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| Next Generation Sequencing (NGS) Solid Tumors | | Turnaround Time (est.): 7-10 days | |
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| Specimen Requirements: Tumor tissue; freshly cut slides from formalin-fixed, paraffin-embedded (FFPE) blocks. | | | |
| Recommended histological processing: Fix tissue samples in 4–10% formalin as quickly as possible after removal. | | | |
| <i>TEST NAME</i> | <i>COMMON USE</i> | <i>TEST CODE</i> | <i>Millennium Code</i> |
| NGS Colon, Target Gene Panel Colon Cancer | Colorectal Cancer | 906805 | CG TGPCOLCA |
| 7 genes: AKT1, BRAF, ERBB2, EGFR, KRAS, NRAS, PIK3CA | | | |
| NGS Full Tumor, Target Gene Panel with fusions | Comprehensive Tumor | 906808 | CG TGPFUSCOMP |
| 52 genes: ABL1, AKT1, AKT3, ALK, AR, AXL, BRAF, CCND1, CDK4, CDK6, CTNNB1, DDR2, EGFR, ERBB2, ERBB3, ERBB4, ERG, ESR1, ETV1, ETV4, ETV5, FGFR1, FGFR2, FGFR3, FGFR4, GNA11, GNAQ, HRAS, IDH1, IDH2, JAK1, JAK2, JAK3, KIT, KRAS, MAP2K1, MAP2K2, MET, MTOR, MYC, MYCN, NRAS, NTRK1, NTRK2, NTRK3, PDGFRA, PIK3CA, PPARG, RAF1, RET, ROS1, SMO | | | |
| NGS Lung, Target Gene Panel Lung Cancer with fusions | Lung Cancer | 906807 | CG TGPFUSLUNGCA |
| 25 genes: | | | |
| Hotspot: AKT1, ALK, BRAF, CDK4, DDR2, EGFR, ERBB2, FGFR1, FGFR2, FGFR3, HRAS, JAK2, KRAS, MAP2K1, MET, MYC, NRAS, PDGFRA, PIK3CA, RET, ROS1 | | | |
| Copy Number Variation (CNV): CCND1, FGFR1, MET | | | |
| Fusion: ALK, MET, NTRK1, NTRK2, NTRK3, RET, ROS1 | | | |
| NGS Melanoma, Target Gene Panel Melanoma | Melanoma | 906806 | CG TGPMEL |
| 11 genes: AKT1, BRAF, CCND1, CD4K, CTNNB1, ERBB4, GNA11, GNAQ, KIT, MAP2K1, NRAS | | | |
| Next Generation Sequencing (NGS) Hematology | | Turnaround Time (est.): 3-5 days | |
| Specimen Type: 2-5 ml bone marrow or blood. | | | |
| Specimen Requirements: EDTA (lavender top) or sodium heparin (green top container) for blood and marrow. No frozen specimens of FFPE tissues. | | | |
| <i>TEST NAME</i> | <i>COMMON USE</i> | <i>TEST CODE</i> | <i>Millennium Code</i> |
| NGS AML Molecular Profile (56 genes) | AML | 907296 | CG AML NGS |
| Hotspot genes: ANKRD27, FLT3, CSF3R, DDX41, DNMT3A, IDH1, IDH2, KIT, KRAS, NPM1, NRAS, PPM1D, PTPN11, SF3B1, SMC1A, SMC3, SRSF2, U2AF1, WT1 | | | |
| Full genes: ASXL1, BCOR, CEBPA, EZH2, PHF6, RUNX1, STAG2, TET2, TP53, ZRSR2 | | | |
| Fusion drivers: ABL1, ALK, BCL2, BRAF, CCND1, CREBBP, EGFR, ETV6, FGFR1, FGFR2, FUS, HMGA2, JAK2, KMT2A, MECOM, MET, MLLT10, MLLT3, MYBL1, MYH11, NTRK3, NUP214, NUP98, PDGFRB, PDGFRA, RARA, RBM15, RUNX1, TCF3, TFE3 | | | |
| Expression genes: BAALC, MECOM, MYC, SMC1A, WT1 | | | |

| TEST NAME | COMMON USE | TEST CODE | Millennium Code |
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| NGS Hematology Molecular Profile (72 genes) | HEMATOLOGY | 907297 | CG HEM NGS |
| Hotspot genes: ABL1, ANKRD26, BRAF, CBL, CSF3R, DDX41, DNMT3A, FLT3, GATA2, HRAS, IDH1, IDH2, JAK2, KIT, KRAS, MPL, MYD88, NPM1, NRAS, PPM1D, PTPN11, SETBP1, SF3B1, SMC1A, SMC3, SRSF2, U2AF1, WT1 | | | |
