GenOnc Prostate Cancer Panel

GENOME EXPLORATIONS
A DIVISION OF COMPASS LABORATORY SERVICES LLC

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Introduction

GenOnc Prostate Cancer Panel is a collection of multiplexed PCR primer assays for targeted enrichment of the coding (exonic) regions of the 32 genes most commonly mutated in human prostate cancer samples. Mutations in these oncogenes and tumor suppressor genes are often relevant for tumor classification, and warrant extensive investigation to enhance the understanding of carcinogenesis. Prostate cancer is a neoplasm of the male reproductive gland with a high mortality rate. There are many mutations that can cause the oncogenic progression of a prostate tumor. For example, NKX3-1 is a tumor suppressor involved in prostate development. Losses of heterozygosity or mutations leading to decreased NKX3-1 expression both promote prostate cancer progression. However, mutations in other genes are typically required for prostate cancer to progress and become invasive. Therefore, sequencing analysis is an efficient method to examine a prostate tumor sample for multiple potential mutations in multiple genes. This panel narrows the focus to the most relevant mutated genes in prostate cancer, using a variety of resources such as recent whole genome/exome sequencing studies from scientific networks including the Cancer Genome Atlas. Curated databases such as the Cancer Gene Census and COSMIC (Catalogue of Somatic Mutations in Cancer) are also used.

GenOnc Prostate Cancer Panel Genes

Hyperplasia:
TP53

In Situ Neoplasm:
Glandular Intraepithelial Neoplasia Grade III: TP53

Adenoma:
AKAP9, APC, SPOP, TP53

Carcinoma:
AR, C14orf49, CDKN1B (p27KIP1), GLI1, IKZF4, KDM4B, KLF6, MYC, NCOA2, NIPA2, OR5L1, SDF4, TFG, ZNF473, ZNF595

Adenocarcinoma:
AKAP9, APC, CDKN2A (p16INK4), FOXA1, MED12, MLL2, NKX3-1, NRCAM, PCDH11X, PDZRN3, PIK3CA (p110a), PTEN, RB1, SCN11A, SPOP, TBX20, THSD7B, TP53, ZFHX3

Castration-Resistant Prostate Cancer:
APC, AR, CDK12, MLL2, OR5L1, PTEN, RB1, TP53, ZFHX3