November 12, 2019

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

Highlights positive synergies in CDK 4/6 inhibitor combination, as most recent data catalyst

Management hosting conference call and webcast today at 5:00 pm ET

SAN DIEGO, CA and CALGARY, AB / ACCESSWIRE / November 12, 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 September 30, 2019. All dollar amounts are expressed in Canadian currency unless otherwise noted.

"We finished the third quarter with a little over twelve million dollars on the balance sheet and have since added to that balance with warrants exercised since the quarter's end" said Dr. Matt Coffey, President and CEO of Oncolytics Biotech. "The quarter was marked by continued clinical execution and additional clinical validation of our systemically delivered oncolytic virus, as we continued to advance two key clinical studies that will determine the design of the phase three program for pelareorep in metastatic breast cancer. First is the AWARE-1 study, which is enrolling patients and will report additional data before year end, and second is the BRACELET-1 study, which we are co-developing with Pfizer and Merck KGaA, and will begin enrolling in Q1 2020. Both studies are designed to evaluate pelareorep in combination with leading checkpoint inhibitors and confirm the clinical utility of our novel biomarker measuring T cell clonality to predict patient response to the combination regimen."

"In parallel, pelareorep continues to gain validation and recognition among the medical community," said Dr. Rita Laeufle, Chief Medical Officer at Oncolytics. "We announced that a meta-analysis of thirteen clinical studies of pelareorep was presented, providing definitive proof that our virus can selectively infiltrate, replicate within, and inflame a diverse range of solid and hematological tumors, including metastatic disease, following systemic delivery. This is a key differentiator for pelareorep and speaks to the breadth of commercial opportunities that may be available to Oncolytics beyond our lead indication of breast cancer. Other opportunities include additional synergies, such as the recent data from preclinical combinations with CDK 4/6 inhibitors that was presented at the International Oncolytics Virus Conference in October. The preliminary data suggests that pelareorep synergizes with CDK4/6 inhibitors by blocking cellular signaling pathways triggering a process called immunogenic cell death, resulting in another very effective way to make a cold tumor very hot. These are early results, but this drug class is important enough that these advancements can definitely play a role in our business development activities."

Select highlights since July 1, 2019

Clinical & Scientific Updates

- Announced preliminary AWARE-1 data demonstrating viral replication and promotion of inflammation following systemic administration of pelareorep when combined with Tecentriq®.
- Presented AWARE-1 data at the Society of Immunotherapy for Cancer (SITC) conference highlighting the replication of pelareorep exclusively in tumor tissue and an increase in inflammatory cells through the expansion of existing T cell clones, as well as the creation of new T cell clones. Data also demonstrated that pelareorep changes the immunogenetic environment within the tumor, and the results of this early stage breast cancer study support the use of T cell clonality as a biomarker and its potential value in predicting tumor response in BRACELET-1.
- Presented the results of a meta-analysis of 13 clinical studies of pelareorep during a podium presentation at the annual International Oncolytic Virus Conference (IOVC). The analyses examined the effectiveness of viral replication within the tumors of patients treated systemically with pelareorep and demonstrated that, unlike other oncolytic viruses that require intra-tumoral delivery, intravenous systemic delivery of pelareorep resulted in 81% of patient tumor samples across multiple types of cancer testing positive for virus replication, with no infection in normal tissue. These results are from studies across a broad range of solid and liquid tumors, including metastatic disease, and the average increases to 96% when melanoma skin biopsies are excluded.
- Provided an update on Adlai Nortye's clinical progress and approval by the National Medical Products Administration (NMPA) of China for initiating a phase 3 clinical trial for pelareorep. The proposed study, initially based on positive results from the randomized phase 2 metastatic breast cancer study IND-213, will be

finalized based on data from Oncolytics' AWARE-1 breast cancer study in combination with Roche's Tecentriq and BRACELET-1 metastatic breast cancer study in combination with Pfizer's and Merck KGaA's Bavencio®.
- Announced the publication of positive results from its previously announced phase 1b REO 024 study of pelareorep in combination with Merck's Keytruda® in the peer-reviewed medical journal *Clinical Cancer Research*, a journal of the American Association for Cancer Research. Academic collaborators presented preclinical data at IOVC on the synergies between pelareorep and CDK 4/6 inhibitors, suggesting pelareorep synergizes with CDK4/6 inhibitors by blocking cellular signaling pathways and releasing more double-stranded RNA into the tumor cell, triggering immunogenic cell death, resulting in another effective way to make a cold tumor very hot.

Corporate Updates

- Announced the appointment of Leonard Kruimer, MBA, CPA, to Oncolytics' Board of Directors.
- Announced that President and Chief Executive Officer, Matt Coffey, Ph.D., MBA, was presented with the Scientific Achievement and Innovation Award by BioAlberta, the province's life sciences industry association.
- Closed an underwritten public share offering of USD $3.7 million.

Near-term Anticipated Milestones

- Interim data from AWARE-1 breast cancer study - Q4 2019.
- Complete enrollment in AWARE-1 breast cancer study - Q1 2020.
- Initiate phase 2 study BRACELET-1 study in HR+ / HER2- mBC - Q1 2020.
- Final data from AWARE-1 breast cancer study - Q2 2020.

Financial

- At September 30, 2019, the company reported $12.3 million in cash and cash equivalents.
- As at November 8, 2019, the company had an unlimited number of authorized common shares with 26,357,724 common shares issued and outstanding, 16,443,500 warrants exercisable into 1,730,894 common shares with a $9.025 strike price, 3,567,989 warrants with a US$0.90 strike price, and 1,577,230 options and share units.
- Operating expense for the third quarter of 2019 was $1.8 million compared to $1.5 million in the third quarter 2018.
- Research and development expense for the third quarter of 2019 was $1.6 million compared to $1.9 million in the third quarter 2018.
- The net loss for the third quarter of 2019 was $3.5 million compared to $3.3 million in the third quarter 2018, which equates to a net loss of $0.16 per share in 2019 compared to a net loss of $0.20 per share in 2018.

Webcast and Conference Call

Management will host a conference call for Analysts and Institutional Investors at 5:00 pm ET, today, Tuesday, November 12, 2019. The live call may be accessed by dialing 844-407-9500 or callers in North America. Overseas callers should contact investor relations for the toll-free dial information for their country. A replay of this call will be available approximately two hours after the call is ended at (877)-481-4010, using the replay code 56787 and will be available for one week.

A live webcast of the call will be accessible on the Investor Relations page of Oncolytics' website at www.oncolyticsbiotech.com and will be archived for three months.

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 plans to co-develop pelareorep in combination with paclitaxel and atezolizumab and the anticipated sharing of costs associated therewith; the Company's AWARE-1 study and the anticipated design, enrollment and timing thereof; the Company's other development plans for pelareorep; the Company's belief as to the potential and mode of action of 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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