X4 Pharmaceuticals Announces New Positive Phase 1b Data Supporting Mavorixafor's Broad Potential in Chronic Neutropenia (CN)

September 27, 2022

100% of study participants (n=25) achieved robust responses to oral mavorixafor

100% of neutropenic participants (n=14) achieved normalized neutrophil counts

Robust responses achieved across all CN disorders studied (idiopathic, cyclic, congenital); estimated diagnosed patient population ~ 50,000 in the U.S.

Results suggest mavorixafor could be the first oral treatment for CN disorders and has the potential to reduce or replace injectable G-CSF, the current standard of care

X4 to host investor webinar today, Tuesday, September 27, at 8:00 am ET, including live Q&A with clinical experts

BOSTON, Sept. 27, 2022 (GLOBE NEWSWIRE) -- **X4 Pharmaceuticals, Inc.** (Nasdaq: XFOR), a leader in the discovery and development of novel CXCR4-targeted small-molecule therapeutics to benefit people with diseases of the immune system, today announced new positive data from its Phase 1b clinical trial evaluating the ability of its lead clinical candidate, mavorixafor, to increase the absolute neutrophil count (ANC) in people with idiopathic, cyclic, or congenital chronic neutropenia (CN) as monotherapy or concurrently with injectable granulocyte colony-stimulating factor (G-CSF).

"These compelling, positive results demonstrate, for the first time, the broad opportunity for mavorixafor in people with CN disorders beyond our most advanced investigational indication of WHIM syndrome," said Paula Ragan, Ph.D., President and Chief Executive Officer of X4 Pharmaceuticals. "Importantly, we believe mavorixafor's demonstrated ability in this trial to increase and normalize ANC levels in the three primary types of chronic neutropenia suggests an expanded market opportunity that could include up to an estimated 50,000 additional diagnosed patients in the U.S. With current injectable therapies associated with chronic, debilitating side effects, we also believe that mavorixafor carries the potential to address significant unmet patient needs if successfully developed as the first oral therapy for chronic neutropenic disorders."

Diego Cadavid, M.D., Chief Medical Officer of X4 Pharmaceuticals, added, "We are very pleased that this Phase 1b trial achieved all of its key objectives, and, most importantly, that all patients dosed with mavorixafor responded with meaningful increases in neutrophil counts. In addition, we are encouraged by the results of three exploratory sub-analyses we completed assessing the potential of mavorixafor to treat chronic neutropenia as monotherapy or concurrently with G-CSF. We believe these data support the further study of mavorixafor's potential to enable patients to reduce or even discontinue G-CSF treatment. In fact, the Phase 1b trial is currently being amended and expanded to assess the long-term durability, safety, and tolerability of mavorixafor in a larger CN patient population. We anticipate this amended trial to begin generating additional clinical data in the first half of 2023."

Key highlights from the Phase 1b trial are as follows:

- 100% of study participants (n=25) responded to treatment with a single dose of 400 mg of mavorixafor, alone or dosed concurrently with G-CSF:
  - Participants achieved a mean ANC increase at peak of >3,000 cells/microliter.
  - Consistent responses were seen across all of the CN disorders studied – idiopathic, cyclic, and congenital neutropenias.
- All neutropenic participants (n=14) reached normalized ANC levels (>1,500 cells/microliter)
  - When assessed as a monotherapy **in participants with severe chronic neutropenia who were not being treated with G-CSF** (n=6), a single dose of mavorixafor led to normalized ANC levels in all participants within 2 hours, with a mean ANC increase at peak of ~2,500 cells/microliter.
  - When assessed **in participants with moderate or severe neutropenia despite being treated with G-CSF** (n=8), 100% reached normalized ANC levels, suggesting the potential of mavorixafor to both normalize the neutrophil counts in patients with partial response to G-CSF and also to potentially enable the reduction or elimination of G-CSF dosing.
- When assessed **in participants with CN with normalized ANC counts on chronic G-CSF** (n=11), all participants experienced a consistent and sustained increase in ANC, suggesting mavorixafor's potential to reduce or possibly eliminate G-CSF treatment in these patients.
- Mavorixafor was well tolerated in the study; all treatment-related adverse events were deemed to be low grade, consistent with previous clinical studies in WHIM syndrome, and no treatment-related serious adverse events were reported.

Investor Call Details:
X4 will host an investor webinar to present and discuss the new data **today from 8:00 - 9:15 am ET**. The event will include perspectives from patients and clinical experts on the unmet medical need. A live Q&A will follow the formal presentation with X4's management team and several expert clinicians available to answer questions. **To register for the event, click here.** Following the conclusion of the live webcast, a replay of the event will be available within the investors' section of the X4 Pharmaceuticals website at www.x4pharma.com.

