Oncolytics Biotech® Inc. 2016 Message to Shareholders

Shortly after being appointed to the role of President and CEO of Oncolytics, I wrote a note to all stakeholders in which we committed to a comprehensive review and overhaul of our clinical development plan for REOLYSIN®. We further committed that, out of this review, we would articulate a clear and measureable clinical plan that contemplates a specific path to registration, and that we would work to do so rapidly. I am pleased to say that just a few short months later, we have made substantial progress and are successfully delivering on these commitments.

Strengthening the Team

A key contributor to our success over the last few months has been Dr. Andres Gutierrez, who was appointed to the role of Chief Medical Officer in November. He brings a broad range of immuno-oncology expertise to our team and has extensive experience in the design and implementation of clinical programs, including registration studies. He also has a long track record of interacting with regulatory bodies globally and establishing strong relationships with key opinion leaders. As part of our ongoing review, we have supplemented this internal expertise with that of independent third-party clinical, regulatory and statistics experts. We have worked together to analyze our growing library of randomized clinical data, which has helped form our evolving understanding of REOLYSIN's mechanism of action.

Building a Novel Immuno-Oncology Therapy

Based on much of the data received in the last 12 to 18 months, we now believe that REOLYSIN behaves like many other immuno-oncology agents, where patients may derive little or no benefit in terms of progression-free survival (PFS) or response rate (RR), but see a meaningful improvement in overall survival (OS). We further believe that REOLYSIN has multiple mechanisms of action that can be enhanced depending on the combination of therapies. Much of our focus through REOLYSIN's development has been on combinations with chemotherapy, which enhances the lysis, or destruction, of cancer cells and now appears to support a survival benefit. What we have also seen more recently is that REOLYSIN may support further stimulation of innate and adaptive immune responses.

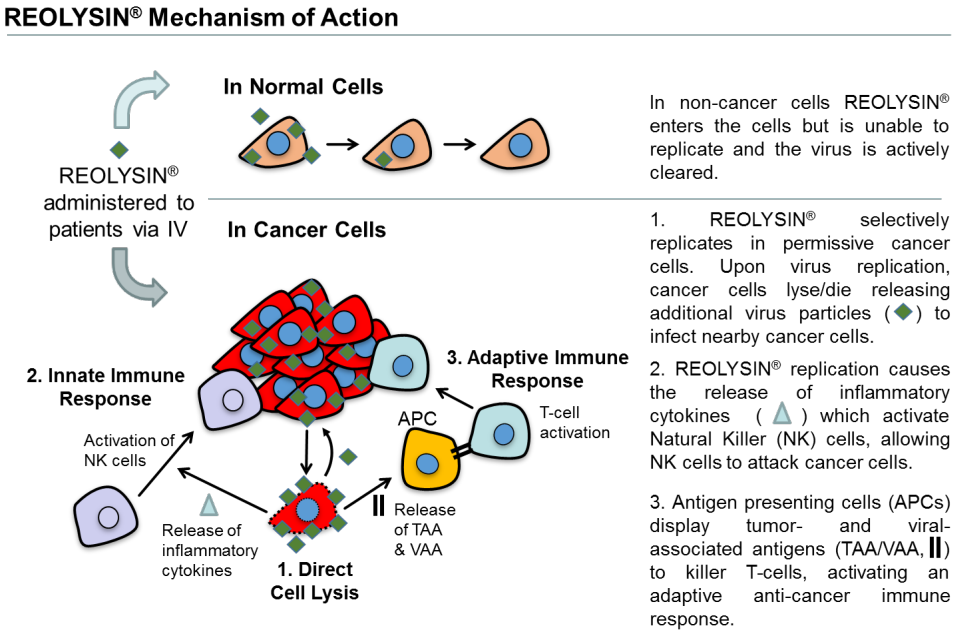
Growing Library of Randomized Clinical Data

In 2016, we reported data from a series of sponsored randomized studies that supported our thinking around REOLYSIN's mechanism of action. While these were initially designed by the sponsors several years ago, and all used PFS as the primary endpoint, they served to provide us with valuable data. In a U.S. based National Cancer Institute (NCI) randomized Phase 2 study of patients with pancreatic cancer (NCI-8601), we saw a higher percentage of patients surviving two years in the test arm versus the control arm. Patients that started in the control arm and crossed-over to the test arm also enjoyed enhanced survival benefit. In a randomized Phase 2 study sponsored by the Canadian Cancer Trials Group (CCTG, formerly the National Cancer Institute of Canada Clinical Trials Group) in advanced or metastatic colorectal cancer (IND 210), we also saw a trend to improvement in OS for female patients in the test arm versus the control arm based on an interim analysis.

