Executive Summary

Summary

Innova Therapeutics is a Charleston, South Carolina based biotechnology company developing a monoclonal antibody (mAb) platform targeting a protein that is highly expressed in various solid cancers and shown to correlate with patient outcome. The lead humanized mAb has been selected and is designated as IVT-8086. Innova's platform technology is initially focused on targeting cancers including pediatric osteosarcoma, sarcomas, breast cancer and pancreatic cancer. The opportunity for this anticancer therapy as a monotherapy and in combination with other chemotherapy agents will expand across other solid tumors. The focus on pediatric osteosarcoma as one of the initial targets will allow a fast-regulatory approval. **Osteosarcoma is a rare disease which was granted both orphan designation and rare pediatric disease designation from the FDA**, which will expedite the regulatory approval timeline including the opportunity to obtain a Rare Pediatric Disease priority review voucher. Because Priority Review Vouchers (PRVs) may be sold, a secondary market for the vouchers has emerged, with revenue ranging between $80M and $350M.

Company Description

Innova Therapeutics was founded on the research conducted by Co-founders Nancy Klauber-DeMore, MD, FACS, Professor of Surgery and BMW Endowed Chair Cancer Research, Medical University of South Carolina (MUSC) and Cam Patterson, MD, MBA who is currently the Chancellor, University of Arkansas for Medical Sciences.

Key functional expertise including clinical, regulatory, preclinical, and manufacturing, and business development are provided by the team within Innova Therapeutics.

Experienced Management Team

The Innova team includes industry leaders with broad pharmaceutical development experience including extensive successful cancer therapy development, as well as life science leadership, manufacturing, preclinical research and safety, business development and regulatory. The team is led by one of the co-founders and CEO, Robert Ryan, Ph.D., who is a successful serial biotech entrepreneur.

The Innova management team was previously the management team in the biotech, Scioderm. Scioderm was the first biotech to receive "Breakthrough Therapy" designation from the FDA for their therapy for an orphan disease. ***In addition, Dr. Ryan led the successful sale of Scioderm to Amicus in 2015 for approximately $957M (4th largest venture capital (VC) backed exit of 2015 in the biotech/pharmaceutical space), in a period of less than 2.5 years from initiation of the company with a total spend of less than $22M.***

Innova has Developed a Novel Anti-Cancer Platform

Secreted frizzled-related protein-2 (SFRP2) is a novel anticancer therapeutic target that is highly expressed across most solid cancers (including primary and metastatic disease). SFRP2 is secreted by tumor cells, endothelial cells, and activated T-cells. SFRP2 selectively modulates the non-canonical Wnt/Calcium (Ca2+)-signaling cascade in different cancers, which plays a role in a series of cellular processes including angiogenesis, cell survival, cell migration and metastasis, and production of T-cell exhaustion markers (Figure 1). SFRP2 binds to the frizzled 5 precursor (FZD5) receptor and activates the calcineurin/nuclear factor (NFATc3) pathway.

IVT-8086 inhibits SFRP2 in cancer and has multi-faceted activities including:

- **Reduced tumor growth (primary and metastatic disease), including increased apoptosis of tumor cells**
- **Rescues T Cell dysfunction including T Cell exhaustion, impacting expression of PD-1 and CD-38**

