Dear Fellow Shareholders,

The first half of 2019 has been very busy at Oncolytics, culminating with our Pfizer/Merck KGaA breast cancer clinical trial collaboration announcement. We have always been confident that we would gain the support of large pharma because we have the only viral agent to show a survival benefit in late-stage metastatic breast cancer. As such, we were excited to sign an agreement with Pfizer/Merck KGaA to develop pelareorep with their jointly owned PD-L1 checkpoint inhibitor, Bavencio®, in the metastatic breast cancer setting via our "BRACELET-1" trial. Specifically, we will be treating second line, HR+/HER2- metastatic breast cancer patients, which is our target patient population for our planned phase 3.

With this agreement and our other accomplishments so far in 2019, we continue to advance towards our objective of obtaining regulatory approval for pelareorep as quickly as possible. We also intend to further expand into additional, commercially valuable new treatment areas, including other co-therapies with the checkpoint inhibitor class of drugs.

Our Lead Indication - Breast Cancer

We chose breast cancer as our lead indication for two reasons: the unmet need and the sheer size of the opportunity. Breast cancer is the largest cancer in terms of new U.S. cases with 268,600 women estimated to be diagnosed in 2019[1]. Over 100,000 women are living with HR+/HER2- metastatic breast cancer with choices offering no more than an additional 10 weeks of overall survival[2]. Ibrance®, which offers only a progression-free survival benefit, generated 2018 U.S. sales of $3 billion based on treating approximately 20,000 patients[3].

We commenced enrollment in our AWARE-1 study with SOLTI, a Spanish breast cancer cooperative group, a window of opportunity study that includes Roche's Tecentriq®. The endpoints for this study are focused on providing biomarker and inflammation data for the three sub-types of breast cancer. The advantage is the collection of primary tumor tissue after just three weeks, prior to each patients' mastectomy, making the study very quick. We expect to provide interim data later this year to confirm that our biomarker works in breast cancer.

While the data from AWARE-1 provides information on breast cancer tumor tissue responses, BRACELET-1 is focused on our lead indication of metastatic breast cancer and will provide biomarker data in addition to early efficacy signals. We are confident the combination of data from AWARE-1 and BRACELET-1 will allow us to optimize our phase 3 breast cancer program and to move quickly towards registration.

Co-Development with Pfizer/Merck KGaA

The co-development opportunity with Pfizer and Merck KGaA is a statement to the value of pelareorep and our underlying science. Pfizer/Merck KGaA performed an extensive due diligence process before entering into the agreement, including months of presentations to various working groups, active review and query of our data room, extensive negotiations, and financial approval. We have now successfully put our product squarely on a path towards approval in our lead indication with partners that are interested in the original pelareorep combination with chemotherapy (where we doubled median overall survival) and in a triple combination that includes a checkpoint inhibitor.

Our Biomarker & KOL Event

In April, we announced significant scientific progress related to our biomarker science. At this year's American Association for Cancer Research annual meeting, we presented an abstract that identified, for the first time, a biomarker that has the potential to predict which patients are likely to respond to

pelareorep even before we begin treatment, and to confirm the response as quickly as three weeks post-treatment. Our biomarker is derived from a simple blood draw and is a measurement of a patient's T cell repertoire and the change in T cells over the course of treatment.

We followed our AACR abstract with a Key Opinion Leader event that highlighted the biomarker's clinical and business impact. The clinical development impact is significant, as the biomarker will allow us to better select patients for our clinical trials and to stratify the treatment populations within each protocol based on the biomarker outcome resulting in more cost-efficient and faster-enrolling trials with a greater likelihood of success. We also experienced a positive impact on business development, including the signing of our co-development agreement with Pfizer/Merck KGaA.

The Checkpoint Opportunity

Cancers grow in our bodies because our immune systems do not recognize these tumors as foreign or as a threat. Cancers accomplish this by applying the brakes to our immune systems, notably T cells, through receptors called checkpoints. Immunotherapies, including checkpoint inhibitors, help our immune systems to recognize and kill cancer. So instead of attacking the tumor directly, checkpoint inhibitors work to prevent tumors from suppressing our immune systems. For some patients, the effects are profound, and as a result, ***this drug class is expected to account for $25 billion in revenue in 2022***[4]. Despite this promise, ***only about 1 in 5 patients will respond to checkpoint blockade***[5]. Patients who fail to respond either have insufficient T cell populations to target their tumors, have tumors that do not express checkpoints like PD-L1, or have tumors with no inflammatory cells. What we have been able to demonstrate in patients and animal models is that pelareorep can address all of these shortcomings by *priming the immune system*. Through its selective replication, pelareorep creates a new army of tumor-reactive T cells, causes these cells to infiltrate the tumor through an inflammatory process, and promotes the overexpression of PD-L1 and other checkpoints. By priming the immune system before checkpoint blockade, we believe we can dramatically increase the percentage of patients who can respond to checkpoint inhibitors and open up new indications where checkpoint blockade was believed to be ineffective. The opportunity here is vast and underlines the importance of our collaborations with Merck, Bristol-Myers Squibb, and Roche beyond the metastatic breast cancer opportunity.

Looking Forward

With studies reading out data in real-time, Merck, Bristol-Myers Squibb, Roche, and soon both Pfizer and Merck KGaA, will begin to see biomarker data and response rates. With our robust clinical program, we believe Oncolytics can address the unmet clinical needs not only in metastatic breast cancer, but as a potent backbone for checkpoint inhibitors across the entire drug class. We believe our strategy of collaboration will be the foundation for the development and marketing partnerships for our ongoing success. We expect a very exciting path to our phase 3 registration study in metastatic breast cancer and look forward to continued clinical and business development progress.

Sincerely,

Matt Coffey, President & CEO
Oncolytics Biotech, Inc.

1 American Cancer Society: Cancer Facts and Figures https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2019/cancer-facts-and-figures-2019.pdf
2 Bavencio Package Insert https://www.halaven.com/-/media/Files/Halaven/HALAVEN-Full-Prescribing-Information.pdf
3 Evaluate Pharma: Breast cancer indication report, page 61.
4 RESEARCH AND MARKETS: https://www.researchandmarkets.com/research/sf2ds7/global_25?w=12
5 National Cancer Institute: https://www.cancer.gov/news-events/cancer-currents-blog/2015/gulley-checkpoint