

Researchers link stress and pancreatic cancer in new paper

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Pancreatic cancer is a deadly disease with increased incidences in the recent years. According to NDSU researchers, epidemiological data show chronic stress in a negative social and psychological state such as depression might serve as a risk factor for cancer development and progression. However, the underlying biological mechanisms are not well understood.

Erxi Wu, assistant professor of pharmaceutical sciences, and Fengfei Wang, research associate of [pharmaceutical sciences](#), co-wrote the article, "B2-AR-HIF-1a: a Novel Regulatory Axis for Stress-Induced Pancreatic Tumor Growth and Angiogenesis," which will be published by *Current Molecular Medicine*.

"It is noted that in Asian countries, like China, doctors usually do not tell patients they have cancer directly after a diagnosis because the doctor is concerned the stress caused by knowing they have the deadly disease may worsen the cancer status, but the scientific evidence is not known so far," said Wu, the paper's senior author.

The authors created a new stress model system to determine the effects of [chronic stress](#) on pancreatic [cancer progression](#). They show chronic stress not only results in mice gaining depression behavior due to an elevated level of epinephrine, but also induces cancer progression. They further demonstrate that the pancreatic [cancer development](#) and progression induced by chronic stress was blocked by a B2-AR inhibitor ICI118 551 or a HIF-1a inhibitor 2-Methoxyestradiol and that the

chronic stress up-regulates the expression of MMP-2, MMP-9, and VEGF via a HIF-1a-dependent B-AR signaling pathway.

"Our data suggest that B2-AR-HIF-1a axis regulates stress-induced pancreatic [tumor growth](#) and angiogenesis. This study may have a therapeutic or preventive potential for the patients with pancreatic cancer who are especially subject to psychosocial stress," Wu said.

The paper was co-written with Qingyong Ma lab at Xi'an Jiaotong University, China. "Collaborating with Dr. Ma, we together would like to find better cancer therapeutics and elucidate the mechanisms of the targeted therapy for pancreatic carcinoma," Wu said.

Provided by North Dakota State University

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