| Full genes: ASXL1, BCOR, CALR, CEBPA, ETV6, EZH2, IKZF1, NF1, PHF6, PRPF8, RB1, RUNX1, SH2B3, STAG2, TET2, TP53, ZRSR2 | | | |
| Fusion drivers: ABL1, ALK, BCL2, BRAF, CCND1, CREBBP, EGFR, ETV6, FGFR1, FGFR2, FUS, HMGA2, JAK2, KMT2A (MLL-PTD), MECOM, MET, MLLT10, MLLT3, MYBL1, MYH11, NTRK3, NUP214, NUP98, PDGFRB, PDGFRA, RARA, RBM15, RUNX1, TCF3, TFE3 | | | |
| Expression genes: BAALC, MECOM, MYC, SMC1A, WT1 | | | |
| NGS MPN (JAK2 V617F & exon 12, CALR, MPL, CSF3R, BCR::ABL1) (5 genes) | MPN | 907298 | CG MPN NGS |
| Hotspot genes: CSF3R, JAK2, MPL | | | |
| Full gene: CALR | | | |
| Fusion drivers: ABL1 | | | |
| ONCOLOGY FISH PANELS | Turnaround Time (est.): 3-8 days | | |
| Specimen Type: Bone marrow, leukemic blood, fresh unfixed tissue, tumors, lymph nodes, unstained aspirate smears or touch preps. FFPE panels are noted. Tests may be available for other specimen types - call Genetics/Genomics Lab at 602-685-5700 . | | | |
| Specimen Requirements: 1-4 mL of bone marrow or peripheral blood. Sodium heparin, lithium heparin and EDTA tube for marrow or blood. Invert to mix. Sterile container with saline for tissues. | | | |
| TEST NAME | COMMON USE | TEST CODE | Millennium Code |
| FISH: ALL Hyperdiploidy Panel Includes chromosomes 4,10,17 | B-cell ALL | 88812 | CG FALLHYPER |
| FISH: ALL Panel Includes BCR/ABL1 t(9;22), KMT2A (MLL) (11q23), ETV6/RUNX1 t(12;21) rearrangements and chromosomes 4,10,17 | B-cell ALL | 88879 | CG FALL |
| FISH: Ph like ALL Panel Includes CRLF2, ABL2, CSF1R, PDGFRB, JAK2, ABL1 and EPOR | Ph neg ALL | 907269 | CG PHLIKEALL SQL |
| FISH: AML Panel Includes MLL(11q23) gene rearrangement, BCR/ABL1 t(9;22), CBFB(16q22) gene rearrangement, PML/RARA t(15;17), RUNX1T1/RUNX1 t(8;21), deletion / monosomy 5, 7, 20; and trisomy 8 | AML | 788807 | CG FAML |
| FISH: CLL Panel Includes Trisomy 12, deletions 13q14.3, 13q34, deletion ATM (11q22.3), deletion TP53(17p13.1) and IGH/CCND1 t(11;14). | CLL | 88915 | CG FCLL |
| FISH: Lymphoma Panel, High Grade Includes BCL2(18q21), BCL6(3q27), MYC(8q24) gene rearrangements. FFPE available | lymphoma | 906763 | CG FHGL |
| FISH: Lymphoma Panel, Low Grade Includes IGH(14q32), BCL2(18q21), BCL6(3q27), MALT1(18q21), IGH/CCND1 t(11;14) gene rearrangements. FFPE available | lymphoma | 906762 | CG FLGL |
| FISH: MDS Panel Includes deletion/monosomy 5 (EGR1), deletion/monosomy 7 (D7S486), deletion/monosomy 20 (D20S108) and trisomy 8. | MDS | 88919 | CG MDS |

| TEST NAME | COMMON USE | TEST CODE | Millennium Code |
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| FISH: Multiple Myeloma (MM) Panel [1p/1q deletion/amplification, deletion/monosomy 13 (13q14.3, 13q34) deletion TP53 (17p13.1), and IGH (14q32) rearrangements; IGH reflex testing for t(4;14) - IGH/FGFR3, t(11;14) - IGH/CCND1, t(14;16) - IGH/MAF and t(14;20) - IGH/MAFB will be ordered and billed separately if an IGH rearrangement is detected. Plasma cell enrichment is performed when appropriate. | Multiple Myeloma (MM) | 88808 | CG FMM PNL |
