Oncolytics Letter to Stakeholders – Q3 2017

Just prior to the third quarter, we completed an $11.5 million public offering that meaningfully extended our cash runway and allowed us to focus our efforts on our next major milestone: a phase 3 registration study of REOLYSIN® in metastatic breast cancer (mBC). Compelling data from our randomized phase 2 mBC study and a favorable End-of-Phase 2 meeting with the United States Food and Drug Administration (FDA) were additional key developments driving value at Oncolytics. As well, we treated the first patient in our Phase 1b multiple myeloma clinical collaboration with Celgene (the MUK eleven trial), which will study REOLYSIN in combination with their immunomodulatory drugs (IMiDs) Revlimid® and Imnovid®. In addition to these positive developments, we made progress on initiatives at the corporate level that will support our clinical plans going forward.

Clinical Developments

REOLYSIN Nearly Doubles Overall Survival in Hormone Receptor Positive Patients & Maintains Strong Safety Profile

At the 2017 European Society for Medical Oncology Congress (ESMO), we presented additional statistically significant and clinically meaningful data from our IND 213 randomized phase 2 mBC study with the Canadian Cancer Trials Group (CCTG). As we previously reported, the intention to treat patient population saw a statistically significant seven-month improvement in medium overall survival (OS) despite no change in progression free survival. Subsequent analysis showed an additional benefit in patients with hormone receptor positive HER2 negative disease. Patients with estrogen receptor positive (with or without progesterone receptor) HER2 negative disease , receiving REOLYSIN and paclitaxel nearly doubled median OS from 10.8 months to 21.0 months when compared to patients receiving paclitaxel alone. Furthermore, as presented in the ESMO poster, patients with both estrogen and progesterone receptor positive HER2 negative disease ((ER+/PR+) / HER2-) in the test arm more than doubled median OS from 10.8 months on the control arm (paclitaxel alone) to 21.8 months. In addition to substantiating our proposed phase 3 study target population, these data represent an opportunity to address a significant unmet need, as patients with HR+/HER2- mBC represent over 70 percent of mBC cases. We envision REOLYSIN playing a key role in the treatment of these patients who have not responded to first- and second-line treatment. For these patients, where few treatments exist and/or are in development, REOLYSIN could provide a new treatment option with a significant OS benefit to a large unserved market.

At ESMO we also presented results of our pooled safety and tolerability analysis of REOLYSIN in combination with chemotherapy in more than 500 cancer patients. The analysis demonstrated that REOLYSIN continues to be safe and well tolerated and is the largest immuno-oncolytic virus (IOV) safety database reported to-date.

Favorable End-of-Phase 2 Meeting with the FDA REOLYSIN in mBC

Our recent End-of-Phase 2 meeting with the FDA provided clear guidance on the design of our planned phase 3 registration study of REOLYSIN in mBC. In addition to supporting our proposed target patient population of HR+/HER2- mBC patients, the FDA provided guidance that OS should be the primary

endpoint in a 400-patient study that, if successful, will be the only study required for a Biologics License Application (BLA) submission to the FDA which will allow us to commercialize and sell REOLYSIN upon an eventual approval. We expect the study will begin enrolling mid-2018 and will include a pre-determined interim analysis.

We look forward to providing details of the pivotal phase 3 registration study following discussions with clinical advisors, European regulators (EMA) and potential partners. We are currently working to finalize the adaptive study design and expect to announce feedback from the EMA, details of the study design and the outcome of our registration study filings (breakthrough designation and special protocol assessment) over the course of the next few months.

First Patient Treated in MUK eleven Study

During the third quarter, we treated the first patient in our Phase 1b MUK *eleven* trial, which will study REOLYSIN in combination with Celgene's Revlimid and Imnovid to treat relapsing myeloma patients. Revlimid had sales of close to $6 billion in 2015 and is expected to sell close to $14 billion in 2022. Its an early stage study, but if REOLYSIN can extend the use of Revlimid in myeloma patients, it could be extremely meaningful for this franchise. This is our first study examining the innate immunity component of REOLYSIN's mechanism of action, and part of our broader strategy to assess the safety and efficacy of REOLYSIN in combination with IMiDs and other targeted therapies.

Corporate Developments

Strengthening our Leadership Team, Developing a Scientific Advisory Board (SAB)

As we progress towards our mBC registration program, we continue to build a world-class leadership team. We welcomed Andrew de Guttadauro to lead our global partnering and business development efforts as President of our U.S. subsidiary. Mr. de Guttaduaro will lead the Company's pursuit of both global and regional licensing, partnership and commercialization opportunities for REOLYSIN. We are focused on collaborations to study combinations of REOLYSIN and checkpoint inhibitors and on securing one or more partners to support our phase 3 registration study in mBC that we plan to initiate next year. Mr. de Guttaduaro brings more than 25 years of biopharmaceutical business development and commercialization experience that will be invaluable as we pursue research collaboration and commercialization partnerships. Subsequent to the quarter's end, we also added Deborah Brown as a member of our board of directors. Ms. Brown brings tremendous experience in product launches and market expansion and will be a very valuable member of our team as we drive towards eventual commercialization.

We intend to build an SAB that will provide the significant experience and expertise required for our phase 3 study. This team will also provide guidance as we advance our clinical development plan into additional collaborations and we look forward to formally introducing the inaugural members later this year.

Initiated the NASDAQ Relisting Process

Our finance and investor relations team have carried out significant due diligence around not just the relisting process and mechanics, but the potential value gained by relisting on NASDAQ and the potential unrealized value and hurdles of not having a NASDAQ listing. The results speak for themselves and simply stated, there seems to be a disconnect between the value of comparable biotech companies listed on the NASDAQ versus those without a listing. Given that Oncolytics is rapidly advancing to a registration study and its most significant milestones to date, we have defined the pathway to relisting our shares on the NASDAQ to increase access to U.S. based investors and U.S. capital markets along with increasing our profile globally. Our goal is to relist on NASDAQ in 2018.

Looking Ahead

We made meaningful and significant clinical and corporate progress during the third quarter of 2017. The remainder of 2017 will see our team focusing on the completion of regulatory filings, continued business development activities and clinical advancements in preparation for the registration study. I look forward to providing updates on all of these initiatives in 2018, which we expect to be a very exciting year for Oncolytics and all of its stakeholders.

/s/ Dr. Matt Coffey
President and CEO