

May 2, 2014



# **Trevena Presents Results from Phase 1b Trial of Injectable Analgesic TRV130 at American Society of Pain Annual Meeting**

*Mu Opioid Biased Ligand Demonstrated Increased Analgesia with an Improved Safety/Tolerability Profile Compared to Morphine*

KING OF PRUSSIA, Pa.--(BUSINESS WIRE)-- Trevena, Inc. (NASDAQ: TRVN), a clinical stage pharmaceutical company focused on the discovery and development of G protein coupled receptor (GPCR) biased ligands, announced that data from the Company's Phase 1b trial of TRV130, a small molecule G protein biased ligand at the mu-opioid receptor, are being presented today in a poster session at the American Pain Society Annual Meeting in Tampa, Florida. In the study, TRV130 was generally well tolerated and produced greater analgesia compared to morphine with less reduction in respiratory drive, less vomiting, and less severe nausea in healthy subjects. TRV130 is in development as a first-line treatment for patients experiencing moderate to severe acute pain where intravenous administration is preferred.

"The data to be presented today provide early proof-of-concept for TRV130, suggesting that when compared directly to morphine, the biased ligand's selective signaling may allow for better pain control, with less of the dose-limiting adverse events associated with current opioid treatments," stated David Soergel, M.D., senior vice president, clinical development at Trevena. "These results suggest that TRV130 could be a meaningful advance in the treatment of pain after surgery and provide a strong rationale for continued development."

The results will be presented in a poster entitled, "TRV130, a novel biased opioid ligand, elicits increased analgesia with reduced adverse effects compared to morphine in healthy volunteers." The randomized, double-blind, placebo-controlled, 5-period crossover study enrolled 30 healthy adult males. Subjects were administered 1 of 5 treatments in each period: 1.5 mg, 3.0 mg, or 4.5 mg of TRV130 via intravenous administration, 10 mg morphine or placebo. The objectives of the trial were to evaluate the safety and tolerability of TRV130, the analgesic effects of TRV130 using the cold pain test vs. placebo, compare TRV130 to morphine and to placebo, evaluate the pharmacokinetics of TRV130 and evaluate the effect of TRV130 on responses to the Drug Effect Questionnaire.

As measured by the cold pain test, TRV130 at 3 mg and 4.5 mg increased analgesia with a more rapid onset of action, superior analgesic effect, and similar duration of action compared with 10 mg morphine. In addition, at the 3 mg and 4.5 mg TRV130 doses, more subjects doubled baseline cold pain test latency and achieved maximum cold pain test latency of 180 seconds. In addition to increased cold pain test efficacy, TRV130 produced less reduction in respiratory drive as compared to morphine, as measured by the ventilatory response to hypercapnia.

“The impressive results of this trial demonstrate the clinical translation of our proprietary biased ligand platform into a potential new and differentiated pharmacotherapy for the treatment of moderate to severe, acute postoperative pain,” stated Maxine Gowen, Ph.D., chief executive officer of Trevena. “Based on this strong data set, we are advancing the development of this program. We recently initiated a Phase 2a/b trial of TRV130 in bunionectomy patients, and plan to launch a second Phase 2 trial of TRV130 in soft tissue surgery patients in the fourth quarter of this year.”

### **About TRV130 and Acute Pain**

The mu-opioid receptor is a well-established target for analgesics such as fentanyl and morphine, which are unbiased mu-opioid agonists. TRV130 activates the mu-opioid G protein pathway, associated with analgesia, and inhibits the beta-arrestin pathway, which, in preclinical studies, was associated with respiratory depression and constipation. The preclinical pharmacology of this novel molecule has been previously published in the Journal of Pharmacology and Experimental Therapeutics, with data suggesting that TRV130 is powerfully analgesic with an improved safety and tolerability profile when compared directly to classical opioids such as morphine. In the first clinical study of TRV130, which was published in the Journal of Clinical Pharmacology in March of 2014, TRV-130 had robust CNS activity and was well tolerated in healthy volunteers.

Trevena anticipates that the initial market opportunity for TRV130 will be in this acute care hospital setting, with a focus on postoperative pain. Dosing of mu-opioid agonists, the most effective class of analgesics currently available, is limited by severe side effects such as respiratory depression, nausea and vomiting, constipation and postoperative ileus. Trevena believes that TRV130 may offer improved analgesia with reduced incidence and severity of these on-target adverse effects, which could help ease the suffering and burden of care for post-surgical pain. In national surveys, approximately 50% of surgical patients report moderate or severe pain while in hospital despite the use of opioid analgesics, and the cost impact of opioid-related adverse effects in US hospitals is estimated to be up to \$5 billion annually.

### **About Trevena**

Trevena, Inc. is a clinical stage biopharmaceutical company that discovers, develops and intends to commercialize therapeutics that use a novel approach to target G protein coupled receptors, or GPCRs. Using its proprietary product platform, Trevena has identified and advanced three differentiated biased ligand product candidates into the clinic – TRV027 to treat acute heart failure, TRV130 to treat moderate to severe acute pain intravenously, and TRV734 to treat moderate to severe acute and chronic pain orally. Trevena also plans to advance additional product candidates in its portfolio, including a preclinical program focused on central nervous system indications.

### **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, its future operations, clinical development of its therapeutic candidates, potential therapeutic utility for its product candidates, market opportunities for its product candidates, its plans for potential future product candidates and other statements containing the words “anticipate,” “believe,”

"estimate," "expect," "intend," "may," "plan," "predict," "project," "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: availability and timing of data from ongoing clinical trials, the uncertainties inherent in the initiation of future clinical trials, whether interim results from a clinical trial will be predictive of the final results of the trial or results of early clinical trials will be indicative of the results of future trials, expectations for regulatory approvals, availability of funding sufficient for the Company's foreseeable and unforeseeable operating expenses and capital expenditure requirements, other matters that could affect the availability or commercial potential of the Company's therapeutic candidates and other factors discussed in the "Risk Factors" section of the Company's Annual Report on Form 10-K for the year ended December 31, 2013 filed with the Securities and Exchange Commission on March 20, 2014 and other filings the Company makes with the Securities and Exchange Commission from time to time. In addition, the forward-looking statements included in this press release represent the Company's views 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, the Company specifically disclaims any obligation to do so. These forward-looking statements should not be relied upon as representing the Company's views as of any date subsequent to the date hereof.

**Investor Contacts:**

Trevena, Inc.  
Jonathan Violin  
Director of investor relations  
610-354-8840 x231  
[jviolin@trevenainc.com](mailto:jviolin@trevenainc.com)  
or  
Argot Partners  
Andrea Rabney  
President and chief executive officer  
212-600-1902  
[andrea@argotpartners.com](mailto:andrea@argotpartners.com)

or

**Media Contact:**

Argot Partners  
Eliza Schleifstein  
[eliza@argotpartners.com](mailto:eliza@argotpartners.com)  
917-763-8106

Source: Trevena, Inc.