December 3, 2015

Moffitt Cancer Center and Aptose Biosciences to Present Data on a Novel Class of Dual-Targeting Bromodomain / Kinase Inhibitors at 57th Annual American Society of Hematology (ASH) Meeting

REDWOOD CITY, Calif., TORONTO and TAMPA, Fla., Dec. 3, 2015 (GLOBE NEWSWIRE) -- Aptose Biosciences Inc. (NASDAQ:APTO) (TSX:APS) today announced that its collaborator, Moffitt Cancer Center, will present preclinical data for its dual-targeting bromodomain (BRD) / kinase inhibitor, MA2-014, at the 57th Annual American Society of Hematology (ASH) Meeting and Exposition being held December 5-8, 2015, in Orlando, FL.

The dual-targeting inhibitor MA2-014 is a representative candidate from a new family of small molecule, dual-targeting BRD / kinase inhibitors licensed to Aptose from Moffitt Cancer Center. The MA2-014 program was developed to inhibit both the bromodomain 4 (BRD4) protein and the Janus kinase 2 (JAK2) for the potential treatment of various hematologic and solid tumor cancers. The data being presented by Moffitt researchers reflect *in vitro* activity of MA2-014 in myeloproliferative neoplasm (MPN) cell lines. MPNs are rare blood cancers including polycythemia vera (PV), essential thrombocythemia (ET) and myelofibrosis (MF).

Clinically, JAK2 inhibitors alone have demonstrated the ability to improve symptoms of MPNs, but have not been shown to induce remission. Further, combining a bromodomain inhibitor and a JAK2 inhibitor has been shown to be more effective against MPN cells than JAK2 inhibition alone. This provided rationale to develop a single molecule with potent activity against both the bromodomain family proteins and JAK2. Moffitt researchers will present data for MA2-014, a single molecule that exhibits similar anti-JAK2 activity as a known JAK2 inhibitor, TG101209, with an approximate ten-fold improvement in anti-BRD activity. Moffitt researchers also demonstrated a ten-fold improvement in the ability of MA2-014 to inhibit JAK2-V617F signaling over TG101209, and comparable to ruxolitinib. Ruxolitinib is the only FDA approved JAK inhibitor for MPNs. However, MA2-014 retained its potency against ruxolitinib-resistant cells. Moffitt researchers also determined in long-term culture assays that JAK2-V617F driven MPN Uke1 cells do not experience resistance to MA2-014 as readily as they do to TG101209 or ruxolitinib.

"We are excited to continue development of MA2-014 and other candidates in our collaboration with Moffitt and to advance highly differentiated dual-targeting BRD / kinase inhibitors for the treatment of rare blood cancers into the clinic," said William G. Rice, Ph.D., Chairman, President and CEO. "We share Moffitt's optimism about the potential for dual-targeting BRD / kinase inhibitors as high-value epigenetic drug candidates to provide the benefits of combination therapy for hematologic cancers."

"The development and optimization of a single drug designed to simultaneously inhibit JAK2 kinase and bromodomains of the bromodomain and extraterminal proteins may improve therapy for myeloproliferative neoplasms (MPN), by delivering a potentially effective combination therapy with a single agent," said Gary Reuther, Associate Member of the Cancer Biology and Evolution Program at Moffitt. "Such dual inhibition of these targets and their respective pathways may provide a new effective MPN therapy and reduce the development of drug resistance seen with JAK2 inhibitors."

Abstract Details

Title: **"Single Molecule Dual JAK2-BET Inhibition as an MPN Therapeutic"**
* Date/Time: Sunday, December 6, 2015, 6:00 - 8:00 p.m.
* Location: Orange County Convention Center, Hall A, Level 2
* Abstract #: 2826
* Session: 635. Myeloproliferative Syndromes: Basic Science: Poster II

The abstract is available in the online edition of Blood, the official Journal of the American Society of Hematology and on the ASH conference website.

Aptose previously announced additional ASH abstracts on its lead clinical candidate APTO-253:

Title: **"Broad Activity of APTO-253 in AML and Other Hematologic Malignancies Correlates with KLF4 Expression Level"**
* Date/Time: Saturday, December 5, 2015, 5:30-7:30 p.m.
* Location: Orange County Convention Center, Hall A
* Abstract #: 83676
* Session: 616. Acute Myeloid Leukemia: Novel Therapy, excluding Transplantation: Poster I

Title: **"Clinical Pharmacokinetics of APTO-253 Support its Use as a Novel Agent for the Treatment of Relapsed or Refractory Hematologic Malignancies"**
* Abstract #: 4934
* Location: Publication

Strategic Collaboration with Moffitt Cancer Center

Aptose recently entered into a definitive agreement with Moffitt Cancer Center for exclusive global rights to potent, multi-targeting, single-agent inhibitors for the treatment of hematologic and solid tumor cancers. These small molecule agents are highly differentiated inhibitors of the Bromodomain and Extra-Terminal motif (BET) protein family members, which simultaneously target specific kinase enzymes. The molecules developed by Moffitt exhibit single-digit nanomolar potency against the BET family members and specific oncogenic kinases which, when inhibited, are synergistic with BET inhibition. Under the agreement, Aptose gains access to the drug candidates developed by Moffitt and the underlying intellectual property covering the chemical modifications enabling potent bromodomain (BRD) inhibition on the chemical backbone of a kinase inhibitor. Aptose expects lead clinical candidates to emerge from the collaboration by late 2016.

About Moffitt Cancer Center

Located in Tampa, Moffitt is one of only 45 National Cancer Institute-designated Comprehensive Cancer Centers, a distinction that recognizes Moffitt's excellence in research, its contributions to clinical trials, prevention and cancer control. Moffitt is the top-ranked cancer hospital in Florida and has been listed in U.S. News & World Report as one of the "Best Hospitals" for cancer care since 1999. With more than 4,600 team members, Moffitt has an economic impact in the state of $1.9 billion. For more information, visit MOFFITT.org, and follow the Moffitt momentum on Facebook, Twitter and YouTube.

About Aptose Biosciences

Aptose Biosciences is a clinical-stage biotechnology company committed to discovering and developing personalized therapies addressing unmet medical needs in oncology. Aptose is advancing new therapeutics focused on novel cellular targets on the leading edge of cancer research, coupled with companion diagnostics to identify the optimal patient population for our products. The Company's small molecule cancer therapeutics pipeline includes products designed to provide enhanced efficacy with existing anti-cancer therapies and regimens without overlapping toxicities. Aptose Biosciences Inc. is listed on NASDAQ under the symbol APTO and on the TSX under the symbol APS.

Forward Looking Statements

This press release contains forward-looking statements within the meaning of Canadian and U.S. securities laws. Such statements include, but are not limited to, our ability to advance one of the first dual-targeting bromodomain / kinase inhibitors for the treatment of rare blood cancers into the clinic; the potential for dual-targeting BRD / kinase inhibitors as high-value epigenetic drug candidates; that these drug candidates may provide benefits in combination therapy for hematologic cancers 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", 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 expressed or implied forward looking statements 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 conditions; uncertainty in the length of the clinical hold and the conditions the FDA may impose to lift it; potential loss of API; inability of new manufacturers to produce acceptable batches of cGMP 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.

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