

February 21, 2017



Trevena Announces Positive Top-line Results from Two Phase 3 Pivotal Efficacy Studies of Intravenous Oliceridine in Moderate-to-Severe Acute Pain

- *Program is on track for NDA submission in 4Q 2017* –
- *OLINVO™ to be the proprietary brand name for oliceridine* –
- *Company to host conference call and webcast at 8:00 a.m. EST* –

KING OF PRUSSIA, Pa., Feb. 21, 2017 (GLOBE NEWSWIRE) -- Trevena, Inc. (NASDAQ:TRVN) today announced positive top-line results from its Phase 3 APOLLO-1 and APOLLO-2 pivotal efficacy studies of oliceridine in moderate-to-severe acute pain following bunionectomy and abdominoplasty, respectively. In both studies, all dose regimens achieved their primary endpoint of statistically greater analgesic efficacy than placebo, as measured by responder rate. In addition, oliceridine showed dose-related trends of improvements vs. morphine on numerous measures of respiratory safety and gastrointestinal tolerability – both key unmet needs in acute pain management.

“These data are exciting – they confirm earlier data, and show an improved safety and tolerability profile of oliceridine compared to morphine, with very similar results across the two studies,” said Timothy Beard, M.D., FACS, Chair of Department of Surgery, Bend Memorial Clinic, Oregon.

“We believe the data for all three dose regimens will support FDA approval of IV oliceridine with a broad indication of management of moderate-to-severe acute pain. These successful trials cap a development program that has shown consistent differentiation of oliceridine from morphine in multiple clinical trials,” said Maxine Gowen, Ph.D., chief executive officer. “We look forward to submitting a new drug application with the goal of bringing this innovative product to patients.”

Both APOLLO trials were Phase 3, multicenter, randomized, double-blind, placebo- and active-controlled studies of oliceridine. The primary objective of each study was to evaluate the analgesic efficacy of oliceridine compared to placebo. Secondary endpoints included comparisons of efficacy, safety, and tolerability of oliceridine to morphine. Both studies included multiple measurements of nausea and vomiting, which occur in approximately 30% of postoperative patients and increase costs to hospitals, as well as multiple measures of respiratory safety, which can pose serious and costly risks to patient safety.

Results of APOLLO-1 (bunionectomy)

- All three oliceridine regimens (0.1 mg, 0.35 mg, and 0.5 mg on-demand doses) achieved the primary endpoint with statistically superior responder rates compared to

placebo at 48 hours ($p < 0.0001$, adjusted for multiplicity).

- The 0.35 mg and 0.5 mg oliceridine dose regimens demonstrated efficacy comparable to morphine at 48 hours based on responder rate (both doses $p < 0.005$ for non-inferiority to morphine). Both doses were also comparable to morphine for rates of rescue analgesic use.
- Following the 1.5 mg initial loading dose, all oliceridine regimens demonstrated rapid onset with statistically significant efficacy by 5 minutes ($p < 0.05$).
- Oliceridine exhibited a dose-related trend of improved respiratory safety burden in all three oliceridine dose regimens ($p < 0.05$ for the 0.1 mg regimen vs. morphine). Consistent with this, in all dose regimens oliceridine showed dose-related trends of reduced prevalence of oxygen desaturation ($O_2 < 90\%$) and lower prevalence of supplemental oxygen use ($p < 0.05$ for the 0.1 mg regimen vs. morphine for both measures).
- Oliceridine exhibited a dose-related trend of less antiemetic use compared to morphine ($p < 0.05$ for all oliceridine regimens vs. morphine). Consistent with this, oliceridine showed dose related trends of lower prevalence of nausea and vomiting in all three oliceridine regimens ($p < 0.05$ for the 0.1 mg regimen vs. morphine).

Results of APOLLO-2 (abdominoplasty)

- All three oliceridine dose regimens achieved the primary endpoint with statistically superior responder rates compared to placebo (adjusted $p < 0.05$ for the 0.1 mg regimen; adjusted $p < 0.001$ for the 0.35 mg and 0.5 mg regimens).
- The 0.35 mg and 0.5 mg oliceridine dose regimens demonstrated efficacy comparable to morphine at 24 hours based on responder rate ($p < 0.05$ for non-inferiority of the 0.35 mg regimen vs. morphine). Both doses were also comparable to morphine for rates of rescue analgesic use.
- Following the 1.5 mg initial loading dose, all oliceridine regimens demonstrated rapid onset with statistically significant efficacy by 5 to 15 minutes ($p < 0.05$).
- Oliceridine showed a dose-related trend of improved respiratory safety burden in all three oliceridine dose regimens ($p < 0.05$ for the 0.1 mg regimen vs. morphine). Consistent with this, for all dose regimens oliceridine showed dose-related trends of reduced prevalence of oxygen desaturation ($O_2 < 90\%$) and lower prevalence of supplemental oxygen use ($p < 0.05$ for the 0.1 mg regimen vs. morphine for both measures).
- Oliceridine showed a dose-related trend of less antiemetic use than morphine for all three oliceridine regimens ($p < 0.05$ for the 0.1 mg oliceridine regimen vs. morphine). Consistent with this, oliceridine showed dose-related trends of lower prevalence of nausea and vomiting ($p < 0.05$ for the 0.1 mg regimen vs. morphine for both nausea and vomiting; $p < 0.05$ for the 0.35 mg regimen vs. morphine for vomiting).

In both studies, oliceridine was generally safe and well-tolerated. The most common drug-related adverse events were nausea, vomiting, headache, and dizziness.

Full results will be presented at a future scientific conference or in a peer-reviewed publication.

