James Allison and Cancer Immunotherapy

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In 2018, James Patrick “Jim” Allison of The University of Texas MD Anderson Cancer Center and Tasuku Honjo of Kyoto University in Japan shared the Nobel Prize in Physiology or Medicine for their discoveries in basic and applied immunology. Their work has led to novel and effective treatments for cancer.

Jim Allison was born on August 7, 1948, in the small city of Alice, Texas, in the southern part of the state. He was the youngest of 3 sons. His mother, Constance Kalula Lynn, died of lymphoma in 1960 when Allison was 11 years old; his father Albert Murphy Allison (1909-1973) was a “country physician,” and as a boy Allison envisioned a medical career as well.

Allison began pre-medical studies in 1965 at the University of Texas at Austin, but worried about making a mistake caring for a patient and decided to focus on science instead. He earned an undergraduate degree in microbiology in 1969. He stayed in Austin for graduate school and received a doctorate in biological sciences in 1973.

After completing postdoctoral work at Scripps University under the supervision of tumor immunologist Ralph Reisfeld in 1977, he joined the faculty of MD Anderson at the then-new Science Park in Smithville, Texas, which was built with special funding from the Texas legislature, and was remote from the main campus of MD Anderson in Houston. He worked in Smithville until 1984, enjoying almost complete freedom from administrative and teaching responsibilities.

Allison then joined the University of California, Berkeley, in 1985 and moved his laboratory to the University of California, San Francisco, in 1997. From 2004 to 2012, he was the chair of the Ludwig Center for Cancer Immunotherapy at Memorial Sloan Kettering Cancer Center in New York before returning to MD Anderson as chair of immunology as part of the institution’s “Cancer Moonshot” effort. He has served as president of the American Association of Immunologists and is a member of the National Academy of Sciences. Among his numerous prizes is the 2015 Lasker-DeBakey Clinical Medical Research Award, a prominent award that is often followed by a Nobel Prize.

The use of immunotherapy to try to treat cancer dates back to William Coley’s use of Streptococcus pyogenes and Serratia marcescens extracts to induce regression of malignant growths in the 1890s, but the field has experienced a renaissance in the 21st century. Allison’s key discovery was that a T-cell inhibitory molecule called cytotoxic T lymphocyte-associated protein 4 (CTLA-4), an immune checkpoint that had first been identified by Pierre Golstein and colleagues in Marseille, France, in 1987, could be blocked with a monoclonal antibody and that inhibition of this checkpoint could result in potent T lymphocyte activation against malignant tumors.

The checkpoint inhibition approach proved effective in clinical trials, and the discovery has resulted in dozens of US Food and Drug Administration (FDA) approvals for immune checkpoint inhibitor antibodies targeting CTLA-4 or other immune checkpoints, including programmed death receptor 1 (PD-1, which was discovered by Honjo in 1992) and its ligand, PD-L1. The CTLA-4 antibody ipilimumab was first approved in 2011 by the FDA for treatment of advanced melanoma.

Allison enjoys the blues harmonica and plays in a band called the “Checkpoints,” which includes other immunologists and oncologists. He has been married twice, first to Malinda Bell (married from 1969-2012) and
then to MD Anderson immunologist and genitourinary oncologist Padmanee Sharma (married 2014). He has one son and three stepchildren.

A number of countries with liberal postage stamp issuing policies create stamps honoring Nobel laureates immediately after each year’s prizes are announced, in order to generate revenue from topical stamp collectors. Those countries honoring the 2018 laureates included Madagascar (depicted), Sierra Leone, Djibouti, Togo, Cameroon, Guinea, and the Central African Republic (Scott numbers pending).

Potential Competing Interests: The authors report no competing interests.

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