December 13, 2021

HM43239 Demonstrates Durable Clinical Benefit in Acute Myeloid Leukemia

HM43239 Data Featured in Oral Presentation at the American Society of Hematology Annual Meeting

Aptose Presents Highlights from Luxeptinib and APTO-253 and Provides Corporate Update

SAN DIEGO, TORONTO and ATLANTA, Dec. 13, 2021 (GLOBE NEWSWIRE) -- Aptose Biosciences Inc. (“Aptose”) (NASDAQ: APTO, TSX: APS) today reported that the oral myeloid kinome inhibitor HM43239 has demonstrated durable single agent activity in patients with relapsed or refractory acute myeloid leukemia (AML). Data were presented in an oral presentation today at the 2021 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.

HM43239 is an oral, once-daily, highly potent myeloid kinome inhibitor (MKI) designed to target key kinases operative in myeloid malignancies. In earlier preclinical studies, HM43239 demonstrated potent *in vitro* and *in vivo* activity against FLT3 ITD mutated as well as resistance-conferring D835 and gatekeeper (F691) TKD mutated AML. Additionally, HM43239 inhibited phosphorylation of SYK, known to be highly activated in AML and associated with resistance to FLT3 targeted therapy.

In the ongoing international Phase 1/2 study, thirty-four relapsed/refractory patients who had received at least one prior line of therapy were enrolled at multiple centers between March 2019 and August 2021, and treated at doses escalating from 20 mg to 160 mg. HM43239 delivered multiple complete responses (CR) and demonstrated clinically meaningful benefit in all responders, by either bridging successfully to hematopoietic stem cell transplant (HSCT) or leading to a durable response, as well as a favorable safety profile across all treated patients.

Highlights of Dr. Daver’s ASH oral presentation:

- Among FLT3 mutant patients treated with 80 mg, 3 of 8 (37.5%) achieved a durable composite complete response (CRc, CR + CRi).
- At the 80 mg dose, a composite CRc rate of 25% was observed in both FLT3 mutant (including a prior gilteritinib failure patient) and FLT3 wild-type AML (including >1 year duration of response in a relapsed TP53m AML patient unfit for HSCT).
- At the 80 mg dose, 4 of 5 (80%) responders advanced to HSCT.
- Recently, another prior gilteritinib failure patient achieved PR after one cycle at the 120 mg dose.
- HM43239 showed a favorable safety profile with only mild AEs and no DLTs up to 160 mg per day, and no drug discontinuations from drug related toxicity.
- HM43239 plasma inhibitory assay (PIA) activity was dose-dependent with up to 90%

phospho-FLT3 inhibition at dose levels ≥ 80 mg.
- The study is ongoing across several cohorts – the dose escalation cohort of 200 mg and the dose expansion cohorts of 120 mg and 160 mg are currently enrolling.

“HM43239 demonstrated clear genotype-agnostic clinical activity as a single-agent in one of the most challenging and most heterogeneus disease settings in oncology today – relapsed and refractory AML,” said Rafael Bejar, M.D., Ph.D., Chief Medical Officer. “Importantly, HM43239 has demonstrated activity in patients with FLT3 wild-type AML, FLT3 mutated AML, NPM1 mutated AML, as well as in patients with mutations historically associated with resistance to targeted therapy, such as TP53, NRAS, KRAS, and others. We believe that the clinical activity observed to date could support a broad expansion program covering multiple genotypes and disease stages in AML, both as monotherapy and in combination with other active agents.”

In addition, clinical data for luxeptinib and APTO-253 were presented at ASH. The posters are now available on the presentations page of the Aptose website here.

