

FOR IMMEDIATE RELEASE

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MEDIA CONTACTS

Saralyn Stewart

(512) 694-2320

stewart@physics.utexas.edu

A New Way to Selectively Kill Cancer Cells

Room-temperature plasma proves promising for cancer therapy.

MILWAUKEE, Wis.—Cancer is the second leading cause of death worldwide, killing more than 8 million people a year. Typical cancer treatments, such as radiation and chemotherapy, have drawbacks that can be harmful for cancer patients. An ideal treatment would kill cancer cells, while leaving healthy cells unharmed. In a new treatment approach, researchers at George Washington University (GWU) in Washington, D.C. are using room-temperature plasma to selectively kill cancer cells.

Plasmas are gases which include charged particles—positively charged ions and negatively charged electrons. Plasmas are typically extremely hot, but they can also be much cooler. These cooler plasmas are used in the energy efficient light bulbs in your house, the pixels in your TV, and for etching paths on computer chips.

A room-temperature plasma is mostly made up of regular air, but also contains a small quantity of charged particles. Such plasmas have gained attention from the medical community in the last decade, in treatments for skin and teeth. Recently, researchers have explored using room-temperature plasmas as a treatment for cancer.

“When we exposed healthy cells to a room-temperature plasma, we found that they weren’t damaged,” says Dr. Michael Keidar, director of the laboratory at GWU. “This made us interested in using this gentle plasma as a potential treatment of cancer cells.”

The research team then subjected cancer cells to the room-temperature plasma, and found the cells were killed. They’ve since tested on animals and confirmed that the cancer cells are selectively killed while healthy tissue is not affected (Figure 1).

“This is an important breakthrough for cancer research,” says Keidar.

The team’s next research will be directed toward making the process more efficient, with the goal of developing it for use in cancer therapy.

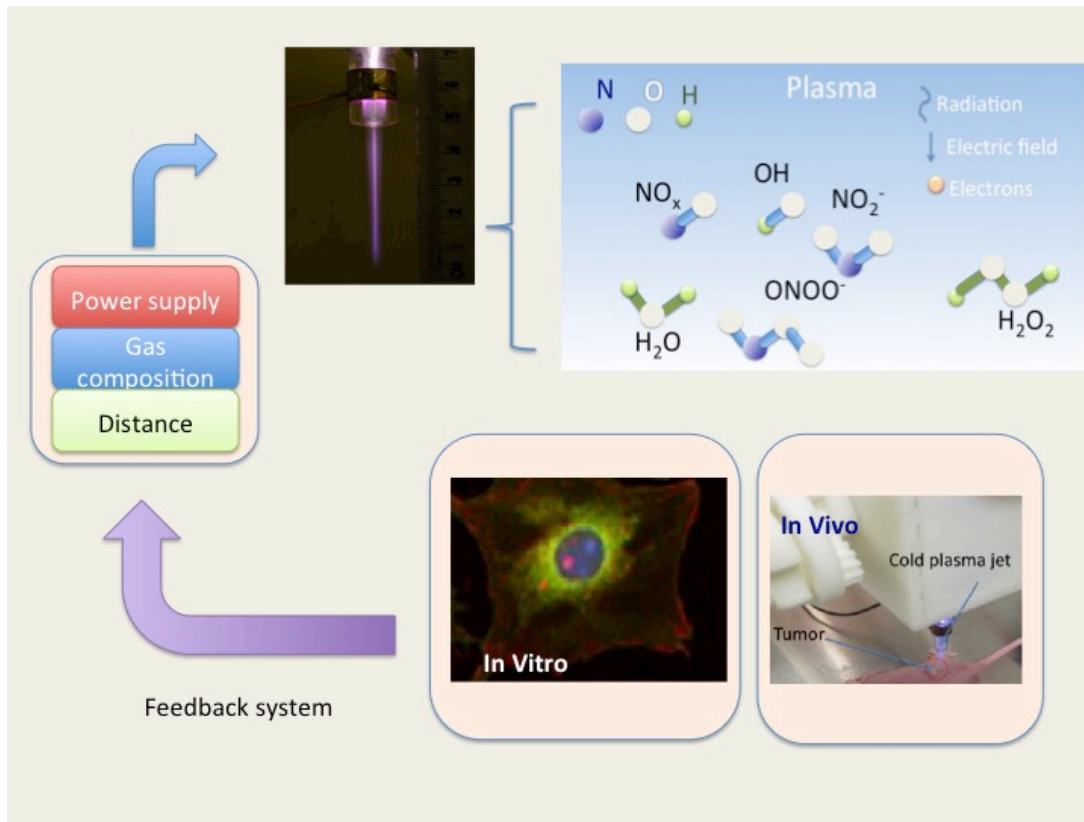


Figure 1: Room-temperature plasmas, like the one shown in the top picture, can be used to treat cancer cells in animals. The bottom pictures show cancer cells being exposed to the room temperature plasma. The cancer cells will react and send out a signal when exposed, and the signal tells scientists how well the plasma is working to kill the unhealthy cells. If the room temperature plasma is not effectively killing the cancer cells, then the settings on the plasma are automatically changed to improve the effect it has on the cancer cells.

Contact:

Michael Keidar, George Washington University, Keidar@gwu.edu

Abstract

[GI2.00004](#)

[Adaptive plasma for cancer therapy: physics, mechanism, and applications](#)

Session

[GI2: Pedestal and Low-Temperature Physics](#)

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