

# Precise proton beam takes aim at cancer

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It's a moment nobody wants to think about, that moment when someone discovers an odd lump on their body.

The cells in our bodies continuously grow, divide and replace each other. As new cells form, old cells die. Sometimes, too many cells grow in one area of the body or too many old cells live longer than expected. In such cases, a clump of cells — a tumor — can develop.

Although some tumors are benign and easily removed, others are malignant with cancer cells. According to the National Cancer Institute, more than one million new cases of cancer were diagnosed in 2018 in the United States alone.

One of the biggest challenges in battling cancerous tumors is destroying all the cancer cells while protecting the healthy tissue surrounding the tumor. Removing a tumor surgically or treating it with radiation is a risky business, particularly when the tumor grows close to vital organs.

Proton therapy is a precise and highly accurate nonsurgical cancer treatment method. But the technique is only as good as the ability to accurately kill cancer tissue and spare the healthy tissue around it.

Scientists at Los Alamos National Laboratory are advancing a technology known as proton radiography to increase the precision and accuracy of proton therapy.

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