Oliceridine program update

The Company also announced that patient enrollment for the Phase 3 ATHENA multi-procedure safety study remains on track, with over 400 patients treated with oliceridine and no apparent off-target or unexpected adverse effects to date. In addition, a recently completed renal impairment study suggests that no dose adjustment will be required in renally impaired patients, and a metabolism study showed no evidence of active metabolites. These data distinguish oliceridine from conventional opioids like morphine and hydromorphone and support ease of administration for oliceridine – particularly in at-risk patients for whom safe opioid titration can be challenging. All additional clinical, non-clinical, and manufacturing activities remain on track to support an NDA submission in the fourth quarter of this year.

The Company also announced that the U.S. Food & Drug Administration has conditionally accepted OLINVO™ as the proprietary brand name for oliceridine.

Conference call and webcast

Date: Tuesday, February 21, 2017

Time: 8:00 a.m. (EST)

Telephone Access: (855) 465-0180

International: (484) 756-4313

Conference ID: 75705243

To access the live audio webcast of the presentation and the slides, please visit the [Investor](#) section of the Company's website. The webcast will be available for replay for 30 days.

About APOLLO-1 and APOLLO-2

The APOLLO-1 and APOLLO-2 studies were both Phase 3, multicenter, randomized, double-blind, placebo- and active-controlled studies of oliceridine. APOLLO-1 and APOLLO-2 evaluated oliceridine's efficacy in patients for 48 hours following bunionectomy and 24 hours following abdominoplasty, respectively. During the study period, a loading dose of placebo, morphine (4 mg), or oliceridine (1.5 mg) was administered first, and then patients used a patient controlled analgesia (PCA) button to dose themselves as often as every 6 minutes with the same study drug: 1 mg morphine or 0.1 mg, 0.35 mg, or 0.5 mg oliceridine. If PCA dosing was inadequate to control pain, patients could request supplemental study medication (0.75 mg oliceridine or 2 mg morphine, no more than once an hour). If the study medication regimen did not adequately manage pain, patients could opt for an NSAID rescue analgesic. Placebo loading, demand, and supplemental doses were volume-matched.

All endpoints were the same in both studies. Efficacy was measured by a responder analysis, which defined a responder as a patient who experienced at least a 30% reduction in their sum of pain intensity difference (SPID) at the end of the treatment period without either early discontinuation (for lack of efficacy or safety/tolerability) or use of rescue medication. Non-inferiority to morphine and superiority to morphine were key secondary endpoints. Respiratory safety events were defined as clinically relevant worsening of

respiratory status (e.g., oxygen saturation, respiratory rate, or sedation). The product of the frequency and conditional duration of these events was reported as respiratory safety burden, a key secondary endpoint. Additional measures of respiratory safety included prevalence of oxygen saturation less than 90% and prevalence of supplemental oxygen use. Measures of gastrointestinal tolerability included use of rescue antiemetics, vomiting, and spontaneously reported nausea.

About OLINVO™ (oliceridine injection)

OLINVO™ (oliceridine injection), Trevena's lead product candidate, is a next generation IV analgesic in Phase 3 development for the management of moderate-to-severe acute pain in the hospital and similar settings and has been granted Breakthrough Therapy designation by the U.S. Food and Drug Administration (FDA). OLINVO was specifically designed to improve conventional opioid pharmacology to deliver the pain-reducing potential of an opioid but with fewer associated adverse effects. In Phase 2 and Phase 3 clinical trials, OLINVO provided rapid and powerful analgesic efficacy while demonstrating a wider therapeutic window compared to morphine, suggesting it may be highly effective and well-tolerated for patients in need of strong analgesia. OLINVO is an investigational product and has not been approved by the FDA or any other regulatory agency. The Company expects OLINVO to be a Schedule II controlled substance.

About Trevena

Trevena, Inc. is a biopharmaceutical company developing innovative therapies based on breakthrough science to benefit patients and healthcare providers confronting serious medical conditions. The Company has discovered four novel and differentiated drug candidates, including oliceridine. Trevena also has discovered TRV250, in preclinical development for the treatment of migraine, and TRV734 for pain. The Company maintains an early stage portfolio of drug discovery programs.

Cautionary note on forward looking statements

Any statements in this press release about future expectations, plans and prospects for the Company, including statements about the Company's strategy, future operations, clinical development of its therapeutic candidates, plans for potential future product candidates and other statements containing the words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "suggest," "target," "potential," "will," "would," "could," "should," "continue," 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: the status, timing, costs, results and interpretation of the Company's clinical trials, including the interpretation of the top-line results from the APOLLO trials, the consistency of such results between the two trials and previous clinical trials, and the expected timing of the NDA submission for oliceridine; the uncertainties inherent in conducting clinical trials, including whether top-line results from the APOLLO trials will be consistent with the full results of the trials, once available, or adverse events seen to date in the ATHENA safety study will be consistent with any future adverse events; expectations for regulatory approvals, including whether the Phase 3 data will support FDA approval of oliceridine for the management of moderate-to-severe pain; availability of funding sufficient

for the Company's foreseeable and unforeseeable operating expenses and capital expenditure requirements; uncertainties related to the Company's intellectual property; other matters that could affect the availability or commercial potential of the Company's therapeutic candidates, including whether physicians, patients, and payors will conclude that the oliceridine development program has shown consistent differentiation from morphine across multiple clinical trials; and other factors discussed in the Risk Factors set forth in the Company's Annual Report on Form 10-K and Quarterly Reports on Form 10-Q filed with the Securities and Exchange Commission (SEC) and in other filings the Company makes with the SEC from time to time. In addition, the forward-looking statements included in this press release represent the Company's views only as of the date hereof. The Company anticipates that subsequent events and developments may cause the Company's views to change. However, while the Company may elect to update these forward-looking statements at some point in the future, it specifically disclaims any obligation to do so, except as may be required by law.

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