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Novartis broadens immuno-oncology pipeline

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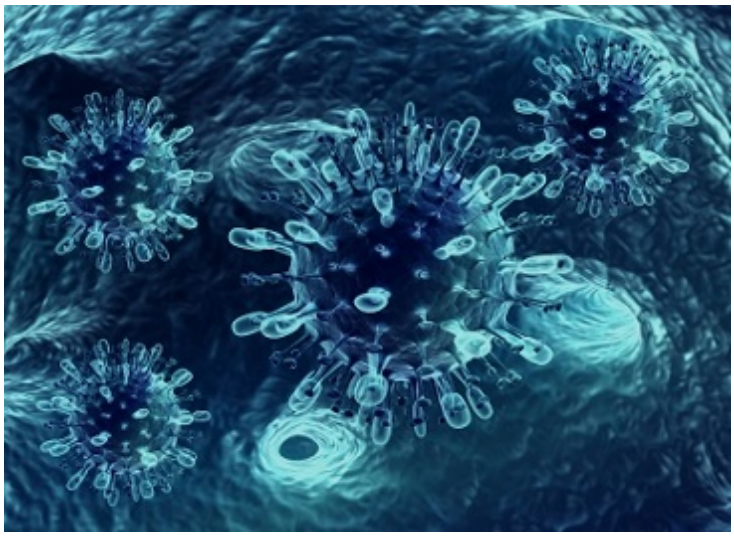

Novartis has announced that it is broadening its portfolio of cancer immunotherapies with the acquisition of Admune Therapeutics and licensing agreements with Palobiofarma and XOMA Corporation.

With four candidates currently in clinical trials and five more agents expected to enter the clinic by the end of 2016, Novartis has rapidly built a robust portfolio of programs focused on stimulating the body's immune system to combat cancers that includes novel checkpoint inhibitors, chimeric antigen receptor T-cell (CART) technology, myeloid cell targeting agents, and STING agonists. Currently Novartis' myeloid cell targeting program (MCS-110) and checkpoint inhibitors targeting PD-1 (PDR001), LAG-3 (LAG525), are in phase 1 clinical trials. The CART program (CTL019) is in phase 2 clinical trials. The anti-TIM-3 program (MGB453) is expected to enter the clinic by the end of 2015 and a STING agonist (MIW815), through collaboration with Aduro Biotech, and GITR agonist are progressing toward first-in-human clinical trials in 2016.

The acquisition of Admune adds an IL-15 agonist program currently in phase I clinical trials for metastatic cancer. The licensing agreement with Palobiofarma gives Novartis development and commercialization rights to PBF-509, an adenosine receptor antagonist currently in phase I clinical trials for non-small cell lung cancer. The agreement with XOMA gives Novartis development and commercialization rights to XOMA's TGF-beta antibody programs. All three programs will be explored as monotherapies and in combination with therapies in Novartis' immuno-oncology and targeted therapy portfolios.

"The first wave of immuno-oncology therapies has demonstrated the impact this approach can have in treating certain types of tumors. To realize its full potential requires exploration of the complex system of biological pathways in the tumor microenvironment with agents that can stimulate the immune system to attack a wider variety of tumors," said Mr Mark Fishman, president of the Novartis Institutes for BioMedical Research.

In pre-clinical studies, IL-15 therapies have been shown to activate CD8+, CD4+ memory T cells and Natural Killer (NK) cells that play a critical role in stimulating the immune system. Adenosine and TGFÃŸ both drive immune suppression in the tumor

microenvironment, which allows cancer cells to escape immune surveillance, making inhibition of these two pathways an attractive next-generation immuno-oncology approach.