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Merck, known as MSD outside the United States and Canada, announced that the US Food and Drug Administration (FDA) has granted Breakthrough Therapy Designation to KEYTRUDA (pembrolizumab), the company's anti-PD-1 therapy, for the treatment of patients with microsatellite instability high (MSI-H) metastatic colorectal cancer.

KEYTRUDA is a humanized monoclonal antibody that works by increasing the ability of the body's immune system to help detect and fight tumor cells.

It blocks the interaction between PD-1 and its ligands, PD-L1 and PD-L2, thereby activating T lymphocytes which may affect both tumor cells and healthy cells.

"We are committed to understanding the full potential of KEYTRUDA to help patients with a broad range of difficult-to-treat cancers," said Dr Roger M Perlmutter, president, Merck Research Laboratories. "The data investigating the use of KEYTRUDA in patients with advanced colorectal cancer whose tumors have substantial evidence of mismatch DNA repair defects have been encouraging, and we appreciate the opportunity that this FDA Breakthrough Therapy Designation provides us to accelerate our effort to bring KEYTRUDA to these patients."

The FDA's Breakthrough Therapy Designation is intended to expedite the development and review of a candidate that is planned for use, alone or in combination, to treat a serious or life-threatening disease or condition when preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints.

KEYTRUDA was previously granted breakthrough status for advanced melanoma and advanced non-small cell lung cancer

(NSCLC).

The Breakthrough Therapy Designation in advanced colorectal cancer is based on data from a Phase 2 study evaluating the activity of KEYTRUDA in cancers with microsatellite instability, a well-established feature seen in cells with certain types of DNA repair defects.

Findings from the study, led by researchers from Johns Hopkins Kimmel Cancer Center, were presented at the 2015 American Society of Clinical Oncology (ASCO) annual meeting and were published simultaneously in the New England Journal of Medicine.

Testing tumors for microsatellite instability can identify patients with defective DNA mismatch repair (MMR) systems.

DNA MMR is a process that permits cells to recognize and repair genetic mismatches generated during DNA replication. A defective MMR system allows mismatch mutations to persist.

The average tumor has dozens of mutations; however tumors with DNA MMR deficiency may harbor thousands, especially in regions of repetitive DNA known as microsatellites.

Tumors that are found to have mutations in select microsatellite sequences, called microsatellite instability (MSI), are considered DNA MMR-deficient. These tumors are referred to as being "MSI high".

Overall, DNA MMR-deficiency is present in approximately 15-20 percent in Stage II disease, 10 percent in Stage III disease and approximately 5 percent or less in Stage IV disease.

In colorectal cancers, MMR-deficiency is seen in approximately 15-20 percent of non-hereditary colorectal cancers and in most hereditary colorectal cancers associated with Lynch Syndrome.

Merck is conducting a Phase 2 registration study (KEYNOTE-164) to evaluate the efficacy and safety of KEYTRUDA based on microsatellite instability status in patients with previously treated advanced colorectal cancers, and is also planning a Phase 3 study (KEYNOTE-177) in a treatment naÃ¯ve patient population.

The KEYTRUDA clinical development program includes patients with more than 30 tumor types in more than 160 clinical trials, including more than 80 trials that combine KEYTRUDA with other cancer treatments.