating Shareholder Value

Executive Management

Steven C. Gilman, Ph.D. – Chairman and CEO
Former EVP, R&D and CSO, Cubist Pharmaceuticals

Natalie Bogdanos – General Counsel & Corporate Secretary
Assoc General Counsel Memorial Sloan-Kettering; General Counsel Enzo Biochem

Cara Cassino, MD FCCP – CMO & SVP, Development
Sr VP Global Clinical Development at Forest; VP Pfizer; Boehringer-Ingelheim Pharmaceuticals

Michael Messinger – VP, Finance
Director of Finance at Lexicon Pharmaceuticals

Josh Muntner – SVP of Business Development
Managing Director, Janney Montgomery Scott

Michael Wittekind, Ph.D. – CSO & SVP, Research
Exec. Dir., Research Amgen, Assoc. Dir. at Bristol-Myers Squibb

Board of Directors

Steven C. Gilman, Ph.D.– Chairman and CEO

Sol Barer, Ph.D. – Lead Independent Director
Former Chairman and CEO of Celgene

Roger Pomerantz, M.D. – Vice Chairman
President, CEO and Chairman Seres Therapeutics; Former Global Head of Infectious Disease, Merck; J&J

Isaac Blech
Founder of Leading Biotech Companies: Celgene and ICOS

David Low
Investment Banker, Lazard, JP Morgan & Lehman Brothers

Michael Otto, Ph.D.
Former Chief Scientific Officer, Pharmasset

Cary Sucoff
President, Equity Source Partners LLC
Summary Financial Data

- IPO July 29, 2014: $41.3 M
- PIPE Financing June 12, 2015: $20 M
  Oracle/Broadfin/Birchview/Cormorant
- Cash and Investments at March 31, 2016: $26.3 M
- Est. Operating Cash Burn: Average $2.5 M/Month in 2016
- Shares Outstanding: 27.5 M
Upcoming Milestones and Events

✓ Phase 1 Trial Details 2Q16

• Advance New Lysin to Clinical Candidate 2Q16
• Initiate Phase 2 Clinical Trial for CF-301 4Q16
• IND Submission for CF-404 Mid-2017
• Interim Phase 2 Data for CF-301 4Q17
Investment Highlights

• Novel Anti-Infective Technologies that Address Drug-Resistance
• Lysins: Potential Breakthrough Alternatives to Antibiotics
• CF-301: for *Staph aureus* Infections Including MRSA
  • First and Only Lysin to Enter Clinical Trials in the U.S.
  • Granted Fast Track Status by FDA
  • Phase 1 completed; Phase 2 start 4Q16
• Antibodies: CF-404 for Influenza
• Deep Patent Portfolio
• Strong Management Team and Experienced Board