April 2, 2019

Oncolytics Biotech (R) Presents Positive Clinical Biomarker Data at the American Association for Cancer Research Annual Meeting 2019

- Clinical data highlight potential utility of T cell clonality as a predictive and prognostic biomarker of pelareorep therapy -

- Using pelareorep in advance of the checkpoint inhibitor Keytruda® safely primes the immune system to target cancer cells in pancreatic cancer patients -

CALGARY, AB and SAN DIEGO, CA / ACCESSWIRE / April 2, 2019/ Oncolytics Biotech® Inc. (NASDAQ: ONCY) (TSX: ONC), currently developing pelareorep, an intravenously delivered immuno-oncolytic virus, today announced a poster presentation at the American Association for Cancer Research (AACR) Annual Meeting 2019 which is taking place March 30 through April 3 in Atlanta, Georgia.

The poster, entitled, "*Exploratory analysis of T cell repertoire dynamics upon systemic treatment with the oncolytic virus pelareorep in combination with pembrolizumab and chemotherapy in patients with advanced pancreatic adenocarcinoma*," describes analysis of patient samples from REO 024; a study of pelareorep and Keytruda® in combination with chemotherapy in patients with advanced (second-line) pancreatic cancer.

"We are thrilled with the rates of disease control observed in this study evaluating pelareorep and Keytruda in combination with chemotherapy in patients with advanced second-line pancreatic cancer," said Dr. Matt Coffey, President and Chief Executive Officer of Oncolytics Biotech. "The data presented at AACR now demonstrate that the degree of T cell clonality, examined in patients from REO 024, has the potential to serve as a predictive and prognostic biomarker of pelareorep therapy. Providing physicians with a simple blood test to understand which patients are likely to respond to treatment is invaluable, allowing the medical community to target the right treatment to the right patient. We look forward to utilizing this new biomarker as we move forward with all of our current clinical programs with checkpoint inhibitors including trials for multiple myeloma, our ongoing phase 2 second-line pancreatic cancer study, and of course, our breast cancer program."

Dr. Rita Laeufle, Chief Medical Officer of Oncolytics Biotech, said, "These data provide additional insight into the underlying biology that drives the efficacy of pelareorep therapy when combined with a checkpoint inhibitor and chemotherapy. We see that treatment with pelareorep can educate or prime the immune system early on during treatment. This priming occurs after pelareorep but before Keytruda, highlighting the synergy of these agents given that checkpoint inhibitors need a primed immune system that recognizes cancer cells in

order to work. Importantly, the extent of early priming measured before the addition of Keytruda, is what most strongly correlates to overall survival. We believe these biological changes are intimately tied to pelareorep's mechanism of action and serve as a biomarker with utility across multiple cancer types."

Key data and conclusions:

- Patients treated with pelareorep in combination with chemotherapy and pembrolizumab showed changes in their T cell repertories with high turnover and significant expansion during treatment
- These post-treatment expanded T cell populations, are "new" clones not present at baseline, suggesting effective priming of the immune system
- Higher T cell clonality at baseline correlates with longer progression free survival (HR=0.05, p=0.01) and overall survival (HR=0.12, p=0.01) demonstrating the predictive value of the assay
- Enhanced T cell clonality after the first cycle of treatment correlates with improved overall survival (HR=0.08, p=0.01) and serves as an on-treatment prognostic biomarker
- Early expanded T cell clones, detected at day 8 of treatment (prior to pembrolizumab), most strongly correlate with survival time which suggests that early versus late clonal expansion may be elicited by pelareorep treatment
- T cell clonality has significant potential as a predictive and prognostic on-treatment biomarker to pelareorep therapy

The poster was authored by Dr. Grey Wilkinson, a translational scientist at Oncolytics Biotech, and his colleagues, in collaboration with Northwestern University, UT Health San Antonio and Adaptive Biotechnologies. The poster can be found on the Posters & Publications page of Oncolytics' website, https://www.oncolyticsbiotech.com/technology/posters-publications.

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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