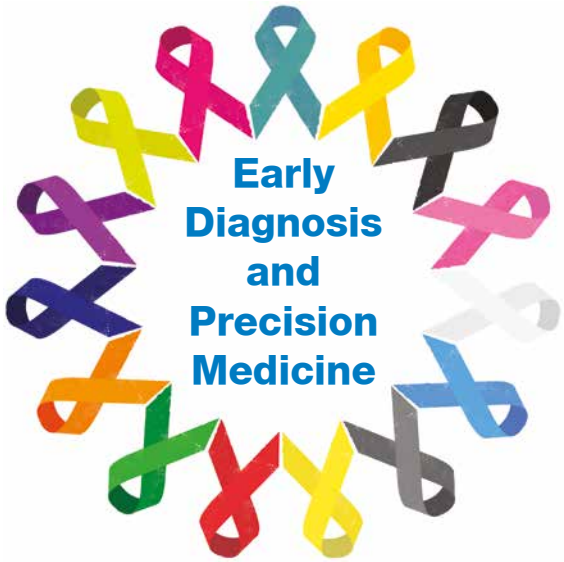
Mikrogen Somatic Cancer Panels

PANEL NAME	NUMBER OF GENES	SAMPLE TYPE	PANEL GENE CONTENT
Actionable Cancer Panel	22 genes	FFPE Liquid Biopsy	AKT1, ALK, BRAF, CTNNB1, EGFR, ERBB2, ERBB3, ESR1, FOXI2, GNA11, GNAQ, IDH1, IDH2, KIT, KRAS, MET, NRAS, PDGFRA, PIK3CA, RAF1, RET, TP53
Lung Cancer Panel (Somatic)	72 genes	FFPE Liquid Biopsy	KRAS, PIK3CA, TP53, ALK, AMER1, APC, ATM, ADGRB3, BRAF, CDKN2A, CTNNB1, EGFR, ERBB2, FGFR3, GRM8, HRAS, JAK2, MET, MUC16, NF1, NFE2L2, NRAS, NTRK2, NTRK3, PDGFRA, PIK3CG, PKHD1, PTEN, RB1, RET,SMARCA4, STK11, TNFAIP3, ARID1A, CREBBP, DDR2, EPHA5, ERBB4, FBXO7, FBXW7, FGFR1, FHIT, KDR, KIT, LRP1B, KMT2D, MYC, NOTCH1, NTRK1, PIK3R1, PTPRD, RARB, RBM10, RIT1, ROS1, RUNX1T1, SETD2, AKT1, CDKN2B, FGFR2, KEAP1, MAP2K1, MDM2, MGA, MLH1, PIK3R2, SMAD4, TSC1, U2AF1, BAP1, RASSF1, SOX2
Myeloid Neoplasia Panel (Somatic)	141 genes	Blood With EDTA / Bone Marrow	ASXL2, ATM, BRAF, CALR, CDKN2A, CREBBP, CRLF2, CSF3R, CTCF, DNM2, EGFR, EP300,FBXW7, GATA2, HNRNPK, HRAS, IKZF3, IL7R, KDM6A, KDR, KMT2C, LRRC4, MAP2K1, MLH1, MSH2, MSH6, NOTCH1, NTRK3, PAX5, PDGFRA, PMS2, PRAMEF2, PTEN, RELN, SMARCB1, ANKRD26, ASXL1, BCOR, BCORL1, BIRC3, C17orf97, CARD11, CBLC, CEBPA, CHEK2, CSF1R, DAXX, DDX41, DNMT1, ELANE, FLRT2, FLT3, GATA1, IDH1, IDH2, IKZF1, JAK1, JAK3, KIT, KMT2A,KRAS, MPL, MYC, NBN, NPM1, NRAS, NSD1, OR13H1, OR8B12, P2RY2, PCDHB1, PHF6, PRPF8, PTPN11, RAD21, RUNX1, SF1, SF3A1, SMC1A, SMC3, SRP72, SRSF2, STAG2,STXBP2, U2AF1, U2AF2, WT1, ADA, BLM, KCNA4, KLHL6,NPAT, TAL1, TERT, TUBA3C, WAS, WRN, ABL1, RB1, TP53, LUC7L2, BCL6, BCR, GJB3, SH2D1A, ATRX, ETNK1, GNAS, SETBP1, XPO1, ZRSR2, CBL, CBLB, DNMT3A, EED, ETV6, EZH2, PRPF40B, SUZ12, TET2, JAK2, KAT6A, NF1,SF3B1, SH2B3, KLHDC8B, TPMT, BRCA1, BRCA2, BRINP3, CUX1, FAM47A, FAS, KCNK13, MYD88, PML, PRF1, SAXO2, STAT3, TERC, TNFRSF13B
Prostate Cancer Panel (Somatic)	14 genes	FFPE	APC, ATM, BRCA1, BRCA2, CHEK2, EPCAM, HOXB13, MLH1, MSH2, MSH6, MUTYH, PALB2, PMS2, TP53
Mikro-Act Hot Spot Somatic Panel	4 genes	FFPE Liquid Biopsy	BRAF, EGFR, KRAS, NRAS
Colon Cancer Panel (Somatic)	71 genes	FFPE Liquid Biopsy	BRAF, FBXW7, KRAS, CTNNB1, NRAS, PIK3CA, APC, DMD, SMAD4, STK11, TCF7L2, TP53, ACVR1B, AKT1, ATM, ATP6V0D2, AXIN2, BAX, BLM, BMPR1A, BRCA1, BRCA2, BUB1B, CASP8, CDC27, CDH1, CDK4, CDKN2A, CHEK2, CTNNA1, DCC, EGFR, ENG, EP300, EPCAM, ERBB2, FGFR3, FLCN, FZD3, GALNT12, GPC6, GREM1, KIT, MAP2K4, MAP7, MET, MIER3, MLH1, MLH3, MSH2, MSH3, MSH6, MUTYH, MYO1B, PALB2, PIK3R1, PMS1, PMS2, POLD1, POLE, PTEN, PTPN12, RET, RPS20, SLC9A9, SMAD2, SRC,TCERG1, TGFBR2, WBSCR17, SCG5
Micro-HRR Panel (Somatic)	15 genes	FFPE Liquid Biopsy	ATM, BARD1, BRCA1, BRCA2, BRIP1, CDK12, CHEK1, CHEK2, FANCL, PALB2, PPP2R2A, RAD51B, RAD51C, RAD51D, RAD54L
BRCA 1/2 Panel (Somatic)	2 genes	FFPE	BRCA1, BRCA2
Breast Cancer Panel (Somatic)	93 genes	FFPE	PIK3CA, PTEN, ATR, BLM, BRCA1, BRCA2, CASP8, CDH1, CDKN2A, CSMD1, EGFR, ERBB2, ERBB3, EXOC2, FGFR1, HERC1, ITCH, KMT2C, KRAS, MED12, MSH6, MUC16, NEK2, PALLD, PIK3R1, PMS2, PTGFR, RAD51C, RB1, SMARCA4, SYNE1, TP53, XRCC2, AKT1, APC, ATM, FANCC, FGFR2, GATA3, GEN1, HOXB13, MLH1, MRE11, MSH2, NF1, PALB2, RAD51D, SMAD4, STK11, ACVR1B, CBFB, EXT2, PPM1L, SEPT9, AR, BMPR1A, CDK4,FBXO32, IRAK4, NCOR1, RAD50, TRAF5,VHL, MAP2K4, NBN, AXIN2, BARD1, BRIP1, CDK6, CHEK2, CTNNB1, DIRAS3, ERCC4, FAM175A, MEN1, MUTYH, PMS1, RAD51, TGFB1, BAP1, EP300, ESR1, MAP3K1, MDM2, MYC, PBRM1,PCGF2, WEE1, ZBED4, RET, CCND1,EPCAM, XRCC3
Breast/Over Cancer Panel (Somatic)	14 genes	FFPE	APC, ATM, BRCA1, BRCA2, CHEK2, EPCAM, HOXB13, MLH1, MSH2, MSH6, MUTYH, PALB2, PMS2, TP53
Tumor Mutation Burden (TMB) Panel	486 genes	FFPE	*"Please visit our website (**www.mikrogenlab.com**) for test details."*
Mikro-FUSION NTRK Test	Gene Fusions	FFPE	NTRK1, NTRK2, NTRK3
Mikro-EXP PDL1 Test	1 genes	FFPE	PDL-1
Mikro-MSI Test	8 markers	FFPE Bone Marrow	MSI

