Study: Mitochondria engage the integrated stress response to promote tumor growth

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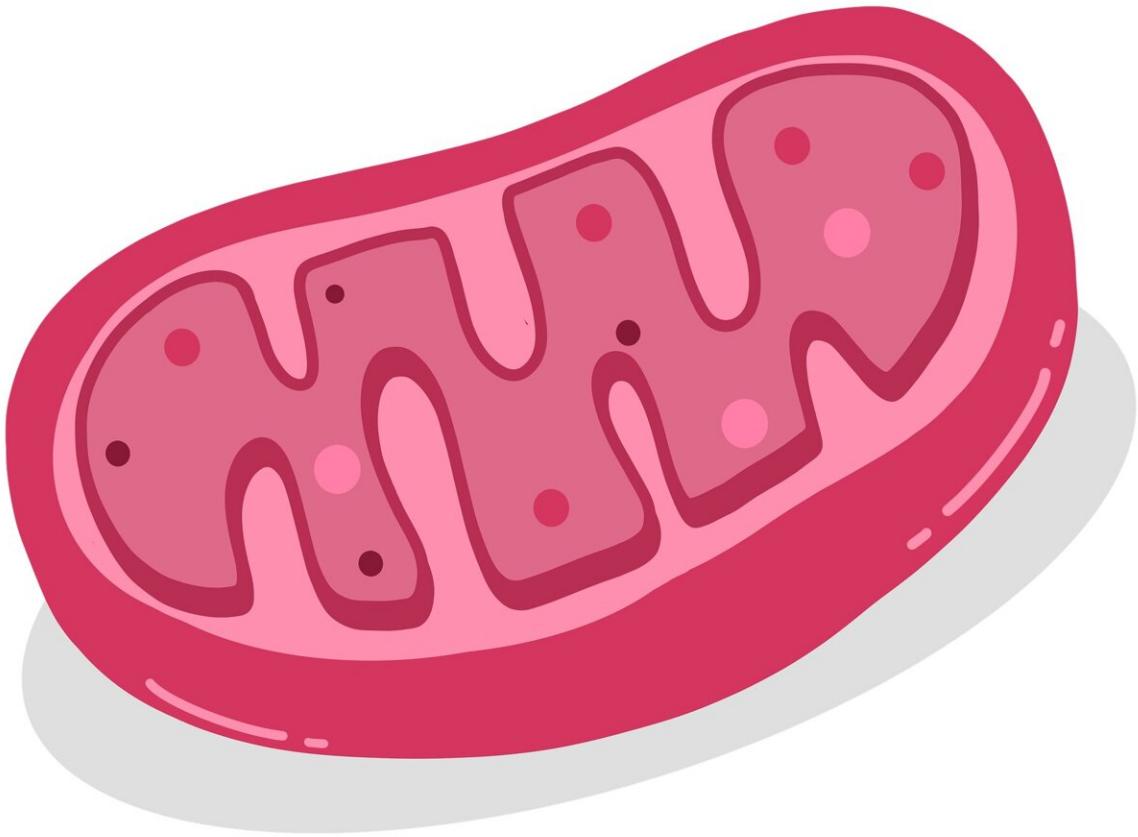

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A new editorial paper, titled "Mitochondria engage the integrated stress

response to promote tumor growth," was published in *Oncotarget*.

In this new editorial, researchers Dillon P. Boulton and M. Cecilia Caino from the University of Colorado School of Medicine discussed prostate cancer (PCa)—the most diagnosed and second deadliest cancer among men in the United States, with an estimated 268,490 new cases and 34,500 deaths in 2022 (ACS Cancer Facts and Figures 2022).

"While the prognosis for men with early-stage disease remains extremely favorable (>99% 5-year overall survival, OS), men diagnosed with metastatic PCa have a 30% 5-year OS, clearly demonstrating a need for therapeutic options for these patients (ACS Cancer Facts and Figures 2022)," write the researchers.

Due to a strong reliance on androgens to drive PCa, first and second courses of therapy involve androgen deprivation therapy or targeting the androgen receptor directly in combination with several other cytotoxic agents.

Unfortunately, some tumors develop resistance to these androgen axis therapies and progress to castrate resistant and metastatic PCa, which drives the majority of PCa deaths. This underscores a strong need to identify and characterize actionable targets within these tumors. Of interest, mitochondria are emerging as critical organelles that promote tumorigenesis and metastasis.

"Along this line, we have recently described a novel signaling pathway where mitochondria promote castrate resistant metastatic PCa growth by acting as a signaling platform to facilitate efficient stress signaling. This pathway is centered around mitochondrial Rho GTPase 2 (MIRO2), an outer-mitochondrial membrane protein in the Ras superfamily of GTPases," note the researchers.

More information: Dillon P. Boulton et al, Mitochondria engage the integrated stress response to promote tumor growth, *Oncotarget* (2023). DOI: 10.18632/oncotarget.28372