



## **Osiris Therapeutics Announces Positive Results in Groundbreaking Stem Cell Trial to Treat Heart Disease**

### **Intravenous Therapy Resulted in Statistically Significant Improvement Over Placebo in Multiple Safety and Efficacy Endpoints**

BALTIMORE, Mar 25, 2007 (BUSINESS WIRE) -- Osiris Therapeutics, Inc. (Nasdaq:OSIR) today announces positive six-month results in a groundbreaking clinical trial evaluating PROVACEL(TM), an adult mesenchymal stem cell (MSC) therapy for the treatment of heart disease.

In a 53-patient, double-blind, placebo-controlled study evaluating the safety and preliminary efficacy of the intravenous administration of PROVACEL, heart attack patients receiving the therapy had significantly lower rates of adverse events, such as cardiac arrhythmias, as well as significant improvements in heart, lung and overall condition. Joshua Hare M.D., the trial's lead investigator, presented the data this morning at the American College of Cardiology's Innovation in Intervention: i2 Summit.

"We are extremely enthusiastic and encouraged by the degree to which these results indicate that MSCs are not only safe, but also appear to clinically improve patients who have suffered a heart attack," said Dr. Hare, who is the Lemberg Professor of Medicine at the Miller School of Medicine, University of Miami; Chief of the Cardiology Division; and Director of the School's Interdisciplinary Stem Cell Institute. "The results consistently show patient improvement with regard to heart and lung function, and indicate global improvements in well-being. These findings strongly support the ongoing development of PROVACEL for acute myocardial infarction and possibly other forms of heart and lung disease."

C. Randal Mills Ph.D., President and CEO of Osiris Therapeutics, said: "We were confident in the safety profile given our previous experience using the intravenous form of these stem cells to treat other diseases in later stage clinical trials. However, the magnitude of the across-the-board improvement was surprising. These data further validate the broad clinical applicability of our stem cell technology. Based on these encouraging results, we have started working on the design of the next stage of clinical trials."

#### **Trial Highlights**

-- Administration of PROVACEL was found to be well tolerated at all dose levels.

-- Patients in the PROVACEL group were four times less likely to experience an arrhythmic event compared to those receiving placebo (9% vs. 37%,  $p=0.025$ ).

-- Fewer patients experienced clinically significant premature ventricular contractions after receiving PROVACEL as compared to placebo across all time points (11% vs. 24%,  $p$  less than 0.001).

-- PROVACEL patients with major "anterior wall" heart attacks had a statistically significant 7.0 point (24%) improvement in ejection fraction at three months and a 7.3 point (25%) improvement at six months over baseline ( $p$  less than 0.05), while similar patients receiving placebo did not have significant improvement.

-- Patients receiving PROVACEL had significantly improved lung function as measured by improvement in FEV1 % predicted values (17 point PROVACEL vs. 6 point placebo,  $p$  less than 0.05).

-- Significantly more patients who received PROVACEL experienced improvement in their overall condition at six months as compared to those receiving placebo (42% vs. 11%,  $p=0.027$ ).

"The data speak for themselves," said Timothy Henry M.D., Director of Research at the Minneapolis Heart Institute Foundation at Abbott Northwestern. "This was a carefully executed, double-blind, placebo-controlled trial where patients who received the stem cells simply did better. The results are fascinating, particularly given the route of administration, and lead us to challenge our basic assumptions about cell therapy for heart disease."

#### **Safety Data**

Administration of PROVACEL was found to be well tolerated at all dose levels evaluated. There were no patient deaths, and no toxicity was observed with the administration of PROVACEL. Importantly, there were fewer adverse events in patients receiving PROVACEL as compared to placebo (5.3 vs. 7.0 adverse events per patient). Patients receiving placebo required repeat hospitalization sooner and more often than those treated with PROVACEL (31.5% at an average of 66 days vs. 23.5% at an average of 120 days). There were no serious adverse events attributed to the drug.

