

New Data Highlighting *in vitro* Potency Advantages for VIBATIV® (telavancin) Against Difficult-to-Treat MRSA and MSSA Pathogens Reported at ASM Microbe 2017

VIBATIV (telavancin) Demonstrates Greater *in vitro* Activity Compared to Competitor Antibiotics Against Range of Challenging Infection Types

DUBLIN, June 5, 2017 /PRNewswire/ -- Theravance Biopharma, Inc. (NASDAQ: TBPH) ("Theravance Biopharma" or the "Company") today announced the presentation of positive new data from multiple studies of VIBATIV® (telavancin), the Company's proprietary FDA-approved antibiotic. Study results highlighted greater *in vitro* potency for VIBATIV against difficult-to-treat *Staphylococcus aureus* (*S. aureus*) pathogens, including those considered to be multidrug resistant (MDR), as compared to other commercialized antibiotics. These data were presented at ASM Microbe 2017, the annual meeting of the American Society for Microbiology (ASM), which is being held in New Orleans, June 1-5, 2017.



Highlights from the VIBATIV presentations at ASM Microbe include:

Activity Against *S. aureus* Clinical Isolates Causing Skin Infections or Pneumonia with Concomitant Bacteremia

Researchers collected and analyzed *S. aureus* clinical isolates causing skin and skin-structure infections (SSSI) or pneumonia with concomitant bacteremia in US hospitals from 2012-2016. Results from the study demonstrated that VIBATIV possessed potent *in vitro* activity against this broad range of *S. aureus* clinical isolates, including those classified as methicillin-resistant and methicillin-susceptible (MRSA and MSSA). 100% of the evaluated *S. aureus* clinical isolates, regardless of their type and including those considered to be MDR, were susceptible to VIBATIV with an MIC₉₀ of 0.06 µg/mL. Minimum inhibitory concentrations (MICs) are a measure used to express *in vitro* activity of an antibiotic against a pathogen. MIC₉₀ is the antibiotic concentration at which 90% of isolates are inhibited.

Importantly, the findings demonstrated greater *in vitro* activity for VIBATIV as compared to other well-known antibiotics such as vancomycin, daptomycin, ceftaroline and linezolid. Against subsets of isolates classified as MRSA, the MICs for VIBATIV were 8-fold lower than daptomycin, 16-fold lower than ceftaroline and 16- to 32-fold lower than vancomycin and linezolid. For those isolates classified as MDR, defined as displaying a resistance to three or more drug classes, the MICs for VIBATIV were 8-fold lower than daptomycin, 16- to 32-fold lower than vancomycin and linezolid, and 32-fold lower than ceftaroline.

Activity Against Cystic Fibrosis-Associated *S. aureus*, Including Ceftaroline-Resistant MRSA

Researchers collected and analyzed MRSA and MSSA cystic fibrosis (CF) clinical strains from three different CF centers in the US. Results from the study demonstrated that VIBATIV possessed potent *in vitro* activity against both MRSA and MSSA CF clinical strains, including those resistant to ceftaroline. When compared to daptomycin, ceftaroline and vancomycin, VIBATIV showed the greatest *in vitro* potency. MICs for VIBATIV were 8-fold lower than for ceftaroline and daptomycin and 25-fold lower than for vancomycin against the CF-associated *S. aureus* isolates that were evaluated.

MRSA has a significant clinical impact on individuals with CF, resulting in worse survival as compared to CF patients who have never had MRSA.¹ As such, CF-associated MRSA represents an area of significant medical need.

¹ Dasenbrook EC, Checkley W, Merlo CA, Konstan MW, Lechtzin N, Boyle MP. Association Between Respiratory Tract Methicillin-Resistant *Staphylococcus aureus* and Survival in Cystic Fibrosis. *JAMA*.2010;303(23):2386-2392. doi:10.1001/jama.2010.791.

"We continue to work aggressively to generate compelling data to differentiate VIBATIV from other available antibiotics in some of the healthcare industry's most troubling and difficult-to-treat infection types. To this end, these latest data add to the impressive collection of research that demonstrates that VIBATIV has greater *in vitro* potency against a variety of MRSA and MDR infections than many well-known antibiotic products," said Frank Pasqualone, Chief Commercial Operations Officer at Theravance Biopharma. "In an environment clouded by the challenges of antibiotic resistance, we believe that the *in vitro* potency of VIBATIV, coupled with its demonstrated bactericidal activity, provides clinicians an important antibiotic treatment option for some of their most challenging cases, where indicated."

