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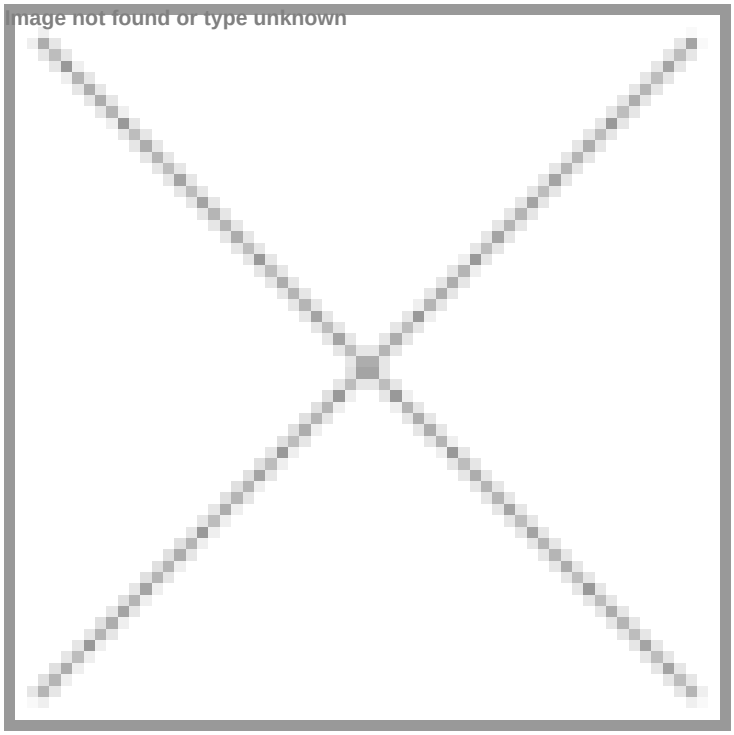
Takeda, Turnstone Biologics to develop novel viral immunotherapies

20 December 2019 | News

Turnstone and Takeda to co-develop and co-commercialize RIVAL-01, the lead candidate from Turnstone's proprietary vaccinia virus platform, with a 50:50 global profit share



US based Turnstone Biologics, a biotechnology company pioneering the development of engineered viral immunotherapies, has announced a strategic collaboration with Japan based Takeda Pharmaceutical Company Limited to develop multiple products from its proprietary vaccinia virus platform targeting a broad range of cancer indications. The parties will advance Turnstone's lead program, RIVAL-01, through a worldwide co-development and co-commercialization partnership and will also conduct collaborative discovery efforts to identify additional novel product candidates based on the vaccinia virus platform for future independent development.

"Our collaboration with Takeda will combine our exciting viral immunotherapy platform with Takeda's deep immuno-oncology research development expertise and proprietary technologies to discover and advance new medicines that have the potential to address critical gaps in the treatment of cancer that exist today," said Sammy Farah, Ph.D., CEO and President, Turnstone Biologics. "Importantly, this partnership allows us to co-develop and co-commercialize RIVAL-01 together with Takeda, enabling us to broaden our internal capabilities and expand our viral immunotherapy pipeline, while retaining our ability to independently develop other candidates based on this technology."

Under the terms of the agreement, Turnstone will receive a total of $120 million in upfront cash, near-term milestones and future equity investment. The collaboration agreement grants Takeda an exclusive worldwide license to co-develop and co-commercialize RIVAL-01 with Turnstone, with global costs and profits shared 50:50. The companies will also collaborate on the development of new product candidates based on Turnstone's proprietary vaccinia virus platform. Takeda has the right to license select candidates resulting from the collaboration, with Turnstone retaining ownership of the others to advance

independently. Turnstone is eligible to receive up to an additional $900 million in potential development, regulatory and commercial milestones across all programs, and receive royalty payments on net sales of each licensed product.

“Our immuno-oncology discovery engine is focused on novel, differentiated mechanisms throughout the cancer immunity cycle and we are privileged to add engineered viral immunotherapies to our portfolio,” said Chris Arendt, Head, Oncology Drug Discovery Unit at Takeda. “Our partnership with Turnstone and its vaccinia virus platform will help us harness the power of the immune system in unique ways to address some of the most difficult-to-treat cancers.”

Turnstone’s RIVAL therapeutic pipeline is based on its proprietary vaccinia virus platform, which has been engineered for enhanced immune-stimulation and tumor cell selectivity, potent oncolysis and large transgene carrying capacity. RIVAL-01 is the lead candidate, consisting of the vaccinia virus backbone encoding transgenes for Flt3 ligand, anti-CTLA-4 antibody and IL-12 cytokine. The transgenes are designed to be expressed when the vaccinia virus enters and replicates in cancer cells throughout the body. The resulting local production of these therapeutics at the site of tumors adds to the inherent oncolytic and microenvironment-modifying properties of the virus to form a powerful multi-modal attack on the disease.

“Our proprietary vaccinia virus platform is exquisitely engineered to enhance virus-mediated cancer cell killing and better harness the power of the immune system against tumors, with the aim of transforming the treatment paradigm and developing much-needed therapies for people with cancer,” said Mike Burgess, Ph.D., President of R&D, Turnstone Biologics. “With RIVAL-01, we intend to deliver three powerful immune modulating agents to primary and metastatic tumor sites and limit their expression to the local tumor environment, reducing the potential for systemic toxicity. This therapy has the potential to drive immune activity in the tumor that is not otherwise achievable.”