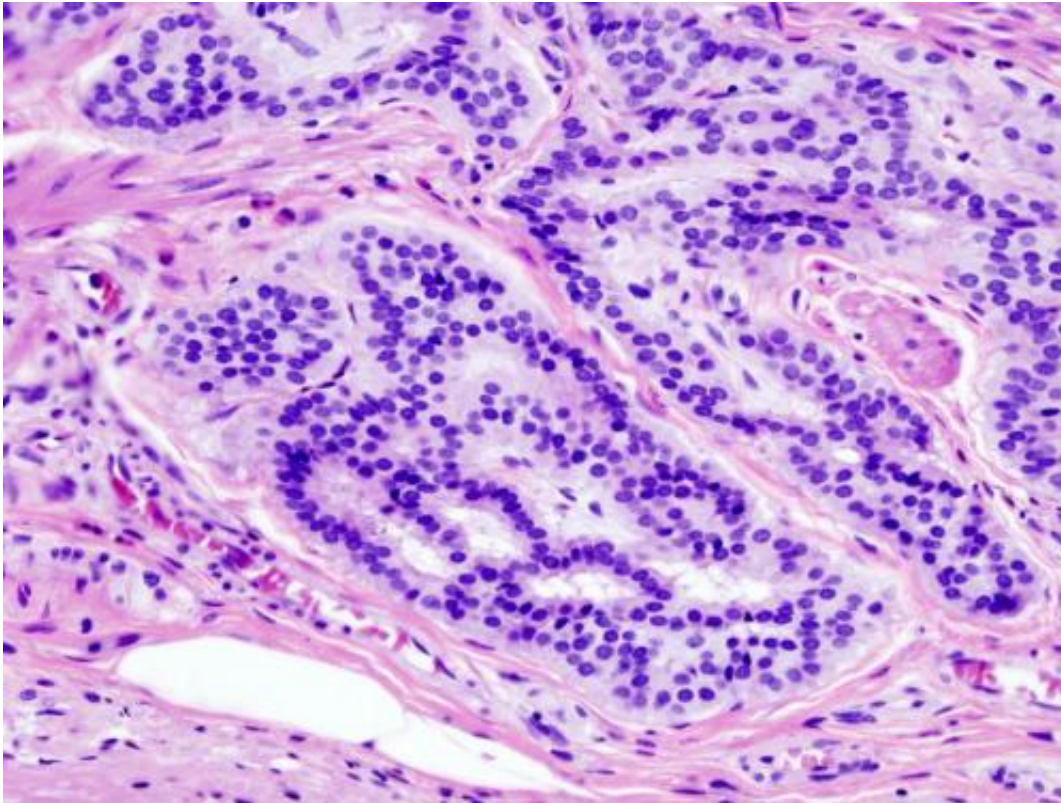# Precision prevention of colorectal cancer

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Cancer — Histopathologic image of colonic carcinoid. Credit: Wikipedia/CC BY-SA 3.0

Precision medicine's public face is that of disease—and better treatments for that disease through targeted therapies.

But precision medicine has an unsung partner that could affect the lives of many more people: Precision prevention—a reflection of the growing

realization that preventing cancer and other diseases may not be one-size-fits-all.

"Precision medicine has been kind of a buzzword recently, but often when people think about precision medicine, they think about treatment," said Fred Hutchinson Cancer Research Center biostatistician Dr. Li Hsu, who focuses on precision prevention for colorectal cancer. "I think it's just as important if not more important to prevent disease."

In work presented Monday at the American Association for Cancer Research's annual meeting in New Orleans, Hsu and other researchers from Fred Hutch, the University of Michigan and other research groups debuted their latest progress in precision prevention—an in-the-works method to predict risk of colorectal cancer that integrates genetic, lifestyle and environmental risk factors.

This research is not yet ready to move into clinical practice, said Fred Hutch epidemiologist Dr. Ulrike "Riki" Peters, one of the study authors. But it's the first attempt at combining so many different areas of colorectal cancer risk into one convenient risk predictor.

Current risk stratification methods for colorectal cancer screening recommendations are relatively crude, based on age and family history alone. No family history of the disease? Start colonoscopies at age 50. Have an immediate relative who had colorectal cancer? Screen at age 40.

But these methods are likely missing many at risk, Peters said. Eighty percent of those with colorectal cancer have no known family history. And, unlike some, it's a cancer where screening and prevention are tightly linked—colonoscopies can catch premalignant lesions and if those lesions are removed, the patient is spared from ever developing cancer.

"That is a very unique aspect of colorectal cancer," Peters said.

Even though the disease is highly preventable if caught in the precancerous stages, colorectal cancer is the [second leading cause of cancer-related deaths](link) (for men and women combined) in the U.S., topped only by [lung cancer](link). So along with encouraging people to get the recommended colonoscopies, a better sieve to catch those at higher risk of the disease could have an impact both on cancer prevention and on sparing those at low risk of the disease unnecessary procedures.

"At the end, what we want to do is prevent disease given limited resources," said Dr. Jihyoun Jeon, a biostatistician at the University of Michigan who presented the risk prediction model in a poster at the AACR meeting. "We want to save resources but also prevent as much [disease] as possible."

The improved risk prediction method was developed using data from more than 18,000 people, approximately 8,400 of whom had colorectal cancer. These data come from two large colorectal [cancer](link) studies that Peters leads, known as the [Genetics and Epidemiology of Colorectal Cancer Consortium (GECCO)](link) and the [Colorectal Transdisciplinary study (CORECT)](link).

The model incorporates 19 known environmental and lifestyle risk factors for the disease, as well as 64 common genetic [risk factors](link).

Peters and her colleagues have been working for years to identify the genetics behind [colorectal cancer](link). It was always her goal to use that information to improve risk predictions, she said, but it's only recently that the team has amassed enough links between genes and disease to be able to work on the precision prevention piece of the puzzle.