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# **ContraFect's Exebacase (CF-301) Improved Clinical Outcomes in Staphylococcus aureus Bacteremia including Right-Sided Endocarditis Compared to Standard of Care Antibiotics Alone in a First-in-Patient Phase 2 Superiority Study**

***Proof of concept that new class of lysin biologics has the potential to improve treatment outcomes in serious bacterial infections***

***Exebacase demonstrated robust safety and tolerability profile***

***Company intends to progress exebacase to Phase 3***

***Conference call today at 8:00 AM Eastern Time to discuss Phase 2 results***

YONKERS, N.Y., Jan. 07, 2019 (GLOBE NEWSWIRE) -- [ContraFect Corporation \(Nasdaq:CFRX\)](#), a clinical-stage biotechnology company focused on the discovery and development of protein and antibody therapeutics for life-threatening, drug-resistant infectious diseases, today announced positive topline results from its Phase 2 clinical trial of exebacase (CF-301) for the treatment of *Staphylococcus aureus* (*Staph aureus*) bacteremia including endocarditis. Overall, exebacase, used in addition to standard of care (SOC) antibiotics, achieved clinically meaningful improvement in the primary efficacy endpoint of clinical response at Day 14 as demonstrated by a 70.4% responder rate as compared to a 60.0% responder rate among patients treated with antibiotics alone. Higher responder rates at Day 14 were also seen with exebacase compared to antibiotics alone in pre-specified exploratory analyses in methicillin-resistant *Staph aureus* (MRSA) patients ( $p=0.010$ ) and in patients diagnosed with *Staph aureus* bacteremia alone ( $p=0.035$ ) as well as in the subgroup of patients with *Staph aureus* bacteremia including right-sided endocarditis ( $p=0.028$ ). The company believes these results represent a positive signal of efficacy, particularly in view of the heterogeneous patient population and an unexpected imbalance in the distribution of difficult-to-treat left-sided endocarditis in favor of the placebo group.

Exebacase demonstrated a robust safety and tolerability profile in this first Phase 2 study of patients treated with lysin therapy which is complimentary to, and synergistic with, conventional antibiotics.

“We are very pleased with the strong efficacy signals and the encouraging safety and tolerability profile of our lead first-in-class therapeutic product candidate in this study, which establish the potential for exebacase to substantially improve the clinical responder rates for serious antibiotic-resistant infections seen with antibiotics alone. These data support progression to Phase 3 and the potential to provide superior clinical responder rates for *Staph aureus* bacteremia including right-sided endocarditis.” said Steven C. Gilman, Ph.D., Chairman and Chief Executive Officer of ContraFect.

Ralph Corey, M.D., Professor of Medicine in the Division of Infectious Diseases, Duke University, remarked, “The strong response rates of exebacase used in addition to antibiotics in patients with bacteremia/right sided endocarditis and the MRSA subgroup are clinically meaningful. These results, together with the overall safety profile of exebacase are very promising. This could be our first chance to improve outcomes in patients with *Staph aureus* bacteremia and right-sided endocarditis. With approximately 200,000 hospitalizations in the U.S. each year and an estimated mortality rate of over 20 percent, there is major need to improve the clinical outcomes for these serious and life-threatening infections.”

The Phase 2 clinical trial of exebacase is an international, multi-center, randomized, double-blind, placebo-controlled clinical trial in patients with *Staph aureus* bacteremia including endocarditis. This superiority design study compared the responder rates with exebacase administered on a background of antibiotic therapy to antibiotics alone. The primary efficacy parameter was clinical response at Day 14 and the data readout of the core study was 28 days after end of antibiotic therapy in all patients. Long-term follow-up is ongoing and will be completed 180 days after all patients were dosed with study drug.

“The results of this trial provide important data to guide our progress into Phase 3 following discussions with regulatory agencies, focusing on *Staph aureus* bacteremia and right-sided endocarditis,” said Cara Cassino, M.D., Chief Medical Officer and Executive Vice President of Research and Development at ContraFect. “In addition, we’re excited to demonstrate the clinical efficacy of lysins, using a superiority-designed trial which examined the clinic benefit of lysin therapy over that of standard of care antibiotics alone. These results represent a first step towards a potential new paradigm for treating life-threatening bacterial infections, improving patient outcomes, combating antimicrobial resistance and broadening our armamentarium against antibiotic-resistant pathogens.”

One hundred and sixteen (116) patients enrolled in the study had confirmed *Staph aureus* bacteremia/endocarditis and received study drug. These 116 patients constituted the microbiological intent to treat (mITT) population, which was the primary efficacy analysis population. A total of 38.8% of exebacase-treated and 35.5% of placebo patients, respectively, had a MRSA infection. The majority of patients in both treatment groups had bacteremia (77.5% of the exebacase group and 86.7% of the placebo group). However, there was an unequal distribution of patients with left-sided endocarditis between the treatment groups. A total 15.5% of exebacase-treated patients had left-sided endocarditis compared to 6.7% of placebo patients.

