

# Genetics and Colorectal Cancer

## What does genetics have to do with colon and rectal cancer?

Genes are the biochemical information that we inherit from each of our parents. They determine our varied physical features and may predispose us to certain diseases. Probably all cancers, especially colon and rectal cancer (CRC), have hereditary genetic factors that potentially increase an individual's risk to developing these malignancies. In other words, genes are the reason why some diseases such as CRC occur more frequently in certain families. For this reason, when visiting a colon and rectal surgeon, it is important to provide a detailed family history with regard to cancer.

## Are there different types of colon and rectal cancer?

From a genetic perspective, there are three broad classifications of CRC. The table below shows the respective proportion of each different classification.

Sporadic Colon Cancer	50-60 %
Familial Colon Cancer	30-40 %
Inherited Colon Cancer Syndromes	4-6 %

## What is sporadic colon cancer?

Sporadic colon cancer generally occurs in someone over age 60, without a prior family history of CRC. One in eighteen Americans will develop CRC. Patients who develop CRC as the first member of their family should be encouraged to inform relatives. People with a family history of colon rectal cancer should be advised to inquire about screening protocols at an earlier age.

## What is familial colon cancer?

Some families are predisposed to getting colon cancer. There should be concern if a family has more than one relative with CRC, especially if the CRC occurred in an individual before age 50. If a first degree relative (parent, sibling, or child) develops a colorectal cancer, the risk of family members developing this disease is doubled. Individuals with a first degree relative who has been diagnosed with CRC should begin colon cancer screening at 40 years of age or 10 years earlier than the age at which their relative was diagnosed with cancer, whichever is earlier.

## What are hereditary colorectal cancers?

Hereditary colorectal cancers are associated with a specific genetic abnormality. As genetic researchers continue to define certain syndromes, more genes that predispose colorectal cancer will likely be identified. Currently, some of the syndromes include:

- HNPCC (Hereditary Non-Polyposis Colon Cancer, Lynch Syndrome)
- FAP (Familial Adenomatous Polyposis)
- aFAP (Attenuated Familial Adenomatous Polyposis)
- APCI 1307K
- Peutz-Jehger's Syndrome
- MAP (MYH associated Polyposis)
- Juvenile Polyposis
- Hereditary Polyposis

**What type of information regarding family history should I tell my colon and rectal surgeon?**

Family history information regarding the following items will allow your colon and rectal surgeon to formulate the best plan for prevention and treatment.

- All family members and their approximate ages of when they were diagnosed with colorectal polyps or cancer
- Family history of gynecologic cancers (ovarian or uterine)

**What will the colon and rectal surgeon do with this information?**

The colon and rectal surgeon will use this information to assess an individual's risk for CRC. Additional evaluation of an individual may help to detect and identify a family cancer syndrome. Recommendations for this analysis may include colonoscopy, genetic counseling, formal genetic testing, regular follow-up examination, and potential referral to other medical specialists.