New gene markers detect Lynch syndrome-associated colorectal cancer

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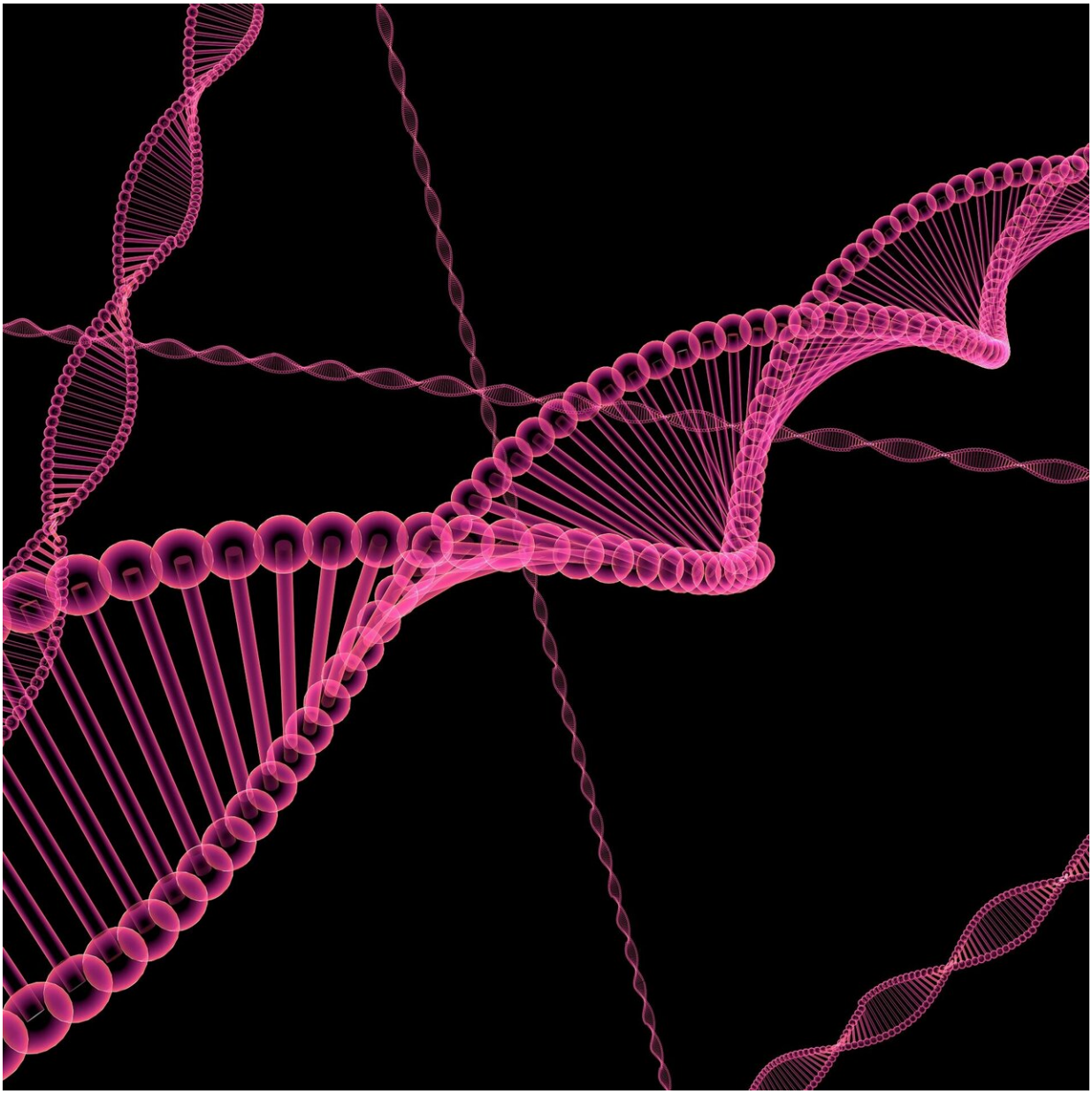

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Researchers from Mayo Clinic Comprehensive Cancer Center and Mayo Clinic Center for Individualized Medicine have discovered new genetic markers to identify Lynch syndrome-associated colorectal cancer with high accuracy. Studies are underway to determine whether these genetic markers are in stool samples, and if so, how this could lead to a non-invasive screening option for patients with Lynch syndrome.

The research is published in *Cancer Prevention Research*.

"This is an exciting finding that brings us closer to the reality that clinicians may soon be able to offer a non-invasive cancer screening option to patients with the highest risk of getting cancer," says Jewel Samadder, M.D., co-lead author of the paper and gastroenterologist at Mayo Clinic Comprehensive Cancer Center. "I look forward to the day when I no longer have to remind patients with Lynch Syndrome to schedule their annual colonoscopy and complete the prep, when they will instead be able to provide a stool sample to screen for cancer."

Lynch syndrome is an inherited genetic condition that significantly increases the risk of multiple cancers, most notably colorectal and uterine cancers. Approximately 1 in 300 people have Lynch syndrome, many of whom are unaware of it. Patients with Lynch syndrome undergo colonoscopies annually to detect and remove pre-cancerous lesions that can form colorectal cancer, in addition to undergoing invasive tests or prophylactic surgery to prevent uterine cancer.

For this study, the researchers evaluated a panel of methylated DNA markers (MDM) for sporadic colorectal and endometrial cancers in people with Lynch syndrome (LS). Sporadic cancer is cancer that occurs

randomly in people with no family history or known predisposing risk factors. The researchers also included control groups with no cancer. For colorectal cancer, there were 23 LS cases, 48 sporadic cases, 32 LS controls, and 48 sporadic controls. For endometrial cancer, there were 30 LS cases, 48 sporadic cases, 29 LS controls and 37 sporadic controls.

"We found that a marker panel composed of three biomarkers (LASS4, LRRC4, PPP2R5C) could effectively differentiate Lynch syndrome-associated colorectal cancer from Lynch syndrome controls, with 92% accuracy. This three-marker panel also performed similarly in distinguishing sporadic colorectal cancer cases from controls," says Dr. Samadder. This three-marker panel is being tested in a multi-site clinical trial in patients with Lynch syndrome as a non-invasive screening option.

"Our findings support the feasibility of cancer detection in stool and lower gynecologic genital tract samples in the setting of Lynch syndrome and warrant further testing," says Dr. Samadder.

More information: Rachel M. Bramblet et al, Methylated DNA Markers for Sporadic Colorectal and Endometrial Cancer Are Strongly Associated with Lynch Syndrome Cancers, *Cancer Prevention Research* (2023). DOI: 10.1158/1940-6207.CAPR-23-0107

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