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Oncolytics Biotech® Inc.'s REOLYSIN® Provides Statistically Significant Improvement in Overall Survival in Canadian Cancer Trials Group Sponsored Randomized Phase 2 Study in Metastatic Breast Cancer

- Statistically significant improvement in median overall survival from 10.4 months in the control arm to 17.4 months in the test arm;
- First time that an immuno-oncology viral-agent has demonstrated a statistically significant median overall survival advantage in a randomized clinical study;
- A registration study is now being designed in metastatic breast cancer with overall survival as the primary endpoint.

CALGARY, March 31, 2017 /PRNewswire/ - Oncolytics Biotech® Inc. (Oncolytics or the Company) (TSX:ONC) (OTCQX:ONCYF) today announced the presentation of positive overall survival data from an open-label, randomized, Phase 2 study designed by the Canadian Cancer Trials Group (CCTG, formerly known as the National Cancer Institute of Canada - NCIC). The 74-patient study, powered to 90 percent, assesses the therapeutic combination of intravenously-administered REOLYSIN® given in combination with paclitaxel versus paclitaxel alone in patients with advanced or metastatic breast cancer. Data from the study (IND 213), will be presented during the American Academy of Cancer Research (AACR) Annual Meeting, April 1-5, in Washington, DC.

The abstract reports that in the intention-to-treat (ITT) patient population there was an improvement in median OS (secondary endpoint) from 10.4 months on the control arm to 17.4 months on the test arm (Hazard ratio 0.65, 80% CI 0.46-0.91, p=0.1), meeting the pre-specified significance level for the 90 percent powered study. Consistent with REOLYSIN acting as an immune therapy agent, there was no meaningful improvement in either progression free survival (the primary endpoint), or response rate (secondary endpoint). The Company is now planning a registration study in metastatic breast cancer with overall survival as the primary endpoint.

"This is the first controlled, randomized study where the systemic administration of an immuno-oncology viral agent (REOLYSIN), was well tolerated and had a significant impact on the overall survival of relapsed metastatic breast cancer patients when used in combination with paclitaxel," said Dr. Karen Gelmon, Head, Investigational Drug Program, Experimental Therapeutics, Department of Medical Oncology, British Columbia Cancer Agency.

"There is an emerging pattern, from this and other studies with REOLYSIN, where patients obtain significant benefit in overall survival, despite limited impact on response rates and/or progression-free survival," said Dr. Andres Gutierrez, Chief Medical Officer of Oncolytics. "This is a well-established pattern for other immunotherapies, like checkpoint inhibitors, which have been approved on an overall survival primary endpoint in melanoma, NSCLC and head and neck cancers. These phase 2 data also support the established mode of activity of REOLYSIN where selective cell lysis of permissive cancer cells is followed by an anti-tumor immune response, which may be responsible for the meaningful survival benefit for patients. Taking into account the specific findings from this study, we continue to believe that REOLYSIN is not solely an oncolytic agent, but has key attributes of an immuno-oncology agent as well."

The abstract, authored by Bernstein *et al*, "A randomized (RCT) phase II study of oncolytic reovirus (pelareorep) plus standard weekly paclitaxel (P) as therapy for metastatic breast cancer (mBC)" is now available on the AACR website. CCTG will be making a poster presentation, #8466, at the AACR Annual Meeting, on Tuesday Apr 4, 2017 from 1:00 PM - 5:00 PM, in Washington, DC.

Oncolytics would like to thank the patients that participated in this study, the CCTG and all the physicians and nurses involved.

About Breast Cancer

The American Cancer Society estimates there will be 255,180 new cases of breast cancer diagnosed in the United States and 41,070 deaths from the disease in 2017.

About Oncolytics Biotech Inc.

Oncolytics is a biotechnology company developing REOLYSIN[®], an immuno-oncology viral-agent, as a potential treatment for a variety of tumor types. The compound induces selective tumor lysis and promotes an inflamed tumor phenotype through innate and adaptive immune responses to treat a variety of cancers. Oncolytics' clinical development program emphasizes three pillars: chemotherapy combinations to trigger selective tumor lysis; immuno-therapy combinations to produce adaptive immune responses; and immune modulator (IMiD) combinations to facilitate innate immune responses. Oncolytics is currently planning its first registration study in breast cancer, as well as studies in combination with checkpoint inhibitors and IMiD/targeted therapies in solid and hematological malignancies. For further information about Oncolytics, please visit: www.oncolyticsbiotech.com.

This press release contains forward-looking statements, within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements, including the Company's expectations related to the Phase 2 clinical trial in breast cancer, future trials in this indication, and the Company's belief as to the potential of REOLYSIN as a cancer therapeutic, involve known and unknown risks and uncertainties, which could cause the Company's actual results to differ materially from those in the forward-looking statements. Such risks and uncertainties include, among others, the availability of funds and resources to pursue research and development projects, the efficacy of REOLYSIN as a cancer treatment, the tolerability of REOLYSIN outside a controlled test, the success and timely completion of clinical studies and trials, the Company's ability to successfully commercialize REOLYSIN, uncertainties related to the research, development and manufacturing of pharmaceuticals, changes in

technology, general changes to the economic environment and uncertainties related to the regulatory process. Investors should consult the Company's quarterly and annual filings with the Canadian and U.S. securities commissions for additional information on risks and uncertainties relating to the forward-looking statements. Investors should consider statements that include the words "believes", "expects", "anticipates", "intends", "estimates", "plans", "projects", "should", or other expressions that are predictions of or indicate future events or trends, to be uncertain and forward-looking. Investors are cautioned against placing undue reliance on forward-looking statements. The Company does not undertake to update these forward-looking statements, except as required by applicable laws.

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