CTI BioPharma Announces Presentation of Data Supporting Pacritinib’s Benefit in Myelofibrosis Patients with Severe Thrombocytopenia at the 61st American Society of Hematology Meeting

December 9, 2019

Results from PAC203 Demonstrate Pacritinib 200 mg Twice-Daily (BID) is Well Tolerated with Clinical Benefit in the Highest Risk Myelofibrosis Patient Population

Mutational Analyses of Phase 2 PAC203 Patients Demonstrate Pacritinib’s Benefit in Myelofibrosis Patient Population with High Mutational Risk and Low JAK2 Allele Burden

PACIFICA Phase 3 Trial Underway to Compare Safety and Efficacy of 200 mg Pacritinib BID to Physician’s Choice

SEATTLE, Dec. 9, 2019 /PRNewswire/ -- CTI BioPharma Corp. (Nasdaq: CTIC) today announced the presentation of data from the Company's pacritinib development program, including results from the PAC203 Phase 2 clinical trial, at the 61st American Society of Hematology (ASH) Annual Meeting being held December 7-10 in Orlando, Florida.

"The data presented at ASH underscore the clinical and scientific rationale for our ongoing PAC203 Phase 3 PACIFICA trial evaluating pacritinib at 200 mg BID in severely thrombocytopenic myelofibrosis patients," said Adam R. Craig, M.D., Ph.D. "Pacritinib has now been demonstrated to provide clinical benefit in treating severely thrombocytopenic myelofibrosis (platelet counts less than 50,000 per microliter) in three clinical trials, including two prior randomized Phase 3 studies. Further, the PAC203 Phase 2 results from the 200 mg BID cohort demonstrate a favorable risk-benefit profile for pacritinib when treating patients with advanced disease that have high mutational risk and long durations of prior ruxolitinib exposure. The totality of the data presented at ASH reinforces our belief that pacritinib has the potential to be an important therapy for severely thrombocytopenic myelofibrosis patients, a population for whom available therapeutic options are limited and often ineffective."

"While currently available treatments for myelofibrosis convey clinical benefit to a majority of the population, patients who are severely thrombocytopenic, and are therefore considered high-risk, continue to lack safe and efficacious therapies," said Claire N. Harrison, M.D., Consultant Haematologist and Professor of Myeloproliferative Neoplasms in London, as well as Chair of the PACIFICA steering committee and Principal Investigator of the PAC203 Phase 2 trial. "Myelofibrosis patients with platelet counts of less than 50,000 per microliter have a median survival of approximately 8 months after discontinuation of first line ruxolitinib therapy. In the PAC203 Phase 2 trial, which represents one of the most advanced and heavily pre-treated myelofibrosis patient populations studied to date as demonstrated by a median prior exposure to ruxolitinib of 1.7 years and the high risk mutational profiles, pacritinib at 200 mg BID achieved an impressive response rate in the severely thrombocytopenic patient population of 17% with a promising safety profile, demonstrating its potential to change the treatment paradigm in this area of serious unmet medical need."

All posters and presentation materials will be available at ctibiopharma.com following the presentations.

Results of PAC203: A Randomized Phase 2 Dose-Finding Study and Determination of the Recommended Dose of Pacritinib

Results from the PAC203 Phase 2 trial are being presented today, Monday, December 9, at 10:30 AM ET, in an oral presentation session.

Abstract: No. 667

Summary: PAC203 enrolled patients with myelofibrosis who were intolerant of or who had not benefitted from prior treatment with ruxolitinib. Patients were randomized in equal measure across 3 dosing arms: 200mg twice-daily (BID), 100mg BID, and 100mg daily (QD), with randomization stratified by baseline platelet count. Patients were mostly thrombocytopenic and anemic at baseline, with a median platelet count was 55,000, and 44% of patients having baseline platelet counts of less than 50,000. Patients had been heavily pre-treated with ruxolitinib, with a median 1.7 years of prior exposure. The study endpoint was broadly defined as an analysis of safety and efficacy data across dosing arms based on data after all patients either reached week 24 or stopped study treatment.

Pacritinib was shown to be generally well tolerated across dosing cohorts, with the most common treatment-emergent non-hematologic adverse events (AEs) being gastrointestinal, including diarrhea (20.5%; Grade 3: 3.1%) and nausea (20%; Grade 3: 0.6%), distributed similarly across arms. The most common hematologic AEs were thrombocytopenia and anemia, both occurring at higher frequencies at the 200 mg dose BID (32% and 22% respectively); this did not, however, lead to higher rates of Grade 3/4 hemorrhage at higher doses (200 mg BID: 5.6%; 100 mg BID: 0%; 100 mg QD: 5.8%; all Grade 3). Similarly, the highest dose saw no excess in Grade 3/4 cardiac (200 mg BID: 3.7%; 100 mg BID: 7.3%; 100 mg QD: 3.7%; all Grade 3) or infectious (200 mg BID: 15%; 100 mg BID: 11%; 100 mg QD: 12%) AEs. In this cohort of advanced MF patients, there were 7 Grade 5 (fatal) AEs: 2 at 200 mg BID (sepsis, subdural hematoma), 3 at 100 mg BID (disease progression, subdural hematoma, heart failure), and 2 at 100 mg QD (sepsis, tuberculosis).

