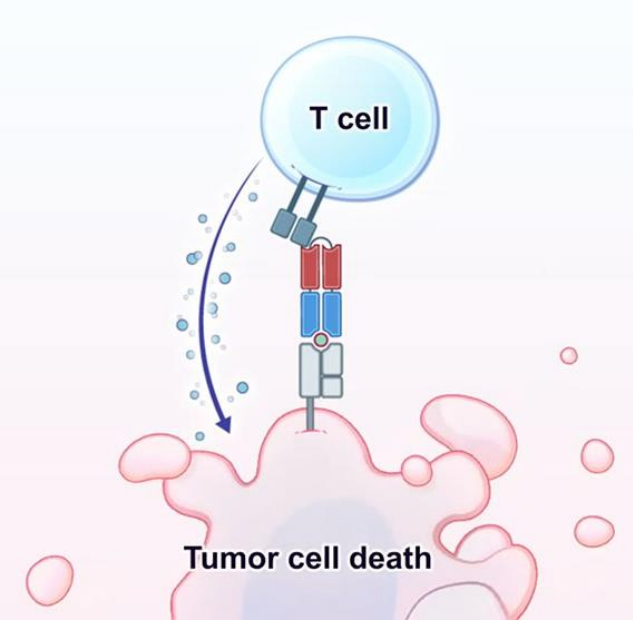
Beamline: FMX, AMX

Fighting Cancer With a New Antibody



The image shows how the T-cell attacks the tumor cell after it was activated by the antibody.

E. Han-Chung Hsiue, K. M. Wright, J. Douglass, M. S. Hwang, B. J. Mog, A. H. Pearlman, S. Paul, S. R. DiNapoli, M. F. Konig, Q. Wang, A. Schaefer, M. S. Miller, A. D. Skora, P. A. Azurmendi, M. B. Murphy, Q. Liu, E. Watson, Y. Li, D. M. Pardoll, C. Bettegowda, N. Papadopoulos, K. W. Kinzler, B. Vogelstein, S. B. Gabelli, S. Zhou, Science, 371, 6533 (2021)

Scientific Achievement

Scientists identified a highly specific antibody to combat cancer cells in tumors with the most common mutation, TP53.

Significance and Impact

TP53 is the most common cancer driver gene, however drugs that target mutant tumor suppressor genes are not available. This study shows the first results of an immuno-therapeutic agent that targeted TP53, effectively killing tumor cells in vitro and suppressing tumor growth in mice.

Research Details

- Used x-ray crystallography at the AMX and FMX beamlines at NSLS-II to determine the structure of the antibody specific to the TP53 mutation
- Tested the new antibody in vitro on cancer cells
- Tested the new antibody in mice
- Found that the bispecific antibody effectively activated T cells, i.e. specific cells within the human immune system, to break down cancer cells

Work was performed in part at Brookhaven National Laboratory