| FISH: Myeloproliferative Neoplasm (MPN) Panel Includes BCR/ABL1 t(9;22), trisomy 8, deletion 13 (13q14.3, 13q34), and deletion/monosomy 20 | Myeloproliferative neoplasms | 906543 | CG MPNP |
| INDIVIDUAL ONCOLOGY FISH PROBES | | Turnaround Time (est.): 3-8 days | |
| Specimen Type: Bone marrow, leukemic blood, fresh unfixed tissue, tumors, lymph nodes, unstained aspirate smears or touch preps. FFPE probes are noted. Tests may be available for other specimen types - call lab at 602-685-5700 . | | | |
| Specimen Requirements: 1-4 mL of bone marrow or peripheral blood. Sodium heparin, lithium heparin and EDTA tube for marrow or blood. Invert to mix. Sterile container with saline for tissues. | | | |
| TEST NAME | COMMON USE | TEST CODE | Millennium Code |
| FISH: CRLF2 (Xp22.33/Yp11.32) rearrangement | acute leukemia | 907274 | CG CRLF2 SQL |
| FISH: ABL1 (9q34.1) rearrangement | acute leukemia | 907220 | CG ABL1 |
| FISH: ABL2 (1q25.2) rearrangement | acute leukemia | 907224 | CG ABL2 |
| FISH: ALK (2p23) rearrangement | non-small-cell lung cancer, anaplastic large-cell lymphomas | 88893 | CG FALK |
| FISH: ALL Hyperdiploidy Panel Includes chromosomes 4,10,17 | B-cell ALL | 88812 | CG FALLHYPER |
| FISH: ATM (11q22.3) deletion | CLL | 906791 | CG FATMD |
| FISH: BCL2 (18q21) rearrangement FFPE available | Follicular lymphoma, DLBCL | 88896 | CG FBCL2 |
| FISH: BCL6 (3q27) rearrangement FFPE available | DLBCL | 88894 | CG FBCL6 |
| FISH: BCR / ABL1 t(9;22) | ALL / CML | 88840 | CG FP1 |
| FISH: BIRC3 / MALT1 (API2 / MALT1) t(11;18) | MALT lymphoma | 88892 | CG FAPI2MALT1 |
| FISH: CBFB (16q22) rearrangement | AML with recurrent abnormalities, AML-M4 | 88810 | CG FCBFB |
| FISH: CDKN2A (9p21.3) rearrangement | ALL | 88916 | CG FCDKN2A |
| FISH: CKS1B (1q21) gain / CDKN2C (1p32.3) deletion | MM | 906095 | CG CKS1B (1q21+) |
| FISH: CSF1R (5q32) rearrangement | acute leukemia | 907268 | CG CSF1R SQL |
| FISH: Deletion / Monosomy 13 (13q14, 13q34) | CLL, MM | 906792 | CG FDELMON |
| FISH: Deletion / Monosomy 20 (D20S108) (20q12) | MDS / MPN / acute leukemias | 88931 | CG FDM20 |
| FISH: Deletion / Monosomy 5 (EGR1) (5q31.2) | MDS with isolated del(5q) | 88925 | CG FDM5 |
| FISH: Deletion / Monosomy 7 (D7S486) | MDS | 88927 | CG FDM7 |
| FISH: EPOR (19p13.2) rearrangement | acute leukemia | 907272 | CG EPOR SQL |
| FISH: ETV6 (12p13) rearrangement | ALL / AML / CMML | 88819 | CG FETV6GR |
| FISH: ETV6 / RUNX1 t(12;21) | B-cell ALL | 88811 | CG FETV6RUNX1 |
| FISH: EVI1 (3q), inv(3) FFPE available | acute leukemia | 88998 | CG EVI 1 |
| FISH: EWSR1 (22q12) rearrangement FFPE available | Ewing's sarcoma | 88897 | CG FEWSR1 |
| TEST NAME | COMMON USE | TEST CODE | Millennium Code |

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| FISH: FGFR1 (8p12) rearrangement FFPE available | Neoplasms with eosinophilia | 88996 | CG FFGFR1GR |
| FISH: FIP1L1-PDGFR A (4q12) rearrangement | Neoplasms with eosinophilia | 88817 | CG FIP1LI or CG PDGFRA |
| FISH: FOXO1 (FKHR) (13q14) rearrangement | Alveolar Rhabdomyosarcoma | 88814 | CG FFOXO1GR |
