



## Adenomatous Polyposis of the Colon

### Alternative Names

APC  
Familial Polyposis of the Colon  
FPC  
Polyposis, Adenomatous Intestinal  
Familial Adenomatous Polyposis  
FAP  
Gardner Syndrome  
GS  
Adenomatous Polyposis Coli, Attenuated  
AAPC  
Deleted in Polyposis 2.5  
DP2.5  
Brain Tumor-Polyposis Syndrome 2  
BTPS2  
Familial Adenomatous Polyposis, Attenuated  
AFAP

### Record Category

Disease phenotype

### WHO-ICD

Diseases of the digestive system > Other diseases of intestines

### Incidence per 100,000 Live Births

Unknown

### OMIM Number

175100

### Mode of Inheritance

Autosomal dominant

### Gene Map Locus

5q21-q22

### Description

The syndrome of familial adenomatous polyposis has a wide spectrum of clinical manifestations including adenomatous polyps of the colon and small bowel, adenocarcinoma of ampulla of Vater, tumors of the

central nervous system, bone lesions, and various soft tissue tumors. Familial adenomatous polyposis of the colon is an autosomal dominant disease in which virtually all affected individuals develop colorectal cancer before the age of 40.

### Molecular Genetics

The gene responsible for familial adenomatous polyposis of the colon (APC gene) is mutated in the germ line of patients. The genetic diagnosis of familial adenomatous polyposis of the colon was initially done using linkage analysis. The low-penetrance susceptibility APC I1307K allele confers a relative risk of 1.5–2.0 for colorectal cancer. The APC allele with lysine (K) at codon 1307, commonly referred to in the literature as I1307K, results from the T-A transition at nt 3920 in APC, which causes an extended mononucleotide tract (A8). This mononucleotide repeat impairs replication fidelity, forming a mutational hotspot.

### Epidemiology in the Arab World

#### Bahrain

Fakhro (1994) was the first to report a Bahraini patient with adenomatous polyposis coli (APC). The patient was a 43-year-old male complaining of painless bleeding from the rectum for six months and bowel motion of three to four times per day. He had duodenal ulcer one month ago. Tiny polyp was seen above the ano-rectal junction by proctoscopy and multiple polyps were detected in the rectosigmoid region by sigmoidoscopy. Barium enema showed the presence of an extensive colonic polyposis (from the caecum to the rectum and possibly involving the anus). Pathological studies of multiple biopsies showed no evidence of malignancy. The patient was fully continent after a surgical intervention.

#### Egypt

[See also: Palestine > Niell et al., 2003]

#### Morocco



[See also: Palestine > Niell et al., 2003]

### **Palestine**

Niell et al. (2003) tested whether selection has operated on the I1307K allele frequency. They estimated the age of the allele, to understand its origin in the context of the Jewish diasporas and subsequent founder events. They found a common progenitor haplotype spanned across APC I1037K from the centromeric marker D5S135 to the telomeric marker D5S346 and showed that it existed in Sephardi Jews of Syrian, Egyptian, Moroccan, Yemeni, and Palestinian origins, as well as in Muslim and Christian individuals of Arab descent. The ancestor of modern I1307K alleles existed 87.9 to 118 generations ago (approximately 2,200 to 2,950 years ago). Since the conserved I1307K haplotype is shared among Jews and Arabs and that the most recent ancestor of I1307K existed sometime between 947 BCE and 195 BCE, future genetic testing for this polymorphism might be offered to individuals of different ethnic backgrounds.

### **Syria**

[See also: Palestine > Niell et al., 2003]

### **Yemen**

In 1999, Patael et al. analyzed the presence of the I1307K polymorphism in Ashkenazi and Yemenite Jews using denaturing gradient gel electrophoresis (DGGE). They found a common four-marker haplotype (three intragenic markers and a single downstream marker 30-70 Kb from the APC gene - D5S346) containing the I1307K allele in Ashkenazi and Yemenite Jews. The haplotype excluded D5S82, which was found in 23.4% of unselected Yemenite Jews.

Drucker et al. (2000) conducted a study to estimate the prevalence of the I1307K mutation in several ethnic groups and to elucidate the clinical features of the mutation carriers with colorectal carcinoma

(CRC). Mutation screening in four consecutive CRC patients of Yemenite origin identified three carriers of the mutation. On the other hand, screening of 189 Yemenites randomly selected from the general population demonstrated the presence of nine individuals carrying the mutation, hence an I1307K carrier frequency in Yemenite Jews of approximately 4.7%.

[See also: Palestine > Niell et al., 2003]

### **References**

- Drucker L, Shpilberg O, Neumann A, Shapira J, Stackievicz R, Beyth Y, Yarkoni S. Adenomatous polyposis coli I1307K mutation in Jewish patients with different ethnicity: prevalence and phenotype. *Cancer*. 2000; 88(4):755-60. PMID: 10679643
- Fakhro AR. Adenomatous polyposis coli (APC). *J Bahrain Med Soc*. 1994; 6(1):39-40.
- Niell BL, Long JC, Rennert G, Gruber SB. Genetic anthropology of the colorectal cancer-susceptibility allele APC I1307K: evidence of genetic drift within the Ashkenazim. *Am J Hum Genet*. 2003; 73(6):1250-60. PMID: 14624392
- Patael Y, Figer A, Gershoni-Baruch R, Papa MZ, Risel S, Shtoyerman-Chen R, Karasik A, Theodor L, Friedman E. Common origin of the I1307K APC polymorphism in Ashkenazi and non-Ashkenazi Jews. *Eur J Hum Genet*. 1999; 7(5):555-9. PMID: 10439961

### **Related CTGA Records**

Turcot Syndrome

### **External Links**

<http://www.genetests.org/profiles/fap>  
<http://www.orpha.net/data/patho/GB/uk-fap.html>

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