PathGroup
Physician Centered. Patient Focused.

SmartGenomics™ Melanoma Profile

Oncology Services

Clinical to Genomic

Advanced Standard of Care

PathGroup SmartGenomics: Melanoma is designed for ***use at diagnosis*** of primary or metastatic melanoma to uncover therapeutic options and aid in treatment planning to improve patient outcomes.

- **Includes NCCN recommended markers BRAF, KIT, PDGFRA and NRAS**
- **Facilitates selection of appropriate clinical trials as recommended by NCCN guidelines**
- Clinically actionable genomic information for 43 gene mutations, IHC and CMA from a single biopsy for a complete patient picture
- Full results in 7 to 10 days

Tailored Genomic Melanoma Profile

Next Generation Sequencing (NGS)	
AKT1	Mediates resistance to BRAF inhibitors
APC	Mutations may promote cell proliferation
ARAF	Clinically acquired resistance to RAF therapy
ATM	Loss of function mutations lead to genomic instability
BRAF	Mutation status required to initiate treatment of metastatic melanoma with FDA approved therapies
BRCA1/2	Potential therapeutic target
CDKN2A	Frequently mutated in 10-40% of familial melanomas
CTNNB1	Co-occurence with NRAS; thought to be synergistic in melanoma formation. May have a role in prognosis
EGFR	Associated with acquired resistance to BRAF inhibitors
ERBB2/4	Promotes cell growth and survival in primary and metastatic melanoma
FBXW7	A critical tumor suppressor often mutated and inactivated in melanoma
FGFR1/2/3/4	Various gain or loss of function mutation lead to tumorigenesis
GNA11	Frequently mutated in primary and metastatic uveal melanoma. MEK inhibitors are available in clinical trials
GNAQ	Frequently mutated in primary and metastatic uveal melanoma. MEK inhibitors are available in clinical trials
GNAS	Mutation has a recognized role in acral melanoma. Targeted therapeutics currently in clinical trial
HRAS	Mutations reported in both deep penetrating nevi and cutaneous melanoma
IDH1/2	Typically co-exist with BRAF/KIT mutations and may increase risk of metastasis in melanoma
JAK1/2/3	Acquired resistance to immunotherapy
KDR	Potential benefit from antiangiogenesis treatment
KIT	Mutation most commonly noted in acral and mucosal melanomas; potential response to KIT targeted agents. In GIST, associated with increased likelihood of response to FDA approved agents
KRAS	Predictive of lack of response to some targeted therapies. MEK inhibitor combinations currently being tested
MAP2K1	Recognized role in therapeutic resistance. MEK inhibitors currently in clinical trials
MET	Potentially targetable mutation
NF1/2	Resistance to BRAF inhibitors, sensitivity to MEK inhibition
NOTCH1	Mutation can lead to uncontrolled cell growth, potentially targetable

(profile components listing continued on back)

NRAS	Associated with poor prognosis and lack of response to vemurafenib. Potential role for targeted investigational agents and/or immunotherapy
NTRK1/2/3	Potential therapeutic target
PDGFRA	Recognized driver mutation in GIST and melanoma. FDA-approved targeted therapies in GIST
PIK3CA	Frequently mutuated in GIST and predictive of response to FDA approved agents
PTEN	Thought to be a late occurring mutation in both melanoma and GIST. Prognostic and predictive of response to targeted therapy
SMAD4	Mutation can lead to uncontrolled cell growth
SMO	A proto-oncogene thought to be an early genetic factor in its tumourigenesis
SRC	Mediates resistance to RAF inhibitors
STK11	Predictive of metastasis in melanocytic cells
TERT	High frequency mutation predictive of survival
TP53	Poor prognostic marker
VHL	Tumor suppressor gene associated with prognosis

Immunohistochemistry (IHC)

PDL1	Predictive of response to immunomodulating agents

Cytogenomic Microarray (CMA)

Whole genome copy number changes in >22,000 genes, 500 of which are implicated in cancer