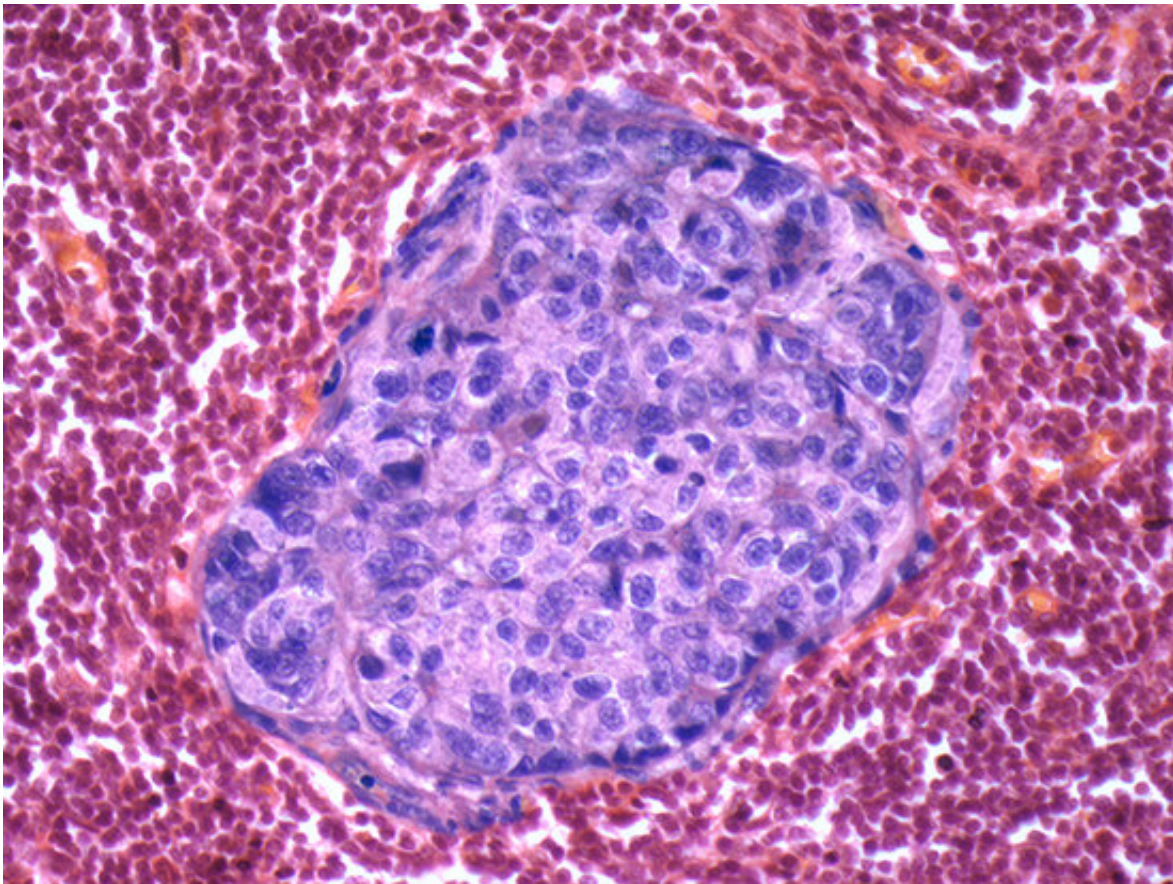


# New review identifies four hallmarks of cancer metastasis

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Metastasis is believed to be the cause of up to 90 percent of cancer deaths.  
Credit: University of Alabama at Birmingham

Researchers at the University of Alabama at Birmingham and the University of Kansas Cancer Center have identified four hallmarks of

cancer metastasis—when cancer has spread to different parts of the body from where it started. Metastasis is believed to be the cause of up to 90 percent of cancer deaths.

Douglas Hurst, Ph.D., assistant professor in the UAB Department of Pathology, and Danny Welch, Ph.D., associate director of Education at the KUCC, conducted a literature review of more than 10,000 publications on metastasis, and published their findings in *Cancer Research*, from the American Association for Cancer Research.

Metastasis can be very difficult to treat. Virtually any cancer type can form [metastatic tumors](#). The most common sites for cancers to metastasize include the brain, bones, lungs and liver. Other areas include the [adrenal gland](#), [lymph nodes](#), skin and other organs.

By defining the unique properties of metastatic cancer cells, Hurst says, he hopes to provide a [conceptual framework](#) to accelerate the discovery of treatment strategies.

"Our attempts to identify the underlying first principles of the metastatic process hopefully provide a means for simplifying the processes that are essential for all metastases to develop," the authors said in the review.

Hurst and Welch identified four hallmarks of metastasis:

- Motility and invasion
- Modulation of the microenvironment
- Plasticity
- Ability to colonize

Defining the hallmarks of metastasis has been complicated by both heterogeneity among [tumor cells](#), and the myriad interactions with other molecules and cells throughout the process, according to the authors.

Hurst and Welch say they hope that refining definitions and bringing together diverse data will identify vulnerabilities that metastasis researchers can exploit in the quest to treat cancer metastasis.

Hurst, who also serves as an associate scientist at the O'Neal Comprehensive Cancer Center at UAB, explains why metastasis is hard to understand.

"Metastasis is a highly complex pathological process," Hurst said. "Increased specificity in defining the underlying principles is important to better understand and interpret the literature to move forward in the development of therapeutic interventions."

**More information:** "Defining the Hallmarks of Metastasis," *Cancer Research* (2019). [DOI: 10.1158/0008-5472.CAN-19-0458](https://doi.org/10.1158/0008-5472.CAN-19-0458)

Provided by University of Alabama at Birmingham

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