| FISH: HER2 Amplification, Breast Cancer FFPE only | Breast cancer | 905837 | CG HER2 |
| FISH: IGH (14q32) rearrangement FFPE available | MM / CLL / B-cell ALL / B-cell NHL | 88886 | CG FIGHGR |
| FISH: IGH / BCL2 t(14;18) FFPE available | Follicular lymphoma, t(FL) to DLBCL | 88890 | CG FIGHBCL2 |
| FISH: IGH / CCND1 (BCL1) t(11;14) FFPE available | Mantle cell lymphoma / CLL / MM | 88887 | CG FIGHCCND1 |
| FISH: IGH / FGFR3 t(4;14) | MM | 88888 | CG FFGFR3IGH |
| FISH: IGH / MAF t(14;16) | MM | 88889 | CG FIGHMAF |
| FISH: IGH / MAFB t(14;20) | MM | 906097 | CG IGH/MAFB t(14;20) |
| FISH: IGH / MALT1 t(14;18) | MALT lymphoma / B-cell NHL | 88891 | CG FIGHMALT1 |
| FISH: IGH / MYC t(8;14) FFPE available | Burkitt lymphoma, Diffuse Large B-cell Lymphoma | 88933 | CG FIGHMYC |
| FISH: JAK2 (9p24.1) rearrangement | acute leukemia | 907273 | CG JAK2GR SQL |
| FISH: KMT2A (MLL) (11q23) rearrangement | Pediatric and adult leukemias | 88837 | CG FMLL |
| FISH: MALT1 (18q21) rearrangement FFPE available | MALT1 translocations | 88910 | CG FMALT1GR |
| FISH: MDM2 amplification FFPE only | Soft tissue and bone tumors | 906793 | CG MDM2 |
| FISH: MECOM (EVI1) (3q26.2) rearrangement FFPE available | AML / MDS / MPN / therapy related disease | 88998 | CG EVI 1 |
| FISH: Miscellaneous Lymphoid Hematopoietic | Leukemia | 788922 (specify) | CG FMISCLH |
| FISH: Miscellaneous Sarcoma | Sarcoma | 88921 | CG FMISCSAR |
| FISH: Miscellaneous Solid Tumor | Tumor | 88866 | CG FISHST |
| FISH: MYB (6q23) deletion | AML / Lymphoid leukemias | 88895 | CG FMYB |
| FISH: MYC (C-MYC) (8q24) rearrangement FFPE available | Burkitt lymphoma | 88830 | CG FCMYC |
| FISH: MYCN (N-MYC) (2p24.1) rearrangement | Neuroblastoma | 88838 | CG FNMYCAMP |
| FISH: MYH11/CBFB inv(16), t(16;16) | acute leukemia | 907225 | CG MYH/CBFB |
| FISH: NUP98 (11p15) rearrangement | acute leukemia | 907221 | CG NUP98 |
| FISH: PDGFRβ (5q33.2) rearrangement FFPE available | MDS / MPN / Neoplasms with Eosinophilia | 88995 | CG PDGFRB |
| FISH: PML / RARA t(15;17) | Acute promyelocytic leukemia | 788831 | CG PML/RARA |
| FISH: RARA (17q21) rearrangement | AML w/variant RARA translocation | 906794 | CG FRARAR |
| FISH: RUNX1T1 / RUNX1 (ETO/AML1) t(8;21) | AML with recurrent abnormalities | 88809 | CG FRUNX1RUNX1T1 |
| FISH: SS18 (SYT) (18q11.2) rearrangement FFPE available | Synovial sarcoma | 88901 | CG FSS18GR |
| FISH: TCF3 / PBX1 t(1;19) | Pre-B cell ALL | 88900 | CG FTCF3PBX1 |
| FISH: TP53 (p53) (17p13.1) deletion | Numerous malignancies | 788898 | CG FP53 |
| TEST NAME | COMMON USE | TEST CODE | Millennium Code |
| FISH: TRA/D (TCR) (14q11) rearrangement | T-cell ALL / Lymphoma | 788815 | CG FTRADGR |

| FISH: Trisomy 17 (ordered as TP53 deletion) | Numerous malignancies | 788898 | CG FP53 |
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| FISH: Trisomy 12 | CLL | 88937 | CG FTRI12 |
| FISH: Trisomy 8 | MDS / MPN / acute leukemias | 88929 | CG FTRI8 |
| FISH: X/Y (Post-transplant) sex determination | post BMT | 88818 | CG FXYPOST |
| MOLECULAR TESTING | | Turnaround Time (est.): 3-9 days | |
