May 3, 2019

Oncolytics Biotech (R) Reports 2019 First Quarter Financial Results and Operational Highlights

- Recent biomarker data identifies a simple blood test that may predict clinical response to pelareorep -

- Interim data from ongoing AWARE-1 window of opportunity breast cancer study expected in 2H 2019 -

CALGARY, AB and SAN DIEGO, CA / ACCESSWIRE / May 3, 2019/ Oncolytics Biotech® Inc. (NASDAQ: ONCY) (TSX: ONC), currently developing pelareorep, an intravenously delivered immuno-oncolytic virus, today announced its financial results and operational highlights for the quarter ended March 31, 2019. All dollar amounts are expressed in Canadian currency unless otherwise noted.

"Our primary focus remains the breast cancer program and the timely completion of our AWARE-1 study of pelareorep in combination with the immune checkpoint inhibitor Tecentriq. We remain on track to report interim data in the second half of this year," said Dr. Matt Coffey, President and Chief Executive Officer of Oncolytics Biotech. "We expect the results of this important study to confirm the clinical utility of using T cell clonality as a biomarker for patient response to pelareorep, as well as pelareorep's ability to prime the immune system to recognize cancer cells and enhance the potential efficacy of checkpoint inhibitors. This data will assist in the final design of our registrational study of pelareorep as a treatment for metastatic breast cancer and serve to confirm the broader utility of this biomarker, currently established in pancreatic cancer and multiple myeloma, across multiple cancer types."

Selected highlights since January 1, 2019

Clinical & Scientific Updates

- Announced the identification of T cell clonality as a potentially predictive and prognostic biomarker of pelareorep therapy in a poster presentation delivered at the American Association for Cancer Research 2019 annual meeting
- Treated the first patient in the AWARE-1 window of opportunity study, which is being conducted in collaboration with SOLTI, in which patients will receive the appropriate intervention for their breast cancer sub-type plus pelareorep with or without Roche's anti PD-L1 Tecentriq®, followed by surgery
- Published data in the journal *Blood Advances* highlighting the synergistic effect of pelareorep in combination with proteasome inhibitor bortezomib for the treatment of multiple myeloma

- Hosted a key opinion leader meeting with investors and analysts to discuss the emerging role of biomarkers and oncolytic viruses in the treatment of cancer, featuring Dirk Arnold, MD, PhD, Executive Board Member of the European Society of Medical Oncology (ESMO) and Chief of Oncology at Asklepios Klinik Altona

Anticipated Milestones

- Publish and present findings at leading U.S. and European oncology conferences including ASCO, ESMO and ASH
- Initiate combination study with Merck's Keytruda in multiple myeloma in mid-2019*
- Expect to report interim data from AWARE-1 study in the second half of 2019
- Prepare for registration study with pelareorep in mBC after AWARE-1

** Guidance provided by principal investigator*

Financial

- At March 31, 2019, the company reported $14.2 million in cash and cash equivalents
- As at May 2, 2019, the company had an unlimited number of authorized common shares with 20,298,482 common shares issued and outstanding, 16,443,500 warrants exercisable into 1,730,894 common shares with a $9.025 strike price and 1,567,510 options and share units
- Operating expense for the first quarter of 2019 was $1.8 million compared to $1.8 million in the first quarter 2018
- Research and development expense for the first quarter of 2019 was $3.2 million compared to $2.9 million in the first quarter 2018
- The net loss for the first quarter of 2019 was $4.9 million compared to $4.7 million in the first quarter 2018, which equates to a loss of $0.27 per share in 2019 compared to a net loss of $0.31 per share in 2018, on a consolidated basis

About Pelareorep

Pelareorep is a non-pathogenic, proprietary isolate of the unmodified reovirus: a first-in-class intravenously delivered immuno-oncolytic virus for the treatment of solid tumors and hematological malignancies. The compound induces selective tumor lysis and promotes an inflamed tumor phenotype through innate and adaptive immune responses to treat a variety of cancers and has been demonstrated to be able to escape neutralizing antibodies found in patients.

About Oncolytics Biotech Inc.

Oncolytics is a biotechnology company developing pelareorep, an intravenously delivered immuno-oncolytic virus. The compound induces selective tumor lysis and promotes an inflamed tumor phenotype - turning "cold" tumors "hot" - through innate and adaptive immune responses to treat a variety of cancers. Pelareorep has demonstrated synergies with immune checkpoint inhibitors and may also be synergistic with other approved immuno-oncology agents. Oncolytics is currently conducting and planning additional studies in combination with checkpoint inhibitors and targeted therapies in solid and hematological malignancies, as it prepares for a phase 3 registration study in metastatic breast cancer. For further information, please visit: www.oncolyticsbiotech.com.

This press release contains forward-looking statements, within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended and forward-looking information under applicable Canadian securities laws (such forward-looking statements and forward-looking information are collectively referred to herein as "forward-looking statements"). Forward-looking statements, including the Company's belief as to the potential and mode of action of REOLYSIN, also known as pelareorep, as a cancer therapeutic; and other statements related to anticipated developments in the Company's business and technologies 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 pelareorep as a cancer treatment, the success and timely completion of clinical studies and trials, the Company's ability to successfully commercialize pelareorep, uncertainties related to the research and development of pharmaceuticals, uncertainties related to the regulatory process and general changes to the economic environment. 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 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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