

New Cancer Treatments Just Won 2 Scientists a Nobel Prize. Here's How They Work



By [Alice Park](#) October 1, 2018

It wasn't the Nobel Committee that reached James Allison first on Monday to inform him that he had won the coveted annual prize in Physiology or Medicine. It was his son who broke the news with a 5:30 am phone call. Minutes later, a Swedish reporter reached him before the committee could.

"I was like, 'Oh my God, it happened,'" Allison says to TIME. "I'm just in shock, I guess."

Allison, chair of immunology at the University of Texas MD Anderson Cancer Center, was awarded the Nobel for his discovery in 1994 in mice that led to an entirely new class of anti-cancer drugs called checkpoint inhibitors. They're designed to [unleash the power of the immune system](#) and have saved tens of thousands of lives—including that of President Jimmy Carter, who was [treated with an experimental version](#) of this type of drug when he was diagnosed with advanced melanoma that had spread to his liver and brain. Dr. Tasuku Honjo, professor of immunology and genomic medicine from Kyoto University in Japan, was also awarded a Nobel in the same category for his discovery of another checkpoint inhibitor pathway.

Allison and Honjo both discovered a key feature of the immune system that prevented it from robustly attacking cancer cells. Because cancers arise from normal cells that have accumulated mutations that propel them to divide abnormally, the immune system is loathe to destroy these cells in the same way that it would easily recognize and destroy bacteria or viruses. Allison found one protein—CTLA-4, which is found on a group of immune cells called T cells—that prevents those T cells from attacking tumors. A few years earlier, Honjo had discovered a protein, PD-1, that also held back T cells from destroying cancer cells, but in a different way than CTLA-4.

Those discoveries led to checkpoint inhibitors, the first class of drugs designed to strip away that protective molecular cloak. The U.S. Food and Drug Administration (FDA) approved the first checkpoint inhibitor in 2011.

Allison credits his discovery to **an unbiased curiosity about basic science and the luxury of chasing interesting scientific questions without necessarily knowing whether they will lead to something useful for treating disease.** “The way I prefer to do science is to pursue basic science, and every now and then you put your feet up and think, how can I use what I’ve learned?” he says. **“The best science doesn’t worry about the implications.”**

Allison, a Texas native, spent much of his spare time as a child in the family garage, tinkering with the science lab he had built there. He didn’t know then that cancer would soon consume his life, in more ways than one. The disease would claim his mother, two uncles and a brother, losses that would play a role in shaping his scientific career.

http://time.com/5411739/nobel-prize-winners-medicine-cancer/?utm_source=time.com&utm_medium=email&utm_campaign=the-brief&utm_content=2018100210am&xid=newsletter-brief&eminfo=%7b%22EMAIL%22%3a%221JIUKO%2bqECzFnqQMC8KxPw%3d%3d%22%2c%22BRAND%22%3a%22TD%22%2c%22CONTENT%22%3a%22Newsletter%22%2c%22UID%22%3a%22TD_TBR_EC6206C4-351E-4344-A7B5-15AE20EF41C6%22%2c%22SUBID%22%3a%2224217017%22%2c%22JOBID%22%3a%22893246%22%2c%22NEWSLETTER%22%3a%22THE_BRIEF%22%2c%22ZIP%22%3a%22479068699%22%2c%22COUNTRY%22%3a%22%22%7d