March 10, 2021

Oncolytics Biotech® Announces Upcoming Presentations at the AACR Annual Meeting

SAN DIEGO and CALGARY, AB, March 10, 2021 /CNW/ -- Oncolytics Biotech® Inc. (NASDAQ: ONCY) (TSX: ONC) today announced that it will present updated clinical data from its AWARE-1 window-of-opportunity study in patients with early-stage breast cancer, as well as results from preclinical studies evaluating pelareorep-based combination therapies, in poster presentations during Week 1 of the American Association for Cancer Research (AACR) Annual Meeting 2021, taking place virtually from April 10-15, 2021.

Details on the posters and corresponding abstracts are shown below. All posters will be made available on the conference website on April 10, 2021.

Title: A window-of-opportunity study with atezolizumab and the oncolytic virus pelareorep in early breast cancer (AWARE-1)
Session Type: E-Poster Session
Session Category: Phase II Clinical Trials
Session Title: Phase II Clinical Trials
Abstract Number: CT191 (late-breaking abstract)

Oncolytics will provide details on the results described in this abstract following publication of the abstract and corresponding poster at the AACR Annual Meeting in April, in accordance with conference embargo policies regarding late-breaking abstracts.

Title: Mechanisms of therapeutic synergy between pattern recognition response agonists and cdk4 inhibitors
Session Type: E-Poster Session
Session Category: Molecular and Cellular Biology / Genetics
Session Title: Cell Cycle
Abstract Number: 1960

New preclinical studies identify the mechanisms of therapeutic synergy between pelareorep and the CDK4/6 inhibitor palbociclib. Data show that combining pelareorep with palbociclib augmented pelareorep-induced endoplasmic reticulum (ER) stress signaling and increased innate immune activation and effector function. These results suggest that this combination can be exploited to enhance anti-cancer efficacy with pro-immunogenic consequences and suggest that pelareorep may have the potential to broaden the therapeutic applicability of CDK4/6 inhibitors.

The full text of the corresponding abstract is available on the AACR Annual Meeting 2021 website (link).

Title: Talazoparib interacts with oncolytic reovirus to enhance death-inducing signaling complex (DISC)-mediated apoptosis and immune response
Session Type: E-Poster Session
Session Category: Molecular and Cellular Biology / Genetics
Session Title: Apoptosis
Abstract Number: 1932

New preclinical data show that combining pelareorep with talazoparib, a clinically approved poly(ADP)-ribose polymerase 1 (PARP-1) inhibitor, led to enhanced anti-tumor efficacy that correlated with an increased immune response in murine tumor models. These data provide a scientific rationale for combining pelareorep with PARP-1 inhibitors to exploit immunogenic responses in cancer treatment.

The full text of the corresponding abstract is available on the AACR Annual Meeting 2021 website (link).

About AWARE-1
AWARE-1 is an open label window-of-opportunity study in early-stage breast cancer enrolling 38 patients into five cohorts:

- Cohort 1 (n=10), HR+ / HER2- (pelareorep + letrozole)
- Cohort 2 (n=10), HR+ / HER2- (pelareorep + letrozole + atezolizumab)
- Cohort 3 (n=6), TNBC (pelareorep + atezolizumab)
- Cohort 4 (n=6), HR+ / HER2+ (pelareorep + trastuzumab + atezolizumab)
- Cohort 5 (n=6), HR- / HER2+ (pelareorep + trastuzumab + atezolizumab)

The study combines pelareorep, with or without atezolizumab, and the standard of care therapy according to breast cancer subtype. Patients are biopsied as part of their initial breast cancer evaluation, then again on day three following initial treatment, and a final tissue sample after three weeks, on the day of their mastectomy. Data generated from this study are intended to confirm that the virus is acting as a novel immunotherapy and to provide comprehensive biomarker data by breast cancer subtype. The primary endpoint of the study is overall CelTIL (a measurement of cellularity and tumor-infiltrating lymphocytes). Secondary endpoints for the study include CelTIL by breast cancer subtype, safety and tumor, and blood-based biomarkers.

For more information about the AWARE-1 study, refer to https://clinicaltrials.gov/ct2/show/NCT04102618.

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 of pelareorep 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 pelareorep as a cancer therapeutic; the timing and anticipated subject matter of the upcoming presentations of clinical and preclinical study data and the timing thereof; Oncolytics' plans and expectations as to the purpose, design, outcomes and benefits of its current or pending clinical trials involving pelareorep; 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. In particular, we may be impacted by business interruptions resulting from COVID-19 coronavirus, including operating, manufacturing supply chain, clinical trial and project development delays and disruptions, labour shortages, travel and shipping disruption and shutdowns (including as a result of government regulation and prevention measures). It is unknown whether and how the Company may be affected if the COVID-19 pandemic persists for an extended period of time. We may incur expenses or delays relating to such events outside of our control, which could have a material adverse impact on our business, operating results and financial condition. 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 any obligation to update these forward-looking statements, except as required by applicable laws.

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