Sonora Quest Laboratories™
A Subsidiary of Laboratory Sciences of Arizona

Genetics/Genomics FISH and Molecular Test Menu

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GENERAL SPECIMEN REQUIREMENTS:	Completed Cytogenetics Requisiton which must include: Clinical information, patient history, physicians's name and contact numbers.
DO NOT ADD FIXATIVE (e.g. formalin, alcohol) or send in any co	Specimen must have at least 2 unique identifiers. Unless otherwise specified: Do not refrigerate or freeze.
Send to the lab as soon as possible to maximize viability.	Include an ice pack in shipping, April through October.

Next Generation Sequencing (NGS) Solid Tumors		**Turnaround Time (est.): 7-10days**
Specimen Type: Formalin fixed, paraffin embedded tissue		
Specimen Requirements: Tumor tissue; freshly cut slides from formalin-fixed, paraffin-embedded (FFPE) blocks. Minumum 5 unstained, unbaked slides cut at 5-10 mm along with 1 marked H&E slide or instructions from pathologist about tumor involvement	**Recommended:** • Fix tissue samples in 4–10% formalin as quickly as possible after removal. • Use a fixation time of 14–24 hours (Longer fixation times lead to severe DNA fragmentation, and poor test performance). • Thoroughly dehydrate samples prior to embedding	
Store and transport at low-ambient temperature (39-77°F/4-25°C)	**Unacceptable:** Frozen tissue, <3 slides or insufficient cuts/slides	

TEST NAME(S) Next Generation Sequencing (NGS)	***COMMON USE***	***TEST CODE***	***Millennium Code***
NGS Colon, Target Gene Panel Colon Cancer 7 genes: AKT1, BRAF, ERBB2, EGFR, KRAS, NRAS, PIK3CA	Colorectal Cancer	**906805**	**CG TGPCOLCA (only used when the hospital is billed directly for testing)**
NGS Full Tumor, Target Gene Panel with fusions 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	Comprehensive Tumor	**906808**	**CG TGPFUSCOMP (only used when the hospital is billed directly for testing)**
NGS Lung, Target Gene Panel Lung Cancer with fusions 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	Lung Cancer	**906807**	**CG TGPFUSLUNGCA (only used when the hospital is billed directly for testing)**
NGS Melanoma, Target Gene Panel Melanoma 11 genes: AKT1, BRAF, CCND1, CD4K, CTNNB1, ERBB4, GNA11, GNAQ, KIT, MAP2K1, NRAS	Melanoma	**906806**	**CG TGPMEL (only used when the hospital is billed directly for testing)**

Next Generation Sequencing (NGS) Hematology		**Turnaround Time (est.): 3-5 days**	
Specimen Type: 2-5 ml bone marrow or blood.			
Specimen Requirements: EDTA (lavendar top) or sodium heparin (green top container) for blood and marrow. No frozen specimens.			
TEST NAME(S)	***COMMON USE***	***TEST CODE***	***Millennium Code***
NGS AML Molecular Profile (56 genes) Hotspot genes: FLT3, CSF3R, DNMT3A, IDH1, IDH2, KIT, KRAS, NPM1, NRAS, PTPN11, RUNX1, SF3B1, SRSF2, U2AF1, WT1 Full genes: ASXL1, BCOR, CEBPA, EZH2, PHF6, 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, PDGFRB, PDGFRA, RARA, RBM15, RUNX1, TCF3, TFE3 Expression genes: BAALC, MECOM, MYC, SMC1A, WT1	AML	906877	**CG NGS AML**
NGS Hematology Molecular Profile (72 genes) Hotspot genes: ABL1, BRAF, CBL, CSF3R, DNMT3A, FLT3, GATA2, HRAS, IDH1, IDH2, JAK2, KIT, KRAS, MPL, MYD88, NPM1, NRAS, PTPN11, SETBP1, SF3B1, 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, MECOM ,MET, MLLT10, MLLT3, MYBL1, MYH11, NTRK3, NUP214, PDGFRB, PDGFRA, RARA, RBM15, RUNX1, TCF3, TFE3 Expression genes: BAALC, MECOM, MYC, SMC1A, WT1	HEMATOLOGY	906878	**CG NGSHEM**
NGS MPN Molecular Profile (38 genes) Hotspot genes: CSF3R, JAK2, MPL, SETBP1 Full gene: CALR Fusion drivers: ABL1, ALK, BCL2, BRAF, CCND1, CREBBP, EGFR, ETV6, FGFR1, FGFR2, FUS , HMGA2, JAK2, KMT2A, MECOM ,MET, MLLT10, MLLT3, MYBL1, MYH11, NTRK3, NUP214, PDGFRB, PDGFRA, RARA, RBM15, RUNX1, TCF3, TFE3 Expression genes: BAALC, MECOM, MYC, SMC1A, WT1	MPN	907043	**CG NGS MPN**

