December 9, 2019

# Aptose Presents New Preclinical CG-806 Data at the 2019 ASH Annual Meeting

SAN DIEGO and TORONTO, Dec. 09, 2019 (GLOBE NEWSWIRE) -- Aptose Biosciences Inc. ("Aptose") (NASDAQ: APTO, TSX: APS), a clinical-stage company developing highly differentiated therapeutics targeting the underlying mechanisms of cancer, today announced the presentation of preclinical data for its first-in-class, FLT3/BTK inhibitor CG-806 at the 61st American Society of Hematology (ASH) Annual Meeting and Exposition in Orlando, FL. The University of Texas MD Anderson Cancer Center researchers presented two posters elucidating CG-806's mechanism of action in targeting chronic lymphcytic leukemia (CLL) cells and its inhibitory effect on ibrutinib-resistant mantle cell lymphoma (MCL) cells.

The poster ***CG-806, a First-in-Class Pan-FLT3/Pan-BTK Inhibitor, Exhibits Broad Signaling Inhibition in Chronic Lymphocytic Leukemia Cells*** compares CG-806 and ibrutinib, the standard of care, in primary patient cells of CLL.

Key findings:

- CG-806 broadly inhibits B-cell receptor signaling in CLL cells, resulting in CLL cell apoptosis and reduced proliferation.
- CG-806 is more potent than ibrutinib to induce apoptosis of MEC1 CLL cells.
- CG-806 targets elements of the CLL microenvironment, and thereby potentially targets pro-survival signals from the microenvironment.

A second poster, ***Synergistic Targeting of BTK and E-Selectin/CXCR4 in the Microenvironment of Mantle Cell Lymphomas,*** explores the effects of CG-806 on cells of MCL, a rare subtype of aggressive B cell non Hodgkin lymphoma that is incurable with standard therapy, and investigates the molecular mechanisms of acquired resistance to treatment.

Key findings:

- CG-806 demonstrated superior anti-lymphoma effects compared with ibrutinib, exerting potent cell growth inhibitory effects in ibrutinib-resistant MCL cells.
- CG-806 suppresses phosphor-BTK, -Stat3, -AKT, -ERK, -Src, NF-kB, and the anti-apoptotic protein Mcl1, while upregulating p53.
- CG-806 increases autophagy in MCL cells, which may be associated with resistance to CG-806-mediated apoptosis. Inhibition of autophagy re-sensitizes MCL cells to CG-806-induced apoptosis.
- CG-806 treatment upregulates CXCR4/E-selectin levels in MCL cells.
- Combination of CXCR4/E-selectin antagonists with CG-806 enhances CG-806-induced apoptotic killing of MCL cells in the presence of the tumor microenvironment.

The posters are available on the Aptose website (link). The two poster abstracts also are

published in the November supplemental issue of *Blood*, an ASH journal, available online.

“More than 50% of patients with CLL and MCL discontinue ibrutinib treatment due to intolerance or the emergence of refractory or resistant disease,” said William G. Rice, Ph.D., Chairman and Chief Executive Officer of Aptose. “Our data indicate that CG-806 not only induces apoptosis in CLL cells, but also targets the microenvironment and rescue pathways that lead to resistance or refractory disease. CG-806 also was shown to be more potent than ibrutinib to induce apoptosis in both CLL and MCL cells. We are pleased that CG-806 is now in the clinic in CLL patients who are resistant, refractory or intolerant to ibrutinib and other agents considered the current standard of care.”

**About CG-806**

CG-806 is an oral, first-in-class FLT3/BTK multi-cluster kinase inhibitor and is in a Phase 1 clinical trial for the treatment of hematologic malignancies. This small molecule, in-licensed from CrystalGenomics Inc. in Seoul, South Korea, demonstrates potent inhibition of wild type and all mutant forms of FLT3 (including internal tandem duplication, or ITD, and mutations of the receptor tyrosine kinase domain and gatekeeper region), cures animals of AML in the absence of toxicity in murine xenograft models, and represents a potential best-in-class therapeutic for patients with AML and other myeloid malignancies. Likewise, CG-806 demonstrates potent, non-covalent inhibition of the wild type and Cys481Ser (C481S) mutant forms of the BTK enzyme, as well as other oncogenic kinase pathways operative in B cell malignancies, suggesting CG-806 may be developed for various B cell malignancy patients (including CLL/SLL, FL, MCL, DLBCL and others) that are resistant/refractory/intolerant to covalent or other non-covalent BTK inhibitors. Because CG-806 targets key kinases/pathways operative in malignancies derived from the bone marrow, it is in development for B-cell cancers and AML.

**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 two clinical-stage investigational products for hematologic malignancies: CG-806, an oral, first-in-class mutation-agnostic FLT3/BTK kinase inhibitor, is in a Phase 1 trial in patients with relapsed or refractory B cell malignancies, including chronic lymphocytic leukemia (CLL), small lymphocytic lymphoma (SLL) and non-Hodgkin lymphoma (NHL), who have failed or are intolerant to standard therapies; APTO-253, the only clinical stage agent that directly targets the MYC oncogene and inhibits its expression, is in a Phase 1b clinical trial for the treatment of patients with relapsed or refractory acute myeloid leukemia (AML) or high risk myelodysplastic syndrome (MDS). For further 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 potential and favorable properties of CG-806, and statements relating to the Company’s plans, objectives, expectations and intentions and other statements including words such as

“continue”, “expect”, “intend”, “will”, “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; 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**
Greg Chow
Executive Vice President, CFO
650-718-5028
gchow@aptose.com

**SMP Communications**
Susan Pietropaolo
201-923-2049
susan@smpcommunications.com

**LifeSci Advisors, LLC**
Daniel Ferry
Managing Director
617-535-7746
Daniel@lifesciadvisors.com

Source: Aptose Biosciences, Inc.