Panbela Announces Publication of Preclinical and Clinical Data Titled:
Inhibition of Polyamine Biosynthesis Preserves β Cell Function in Type 1 Diabetes

- **A Phase 1 clinical study showed that DFMO treatment may provide metabolic benefits to preserve β cell function and health in T1D.**

MINNEAPOLIS, Nov. 2, 2023 (GLOBE NEWSWIRE) Panbela Therapeutics, Inc. (Nasdaq: PBLA), a clinical stage biopharmaceutical company developing disruptive therapeutics for the treatment of patients with urgent unmet medical needs announces the publication of preclinical and clinical data from studies of CPP-1X (also known as α-Difluoromethylornithine (DFMO) or Eflornithine) in recent onset type 1 diabetes (T1D). According to Sims et al, although therapy of T1D has improved, the morbidity, mortality and cost continue to impact the quality of life for those affected highlighting the need for safe and effective therapies that address the underlying pathology. Data published in the journal Cell Reports Medicine investigated the mechanism of polyamines and polyamine inhibition by CPP-1X on β cell stress that plays a role in the onset of type 1 diabetes in in vitro and ex vivo models. Results showed that DFMO treatment may preserve β cell function, reflected by C-peptide levels in patients with T1D through the modulation of urinary polyamines, in particular putrescine. The work reflects the Company's ongoing collaboration with Indiana University School of Medicine. A link to the publication can be found here: https://www.cell.com/cell-reports-medicine/fulltext/S2666-3791(23)00438-X.

The research is part of a multi-site clinical trial led by Indiana University (IU) School of Medicine, supported by funding from JDRF, the leading global T1D research and advocacy organization. The preclinical data were generated by Raghavendra Mirmira's laboratory at the University of Chicago. Panbela Therapeutics is providing the drug at no cost to researchers and was not involved in the design and analysis of these studies.

From the Phase 1 dose range finding study of CPP-1X in patients with recent onset T1D, CPP-1X was well tolerated and a dose dependent inhibition of ODC was observed. An exploratory secondary analysis showed that at the two highest dose levels, treatment with CPP-1X stabilized C-peptide areas under the curve compared to placebo. When assessing immune cell populations, there were no differences between the placebo and CPP-1X patients.

Results from these studies suggest that CPP-1X is a safe, oral treatment option that may improve β cell function and/or survival in recent onset T1D.

"By investigating β cell-specific deletion of ornithine decarboxylase (ODC) in preclinical models, our collaborators were able to demonstrate the protection against toxin-induced diabetes which suggests a role for polyamine dysregulation in T1D." said Jennifer K. Simpson, PhD, MSN, CRNP, President & Chief Executive Officer of Panbela. "This observation was extended to the

clinical setting where results from the multi-site randomized, placebo-controlled Phase I trial in patients with recent onset T1D showed that inhibition of ODC by CPP-1X may improve β cell function."

"Overall, we are excited by these results which suggest that CPP-1X may have a role in the clinical management of recent onset type 1 diabetes." said Dr. Simpson. "These studies were the basis for the ongoing IU and JDRF Phase II trial in recent onset T1D to support the goal of developing effective novel therapies for patients with unmet medical needs."

First author Emily K. Sims, MD, an associate professor of pediatrics at IU School of Medicine and a pediatric endocrinologist at Riley Children's Health said, "With our promising early findings, we hold hope that DFMO, possibly as part of a combination therapy, could offer potential benefits not only to individuals with recent-onset type 1 diabetes but could ultimately also be tested for potential benefit to delay disease onset in those who are at risk of developing the condition."

Indiana University School of Medicine is annually ranked among the top medical schools in the nation by U.S. News & World Report. The school offers high-quality medical education, access to leading medical research and rich campus life in nine Indiana cities, including rural and urban locations consistently recognized for livability.

About Panbela's Pipeline
The pipeline consists of assets currently in clinical trials with an initial focus on familial adenomatous polyposis (FAP), first-line metastatic pancreatic cancer, neoadjuvant pancreatic cancer, colorectal cancer prevention and ovarian cancer. The combined development programs have a steady cadence of anticipated catalysts with programs ranging from pre-clinical to registration studies.