"Unlike other cell therapies that have been used in the heart, these cells are readily available when we need them and are administered through a standard IV line like many of the other drugs we give our patients," Jay Traverse M.D., principal investigator and Assistant Professor of Medicine at the University of Minnesota. "If the safety and efficacy profile remains strong, the practicality of the treatment model clearly supports wide-scale use."

#### Arrhythmia Data

Patients enrolled in the trial were monitored for the occurrence of cardiac arrhythmia. Patients in the PROVACEL group were four times less likely to experience an arrhythmic event compared to those receiving placebo (9% vs. 37%,  $p=0.025$ ). Of particular interest, half of the arrhythmias noted in the placebo group involved the ventricle, or blood pumping part of the heart, while only 14% of the arrhythmias in the PROVACEL group involved the ventricle. Ventricular arrhythmias are associated with scar formation in the affected portion of the heart following a heart attack and can be a sign of poorer prognosis.

The anti-arrhythmic effects of PROVACEL were also seen in the number of premature ventricular contractions (PVCs) observed. Patients treated with PROVACEL had fewer PVCs at all time points after day 10, despite having more PVCs at baseline. The percentage of patients who experienced clinically significant PVCs (greater than 10 PVCs per hour) was also significantly less in those patients receiving PROVACEL as compared to placebo (11% vs. 24%,  $p$  less than 0.001) and was most pronounced at the one-month (6% vs. 32%,  $p$  less than 0.05) and two-month (9% vs. 38%,  $p$  less than 0.05) time points. Patients often experience an increase in the number of PVCs following a heart attack, corresponding with the formation of scar tissue in the heart.

#### Performance Data

Preliminary echocardiogram data demonstrated that patients with clinically significant heart attacks involving the anterior wall had pronounced improvement in left ventricular ejection fraction (LVEF) not seen in patients receiving placebo. Patients treated with PROVACEL had a statistically significant 7.0 point (24%) improvement in LVEF at three months and a 7.3 point (25%) improvement at six months over baseline ( $p$  less than 0.05). This compared favorably to the 2.9 point (6%) and 3.4 point (8%) improvement found in patients receiving placebo, neither of which was significant over baseline.

Overall, patients treated with PROVACEL had an 18% improvement in LVEF at three months compared to an 11% improvement for the placebo group. The improvement observed in the PROVACEL patients was statistically significant over baseline ( $p$  less than 0.005), and the effect was maintained through six months, at which time LVEF was 19% higher than baseline.

The positive differences observed in arrhythmias and the echocardiogram were consistent with the more practical assessments used in the study. A greater proportion of patients had prompt heart rate recovery (less than 15 minutes) following a six-minute walk test when treated with PROVACEL as compared to placebo at the six month time point (55% vs. 26%,  $p=0.08$ ).

Finally, the patients' overall condition was assessed by the treating physician for signs of improvement or deterioration. In this global assessment, significantly more patients in the PROVACEL group experienced improvement in their overall condition at six months as compared to those receiving placebo (42% vs. 11%,  $p=0.027$ ).

#### Pulmonary Data

Lung function tests were performed to monitor subjects for potential adverse changes related to the treatment. Surprisingly, patients who received PROVACEL had significantly improved pulmonary function following treatment compared to placebo as measured by improvement in FEV1 % predicted values (17 point PROVACEL vs. 6 point placebo,  $p$  less than 0.05). Preclinical studies performed at Osiris Therapeutics had previously demonstrated that the anti-inflammatory and anti-fibrotic (anti-scarring) effects of the stem cells may be of benefit to patients with conditions such as Chronic Obstructive Pulmonary Disease (COPD) and Idiopathic Pulmonary Fibrosis (IPF). However, this finding is the first placebo-controlled evidence in humans that indicates MSCs may play a beneficial role in the treatment of certain lung disorders.