About the Phase 1b Clinical Trial
The clinical trial (NCT04154488) is a proof-of-concept Phase 1b open-label, multicenter study designed to assess the safety and tolerability of oral mavorixafor, with or without G-CSF, in participants with chronic neutropenic disorders, including severe idiopathic, cyclic, and congenital neutropenia. Participants were dosed with a single dose of 400 mg oral mavorixafor to assess the magnitude of treatment response. An amendment to the Phase 1b clinical trial is currently being initiated and aims to evaluate the use of daily oral mavorixafor with or without G-CSF for 6 months in up to 50 participants with chronic neutropenic disorders. The study extension is also expected to assess the durability of ANC responses, the potential of mavorixafor to enable patients to taper down dosing with G-CSF, and to evaluate the tolerability of mavorixafor in combination with G-CSF in chronic use.

About Chronic Neutropenia
Chronic neutropenic disorders are rare blood conditions lasting more than three months, persistently or intermittently, and characterized by increased risk of infections and reduced quality of life due to persistent, abnormally low levels of neutrophils circulating in the blood. Chronic neutropenia can be described by a number of etiologies, including idiopathic (of unknown origin), cyclic (typically a 21-day cycle), or congenital (of genetic causation). Patients are categorized as severely neutropenic when their ANC drops below 500 cells/microliter, moderately neutropenic when their ANC is between 500 and 999 cells/microliter, and mildly neutropenic when their ANC is between 1,000 and 1,499 cells/microliter. The lower limit of normal ANC is considered 1,500 cells/microliter. Neutrophils are retained in the bone marrow by the CXCL12/CXCR4 axis, creating a reserve of cells; downregulation of the CXCR4 receptor by G-CSF or inhibition of the receptor by

a CXCR4 antagonist has been shown to mobilize neutrophils from the bone marrow into peripheral blood.

About X4 Pharmaceuticals

X4 Pharmaceuticals is a late-stage clinical biopharmaceutical company leading the discovery and development of novel therapies for people with diseases of the immune system. Our lead clinical candidate is mavorixafor, a first-in-class, small molecule antagonist of chemokine receptor CXCR4 that is being developed as a once-daily oral therapy. Due to mavorixafor's ability to antagonize CXCR4 and improve the mobilization of white blood cells, we believe that mavorixafor has the potential to provide therapeutic benefit across a wide variety of immune system diseases, including a range of chronic neutropenic disorders and certain types of cancer. The efficacy and safety of mavorixafor are being evaluated in a global Phase 3 clinical trial in patients with WHIM syndrome, a rare, primary immunodeficiency disease typically caused by genetic mutations in the CXCR4 receptor gene. We are also studying mavorixafor in two Phase 1b clinical trials – one in patients with chronic neutropenic disorders including congenital, idiopathic, and cyclic neutropenia, and one concurrently with ibrutinib in patients with Waldenström's macroglobulinemia (WM), a rare B-cell lymphoma. Further clinical development of mavorixafor in WM will now be subject to completing a strategic partnership as we focus our resources on advancing mavorixafor for the benefit of patients with chronic neutropenic disorders. We continue to leverage our insights into CXCR4 biology at our corporate headquarters in Boston, Massachusetts and at our research facility in Vienna, Austria. For more information, please visit our website at www.x4pharma.com.

Forward-Looking Statements

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended. These statements may be identified by the words "may," "will," "could," "would," "should," "expect," "plan," "anticipate," "intend," "believe," "estimate," "predict," "project," "potential," "continue," "target," or other similar terms or expressions that concern X4's expectations, strategy, plans, or intentions. Forward-looking statements include, without limitation, statements regarding the clinical development and therapeutic potential of mavorixafor. Any forward-looking statements in this press release are based on management's current expectations and beliefs. Actual events or results may differ materially from those expressed or implied by any forward-looking statements contained herein, including, without limitation, on account of uncertainties inherent in the initiation and completion of clinical trials and clinical development; the risk that trials and studies may not have satisfactory outcomes; the risk that the outcomes of preclinical studies or earlier clinical trials will not be predictive of later clinical trial results; the risk that initial or interim results from a clinical trial may not be predictive of the final results of the trial or the results of future trials; the potential adverse effects arising from the testing or use of mavorixafor or other product candidates; the risks related to X4's ability to raise additional capital, and other risks and uncertainties, including those described in the section entitled "Risk Factors" in X4's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission (SEC) on August 4, 2022, and in other filings X4 makes with the SEC from time to time.

Contacts:

Daniel Ferry (investors)
Managing Director, LifeSci Advisors
daniel@lifesciadvisors.com
(617) 430-7576

Mónica Rouco Molina, Ph.D. (media)
Account Supervisor, LifeSci Communications
mroucomolina@lifescicomms.com

Source: X4 Pharmaceuticals