About VIBATIV[®] (telavancin)

VIBATIV[®] was discovered internally in a research program dedicated to finding new antibiotics for serious infections due to *Staphylococcus aureus* (*S. aureus*) and other Gram-positive bacteria, including MRSA and MSSA. VIBATIV is a once-daily, injectable lipoglycopeptide antibiotic with *in vitro* potency, bactericidal activity within six hours, and penetration into target infection sites. The drug's proven efficacy against difficult-to-treat Gram-positive infections has been demonstrated in several large, multinational registrational studies, which involved one of the largest cohorts of patients with *S. aureus* infections studied to date. Additionally, there is extensive and well-documented evidence of the drug's *in vitro* potency and *in vivo* activity against a broad collection of Gram-positive bacterial pathogens, including those that are considered difficult-to-treat and multidrug-resistant. VIBATIV is approved in the U.S. for the treatment of adult patients with hospital-acquired and ventilator-associated bacterial pneumonia (HABP/VABP) caused by susceptible isolates of *S. aureus* when alternative treatments are not suitable. In addition, VIBATIV is approved in the U.S. for the treatment of adult patients with complicated skin & skin structure infections (cSSSI) caused by susceptible isolates of Gram-positive bacteria, including *S. aureus*, both methicillin-susceptible (MSSA) and methicillin-resistant (MRSA) strains. The product labeling also describes the use of VIBATIV in treating patients with concurrent bacteremia (in addition to either skin infection or pneumonia).

VIBATIV is also approved for marketing in Europe, Canada and Russia. Theravance Biopharma plans to market VIBATIV outside the U.S. through a network of partners. To date, the company has secured partners for VIBATIV in the following geographies - Canada, Middle East, North Africa, Israel, Russia, China and India.

VIBATIV[®] Important Safety Information

Mortality

Patients with pre-existing moderate/severe renal impairment (CrCl \leq 50 mL/min) who were treated with VIBATIV[®] for hospital-acquired bacterial pneumonia/ventilator-associated bacterial pneumonia had increased mortality observed versus vancomycin. Use of VIBATIV in patients with pre-existing moderate/severe renal impairment (CrCl \leq 50 mL/min) should be considered only when the anticipated benefit to the patient outweighs the potential risk.

Nephrotoxicity

New onset or worsening renal impairment occurred in patients who received VIBATIV. Renal adverse events were more likely to occur in patients with baseline comorbidities known to predispose patients to kidney dysfunction and in patients who received concomitant medications known to affect kidney function. Monitor renal function in all patients receiving VIBATIV prior to initiation of treatment, during treatment, and at the end of therapy. If renal function decreases, the benefit of continuing VIBATIV versus discontinuing and initiating therapy with an alternative agent should be assessed.

Fetal Risk

Women of childbearing potential should have a serum pregnancy test prior to administration of VIBATIV. Avoid use of VIBATIV during pregnancy unless the potential benefit to the patient outweighs the potential risk to the fetus. Adverse developmental outcomes observed in three animal species at clinically relevant doses raise concerns about potential adverse developmental outcomes in humans. If not already pregnant, women of childbearing potential should use effective contraception during VIBATIV treatment.

Contraindication

Intravenous unfractionated heparin sodium is contraindicated with VIBATIV administration due to artificially prolonged activated partial thromboplastin time (aPTT) test results for up to 18 hours after VIBATIV administration.

VIBATIV is contraindicated in patients with a known hypersensitivity to the drug.

Hypersensitivity Reactions

Serious and potentially fatal hypersensitivity reactions, including anaphylactic reactions, may occur after first or subsequent doses. VIBATIV should be used with caution in patients with known hypersensitivity to vancomycin.

Geriatric Use

Telavancin is substantially excreted by the kidney, and the risk of adverse reactions may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection in this age group.

Infusion Related Reactions

VIBATIV is a lipoglycopeptide antibacterial agent and should be administered over a period of 60 minutes to reduce the risk of infusion-related reactions. Rapid intravenous infusions of the glycopeptide class of antimicrobial agents can cause "Red-man Syndrome" like reactions including: flushing of the upper body, urticaria, pruritus, or rash.

