Immuno-oncology research at Novartis

Activating the immune system to help treat cancer.

Tumors are masters of defense and deception, evading our immune system with molecular tricks. But new immunotherapies are outsmarting tumors and achieving dramatic early successes in patients.

Our immuno-oncology researchers are developing a deep and diverse portfolio of potential immune treatments.

- Certain cells in the immune system can be taught to attack unwanted invaders, including cancer cells. Here the CAR-T cells (green) have recognized a cancer cell (red) and launched an attack. Credit Ned Kirkpatrick, Farid Sari-Sarraf, Boris Engels, and Carla Guimaraes.

Led by Glenn Dranoff, the team investigates three key steps in the immune response to cancer:

- **Education of immune cells**
- **Activation of immune cells**
- **Dissemination of immune cells**

These steps collectively have the potential to destroy tumors. We are seeking ways to improve immune cell activity at each step, and to combine these therapies with other treatments to offer the best outcome for each patient.

One of our efforts is studying and developing chimeric antigen receptor T (CAR-T) cell therapy, which trains a patient’s own T cells to seek and destroy specific cancer cells. A second approach is to target the key control points in the immune response that limit the body’s ability to mount an effective anti-cancer attack. A third strategy aims to make the tumor cells appear more foreign to the immune system, which enables better recognition and killing of tumor cells.

We are also investigating the ways that chronic inflammation influences tumor growth. Inflammation may give tumors a safe space to grow by blocking T cells from entry. Reducing inflammation could help strip away this shield.

In recent years, we have seen an explosion of positive clinical evidence for these newer types of cancer immunotherapies. Clinical trials are also uncovering the potential benefits of combining immunotherapies with other immune treatments and targeted small molecules, to hit multiple trigger points in the immune system.

“Our goal will be to take most human tumors, which don’t have evidence of an immune response, and convert them to have a response so that they become highly sensitive to treatment,” says Dranoff. “One of the exciting aspects of this work is that rather than developing treatments for very small subsets of patients, we’re now contemplating treatments that are broadly active for patients.”

Reimagine medicine with Novartis

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