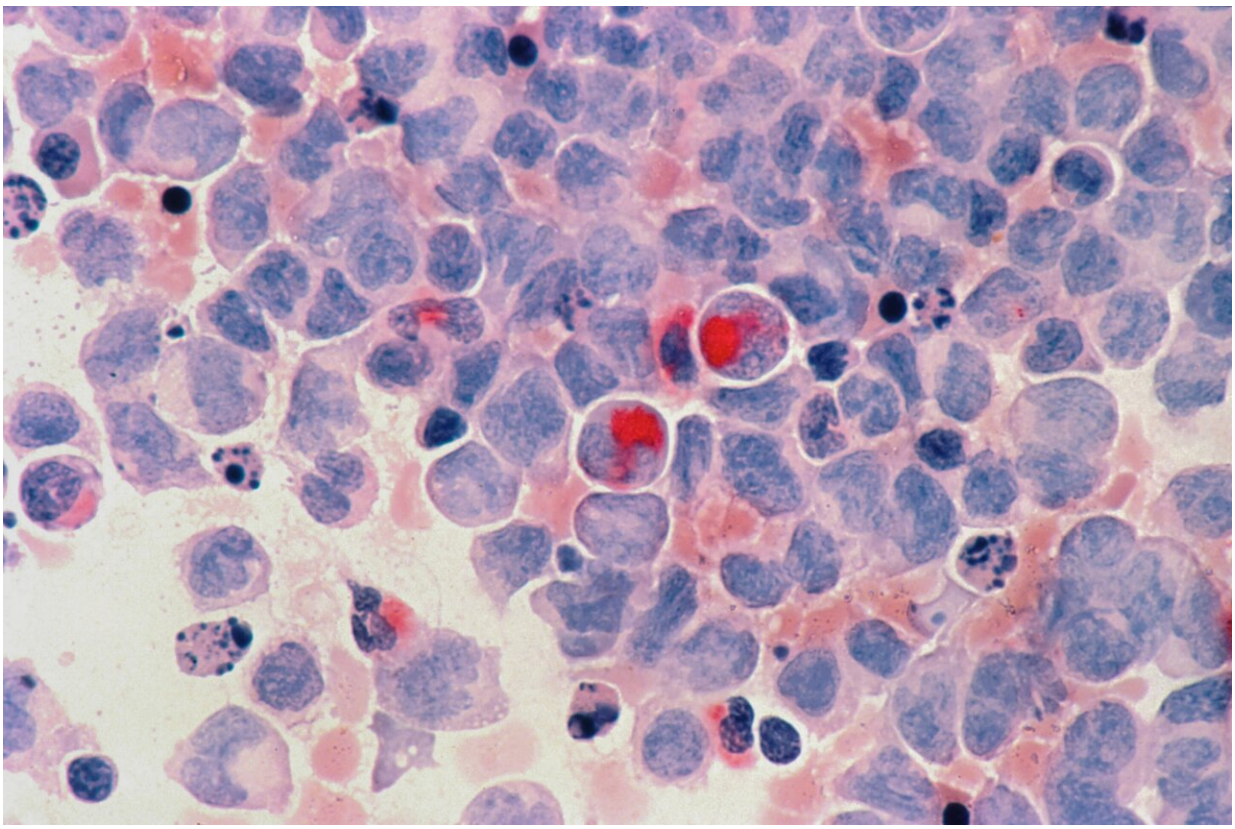
MedicalXpress

Study shows that VEGF-A can increase expression of dopamine D2 receptors on endothelial cells

May 20 2022



Credit: Unsplash/CC0 Public Domain

Researchers have identified a new molecular drug target that could result in new cancer drugs with fewer side effects.

Previous studies have shown that vascular endothelial growth factor-A (VEGF-A)—a potent cytokine (signaling protein)—and dopamine (a neurotransmitter/neurohormone) play essential roles in many physiological and pathological functions. In this new laboratory study, Dr. Sujit Basu and colleagues conducted further preclinical analysis of VEGF-A as a target for the development of new cancer therapy approaches.

The team found for the first time that VEGF-A can increase expression of dopamine D2 receptors on endothelial cells that can then be stimulated to stop the growth of blood vessels that fuel the growth and spread of several diseases, including colon cancer, endometriosis and ovarian hyperstimulation syndrome. Such blood vessel growth is called angiogenesis. This study is published in the *Journal of Cell Science*.

"This is a very compelling discovery that opens up new pathways for developing effective new anti-angiogenic therapy for the treatment of cancer and other diseases where VEGF-A is a known driver of disease growth and spread," said Basu, who serves as a professor at The Ohio State University College of Medicine and is a member of the Translational Therapeutics Program at the OSUCCC—James.

Basu notes that, unlike the presently available anti-VEGF-A anti-angiogenic agents, selective dopamine D2 receptor agonists are inexpensive and have well-established and manageable side effects.

"These drugs are devoid of the serious side effects of the currently used anti-VEGF-A anti-angiogenic agents in the clinics. We believe they merit further investigation as a viable treatment approach in cancer and other diseases driven by the VEGF-A pathway," Basu said.

Researchers expect to begin testing these drugs through clinical trials in the near future.

More information: Chandrani Sarkar et al, VEGF-A controls the expression of its regulator of angiogenic functions, dopamine D2 receptors on endothelial cells, *Journal of Cell Science* (2022). DOI: 10.1242/jcs.259617

Provided by Ohio State University Medical Center