May 29, 2020

Oncolytics Biotech® Presents Clinical Proof-of-Concept Data in Multiple Myeloma at the ASCO Virtual Annual Meeting

- Combination therapy with pelareorep activates a profound inflammatory response

- 50% Overall Response Rate and 83% Clinical Benefit Rate in patients who failed carfilzomib

- T cell activation resulting in the 1st report of cytokine storm associated with tumor response in multiple myeloma

SAN DIEGO and CALGARY, Alberta, May 29, 2020 /PRNewswire/ -- Oncolytics Biotech® Inc. (NASDAQ: ONCY) (TSX: ONC), currently developing pelareorep, an intravenously delivered immuno-oncolytic virus, today announced the publication of an electronic-poster (ePoster) with clinical proof-of-concept data from the Company's phase 1b study in carfilzomib-refractory multiple myeloma patients treated with pelareorep in combination with carfilzomib (Kyprolis®). Data presented in the ePoster demonstrates that the pelareorep-carfilzomib combination treatment results in selective replication of pelareorep in cancer cells and beneficial induction of an inflamed tumor environment associated with clinical responses. The ePoster was published this morning and will be presented this weekend as part of the American Society of Clinical Oncology (ASCO) Virtual Annual Meeting.

"We are excited by the data showing an association between clinical and anti-tumor inflammatory response induced with pelareorep-carfilzomib treatment in this extremely difficult to treat patient population," said Dr. Douglas W. Sborov, MD, co-author. "The induction of cytokine release syndrome, which can be effectively monitored and managed via treatment with tocilizumab and steroids, is particularly interesting as it highlights the ability of the treatment to induce robust immune cell activation and tumor lysis. Taken together with earlier results from this study demonstrating pelareorep-induced upregulation of PD-L1 expression, the current data strongly support the potential of the ongoing trial investigating pelareorep, carfilzomib, and immune checkpoint inhibitor combination. This ongoing study could ultimately result in the development of a new treatment option for this high-need indication."

The ePoster, *Oncolytic virus Pelareorep [P] plus Carfilzomib & Dexamethasone [Kd] phase 1 trial in Carfilzomib-refractory patients (NCI9603): responses with cytokine storm* was co-authored by Dr. Douglas W. Sborov MD, MS, Assistant Professor, Division of Hematology

and Hematologic Malignancies, University of Utah – Huntsman Cancer Institute, and Craig Hofmeister, M.D., MPH, Associate Professor, Department of Hematology and Medical Oncology Emory University School of Medicine, as well as several other colleagues at institutions across the United States. Key data and conclusions from six patients in the study are presented in the ePoster and include:

- Pelareorep targets and selectively replicates in multiple myeloma tumor cells
- Pelareorep, when combined with carfilzomib, activates a profound inflammatory response accompanied by a 50% ORR (overall response rate) and 83% CBR (clinical benefit rate)
- Three partial responses (PRs), one minimal response (MR), one stable disease (SD), and one progressive disease (PD) were achieved among patients with advanced and difficult-to-treat carfilzomib-refractory disease
- Significant and rapid T cell activation led to a single incidence of cytokine storm associated with tumor response after treatment with pelareorep and carfilzomib

"The exciting clinical proof-of-concept data demonstrate that pelareorep induces an inflammatory response in multiple myeloma, which is an unusual lymphoid tumor with immunosuppressive properties," said Dr. Rita Laeufle, Chief Medical Officer of Oncolytics Biotech. "The study examines the relationship between pelareorep-induced tumor inflammation and response to treatment. These findings reveal that induction of inflammation within the multiple myeloma tumor microenvironment may augment the effectiveness of checkpoint inhibitors, which to date have had little success against multiple myeloma."

The ePoster was presented as part of the Hematologic Malignancies-Plasma Cell Dyscrasia session at the ASCO Virtual Annual Meeting. A copy of the ePoster can be found on the *Posters & Publications* page of the company's 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 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. 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 to update these forward-looking statements, except as required by applicable laws.

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View original content:http://www.prnewswire.com/news-releases/oncolytics-biotech-presents-clinical-proof-of-concept-data-in-multiple-myeloma-at-the-asco-virtual-annual-meeting-301067554.html

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