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. 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(S)	***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	B-cell ALL	**88879**	**CG FALL**
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	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.	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**
FISH: Multiple Myeloma (MM) Panel Includes 1p/1q deletion/amplification, deletion/monosomy 13 (13q14.3, 13q34) deletion TP53 (17p13.1), and IGH (14q32) rearrangements. **NOTE:** Does not include specific IGH translocations; which may be ordered and billed seperately.	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. 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(S)	*COMMON USE*	*TEST CODE*	*Millennium Code*
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	Follicular lymphoma, DLBCL	**88896**	**CG FBCL2**
FISH: BCL6 (3q27) rearrangement	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: 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: ETV6 (12p13) rearrangement	ALL / AML / CMML	**88819**	**CG FETV6GR**
FISH: ETV6 / RUNX1 t(12;21)	B-cell ALL	**88811**	**CG FETV6RUNX1**
FISH: EWSR1 (22q12) rearrangement	Ewing's sarcoma	**88897**	**CG FEWSR1**
FISH: FGFR1 (8p12) rearrangement	Neoplasms with eosinophilia	**88996**	**CG FFGFR1GR**
FISH: FIP1L1-PDGFRA (4q12) rearrangement	Neoplasms with eosinophilia	**88817**	**CG FIP1LI or CG PDGFRA**
FISH: FOXO1 (FKHR) (13q14) rearrangement	Alveolar Rhabdomyosarcoma	**88814**	**CG FFOXO1GR**
FISH: IGH (14q32) rearrangement	MM / CLL / B-cell ALL / B-cell NHL	**88886**	**CG FIGHGR**
FISH: IGH / BCL2 t(14;18)	Follicular lymphoma, t(FL) to DLBCL	**88890**	**CG FIGHBCL2**
FISH: IGH / CCND1 (BCL1) t(11;14)	Mantle cell lymphoma / CLL / MM	**88887**	**CG FIGHCCND1**
FISH: IGH / FGFR3 t(4;14)	MM	**88888**	**CG FFGR3IGH**
FISH: IGH / MAF t(14;16)	MM	**88889**	**CG FIGHMAF**
FISH: IGH / MAFB t(14;20)	MM	**906097**	**CG IGH/MAF2 t(14;20)**
FISH: IGH / MALT1 t(14;18)	MALT lymphoma / B-cell NHL	**88891**	**CG FIGHMALT1**
FISH: IGH / MYC t(8;14)	Burkitt lymphoma, Diffuse Large B-cell Lymphoma	**88933**	**CG FIGHMYC**
FISH: KMT2A (MLL) (11q23) rearrangement	Pediatric and adult leukemias	**88837**	**CG FMLL**
FISH: MALT1 (18q21) rearrangement	MALT1 translocations	**88910**	**CG FMALT1GR**
FISH: MECOM (EVI1) (3q26.2) rearrangement	AML / MDS / MPN / therapy related disease	**88998**	**CG EVI 1**
FISH: Miscellaneous Lymphoid Hematopoietic	Leukemia	**788922 (specify)**	**CG FMISCLH must specify test**
FISH: Miscellaneous Sarcoma	Sarcoma	**88921**	**CG FMISCSAR must specify test**
FISH: Miscellaneous Solid Tumor	Tumor	**88866**	**CG FISHST**
FISH: MYB (6q23) deletion	AML / Lymphoid leukemias	**88895**	**CG FMYB**
FISH: MYC (C-MYC) (8q24) rearrangement	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	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	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**
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**
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(S) Polymerase Chain Reaction (PCR)	***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, but also other myeloid neoplasms)	**906423**	**CG JAK2**
Methylenetetrahydrofolate Reductase (MTHFR) mutation	Hematological disorders	**901893**	**MTHFR**
Pharmacogenomics(PGx) Panel	Genetically high-risk populations for various medications	**907022**	**CG PGx panel**

BLADDER CANCER SCREEN		Turnaround Time (est.): 5-10 days	
TEST NAME(S)	***COMMON USE***	***TEST CODE***	***Millennium Code***
FISH: Bladder Cancer	Bladder cancer	**3462**	**CG FUROVYS**
Specimen Type: Urine or barbotage (bladder wash)		**Turnaround time (est.): 5-10 days**	
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** (OR EDTA). Do not centrifuge. A Microarray Patient Information Profile must accompany the specimen (call 602-685-5700)			
Chromosomal Microarray	Microdeletions, submicroscopic rearrangements, SNPs	**906372**	**CG MICARRAYBLD**

CHROMOSOME ANALYSIS: Oncology		Turnaround Time (est.): 7-14 days	
Bone Marrow	Leukemia, lymphoma, dysplasia	**88858**	**CG BMCHROMO**
Specimen Requirements: 2-4 mL bone marrow aspirate in sodium heparin (green top) tube. Invert to mix. Sodium heparin preferred, lithium heparin and EDTA acceptable.			
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, lithium heparin and EDTA acceptable. Invert to mix.			
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).			