The clinical responder rates on Day 14 in the subset of patients with bacteremia including

right-sided endocarditis treated with exebacase was 80.0% compared to 59.5% in the patients treated with antibiotics alone, a 20.5% improvement ( $p=0.028$ ). In patients diagnosed with *Staph aureus* bacteremia alone, the clinical responder rate on Day 14 in the exebacase-treated group was 81.8% compared to 61.5% in the patients treated with antibiotics alone ( $p=0.035$ ). Of note, among all patients infected with MRSA, a 42.8% higher responder rate was observed in exebacase-treated patients compared to those treated with antibiotics alone (74.1% compared to 31.3%, respectively ( $p=0.010$ )). Based on these data, the company concludes that in this trial exebacase demonstrated clinically meaningful improvements in outcomes compared to antibiotic therapy alone.

The incidence of treatment emergent adverse events (TEAEs) was balanced between the treatment groups (88.9% and 85.1% of the exebacase and placebo groups, respectively), with incidence rates as expected for this population, given the severity of the disease under study and that patients had multiple co-morbidities. The incidence rates of TEAEs reported within approximately one week after administration of the single dose of study drug were balanced between the treatment groups (66.7% and 66.0% in the exebacase and placebo groups, respectively). The overall rate of serious TEAEs was also similar between the treatment groups (47.2% for exebacase and 51.1% for placebo). Among all patients who received study drug, 19.4% of exebacase patients and 14.9% of placebo patients died. There were no serious TEAEs that we determined to be related to exebacase. Importantly, there were no reports of hypersensitivity to exebacase and no patients discontinued study drug in either treatment group. Based on these data the company concludes that exebacase was safe and well-tolerated in this study.

## **Conference Call**

The Company will host a conference call today, January 7, 2019, to discuss the Phase 2 trial results at 8:00 a.m. ET / 5:00 a.m. PT. To access the call, please dial 866-691-5817 (domestic) or 409-216-0839 (international) and provide Conference ID 8489987. A live webcast of the presentation will be available on the Investors & Media section of the Company's website at [www.contrafect.com](http://www.contrafect.com). The presentation will also be available as an archived webcast for a limited time.

## **About Exebacase (CF-301):**

Exebacase (CF-301) is a recombinantly-produced lysin (cell wall hydrolase enzyme) with potent bactericidal activity against *Staph aureus*, a major cause of blood stream infections (BSIs) also known as bacteremia. Exebacase has the potential to be a first-in-class treatment for *Staph aureus* bacteremia. It has a novel, rapid, and specific mechanism of bactericidal action against *Staph aureus*. By targeting a conserved region of the cell wall that is vital to bacteria, resistance is less likely to develop to exebacase. The addition of exebacase to standard of care antibiotics significantly increased bacterial killing and survival in animal models of disease when compared to treatment with antibiotics. In addition, *in vitro* and *in vivo* experiments have shown that exebacase is highly active against biofilms which complicate *Staph aureus* infections. Exebacase was licensed from The Rockefeller University and is being developed at ContraFect.

## **About *Staph aureus* Bacteremia and Endocarditis:**

*Staph aureus* bacteremia is a serious bacterial infection associated with high morbidity and

mortality. In the U.S. alone, there are approximately 200,000 hospitalizations for *Staph aureus* bacteremia annually. Mortality rates from *Staph aureus* bacteremia have been reported as ranging from 20-40% despite conventional antibiotics. *Staph aureus* bacteremia can lead to infective endocarditis, a serious infection affecting the heart valves. The incidence of infective endocarditis in the U.S. has increased over the past decade, with over 47,000 cases in 2011, and is likely due to the growth of the at-risk populations, such as older, diabetic and hemodialysis patients. *Staph aureus* endocarditis remains difficult to treat with current standard of care antibiotics. One reason for this is biofilm formation which prevents antibiotics from eradicating the bacteria, leading to the need for long courses of antibiotic therapy, which are often unsuccessful and necessitate surgery to eradicate bacteria from infected heart valves. Left-sided endocarditis, which affects the aortic and/or mitral valves of the heart, is poorly responsive to medical therapies and surgical removal and replacement of damaged heart valves is generally required to eradicate infection and restore cardiac function. The treatment response for left-sided endocarditis has been reported to be as low as 10% in published clinical trials (Fowler, NEJM, 2006). MRSA is considered a serious threat to global health by the Center for Disease Control and a high priority threat by the World Health Organization. Emerging resistance to conventional antibiotics such as vancomycin and daptomycin, which are used to treat MRSA, represents an additional serious threat which may have serious consequences in terms of increasing morbidity, mortality and health care utilization.