Clinical data from luxeptinib in patients with relapsed or refractory B-cell malignancies and relapsed or refractory AML were presented in poster presentations on Saturday by lead investigators Felipe Samaniego, M.D., Professor in the Department of Lymphoma and Myeloma at MD Anderson Cancer Center, and Aaron Goldberg, M.D., Ph.D, from the Department of Medicine, Leukemia Service, Memorial Sloan-Kettering Cancer Center. In both of these Phase 1/2 studies, luxeptinib has been generally well tolerated at dose levels of 450, 600 and 750 mg BID over multiple cycles, and is currently being dosed in 900 mg BID cohorts in parallel. Target engagement of BTK and FLT3, and anti-tumor activity, including dose- and exposure-dependent tumor reductions, have been observed in multiple patients collectively between the studies, including in patients with FL, DLBCL, CLL/SLL, and AML. In parallel with the ongoing dose escalation of the current formulation of luxeptinib in patients with B-cell malignancies and AML, Aptose has made significant progress in the development of a “next generation” formulation that could reduce total API administered, reduce pill burden, improve absorption, and increase exposure. Aptose expects to begin testing this new formulation of luxeptinib in the ongoing studies in patients with hematologic malignancies in the first half of 2022.

Clinical data from APTO-253 were presented in a poster presentation on Monday at the 2021 American Society of Hematology (ASH) Annual meeting by lead investigator Maro Ohanian, D.O., Associate Professor in the Department of Leukemia at MD Anderson Cancer Center. In an ongoing Phase 1a/b trial, APTO-253 has been well-tolerated in the patients treated at 20, 40, 66, 100, 150 and 210 mg/m^2 over multiple cycles, supporting continued dose escalation. In parallel with the ongoing dose escalation of APTO-253, Aptose has started to explore strategic alternatives to support the further development of APTO-253 in hematologic malignancies and solid tumors.

“Drug resistance remains a tremendous challenge in hematologic malignancies, and we plan to leverage our growing bench of kinase inhibitors to tackle unmet needs across multiple indications and multiple disease genotypes. Our newest and most mature investigational drug, HM43239, is demonstrating activity against some of the most challenging AML genotypes and we look forward to continuing to advance it towards registration-enabling studies,” said William G. Rice, Ph.D., Chairman, President and Chief Executive Officer.

“Luxeptinib also continues to show positive trends of activity in both B-cell cancers and AML. We look forward to bringing on a new formulation of Lux that may help increase exposure levels further, and potentially deliver faster and deeper anti-tumor activity in hematologic malignancies.”

Aptose will be holding a corporate update to discuss these data and updates today, December 13, at 5:30 PM ET:

Aptose Corporate Update Details

Date & Time: Monday, December 13, 2021, 5:30 PM ET

Participant Webcast Link: Link

Participant Dial-in:

Toll Free:	1-877-407-9039
Toll/International:	1-201-689-8470
Conference ID:	13725358

About Aptose

Aptose Biosciences is a clinical-stage biotechnology company committed to developing personalized therapies 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 three clinical-stage investigational products for hematologic malignancies: HM43239, an oral, myeloid kinome inhibitor in an international Phase 1/2 trial in patients with relapsed or refractory acute myeloid leukemia (AML); luxeptinib, an oral, dual lymphoid and myeloid kinome inhibitor in a Phase 1 a/b trial in patients with relapsed or refractory B cell malignancies who have failed or are intolerant to standard therapies, and in a separate Phase 1 a/b trial in patients with relapsed or refractory AML or high risk myelodysplastic syndrome (MDS); and APTO-253, a MYC oncogene repressor, in a Phase 1 a/b clinical trial in patients with relapsed or refractory AML or high risk MDS. 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, the clinical development plans, the clinical potential and favorable properties of HM43239, luxeptinib and APTO-253; the HM43239 Phase 1/2 clinical trial and a potential expansion program, the luxeptinib Phase 1 a/b B-cell malignancy and Phase 1 a/b AML clinical trials and the development of a new formulation; and the APTO-253 Phase 1a/b clinical trial and the exploration of strategic alternatives; 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 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.

For further information, please contact:

Aptose Biosciences Inc.
Susan Pietropaolo
Investor Relations
201-923-2049
spietropaolo@aptose.com

LifeSci Advisors, LLC
Dan Ferry, Managing Director
617-430-7576
Daniel@LifeSciAdvisors.com

Source: Aptose Biosciences, Inc.