Very recently, we announced that an abstract submitted to the American Association of Cancer Research Annual Meeting by CCTG covering results from IND 213, an open-label, randomized, non-blinded Phase 2 study to assess the therapeutic combination of intravenously-administered REOLYSIN given in combination with paclitaxel versus paclitaxel alone in patients with advanced or metastatic breast cancer had been accepted. Data will be presented at the AACR annual meeting in early April and we should also see other sponsored, randomized Phase 2 studies, managed by CCTG and the NCI, read out additional OS data in 2017.

Clinical Development Plan

Our clinical development plan is based on our growing library of clinical data and our understanding of how REOLYSIN acts as an immuno-oncology viral agent. The plan is made up of three paths, with each clearly based on a target element of REOLYSIN's mechanism of action: direct tumour lysis; innate immune response; and adaptive immune response. These mechanisms, working in concert, result in the lysis of cells and the release of chemical signals that attract immune cells to the tumour and may create an inflamed tumor phenotype. The result is the long-term education of the patient's immune system to identify and attack cancer cells.



Path #1 – Direct Tumour Lysis

Our first clinical development path focuses on direct tumour lysis and is based on the clinical data from our randomized chemotherapy combination trials. We have demonstrated a strong trend showing a two-year survival benefit in patients with pancreatic cancer in two clinical studies and are planning to take advantage of this survival data and existing orphan drug designations to seek regulatory advice in the U.S. and Europe to establish a clear path to registration in pancreatic cancer.

Path #2 – Innate Immune Response

The second path involves the combination of immunomodulatory drugs (IMiDS) with REOLYSIN to enhance the innate immune response against the tumor. We expect to be able to announce collaborations in this path in the second quarter of 2017 that combine REOLYSIN with IMiDS and investigate whether the addition of REOLYSIN can enhance the benefit of this class of agents.

Path #3 – Adaptive Immune Response

Our third clinical development path focuses on the adaptive immune response, a long-term, durable and learned response. This creates a vaccination-like response that, through lysis of the tumor by the virus, educates the body's immune cells to target and attack unique cancer antigens. We believe that REOLYSIN in combination with checkpoint inhibitors – immunological agents that enhance the adaptive immune response – will act synergistically to provide enhanced overall survival to patients. During 2016, we initiated the investigation of REOLYSIN in combination with KEYTRUDA®, an approved checkpoint inhibitor, in patients with pancreatic cancer. The primary objective of this study is to understand the safety profile of combining REOLYSIN with a checkpoint inhibitor and potentially provide a trend to increased efficacy.

The focus of Oncolytics will be to work towards product registration via the first path of the clinical development plan. The objectives of paths two and three are to enhance the exposure of REOLYSIN to leading pharmaceutical companies working in immuno-oncology and enhance the market opportunities for our agent; that process is underway.

Emerging Registration Pathway

Based on the data we have generated to date and future review of expected data, we believe we will have a defined registration pathway in the second quarter of 2017. In terms of next steps, we are working to set up an End-of-Phase 2 meeting with the U.S. FDA in order that we might discuss emerging data from these studies as soon as practicable. Our goal is to pursue a registration pathway that gives us the best possible chance of success and we intend to focus on overall survival as the expected primary endpoint.

An Exciting Year Ahead

In closing, I want to publicly recognize and thank all our shareholders for your ongoing commitment to Oncolytics. Many of you have been with us since the early days and I want to reassure you that creation of value remains a top priority for the entire team. I also want to thank our board of directors and all of our employees both new and old; your efforts have been instrumental in all we have accomplished recently. 2016 was a year of change for Oncolytics, but we think 2017 will be transformational for the Company. We remain very excited about our prospects for the year ahead and look forward to updating you on our progress in the coming quarters.

Sincerely,

[signed]

Dr. Matt Coffey, President and CEO