A new way to personalize treatments for prostate cancer

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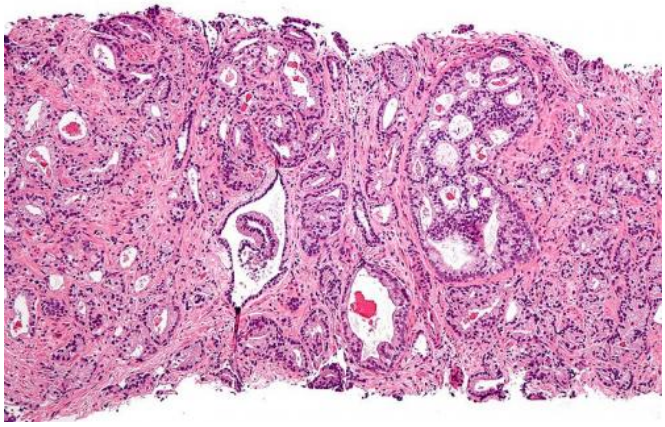

Micrograph showing prostatic acinar adenocarcinoma (the most common form of prostate cancer) Credit: Wikipedia

Rutgers researchers have discovered human gene markers that work together to cause metastatic prostate cancer—cancer that spreads beyond the prostate.

The study, published in the journal *Nature Cancer*, explored prostate cancer cells from people and mice and found a wide collaboration among 16 genes that leads to metastasis, which often leads to treatment challenges.

The gene markers identified can predict if a prostate cancer patient has a high probability of developing metastasis, including bone.

Prostate cancer is the second leading cause of cancer-related deaths among men in the United States with a five-year relative survival rate of near 100 percent when diagnosed early. Metastatic prostate cancer has a five-year survival rate of 30 percent. Current therapeutics like first- and next-generation anti-androgens that target male sex hormones alongside radiation, chemotherapy and others are not always effective, and it's impossible to predict which patients are at risk of developing the advanced late stage of the disease.

"People diagnosed with prostate cancer should now be screened for the protein markers discovered to help determine their risk of developing metastatic prostate cancer, which can help inform more personalized therapy," said Antonina Mitrofanova, an assistant professor at the Rutgers School of Health Professions and research member at Rutgers Cancer Institute of New Jersey. "Our results show that molecular profiling at the time of diagnosis can help inform more personalized therapy leading to better outcomes for those with this advanced form of disease."

Researchers say testing for these gene markers can also predict which patients will fail to respond to normally used androgen targeting therapies in metastatic disease and can decrease multiple treatment rounds for patients.

Researchers, in collaboration with Cory Abate-Shen's lab at Columbia University, have obtained a patent for their discovery and are looking to develop therapeutics and diagnostic tools.

More information: Arriaga, J.M., Panja, S., Alshalalfa, M. et al. A MYC and RAS co-activation signature in localized prostate cancer drives bone metastasis and castration resistance. *Nat Cancer* (2020). doi.org/10.1038/s43018-020-00125-0

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