Ivospemin (SBP-101)
Ivospemin is a proprietary polyamine analogue designed to induce polyamine metabolic inhibition (PMI) by exploiting an observed high affinity of the compound for pancreatic ductal adenocarcinoma and other tumors. It has shown signals of tumor growth inhibition in clinical studies of metastatic pancreatic cancer patients, demonstrating a median overall survival (OS) of 14.6 months and an objective response rate (ORR) of 48%, both exceeding what is typical for the standard of care of gemcitabine + nab-paclitaxel suggesting potential complementary activity with the existing FDA-approved standard chemotherapy regimen. In data evaluated from clinical studies to date, ivospemin has not shown exacerbation of bone marrow suppression and peripheral neuropathy, which can be chemotherapy-related adverse events. Serious visual adverse events have been evaluated and patients with a history of retinopathy or at risk of retinal detachment will be excluded from future SBP-101 studies. The safety data and PMI profile observed in the previous Panbela-sponsored clinical trials provide support for continued evaluation of ivospemin in the ASPIRE trial.

Flynpovi™
Flynpovi is a combination of CPP-1X (eflornithine) and sulindac with a dual mechanism inhibiting polyamine synthesis and increasing polyamine export and catabolism. In a Phase III clinical trial in patients with sporadic large bowel polyps, the combination prevented > 90% subsequent pre-

cancerous sporadic adenomas versus placebo. Focusing on FAP patients with lower gastrointestinal tract anatomy in the recent Phase III trial comparing Flynpovi to single agent eflornithine and single agent sulindac, FAP patients with lower GI anatomy (patients with an intact colon, retained rectum or surgical pouch), showed statistically significant benefit compared to both single agents ($p \leq 0.02$) in delaying surgical events in the lower GI for up to four years. The safety profile for Flynpovi did not significantly differ from the single agents and supports the continued evaluation of Flynpovi for FAP.

CPP-1X

CPP-1X (eflornithine) is being developed as a single agent tablet or high dose powder sachet for several indications including prevention of gastric cancer, treatment of neuroblastoma and recent onset Type 1 diabetes. Preclinical studies as well as Phase I or Phase II investigator-initiated trials suggest that CPP-1X treatment may be well-tolerated and has potential activity.

About Panbela

Panbela Therapeutics, Inc. is a clinical-stage biopharmaceutical company developing disruptive therapeutics for patients with urgent unmet medical needs. Panbela's lead assets are Ivospemin (SBP-101) and Flynpovi. Further information can be found at **www.panbela.com .** Panbela's common stock is listed on The Nasdaq Stock Market LLC under the symbol "PBLA".

Cautionary Statement Regarding Forward-Looking Statements

This press release contains "forward-looking statements," including within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements can be identified by words such as: "anticipate," "can," "continue," "design," "expect," "focus," "intend," "may," "plan," "potential," and "will." All statements other than statements of historical fact are statements that should be deemed forward-looking statements. Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based only on our current beliefs, expectations, and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict and many of which are outside of our control. Our actual results and financial condition may differ materially and adversely from the forward-looking statements. Therefore, you should not rely on any of these forward-looking statements. Important factors that could cause our actual results and financial condition to differ materially from those indicated in the forward-looking statements include, among others, the following: (i) our ability to obtain additional funding to execute our business and clinical development plans; (ii) progress and success of our clinical development program; (iii) the impact of the current COVID-19 pandemic on our ability to conduct our clinical trials; (iv) our ability to demonstrate the safety and effectiveness of our product candidates: ivospemin (SBP-101) and eflornithine (CPP-1X); (v) our reliance on a third party for the execution of the registration trial for our product candidate Flynpovi ; (vi) our ability to obtain regulatory approvals for our product candidates, SBP-101 and CPP-1X in the United States, the European Union or other international markets; (vii) the market acceptance and level of future sales of our product candidates, SBP-101 and CPP-1X; (viii) the cost and delays in product development that may result from changes in regulatory oversight applicable to our product candidates, SBP-101 and CPP-1X; (ix) the rate of progress in establishing reimbursement arrangements with third-party payors; (x) the effect of competing technological

and market developments; (xi) the costs involved in filing and prosecuting patent applications and enforcing or defending patent claims; (xii) our ability to maintain the listing of our common stock on a national securities exchange; and (xiii) such other factors as discussed in Part I, Item 1A under the caption "Risk Factors" in our most recent Annual Report on Form 10-K, any additional risks presented in our Quarterly Reports on Form 10-Q and our Current Reports on Form 8-K. Any forward-looking statement made by us in this press release is based on information currently available to us and speaks only as of the date on which it is made. We undertake no obligation to publicly update any forward-looking statement or reasons why actual results would differ from those anticipated in any such forward-looking statement, whether written or oral, whether as a result of new information, future developments or otherwise.

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