The 200 mg BID arm had the highest observed rates of SVR ≥35% (200 mg BID: 9.3%; 100 mg BID: 1.8%; 100 mg QD: 0.0%). Of the 5 patients with SVR ≥35% at the 200 mg BID dose, 4 had platelet counts <50,000/mL, representing a 17% (4/24) response rate among patients with severe thrombocytopenia. Though a dose response relationship was not observed in total symptom score (TSS) based on the threshold of 50% reduction in symptom score, as 4 patients achieved this endpoint on all arms, the median reduction in TSS was greatest for patients treated at 200 mg BID (200 mg BID: 27%; 100 mg BID: 16%; 100 mg QD: 3%).

The data from PAC203 support the Phase 3 PACIFICA trial, currently underway to compare the safety and efficacy of 200 mg BID of pacritinib to Physician's Choice in 180 adult myelofibrosis patients with severe thrombocytopenia (platelet counts of less than 50,000 per microliter).

The Oral JAK2/IRAK1 Inhibitor Pacritinib Demonstrates Spleen Volume Reduction in Myelofibrosis Patients Independent of JAK2V617F Allele Burden

Results from a retrospective analysis from two Phase 3 studies, PERSIST-1 and PERSIST-2, of pacritinib in myelofibrosis patients were presented in a poster session on Saturday, December 7.

Abstract: No. 1674

Summary: A retrospective analysis of PERSIST-1 and PERSIST-2 was performed in which outcomes were stratified by JAK2 V617F mutation status.
and allele burden. The efficacy endpoint for this study was the percentage of patients achieving ≥35% SVR at week 24 based on an intention-to-treat analysis. Analysis was based on pooled results across the two studies for patients treated with pacritinib and those treated with best available therapy (BAT), and assessed patients with JAK2 V617F for possible relationship between allelic burden and SVR at 24 weeks. The analysis showed pacritinib was associated with a significantly higher rate of SVR response than BAT among patients with low JAK2 allele burden (<50%), while no SVR response was observed for patients treated with BAT (including ruxolitinib) who had low JAK2 allele burden or JAK2 V617F-negative disease. This data suggests that pacritinib, a JAK2/IRAK1 inhibitor, may provide benefit over a wider range of patients with myelofibrosis compared to other JAK inhibitors, specifically patients with low JAK2 allele burden who were shown to have lower baseline platelet counts, more severe anemia and smaller spleen size.

**Pacritinib Demonstrates Efficacy Versus Best Available Therapy in Myelofibrosis Patients with Severe Thrombocytopenia in Two Phase 3 Studies**

Results from a retrospective analysis of PERSIST-1 and PERSIST-2 will be presented in a poster session today, Monday, December 9 at 6:00 PM ET.

**Abstract:** No. 4195

**Summary:** This analysis was performed in patients treated on PERSIST-1 and PERSIST-2 with a baseline platelet count <50,000/μL. At 24 weeks, significantly more patients achieved ≥35% SVR with pacritinib compared with BAT (P-values <0.01). Although not statistically significant, TSS reductions ≥50% nearly doubled for those receiving pacritinib versus BAT. The safety profile in patients with severe thrombocytopenia was generally manageable and consistent with the overall study populations from the two Phase 3 trials. This retrospective analysis represents the largest population of patients with MF and severe thrombocytopenia to be studied in clinical trials, a population with a serious unmet medical need, and the results illustrate the clinical activity of pacritinib in the treatment of these patients.

**Molecular Analysis in the Pacritinib Dose-Finding PAC203 Study in Patients with Myelofibrosis Refractory or Intolerant to Ruxolitinib**

Results from a baseline mutational analysis of patients enrolled in the Phase 2 PAC203 study of pacritinib in patients with myelofibrosis will be presented in a poster session today, December 9, 2019 at 6:00 PM ET.

**Abstract:** No. 4214

**Summary:** The baseline mutational analysis was performed on 105 (out of total 164 recruited, 161 treated) myelofibrosis patients in the PAC203 study. The PAC203 cohort, characterized by ruxolitinib failure and a high burden of anemia and thrombocytopenia, was shown to be a molecularly high-risk population, characterized by high incidence of HMR, TP53 and RAS mutations, high mutational burden, and low incidence of CALR mutations.