| Specimen Type: Peripheral blood, bone marrow | | | |
| Specimen Requirements: 1-4 mL of bone marrow or peripheral blood. Sodium heparin, lithium heparin and EDTA tube for marrow or blood. Invert to mix. | | | |
| Store and transport at low temperature (35-39°F/2-4°C) Include an ice pack in shipping April thru October. | | | |
| TEST NAME | COMMON USE | TEST CODE | Millennium Code |
| BCR/ABL1 mutation, quantitative | CML | 905842 | CG BCR-ABL1 |
| Factor V (Leiden mutation) | Hematological disorders | 21315 | FVL |
| Factor II (Prothrombin) 20210G>A mutation | Hematological disorders | 11887 | P2GM |
| JAK2 V617F mutation, qualitative | Myeloproliferative neoplasms (especially Ph negative) | 906423 | CG JAK2V617F SQL |
| Methylenetetrahydrofolate Reductase (MTHFR) mutation | Hematological disorders | 901893 | MTHFR |
| Pharmacogenomics(PGx) Panel | Genetically high-risk populations for various medications | 907061 | CG PGx panel |
| BLADDER CANCER SCREEN | | Turnaround Time (est.): 5-10 days | |
| TEST NAME | COMMON USE | TEST CODE | Millennium Code |
| FISH: Bladder Cancer | Bladder cancer | 3462 | CG FUROVYS |
| Specimen Type: Urine or barbotage (bladder wash) | | | |
| Specimen Requirements: Samples should be preserved and refrigerated immediately: mix ≥33 mL of specimen with 2:1(v:v) PreservCyt® or Carbowax (2% polyethylene glycol in 50% ethanol). Ship to lab with an ice pack within 72 hrs. Transportation kits with handling instructions are available upon request by calling 602-685-5264 | | Specimens collected without preservative must be refrigerated immediately and shipped within 24 hrs. | Criteria for REJECTION of specimen: <33 mls of urine |
| MICROARRAY | | Turnaround Time (est.): 10-18 days | |
| Specimen Type: Peripheral blood or bone marrow | | | |
| Specimen Requirements: 1-3 mL, Sodium heparin (green top) tube preferred. Do not centrifuge. | | | |
| TEST NAME | COMMON USE | TEST CODE | Millennium Code |
| Chromosomal Microarray | Microdeletions, submicroscopic rearrangements, SNPs | 906372 | CG MICARRAYBLD |
| CHROMOSOME ANALYSIS | | Turnaround Time (est.): 7-14 days | |
| TEST NAME | COMMON USE | TEST CODE | Millennium Code |
| Bone Marrow | Leukemia, lymphoma, dysplasia | 88858 | CG BMCHROMO |

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| Specimen Requirements: 2-4 mL bone marrow aspirate in sodium heparin (green top) tube. Invert to mix. Sodium heparin preferred. | | | |
| Leukemic Blood | CLL, CML, leukemia with circulating blasts | 88859 | CG LEUKBLDCHROMO |
| Specimen Requirements: 3-5 mL peripheral blood in sodium heparin (green top) tube. Sodium heparin preferred. | | | |
| Lymph Node | Lymphoma | 88847 | CG LNCHROMO |
| Specimen Requirements: At least ~3x3 mm sample. Collect in sterile container with sterile tissue culture medium (or saline). | | | |
| Solid Tumor | Tumor | 88862 | CG STCHROMO |
| Specimen Requirements: At least ~3x3 mm sample from tumor tissue. Collect in sterile container with sterile tissue culture medium (or saline). | | | |