

December 9, 2019



Oncolytics Biotech(R) Announces Positive Multiple Myeloma Data Presented at the 61st Annual Meeting & Exposition of the American Society of Hematology

Pre-clinical and clinical data demonstrate synergies between pelareorep and the proteasome inhibitor carfilzomib through inflammation, apoptosis and tumor responses

Data provides scientific rationale supporting the ongoing phase 1b trial in multiple myeloma patients

SAN DIEGO, CA and CALGARY, AB / ACCESSWIRE / December 9, 2019 Oncolytics Biotech[®] Inc. (NASDAQ:ONCY)(TSX:ONC), currently developing pelareorep, an intravenously delivered immuno-oncolytic virus, today announced that a poster presentation was given over the weekend highlighting pre-clinical and clinical results of combining pelareorep with the proteasome inhibitor carfilzomib in the treatment of multiple myeloma. The presentation was given on Saturday, December 7 as part of the 2019 American Society of Hematology Annual Meeting & Exhibition.

The poster, titled, "Carfilzomib Impairs the Innate Antiviral Immune Response and promotes cytotoxic T-cell Expansion in Oncolytic Virus Treated Multiple Myeloma Patients" describes synergies between proteasome inhibitors and pelareorep concerning immune cell changes and response in myeloma patients.

"These findings demonstrate that pelareorep, in combination with carfilzomib, infects multiple myeloma cells, thereby providing a strong scientific rationale regarding immune cell changes," said Dr. Rita Laeufle, Chief Medical Officer at Oncolytics Biotech. "The combination of carfilzomib and pelareorep promotes expansion of killer T cells in patients on an ongoing phase 1b study and how it may lead to tumor response when pelareorep is combined with proteasome inhibitors. We are confident that pelareorep could add significant clinical value to the treatment of multiple myeloma patients with the combination of these agents. Our first data in patients from an ongoing study has been very encouraging and further data will be presented at subsequent clinical conferences."

Key data and conclusions:

- Demonstrated that pelareorep treatment selectively infected multiple myeloma cells and not normal bone marrow cells
- Carfilzomib enhances reovirus entry, infection, and killing of multiple myeloma cells
- Reovirus significantly increases the frequency and activation of certain killer T cells,

and increases the anti-tumor activity of immune cells in multiple myeloma

- Data supports that the combination of pelareorep, and carfilzomib potentiates the expansion of CD8+ killer T cells

The poster presentation was authored by Dr. Flavia Pichiorri, Associate Professor in the Judy and Bernard Briskin Center for Multiple Myeloma Research within the Hematologic Malignancies and Stem Cell Transplantation Institute at the City of Hope, et al. The poster can be found on the Posters & Publications page of Oncolytics' website, <https://www.oncolyticsbiotech.com/technology/posters-publications>.

Title: Carfilzomib Impairs the Innate Antiviral Immune Response and promotes cytotoxic T-cell Expansion in Oncolytic Virus Treated Multiple Myeloma Patients

Number: 1816

Presenter: Dr. Flavia Pichiorri

Program: Oral and Poster Abstracts

Session: 652. Myeloma: Pathophysiology and Pre-Clinical Studies, excluding Therapy: Poster I

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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