**About Myelofibrosis and Severe Thrombocytopenia**

Myelofibrosis is a type of bone marrow cancer that results in formation of fibrous scar tissue and can lead to severe anemia, weakness, fatigue and an enlarged spleen and liver. Patients with severe thrombocytopenia are estimated to make up more than one-third of patients treated for myelofibrosis, or approximately 18,000 people.1 Severe thrombocytopenia, defined as blood platelet counts of less than 50,000 per microliter, has been shown to result in overall survival rates of just 15 months.2 Thrombocytopenia in patients with myelofibrosis is associated with the underlying disease but has also been shown to correlate with treatment with ruxolitinib, which can lead to dose reductions, and as a result, may potentially reduce clinical benefit. Survival in patients who have discontinued ruxolitinib therapy is further compromised, with an average overall survival of seven to 14 months.3,4 There are currently no approved therapies available to treat myelofibrosis patients with severe thrombocytopenia, or patients who have failed ruxolitinib treatment, thereby making this a significant unmet medical need.

**About Pacritinib**

Pacritinib is an investigational oral kinase inhibitor with specificity for JAK2, FLT3, IRAK1 and CSF1R. The JAK family of enzymes is a central component in signal transduction pathways, which are critical to normal blood cell growth and development, as well as inflammatory cytokine expression and immune responses. Mutations in these kinases have been shown to be directly related to the development of a variety of blood-related cancers, including myeloproliferative neoplasms, leukemia and lymphoma. In addition to myelofibrosis, the kinase profile of pacritinib suggests its potential therapeutic utility in conditions such as acute myeloid leukemia (AML), myelodysplastic syndrome (MDS), chronic myelomonocytic leukemia (CMML), and chronic lymphocytic leukemia (CLL), due to its inhibition of c-fms, IRAK1, JAK2 and FLT3.

**About CTI BioPharma Corp.**

CTI BioPharma Corp. is a biopharmaceutical company focused on the acquisition, development and commercialization of novel targeted therapies for blood-related cancers that offer a unique benefit to patients and their healthcare providers. In particular, we are focused on evaluating pacritinib for the treatment of adult patients with myelofibrosis. CTI BioPharma is headquartered in Seattle, Washington.

**Forward-Looking Statements**

This press release contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. These forward-looking statements include statements regarding our expectations regarding: the anticipated trial design of the PACIFICA Phase 3 trial, including potential changes to the protocol as discussed in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2019; the anticipated enrollment of the PACIFICA Phase 3 trial; the effectiveness of, and potential changes to, the PACIFICA Phase 3 trial design; the timing of, and results from, clinical trials and other development activities related to pacritinib, including the PACIFICA Phase 3 trial and its related protocol; the potential efficacy, safety profile, future development plans, addressable market, regulatory success and commercial potential of pacritinib; the anticipated timing of regulatory submissions and interactions; our ability to expedite the regulatory approval process; our ability to successfully develop and achieve milestones in the development of pacritinib; and the anticipated benefits of pacritinib.

**Risks Related to Forward-Looking Statements**

The forward-looking statements contained in this press release are based on current assumptions that involve risks, uncertainties and other factors that may cause the actual results, events or developments to be materially different from those expressed or implied by such forward-looking
statements. These risks and uncertainties, many of which are beyond our control, include, but are not limited to: clinical trials may not demonstrate safety and efficacy of pacritinib; the FDA may determine that the benefit/risk profile of pacritinib at the dose selected for the PACIFICA Phase 3 trial does not support approval based on the results of such trial, previously identified FDA concerns regarding safety and dosing limitations or otherwise; pacritinib may fail in development, may not receive required regulatory approvals, or may be delayed to a point where it is not commercially viable; as discussed more fully in our Quarterly Report on Form 10-Q for the quarter ended September 30, 2019, if investors view negatively FDA’s suggested change to the PACIFICA Phase 3 trial to include TSS as a co-primary endpoint or other potential changes to the PACIFICA Phase 3 trial that would increase the cost of the study and prolong the study, or if we are unable to expedite the regulatory approval process, we may be required to pursue strategic alternatives for the development of pacritinib and/or our company; our assumptions regarding our planned expenditures and sufficiency of our cash to fund operations may be incorrect; we may not achieve additional milestones in our pacritinib development program; the impact of competition; the impact of expanded product development and clinical activities on operating expenses; adverse conditions in the general domestic and global economic markets; as well as the other risks identified in our filings with the Securities and Exchange Commission. These forward-looking statements speak only as of the date hereof and we assume no obligation to update these forward-looking statements, and readers are cautioned not to place undue reliance on such forward-looking statements.

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