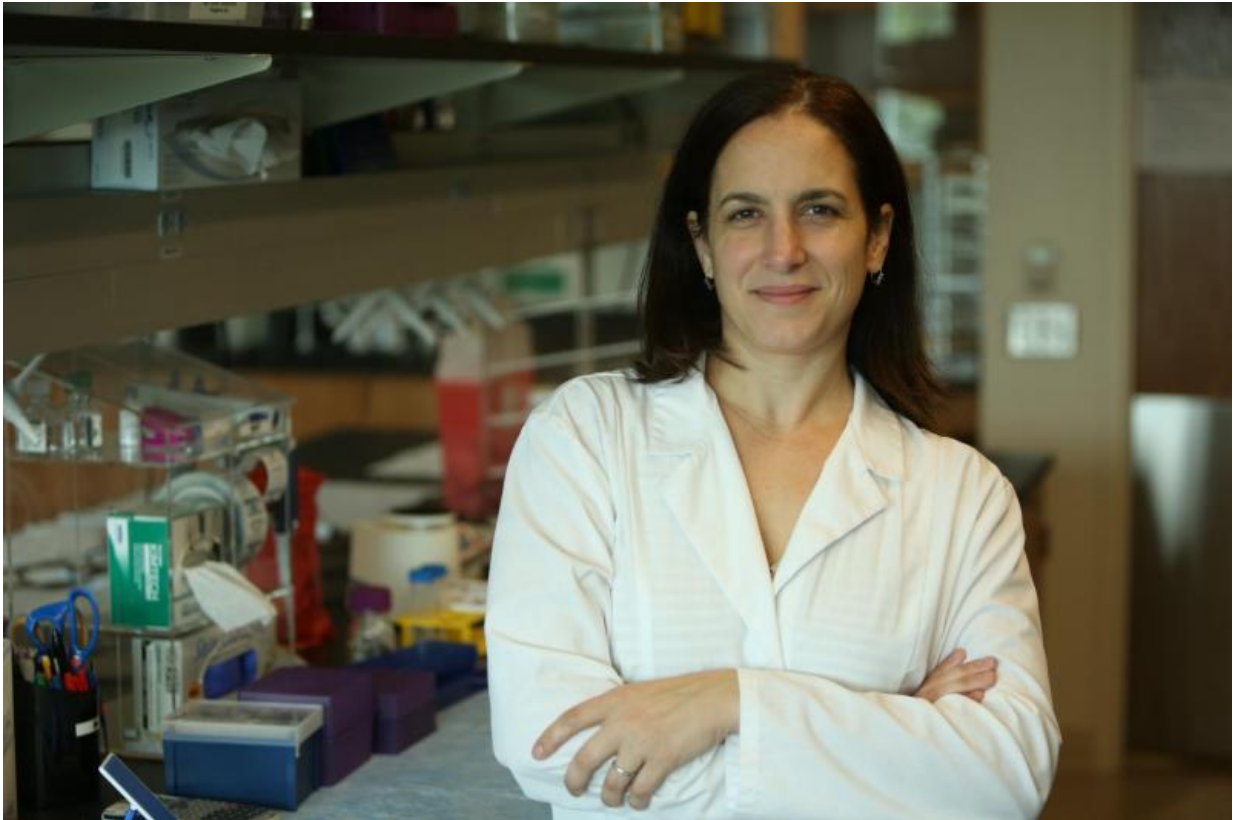


# Protein may trigger cancer cell's metabolism

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Maria Clara Franco, assistant scientist at the Burnett School of Biomedical Sciences at the University of Central Florida's College of Medicine. Credit: Suhtling Wong-Vienneau, University of Central Florida

New research from the University of Central Florida has shed light on the workings of a particular protein found in the human body that could have future implications for the treatment of cancer and

neurodegenerative conditions.

Previous research by Maria C. Franco and Alvaro Estevez of the Burnett School of Biomedical Sciences at UCF's College of Medicine showed that a modified version of a protein known as "[heat shock protein 90](#)" or Hsp90 is a trigger for killing cells in the nervous system in neurodegenerative disorders.

Now, Franco's latest findings show that Hsp90 doesn't treat all cells the same. In fact, the same protein that kills some cells may help [cancer cells](#), according to research published in the *Journal of Biological Chemistry* on July 31.

"We have found a protein that is modified only in pathological conditions," said Franco, an assistant scientist at the Burnett School who led the research team. "In the nervous system, it is toxic to the cells that are affected by neurodegenerative diseases, while in [tumor cells](#) it may actually be acting as a pro-survival agent. In both cases, targeting this oxidized protein may be a potential therapeutic alternative."

Hsp90 is one of the most studied proteins in terms of potential cancer-fighting drugs, but progress has been slow. Franco's work provides more clarity on the complex nature of the protein's impact on cells.

Her research team discovered that a nitration of Hsp90 limits oxygen to the cell's mitochondria, decreasing its energy production. It sounds like a death knell for the cell, but the reduction of oxygen consumption may actually help the [cancerous cells](#) by increasing their resistance to hypoxia since these cells rely on other energy sources.

Franco has been studying the role of Hsp90 and other oxidized proteins in the regulation of cellular metabolism for the past eight years, with the goal of identifying new targets for drugs to combat tumor cells. She is

eager to find ways to combat tumor cells while keeping [healthy cells](#) intact.

A native of Buenos Aires, Franco has been at UCF for the past five years and has multiple degrees from the University of Buenos Aires. She completed post-doctoral work at Cornell University and Oregon State University.

Franco's other work focuses on free radicals, oxidative stress and mitochondrial metabolism.

**More information:** Nitration of Hsp90 on Tyrosine 33 Regulates Mitochondrial Metabolism, [www.jbc.org/content/290/31/19055.abstract](http://www.jbc.org/content/290/31/19055.abstract)

Provided by University of Central Florida

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