



# ULTRA-BRIGHT X-RAYS CRITICAL TO DEVELOPMENT OF DRUG THAT HALTS SKIN CANCER

## THE CHALLENGE

Melanoma is the leading cause of death from skin disease. According to American Cancer Society estimates, in 2018:

- About 91,270 new melanoma cases were expected to be diagnosed (about 55,150 in men and 36,120 in women).
- About 9,320 people were expected to die of melanoma (about 5,990 men and 3,330 women).

The rates of melanoma have been rising for the last 30 years.

## THE BREAKTHROUGH

Researchers from Plexxikon, Inc., (Berkeley, Calif.) and Genentech (San Francisco) collaborated with Argonne researchers and tapped into the ultra-bright X-ray beams at the U.S. Department of Energy's Advanced Photon Source to determine the structure of a cancer-causing mutated protein.

The researchers then used a technique known as macromolecular crystallography to search through hundreds of molecules and determine the structure of the one molecule that could halt the cancer's spread.

The drug that emerged from that research is Zelboraf®. Clinical trials of Zelboraf® started in 2006, and the U.S. Food and Drug Administration approved it for use in 2011.

## THE IMPACT

- Zelboraf® has been used to disrupt melanoma in hundreds of thousands of patients worldwide.
- Zelboraf® has been approved for use in more than 50 countries.



The Advanced Photon Source at Argonne provides ultra-bright X-ray beams for research in almost all scientific disciplines.

## CONTACT

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