- **Reduced angiogenesis resulting in reduced migration and metastasis**

Figure 1. Multi-Faceted Mechanism of SFRP2 in Tumor Growth and Metastasis

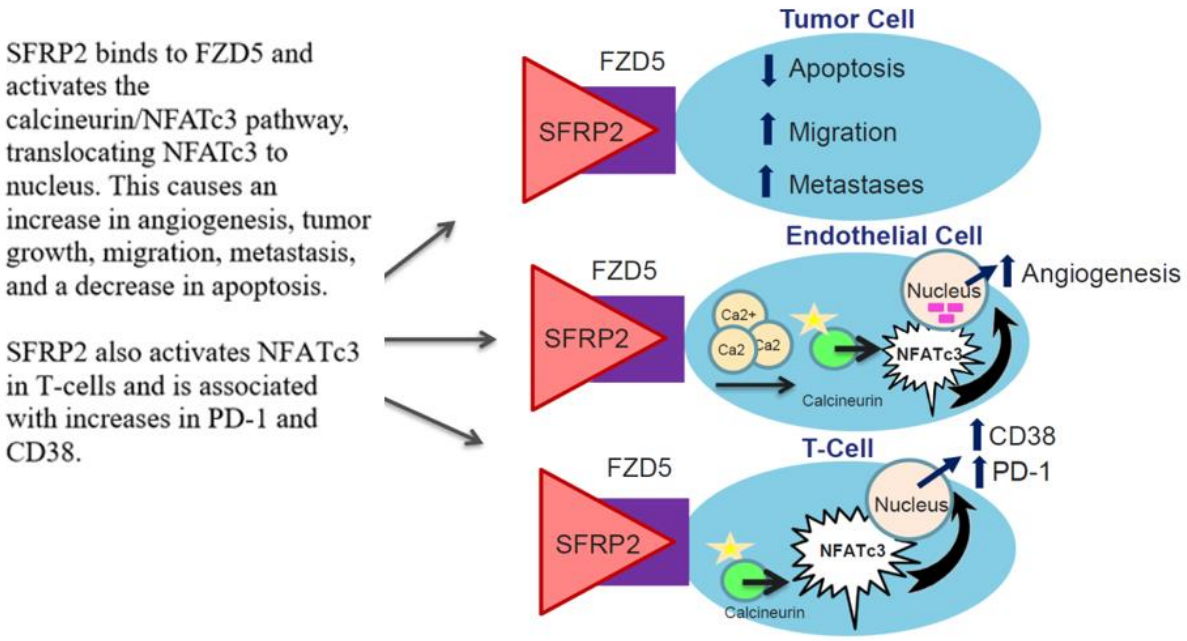

Image represents different mechanisms of SFRP2, in a variety of cells (top arrow image); endothelial cells, and in T cells
PD-1=Programmed cell death protein 1; CD38= Cluster of differentiation 38; Ca2+= Calcium ion; FZD5= Frizzled 5 precursor; SFRP2= Secreted frizzled related protein 2; NFATc3= Nuclear factor of activated T cells 3
(from Innova Therapeutics)

The lead humanized SFRP2 mAb has been selected, IVT-8086, and has been shown to antagonize SFRP2 by selectively blocking the non-canonical Wnt/Ca2+ pathway. **IVT-8086 monotherapy treatment has demonstrated efficacy (with no adverse safety effects) in multiple animal models implanted with either human xenografts or genetically engineered mouse model (GEMM) cell lines. In addition, combination therapy with IVT-8086 and PD-1 mAb has demonstrated synergistic efficacy with no noted safety concerns**. SFRP2 has been further validated as an important molecular target in human cancers, where expression levels haves been shown to correlate with patient outcome.

Competitive Landscape

Treatment options for many cancers are limited due to inadequate efficacy and/or significant toxicity. In particular, metastatic osteosarcoma (OS) is a deadly disease in which patients often have treatment-resistant disease, resulting in survival rates of only 15 to 30%. In the last 20 years, OS patients have not seen improvement in prognosis with available treatments. Consequently, new therapies are needed. Similar limited treatment options currently are also present in patients with sarcoma, pancreatic cancer, and triple negative breast (TNB) cancer, which are the cancers of initial focus for Innova. We have demonstrated compelling efficacy with no adverse effects with our therapy in these indications both as monotherapy and in combination in animal *in vitro* and *in vivo* models.

Recent Research and Market Reports have indicated that the opportunity for more effective and safe therapies in the treatment of cancer with monoclonal antibodies are needed both as monotherapy and in combination

with Checkpoint inhibitors: **Global Cancer Monoclonal Antibodies Market & Clinical Trial Insight 2024 estimated Monoclonal Antibodies Market Opportunity forecast to reach US$ 140 Billion; and Immuno-Oncology Market, By Type [mAb (Naked, Conjugate), Cancer Vaccines, Immune Checkpoint Inhibitors (PD-1, PD-L1, CTLA-4)], By Application (Lung, Melanoma, Leukemia, Lymphoma) is Anticipated to Cross US$ 100 Billion by 2022.**

Financing and Exit Strategy

A total of $7M in non-dilutive funds has been obtained to date to fund the identification and manufacture of the lead humanized monoclonal antibody (IVT-8086). Use of these funds included preclinical mechanistic studies, animal tumor model studies assessing efficacy and safety across several solid tumors and expanding IP.

We are currently raising a Series A financing of US$25-30M to fund our lead candidate, IVT-8086 through the following activities over the next 30 months:

- Scale up and production of IVT-8086,
- Pre-IND meeting with the FDA,
- complete Investigational New Drug (IND) enabling toxicology studies,
- file the IND,
- initiate and complete Phase 1/2 monotherapy studies in pediatric osteosarcoma (registrational study), sarcomas, triple negative breast cancer, and pancreatic cancer,
- and initiate and complete a Phase 1 combination therapy study with PD-1 antibody.

Additional funding to expand the clinical studies in other tumors and to support additional combination studies may be obtained with additional private investments or an Initial Public Offering (IPO).

There are broad therapeutic opportunities across multiple solid tumors including a fast regulatory approval timeline for the orphan indication, osteosarcoma**. Orphan Designation and Rare Pediatric Designation for osteosarcoma has been granted by the FDA.** As mentioned previously, Innova will qualify for a priority review voucher upon accelerated approval, which would bring in additional revenue in excess of $100 million.

The options for effective cancer therapy exits are broad, and could including partnering once clinical data is obtained, partnering in specific territories, or an IPO which would allow investors to sell their shares through secondary market trading. Regardless of the pathway, the market for a broad effective therapy of this type would be in excess of $1-2B.

Contact

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