#### **About the Phase 2 Trial of Exebacase (CF-301):**

The study randomized one hundred and twenty-one (121) patients, 116 of which had confirmed *Staph aureus* bacteremia/endocarditis and received study drug and constituted the microbiological intent to treat (mITT) population, which was the primary efficacy analysis population. Seventy-one (71) patients in the mITT population received exebacase and 45 patients received placebo. All patients in the mITT population received treatment with standard of care antibiotics as prescribed by the study investigators, in accordance with treatment guidelines, accepted medical practice and the study protocol (e.g., vancomycin or daptomycin for MRSA and a semi-synthetic penicillin or first-generation cephalosporin for MSSA). The trial was conducted in the US, Europe, Latin America, Russia and Israel, with 79.3% of patients enrolled in the United States. Final diagnosis and clinical outcomes were determined by an independent clinical Adjudication Committee. An independent Data Safety Monitoring Board (DSMB) reviewed unblinded safety and pharmacokinetic data while the study was ongoing.

#### **About ContraFect:**

ContraFect is a biotechnology company focused on discovering and developing therapeutic protein and antibody products for life-threatening, drug-resistant infectious diseases, particularly those treated in hospital settings. An estimated 700,000 deaths worldwide each year are attributed to antimicrobial-resistant infections. We intend to address life threatening infections using our therapeutic product candidates from our lysin and monoclonal antibody platforms to target conserved regions of either bacteria or viruses (regions that are not prone to mutation). ContraFect's initial product candidates include new agents to treat antibiotic-resistant infections such as MRSA and influenza. ContraFect's lead product candidate, exebacase (CF-301), was evaluated in a Phase 2 clinical trial for the treatment of *Staphylococcus aureus* (*Staph aureus*) bacteremia, including endocarditis and to the best of

our knowledge was the first lysin to enter clinical studies in the U.S. in patients with serious *staph aureus* infections. ContraFect is also conducting research focused on the discovery of lysins to target Gram-negative bacteria.

### **Forward-Looking Statements:**

This press release contains, and our officers and representatives may make from time to time, “forward-looking statements” within the meaning of the U.S. federal securities laws. Forward-looking statements can be identified by words such as “projects,” “may,” “will,” “could,” “would,” “should,” “believes,” “expects,” “anticipates,” “estimates,” “intends,” “plans,” “potential,” “promise” or similar references to future periods. Examples of forward-looking statements in this release include, without limitation, statements regarding whether exebacase improves clinical outcomes in *Staph aureus* bacteremia including right-sided endocarditis compared to SOC antibiotics alone, whether the study showed proof of concept that exebacase has the potential to improve treatment outcomes in serious bacterial infections, whether exebacase demonstrated a robust safety and tolerability profile, whether the results support the progression to Phase 3 and the company’s ability to do so, statements made regarding the scheduled conference call today to discuss Phase 2 results, the company’s ability to discover and develop protein and antibody therapeutics for life-threatening, drug-resistant infectious diseases, whether the topline results from the Phase 2 trial were positive, whether exebacase, in addition to SOC antibiotics, showed clinically meaningful improvements, whether the results represent a positive signal of efficacy in view of heterogeneous patient population and unexpected imbalance in the distribution of difficult-to-treat left-sided endocarditis in favor of placebo group, statements made regarding efficacy, safety and tolerability, the potential for exebacase to substantially improve clinical responder rates for serious antibiotic-resistant infections seen with antibiotics alone, the potential to provide superior responder rates for *Staph aureus* bacteremia including right-sided endocarditis, statements made by Dr. Corey, the Phase 2 study design, Phase 2 follow-up, whether the results of the trial provide important data to guide our progress to Phase 3 following discussions with regulatory agencies, whether the trial demonstrated the clinical efficacy of lysins, whether the results represent a first step towards a new paradigm for treating life-threatening bacterial infections, improving patient outcomes, combating antimicrobial resistance and broadening the company’s armamentarium against antibiotic-resistant pathogens, statements made regarding specific trial results, responder rates, adverse events and hypersensitivity, whether exebacase has potent bactericidal activity against *Staph aureus*, statements made regarding in vivo and in vitro experiments, including biofilm activity, statements made regarding *Staph aureus* bacteremia, and right and left sided endocarditis, our ability to address life threatening infections using our therapeutic product candidates from our lysin and monoclonal antibody platforms to target conserved regions of either bacteria or viruses, whether our initial product candidates can treat antibiotic-resistant infections such as MRSA and influenza, our ability to discover new lysins targeting Gram-negative bacteria, and the potential for exebacase to be a treatment for *Staph aureus* bacteremia, including endocarditis. Forward-looking statements are statements that are not historical facts, nor assurances of future performance. Instead, they are based on ContraFect’s current beliefs, expectations and assumptions regarding the future of its business, future plans, strategies, projections, anticipated events and trends, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent risks, uncertainties and changes in circumstances that are difficult to predict and many of which are beyond ContraFect’s control, including those

detailed in ContraFect's filings with the Securities and Exchange Commission. Actual results may differ from those set forth in the forward-looking statements. Important factors that could cause actual results to differ include, among others, our ability to develop treatments for drug-resistant infectious diseases. Any forward-looking statement made by ContraFect in this press release is based only on information currently available and speaks only as of the date on which it is made. Except as required by applicable law, ContraFect expressly disclaims any obligations to publicly update any forward-looking statements, whether written or oral, that may be made from time to time, whether as a result of new information, future developments or otherwise.

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