QTc Prolongation

Caution is warranted when prescribing VIBATIV to patients taking drugs known to prolong the QT interval. In a study involving healthy volunteers, VIBATIV prolonged the QTc interval. Use of VIBATIV should be avoided in patients with congenital long QT syndrome, known prolongation of the QTc interval, uncompensated heart failure, or severe left ventricular hypertrophy.

Most Common Adverse Reactions

The most common adverse reactions (greater than or equal to 10% of patients treated with VIBATIV) were diarrhea, taste disturbance, nausea, vomiting, and foamy urine.

Full Prescribing Information, including Boxed Warning and Medication Guide in the U.S., is available at www.VIBATIV.com.

About Theravance Biopharma

Theravance Biopharma is a diversified biopharmaceutical company with the core purpose of creating medicines that help improve the lives of patients suffering from serious illness.

Our pipeline of internally discovered product candidates includes potential best-in-class medicines to address the unmet needs of patients being treated for serious conditions primarily in the acute care setting. VIBATIV® (telavancin), our first commercial product, is a once-daily dual-mechanism antibiotic approved in the U.S., Europe and certain other countries for certain difficult-to-treat infections. Revefenacin (TD-4208) is a long-acting muscarinic antagonist (LAMA) being developed as a potential once-daily, nebulized treatment for chronic obstructive pulmonary disease (COPD). Our neprilysin (NEP) inhibitor program is designed to develop selective NEP inhibitors for the treatment of a range of major cardiovascular and renal diseases, including acute and chronic heart failure, hypertension and chronic kidney diseases, such as diabetic nephropathy. Our research efforts are focused in the areas of inflammation and immunology, with the goal of designing medicines that provide targeted drug delivery to tissues in the lung and gastrointestinal tract in order to maximize patient benefit and minimize risk. The first program to emerge from this research is designed to develop intestinally restricted-targeted pan-Janus kinase (JAK) inhibitors for the treatment of a range of inflammatory intestinal diseases.

In addition, we have an economic interest in future payments that may be made by Glaxo Group Limited or one of its affiliates (GSK) pursuant to its agreements with Innoviva, Inc. relating to certain drug development programs, including the Closed Triple (the combination of fluticasone furoate, umeclidinium, and vilanterol), currently in development for the treatment of COPD and asthma.

For more information, please visit www.theravance.com.

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This press release contains certain "forward-looking" statements as that term is defined in the Private Securities Litigation Reform Act of 1995 regarding, among other things, statements relating to goals, plans, objectives, expectations and future events. Theravance Biopharma intends such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 21E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. Examples of such statements include statements relating to: the Company's strategies, plans and objectives, the Company's regulatory strategies and timing of clinical studies, the potential benefits and mechanisms of action of the Company's product and product candidates, the Company's expectations for product candidates through development, potential regulatory approval and commercialization (including their potential as components of combination therapies) and the Company's expectations for product sales. These statements are based on the current estimates and assumptions of the management of Theravance Biopharma as of the date of the press release and are subject to risks, uncertainties, changes in circumstances, assumptions and other factors that may cause the actual results of Theravance Biopharma to be materially different from those reflected in the forward-looking statements. Important factors that could cause actual results to differ materially from those indicated by such forward-looking statements include, among others, risks related to: delays or difficulties in commencing or completing clinical studies, the potential that results from clinical or non-clinical studies indicate the Company's product candidates are unsafe or ineffective (including when our product candidates are studied in combination with other compounds), the feasibility of undertaking future clinical trials for our product candidates based on FDA policies and feedback, dependence on third parties to conduct clinical studies, delays or failure to achieve and maintain regulatory approvals for product candidates, risks of collaborating with or relying on third parties to discover, develop and commercialize products, risks associated with establishing and maintaining sales, marketing and distribution capabilities with appropriate technical expertise and supporting infrastructure and risks of developing an institutional customer mix for VIBATIV[®] (telavancin) that meet the Company's plan for the product. Other risks affecting Theravance Biopharma are described under the heading "Risk Factors" contained in Theravance Biopharma's Form 10-Q filed with the Securities and Exchange Commission (SEC) on May 9, 2017 and Theravance Biopharma's other filings with the SEC. In addition to the risks described above and in Theravance Biopharma's filings with the SEC, other unknown or unpredictable factors also could affect Theravance Biopharma's results. No forward-looking statements can be guaranteed and actual results may differ materially from such statements. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Theravance Biopharma assumes no obligation to update its forward-looking statements on account of new information, future events or otherwise, except as required by law.

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