Mikrogen Somatic Cancer Panels

Identifying Somatic Mutations for Tumor Profiling

Each person's cancer, and even parts of a single tumor, can become completely unique. Somatic mutation analysis is a standard of practice for tumors in order to identify therapeutic sensitizing and resistance mutations. This allows a finer assessment of the diagnosis, prognosis and targeted therapies directed towards the patient's tumor profile.



What is Unique Molecular Indexing (UMI) Technology?

UMI Panel integrates unique molecular index (UMI) technology into a gene-specific, primer-based target enrichment process, enabling sensitive variant detection of targeted genomic regions by NGS. UMIs allow us to distinguish between the artifacts generated by PCR from sequence variants present in original molecules. UMIs not only increase the accuracy of detecting mutations, but also increase the accuracy of target quantification. UMIs enable confident detection of low-frequency DNA variants which is crucial for detection of somatic mutations.

Classification of Somatic Variants in Tumors

Data are analyzed by using QIAGEN Clinical Insight (QCI) and Franklin by Genoox variant analysis software. All the detected variants were classified according to the criteria listed below. Tumor-specific actionable (Tier I and Tier II) and clinically associated variants were reported.

Somatic variants can be classified according to their response to personalized medicine practices specific to the primary tumor site or histology. Somatic variants are classified into four tiers based on their level of clinical significance in cancer diagnosis, prognosis, and/or therapeutics according to Malecular Pathology Guidelines (AMP/ASCO/CAP).

Tier I: Variants with Strong Clinical Significance
These variants predict response or resistance to therapies approved by the FDA or included in professional guidelines as diagnostic and/or prognostic biomarkers for specific types of tumors.

Tier II: Variants with Potential Clinical Significance
These are FDA-approved therapies or therapies included in professional guidelines for a different tumor type, or investigative therapies with some clinical evidence.