

## ***POLE* Mutations**

### **What you should know about *POLE* mutations**

Individuals with a *POLE* mutation have polymerase proofreading-associated polyposis syndrome (PPAP), which means they have an increased chance to develop early onset colorectal cancer and polyps of the GI tract. Exact cancer risks for individuals with one mutation in this gene are not fully understood, but more specific information becomes available with ongoing research.

### **Cancer risks associated with a *POLE* mutation**

- Individuals with a *POLE* mutation may have an increased risk to develop adenomatous polyps of the digestive tract and colorectal cancer. The specific lifetime risk for colorectal cancer is not currently known, but is thought to be increased compared to the general population risk of ~5%.
- Other cancers may be associated with *POLE* mutations, but additional evidence is needed.

### **Risks to family members**

Mutations in the *POLE* gene are inherited in an autosomal dominant manner. This means that children, brothers, sisters, and parents of individuals with a *POLE* mutation have a 1 in 2 (50%) chance of having the mutation as well. Both males and females can inherit a familial *POLE* mutation and can pass that it on to their children.

When an individual inherits two *POLE* mutations (one from each parent), this causes a syndrome called FILS. FILS is a condition associated with mild facial dysmorphism (unique facial features), immunodeficiency, livedo (discoloration of the skin), and short stature.

### **Managing cancer risks**

The following surveillance is recommended by the National Comprehensive Cancer Network (v3.2019).

- Colonoscopy starting at age 25-30
  - Repeat every 2-3 years if colonoscopy is negative
  - Repeat every 1-2 years if polyps found
- Consider surgery if the polyp burden becomes unmanageable by colonoscopy

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