The PROVACEL trial is one of five ongoing clinical trials at Osiris, including two Phase III trials using the cells in the treatment of steroid refractory Graft vs. Host Disease and Crohn's Disease, both of which have been granted fast track status by FDA. Osiris is developing PROVACEL as part of a strategic alliance with Boston Scientific Corporation (NYSE:BSX) for commercialization of Osiris' mesenchymal stem cell technology in the cardiac field.

Evaluation of patients in the PROVACEL trial will continue for a total of two years following treatment.

#### Webcast and Conference Call

Osiris has scheduled a web cast and conference call to discuss the results on Monday, March 26, at 9:00 AM ET. To access the web cast, visit the Investor Relations section of the company's website at <http://investor.osiris.com/events.cfm>. Alternatively, callers may participate in the conference call by dialing 800-810-0924 (U.S. participants) or 913-981-4900 (international participants).

A replay of the conference call will be available approximately three hours after the completion of the call through April 2, 2007. Callers can access the replay by dialing 888-203-1112 (U.S. participants) or 719-457-0820 (international participants). The audio replay passcode is 1463423. To access a replay of the webcast, visit the Investor Relations section of the company's website at <http://investor.osiris.com/events.cfm>.

#### About Osiris Therapeutics

Osiris Therapeutics, Inc. is a leading stem cell therapeutic company focused on developing and marketing products to treat medical conditions in the inflammatory, orthopedic and cardiovascular areas. Osiris currently markets and sells OSTEOCEL(R) for regenerating bone in orthopedic indications. PROCHYMAL(TM) is in Phase III clinical trials and is the only stem cell therapeutic currently designated by FDA as both an Orphan Drug and Fast Track product. The company's pipeline of internally developed biologic drug candidates under evaluation also includes CHONDROGEN(TM) for regenerating cartilage in the knee, and PROVACEL(TM), for repairing heart tissue following a heart attack. Osiris is a fully integrated company, having developed stem cell capabilities in research and development, manufacturing, marketing and distribution. Osiris has developed an extensive intellectual property portfolio to protect the company's technology in the United States and a number of foreign countries including 47 U.S. and 167 foreign patents owned or licensed. More information can be found on the company's website, [www.Osiris.com](http://www.Osiris.com). (OSIR-G)

#### Forward-Looking Statements

This press release contains forward-looking statements. Forward-looking statements provide our current expectations or forecasts of future events. Forward-looking statements include statements about our expectations, beliefs, plans, objectives, intentions, assumptions and other statements that are not historical facts. Words or phrases such as "anticipate," "believe," "continue," "ongoing," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project" or similar words or phrases, or the negatives of those words or phrases, may identify forward-looking statements, but the absence of these words does not necessarily mean that a statement is not forward-looking. Examples of forward-looking statements include, but are not limited to, statements regarding the following: our product development efforts; our clinical trials and anticipated regulatory requirements; the success of our product candidates in development; status of the regulatory process for our biologic drug candidates; implementation of our corporate strategy; our financial performance; our product research and development activities and projected expenditures, including our anticipated timeline and clinical strategy for MSCs and biologic drug candidates; our cash needs; patents and proprietary rights; ability of our potential products to treat disease; our plans for sales and marketing; our plans regarding our facilities; types of regulatory frameworks we expect will be applicable to our potential products; and results of our scientific research. Forward-looking statements are subject to known and unknown risks and uncertainties and are based on potentially inaccurate assumptions that could cause actual results to differ materially from those expected or implied by the forward-looking statements. Our actual results could differ materially from those anticipated in forward-looking statements for many reasons, including the factors described in the section entitled "Risk Factors" in our Registration Statement on Form S-1, File No: 333-134037, as filed with the United States Securities and Exchange Commission (SEC) and declared effective on August 3, 2006, and our subsequent SEC filings. Accordingly, you should not unduly rely on these forward-looking statements. We undertake no obligation to publicly revise any forward-looking statement to reflect circumstances or events after the date of this press release or to reflect the occurrence of unanticipated events.

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Osiris Therapeutics, Inc.  
Abe Wischnia, 619-871-7133  
Erica Elchin, 410-522-5005 ext. 610

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