January 30, 2023

Aptose Initiates Dosing of Tuspetinib in APTIVATE Expansion Trial in Patients with Acute Myeloid Leukemia

- *AML Patients Receive Tuspetinib Monotherapy to Kick Off APTIVATE Phase 1/2 Trial*
- *New Response Emerges with 40 mg Tuspetinib in FLT3 Wildtype AML Patient*
- *Aptose Elucidates Rationale for Tuspetinib's Superior Safety Profile*

SAN DIEGO and TORONTO, Jan. 30, 2023 (GLOBE NEWSWIRE) -- Aptose Biosciences Inc. ("Aptose") (NASDAQ: APTO, TSX: APS) today announced the 120 mg monotherapy dosing of patients in the APTIVATE Phase 1/2 clinical trial of tuspetinib (formerly HM43239), an oral, mutation agnostic tyrosine kinase inhibitor (TKI) being developed for the treatment of patients with relapsed or refractory acute myeloid leukemia (R/R AML). In parallel, another clinical response has been achieved by a R/R AML patient receiving 40 mg tuspetinib once daily orally in the original dose exploration trial, the second response at the recently launched low-dose 40 mg cohort.

Tuspetinib, a once daily oral agent designed to simultaneously target SYK, JAK1/2, FLT3, and other kinases operative in AML, has thus far as a monotherapy safely delivered multiple complete remissions and clinical responses across four dose levels (40mg, 80mg, 120mg, and 160mg) in AML patients that previously had been failed by chemotherapy, BCL2 inhibitors, hypomethylating agents, FLT3 inhibitors, and hematopoietic stem cell transplants. Data were presented last month at the 2022 American Society of Hematology (ASH) annual meeting by lead investigator Naval G. Daver, M.D., Associate Professor in the Department of Leukemia at MD Anderson Cancer Center, showing tuspetinib delivers single agent responses without prolonged myelosuppression or life-threatening toxicities in these very ill and heavily pretreated relapsed or refractory AML patients. Responses were observed in a broad range of mutationally-defined populations, including those with mutated forms of NPM1, MLL, TP53, NRAS, KRAS, DNMT3A, RUNX1, wild-type FLT3, ITD or TKD mutated FLT3, various splicing factors, and other genes.

Importantly, Aptose has elucidated a rationale for the superior safety profile of tuspetinib. While several kinase inhibitors require high exposures that exert near complete suppression of a single target to elicit responses, those agents often cause additional toxicity because they also cause extensive inhibition of that target in normal cells. In contrast, tuspetinib simultaneously suppresses a small suite of kinase-driven pathways critical for leukemogenesis. Consequently, tuspetinib achieves clinical responses at lower exposures with less overall suppression of each pathway, thereby avoiding many of the toxicities observed with competing agents.

The APTIVATE expansion trial is designed to confirm monotherapy activity through patient enrichment of specific mutationally defined AML populations, including TP53-mutant patients

and FLT3-mutant patients who have been failed by a prior FLT3 inhibitor, as supported by FDA fast-track designation and a clinically significant response rate to date. In the APTIVATE expansion trial, tuspetinib also will be tested in combination with venetoclax. More information on the APTIVATE trial can be found on www.clinicaltrials.gov (here).

“We are pleased to have dosing underway in our APTIVATE clinical trial of tuspetinib in a very ill R/R AML population,” said William G. Rice, Ph.D., Chairman, President, and Chief Executive Officer. “Tuspetinib has demonstrated noteworthy safety and mutation agnostic potency across a spectrum of AML patients with a diversity of adverse mutations, further distinguishing it from competing compounds and targeting a much larger AML population. This breadth of activity along with its significant safety profile has allowed us to define a precise clinical and commercial plan for tuspetinib in multiple lines of therapy, including its use in doublet and triplet combinations, as well as maintenance therapy.”

About Aptose

Aptose Biosciences is a clinical-stage biotechnology company committed to developing precision medicines addressing unmet medical needs in oncology, with an initial focus on hematology. The Company's small molecule cancer therapeutics pipeline includes products designed to provide single agent efficacy and to enhance the efficacy of other anti-cancer therapies and regimens without overlapping toxicities. The Company has two clinical-stage oral kinase inhibitors under development for hematologic malignancies: tuspetinib (formerly HM43239), an oral, myeloid kinase inhibitor in an international Phase 1/2 trial in patients with relapsed or refractory acute myeloid leukemia (AML); and luxeptinib, an oral, dual lymphoid and myeloid kinase inhibitor in Phase 1 a/b stage development for the treatment of patients with relapsed or refractory hematologic malignancies. For more information, please visit www.aptose.com.

Forward-Looking Statements

This press release contains forward-looking statements within the meaning of Canadian and U.S. securities laws, including, but not limited to, statements regarding, the clinical development plans, the clinical potential, anti-cancer activity, therapeutic potential and applications and safety profile of tuspetinib, the tuspetinib Phase 1/2 AML APTIVATE clinical trial, and upcoming updates regarding the clinical trial, and statements relating to the Company’s plans, objectives, expectations and intentions and other statements including words such as “continue”, “expect”, “intend”, “will”, “hope” “should”, “would”, “may”, “potential” and other similar expressions. Such statements reflect our current views with respect to future events and are subject to risks and uncertainties and are necessarily based upon a number of estimates and assumptions that, while considered reasonable by us, are inherently subject to significant business, economic, competitive, political and social uncertainties and contingencies. Many factors could cause our actual results, performance or achievements to be materially different from any future results, performance or achievements described in this press release. Such factors could include, among others: our ability to obtain the capital required for research and operations; the inherent risks in early stage drug development including demonstrating efficacy; development time/cost and the regulatory approval process; the progress of our clinical trials; our ability to find and enter into agreements with potential partners; our ability to attract and retain key personnel; changing market and economic conditions; inability of new manufacturers to produce acceptable batches of GMP in sufficient quantities; unexpected manufacturing defects; the

potential impact of the COVID-19 pandemic and other risks detailed from time-to-time in our ongoing current reports, quarterly filings, annual information forms, annual reports and annual filings with Canadian securities regulators and the United States Securities and Exchange Commission.

Should one or more of these risks or uncertainties materialize, or should the assumptions set out in the section entitled "Risk Factors" in our filings with Canadian securities regulators and the United States Securities and Exchange Commission underlying those forward-looking statements prove incorrect, actual results may vary materially from those described herein. These forward-looking statements are made as of the date of this press release and we do not intend, and do not assume any obligation, to update these forward-looking statements, except as required by law. We cannot assure you that such statements will prove to be accurate as actual results and future events could differ materially from those anticipated in such statements. Investors are cautioned that forward-looking statements are not guarantees of future performance and accordingly investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein.

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