



Hereditary Pancreatitis

Hereditary pancreatitis (HP) is a relatively uncommon genetic disorder characterized by epigastric pain and often more serious complications; it is not uncommon for HP to manifest during childhood. Several mutations in the cationic trypsinogen (PRSS1) gene on chromosome 7 are clearly associated with HP including an Arg – His substitution at residue 122 in exon 3 (R122H), and several mutations in exon 2 (e.g. N29I, A16V). Several of these mutations were numbered differently when first identified (e.g. R117H, N21I) but are the same molecular abnormality. Mutations in PRSS1 have been either shown or hypothesized to increase activation or retard degradation of trypsin, an important digestive enzyme, increased levels of which are thought to lead to pancreatic injury. Recurrent attacks of acute pancreatitis often lead to complications of chronic pancreatitis including failure of exocrine digestive functions, diabetes mellitus, pseudocysts, and increased risk of pancreatic cancer. Individuals carrying these mutated genes can be identified before pancreatitis begins, and may aid in the design of strategies for preventing or controlling the development of the clinical manifestations of the disease.

HP demonstrates an interesting mechanism of inheritance. It is transmitted in an autosomal dominant fashion, but with incomplete penetrance. Studies have shown that 80% of individual inheriting a mutant PRSS1 gene will develop pancreatitis but another 20% carrying the mutation will be spared. Individual who do not manifest pancreatitis may still transmit a mutant gene to offspring who may exhibit the disease.

The test employs PCR amplification of genomic DNA isolated from patient white blood cells for these two regions of the PRSS1 gene followed by restriction endonuclease digestion and gel electrophoresis to identify normal and heterozygous individuals in each region tested. A customized report is generated which takes into account family history (if provided) and the inheritance pattern of this disorder.

Turnaround Time: 2-3 weeks.

Specimen Requirements: See Oncology/Genetics Specimen Handling Protocol or Molecular Diagnostics Genetics Requisition Form.

Informed Consent: It is the responsibility of the referring health care professional to obtain proper informed consent from the patient for genetic testing. Test results are released only to the primary referring physician and/or genetic counselor. The laboratory report contains information that may be useful for genetic counseling of the patient and/or family members, although adjunct use of an experienced genetic counselor or medical geneticist may be beneficial for this genetic disorder.