**Supplementary Tables**

**Supplementary Table S1. Composition of gene sets used for pathway analysis.**

|  |  |  |  |
| --- | --- | --- | --- |
| **RTK\_Ras\_Raf** | **RB\_CELL\_CYCLE** | **PI3K\_AKT\_MTOR** | **DDR** |
| PDGFRB | CDKN2B | PTEN | ATM |
| EGFR | CDKN2A | PIK3R2 | MSH2 |
| ERBB2 | TP53 | PIK3CA | BRCA1 |
| ERBB3 | RB1 | PIK3R1 | MLH1 |
| ERBB4 | CDKN2C | AKT1 | ATR |
| KIT | CDK4 | TSC2 | BRCA2 |
| BRAF | CDK6 | AKT2 | CHEK1 |
| IGF1R | MYC | FOXO1 | CHEK2 |
| FGFR1 | CCND1 | RHEB | FANCF |
| RAF1 | – | MTOR | MDC1 |
| KRAS | – | RICTOR | PARP1 |
| NRAS | – | FOXO3 | RAD51 |
| VEGFA | – | PDPK1 | PRKDC |
| FGF1 | – | TSC1 | – |
| IGF1 | – | AKT1S1 | – |
| KDR | – | RPTOR | – |
| PDGFA | – | MLST8 | – |
| PDGFB | – | – | – |
| PDGFRA | – | – | – |
| VEGFB | – | – | – |
| HRAS | – | – | – |
| MAP3K1 | – | – | – |
| MAP3K2 | – | – | – |
| MAP3K3 | – | – | – |
| MAP3K4 | – | – | – |
| MAP3K5 | – | – | – |
| MAP2K1 | – | – | – |
| MAP2K2 | – | – | – |
| MAP2K3 | – | – | – |
| MAP2K4 | – | – | – |
| MAP2K5 | – | – | – |

DDR, DNA damage response; mTOR, mammalian target of rapamycin; PI3K, phosphatidylinositol 3-kinase; *PIK3CA*,phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit alpha; RTK, receptor tyrosine kinase.

**Supplementary Table S2.** **Discordant *PIK3CA* calls between central and local testing**

|  |  |  |  |
| --- | --- | --- | --- |
| Sample | Tumor type | FM *PIK3CA* codon mutation | Local *PIK3CA* codon mutation |
| 1 | Endometrial  | NMD | E542K |
| 2 | Bladder | NMD | Q75E |
| 3 | HNSCC | NMD | E542K |
| 4 | Cervical | NMD | E545K |
| 5 | CRC | NMD | R88Q |
| 6 | Squamous  | NMD | E545K |
| 7 | Pancreatic adenocarcinoma | NMD | E545K |
| 8 | Intrahepatic cholangiocarcinoma | NMD | E545K |
| 9 | Salivary gland adenoid cystic carcinoma | NMD | exon 10a |
| 10 | Gall bladder adenocarcinoma | NMD | E545K, V344G |
| 11 | Gall bladder adenocarcinoma  | NMD | C604R |
| 12 | Small intestine adenocarcinoma | NMD | E365K |
| 13 | Undifferentiated soft tissue sarcoma | NMD | H1047L |
| 14 | Pancreatic sarcomatoid carcinoma  | NMD | I391Mb |
| 15 | Cervical | E542K, P471A | E545K |
| 16 | Myxoid liposarcoma | N345K | E542K |
| 17 | Ovarian clear cell | Q546L | Q546K |
| 18 | Pancreatic adenocarcinoma | Q546R | Q546K |
| 19 | Squamous (skin) | E545Q | E545K |

a Not included in concordance estimate.

b Likely germline SNP.

CRC, colorectal cancer; FM, Foundation Medicine; HNSCC, head and neck squamous cell carcinoma; NMD, no mutation detected; SNP, single nucleotide polymorphism.