April 8, 2022

Oncolytics Biotech® Announces Positive Long-Term Survival Data from Phase 1b Glioblastoma Multiforme Trial at the AACR Annual Meeting

- Results demonstrate meaningful and durable efficacy signal in a highly challenging indication

- A higher dose level of pelareorep led to 50% 24-month median overall survival (mOS) and a patient still alive at 42 months compared to 16.7% mOS at the lower dose

- Investigator-sponsored trial confirms pelareorep's favorable safety profile

SAN DIEGO and CALGARY, AB, April 8, 2022 /CNW/ -- Oncolytics Biotech® Inc. (NASDAQ: ONCY) (TSX: ONC) today announced positive long-term survival data from ReoGlio, an investigator-sponsored phase 1b trial evaluating the combination of pelareorep and granulocyte-macrophage colony-stimulating factor (GM-CSF) alongside standard chemoradiotherapy and adjuvant temozolomide for the treatment of glioblastoma multiforme (GBM). The results, which are the subject of a presentation at the American Association for Cancer Research (AACR) Annual Meeting, show a substantial and durable efficacy signal in newly diagnosed GBM patients and demonstrate the safety and tolerability of the studied treatment combination in this indication.

"These results provide further evidence suggesting that the long-term survival benefits pelareorep delivers to breast cancer patients may be extended to a variety of indications," said Susan Short, M.R.C.P., Ph.D., Professor of Clinical Oncology and Neuro-Oncology at the University of Leeds. "I am highly encouraged by the two-year survival rate and median overall survival observed in ReoGlio and view the relative increases these metrics show in the high dose cohort as a promising sign of this therapy combination's dose-dependent activity in GBM. ReoGlio's long-term results are also consistent with the positive progression-free survival data that were previously reported and confirm pelareorep's

favorable safety profile in this new indication. Collectively, these findings highlight pelareorep's potential to drive clinical benefit in GBM patients, who are historically very challenging to treat and in urgent need of novel therapies."

Key data and conclusions from the AACR poster and corresponding abstract include:

- Evaluable patients treated with pelareorep at dose level-2 ($3x10^{10}$ $TCID_{50}$) had a median overall survival (mOS) of 16.1 months and a 24-month survival rate of 50% (n=6)
- Evaluable patients treated with pelareorep at dose level-1 ($1x10^{10}$ $TCID_{50}$) had a mOS of 12.6 months and a 24-month survival rate of 16.7% (n=6)
- Across both dose levels, mOS was 13.1 months and the 24-month survival rate was 33% (n=12)
- One patient treated at dose level-2 remains alive at 42 months
- The studied treatment combination was deemed safe and well-tolerated at both dose levels by a Safety Review Committee that included two independent physicians

The long-term follow-up data from the ReoGlio study being presented at AACR are an extension of prior data that were featured in a podium presentation at the 2020 Society of Neuro-Oncology Annual Meeting (link to PR). These data demonstrated an estimated median progression-free survival (mPFS) of 7.8 months across all evaluable patients in the study (n=12), with those treated at dose level-2 showing an estimated mPFS of 9.4 months (n=6) and those treated at dose level-1 showing an estimated mPFS of 6.1 months (n=6).

Matt Coffey, Ph.D., MBA, President and Chief Executive Officer of Oncolytics Biotech Inc. added, "ReoGlio's results strengthen the broad clinical dataset demonstrating pelareorep's potential to address unmet needs across a range of cancers. We believe they warrant additional clinical study, and plan to discuss them with thought leaders and potential partners to identify the best and most efficient potential path forward in GBM. This strategy will allow us to opportunistically expand pelareorep's commercial potential while staying focused on the advancement of our lead breast cancer program to a registrational study. We would like to sincerely thank the University of Leeds, Cancer Research UK, and The Brain Tumor Charity for designing and funding the ReoGlio trial, as well as all of the patients who participated."

An electronic copy of the presentation and the corresponding abstract, entitled,*Combination of reovirus (pelareorep) and granulocyte-macrophage colony-stimulating factor (GM-CSF) alongside standard chemoradiotherapy and adjuvant chemotherapy (temozolomide) for patients with glioblastoma multiforme (GBM): long term follow up results of the ReoGlio phase Ib trial,* is available to registered attendees of the AACR annual meeting on the meeting website. A copy of the presentation will also be posted to the *Posters & Publications* page of Oncolytics' website (LINK) following the conclusion of the meeting.

Details for the online presentation are shown below.

Abstract Number: CT569

Session Title: OPO.CT01.01 - Phase I Clinical Trials

About ReoGlio

The ReoGlio trial was an investigator-sponsored phase 1b, open-label trial evaluating the combination of pelareorep and GM-CSF, alongside standard chemoradiotherapy and adjuvant temozolomide, for the treatment of newly diagnosed GBM. Fifteen patients were treated in the trial, twelve of which were evaluable for efficacy analyses. The primary objective of the study was to determine the maximum tolerated dose of pelareorep and GM-CSF with standard chemoradiotherapy. Secondary objectives were to gain a preliminary assessment of the activity of the pelareorep-GM-CSF combination and to assess treatment compliance. The trial was designed and managed by the University of Leeds and funded through grants provided by Cancer Research UK and The Brain Tumor Charity.

About Oncolytics Biotech Inc.

Oncolytics is a biotechnology company developing pelareorep, an intravenously delivered immunotherapeutic agent. This compound induces anti-cancer immune responses 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 oncology treatments. Oncolytics is currently conducting and planning clinical trials evaluating pelareorep in combination with checkpoint inhibitors and targeted therapies in solid and hematological malignancies as it advances towards a 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 contained in this press release include statements regarding Oncolytics' belief as to the potential and benefits of pelareorep as a cancer therapeutic; Oncolytics' expectations as to the purpose, design, outcomes and benefits of its current or pending clinical trials involving pelareorep; the timing and results of the presentation to be made at the American Association for Cancer Research Annual Meeting; our plans to discuss the results of the ReoGlio study with thought leaders and potential partners to identify the best and most efficient potential path forward in GBM and the anticipated results of this strategy; our plans to advance towards a registration study in metastatic breast cancer; and other statements related to anticipated developments in Oncolytics' business and technologies. In any forward-looking statement in which Oncolytics expresses an expectation or belief as to future results, such expectations or beliefs are expressed in good faith and are believed to have a reasonable basis, but there can be no assurance that the statement or expectation or belief will be achieved. Such forward-looking statements involve known and unknown risks and uncertainties, which could cause Oncolytics' 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, Oncolytics' 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 Oncolytics 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 Oncolytics' 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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