Oncolytics Message to Shareholders – Q1 2017

In the first quarter we continued to make solid progress revamping and articulating our clinical development plan for REOLYSIN®. At quarter end, we announced our most compelling clinical data to date, which subsequently enabled us to clarify a registration path for REOLYSIN.

Compelling Overall Survival Data in Metastatic Breast Cancer

In late March, we announced details of an abstract submitted for the American Association of Cancer Research (AACR) Annual Meeting that outlined positive overall survival (OS) data from an open-label, randomized, Phase 2 study (IND 213) designed by the Canadian Cancer Trials Group (CCTG, formerly known as the National Cancer Institute of Canada - NCIC). The 74-patient study, powered to 90 percent, assessed the therapeutic combination of intravenously-administered REOLYSIN given in combination with paclitaxel versus paclitaxel alone in patients with advanced or metastatic breast cancer. In the intention-to-treat (ITT) patient population there was an improvement in median OS (a secondary endpoint) from 10.4 months on the control arm to 17.4 months on the test arm, meeting the pre-specified significance level for the 90 percent powered study.

These data were important for several reasons:

- This was the first time that an immuno-oncology viral-agent had demonstrated a statistically significant improvement in median OS in a randomized clinical study;
- REOLYSIN continues to generate significant benefit in OS for cancer patients, despite limited impact on response rates and/or PFS, suggesting our proprietary isolate of the unmodified reovirus is not solely an oncolytic agent, but has key attributes of an immuno-oncology agent as well;
- Demonstrated that patients with measurable biomarkers including wild type PIK3CA, KIT, APC, PTEN, ATM, AKT1, and mutated TP53 could have significantly better OS results . These biomarkers may allow us to create much more targeted treatment approach and improve clinical trial design.
- Oncolytics has now received its most meaningful confirmation to date of REOLYSIN's potential and, after consulting with key opinion leaders, that this is the right indication to advance down the registration pathway and would support a rapid route to market in an important therapeutic area.

Next Steps with Chemotherapy Combinations

Our emerging clinical development plan has two main objectives: 1) rapidly securing regulatory approval for REOLYSIN with an initial focus on metastatic breast cancer; and 2) expanding REOLYSIN into commercially valuable new treatment areas that include immunotherapy and immunomodulatory (IMiD) agents in collaboration with pharmaceutical partners.

Chemotherapy combinations have been the primary clinical focus of the Company over the last few years. With the OS data we have generated in combination with paclitaxel in metastatic breast cancer, in the near term, we intend to request an End-of-Phase 2 meeting with the FDA with the goal of obtaining some scientific advice with respect to next steps. The FDA also offers a number of programs aimed at expediting the development of drugs that treat life threatening conditions and that meet an unmet medical need. We intend to examine opportunities to access one of these programs with the goal of expediting the future development of REOLYSIN as a treatment for metastatic breast cancer. Based on the data we have,

we'll look at conducting a registration study in patients with metastatic disease and use OS as a primary or co-primary endpoint. We'll also look at study designs that will allow us to enroll a sufficient number of patients to reach the primary endpoint while also carefully managing the overall cost of the study.

While we intend to focus our internal resources on metastatic breast cancer, we will continue to be mindful of other opportunities in cancer indications that we have either compelling or maturing clinical data. Our pancreatic cancer clinical data has shown strong two and three-year survival data and our colorectal data is maturing, and the interim data presented in 2016 showed a possible survival benefit for the women patients. Our focus will be on metastatic breast cancer, but we will be prepared to grow our pipeline of registration opportunities once our metastatic breast cancer program is underway.

Broadening the Clinical Development Plan

In parallel with chemotherapy combinations and based on REOLYSIN's ability to be a potentiator for all agents affecting both innate and adaptive immunity by making cold tumors hot, we have identified two other paths consistent with our second objective of our clinical development plan. During the first quarter, we announced that as part of an ongoing collaboration, cancer charity Myeloma UK had launched MUK *eleven*, a first-of-its-kind immunotherapy trial that aims to modulate the immune system to target myeloma. The Phase 1b trial will study immuno-viral therapy, REOLYSIN in combination with Celgene Corporation's immunomodulatory drugs (IMiDs), Imnovid® (pomalidomide) or Revlimid® (lenalidomide), as a rescue treatment in relapsing myeloma patients. This clinical study expands on earlier pre-clinical work that demonstrates that REOLYSIN has dual modes of action against multiple myeloma; being both directly cytotoxic and also activating immune effector cells to target and destroy cancer cells. Further, this immune-mediated activity can be enhanced by immunomodulatory agents to eliminate disease.

In early 2016, we announced we had enrolled the first patients in REO 024, a Phase 1b study of pembrolizumab (KEYTRUDA®) in combination with REOLYSIN and chemotherapy in patients with advanced pancreatic adenocarcinoma. Our goal for this study was to assess REOLYSIN in combination with a checkpoint inhibitor, an emerging class of therapeutic that facilitates improved recognition of cancer cells by the immune system. We expect to see the preliminary data from this study later in 2017.

Driving Progress

We made significant progress during the first quarter and in the period immediately following quarter-end. We believe strongly that REOLYSIN's emerging potential in metastatic breast cancer must be the driving force of Oncolytics and could prove to be a very important development for women's health and the treatment of late stage cancers. We also continue to focus on research collaborations with our pharma colleagues as a source of commercial opportunity to advance REOLYSIN's development, possibly across an array of indications. In the near-term we anticipate meeting with regulators and further defining our registration pathway in metastatic breast cancer. I look forward to updating all stakeholders on our progress in the months ahead.

[signed]
Dr. Matt Coffey
President and CEO