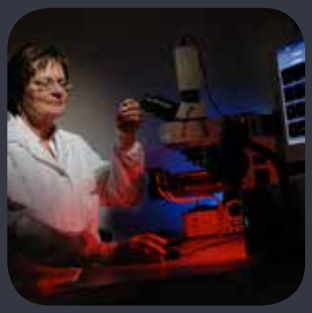
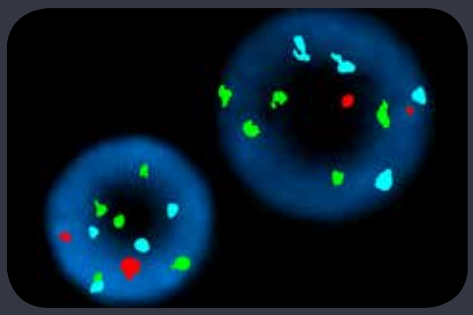
ARUP LABORATORIES | Molecular Oncology

molecular oncology services

PATIENTS.ANSWERS.RESULTS.





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APRIL 2017

Information in this brochure is current as of April 2017. All content is subject to change. Please contact ARUP Client Services at (800) 522-2787 with any questions or concerns.

ARUP LABORATORIES

As a nonprofit, academic institution of the University of Utah and its Department of Pathology, ARUP believes in collaborating, sharing knowledge, and contributing to laboratory science in ways that benefit our clients and their patients.

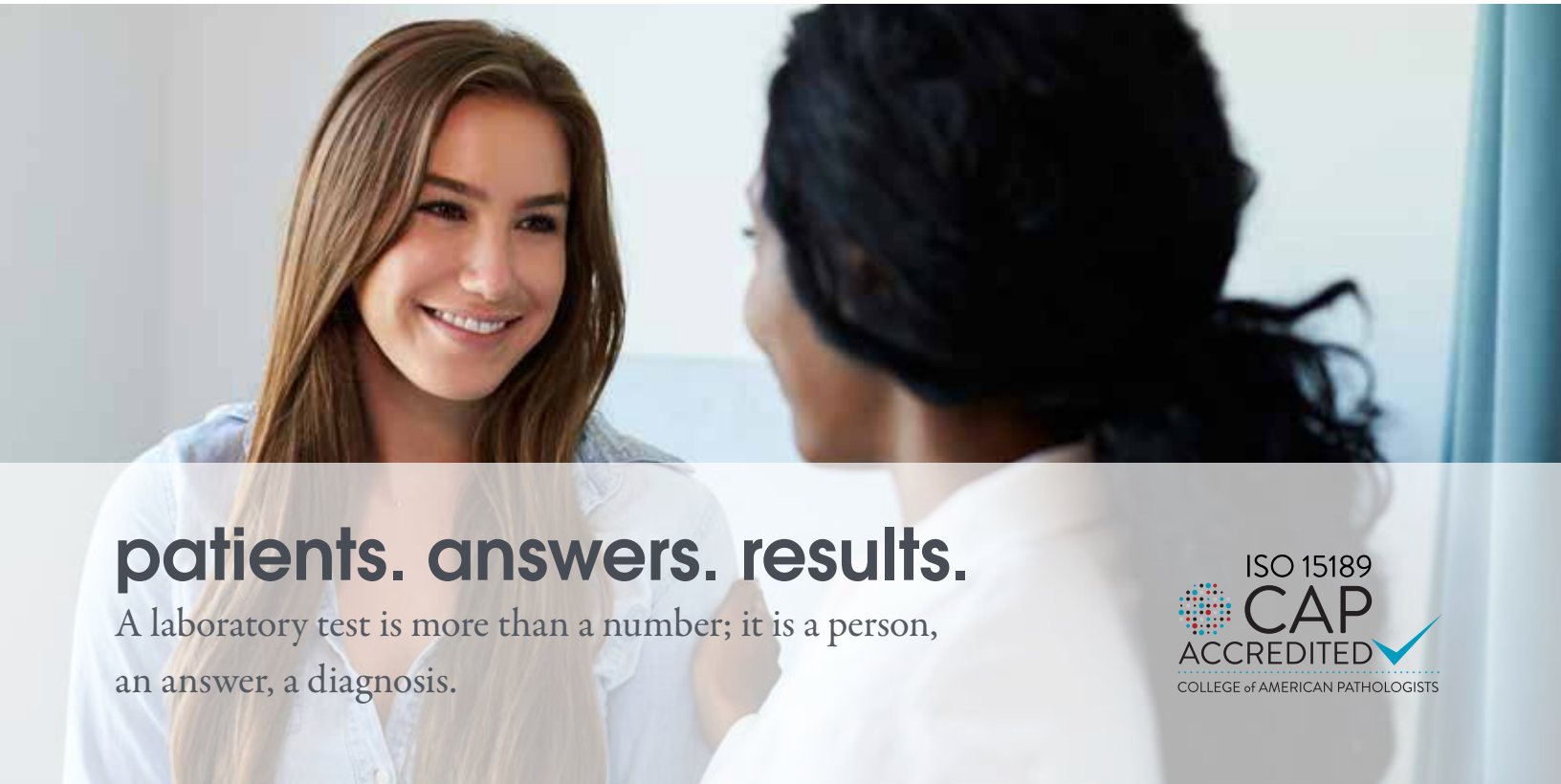
Our test menu is one of the broadest in the industry, encompassing more than 3,000 tests, including highly specialized and esoteric assays. We offer comprehensive testing in the areas of genetics, molecular oncology, pediatrics, and pain management, among others.

ARUP's clients include many of the nation's university teaching hospitals and children's hospitals, as well as multihospital groups, major commercial laboratories, and group purchasing organizations. We do not compete with our clients for physician office business, choosing instead to support clients' existing test menus by offering highly complex assays and accompanying consultative support so clients can provide exceptional patient care in their local communities.

Offering analytics, consulting, and decision support services, ARUP provides clients with the utilization management tools necessary to prosper in this time of value-based care. Our UM+ program helps clients control utilization, reduce costs, and improve patient care. In addition, ARUP is a worldwide leader in innovative laboratory research and development, led by the efforts of the ARUP Institute for Clinical and Experimental Pathology®.

ARUP's reputation for quality is supported by our ability to meet or exceed the requirements of multiple regulatory and accrediting agencies and organizations. ARUP participates in the CAP laboratory accreditation program and has CLIA certification through the Centers of Medicare and Medicaid Services. In December 2016, ARUP earned accreditation to the ISO 15189:2012 standard under CAP.

We believe in collaborating, sharing knowledge, and contributing to laboratory science in ways that provide the best value for the patient. Together, ARUP and its clients will improve patient care today and in the future.



patients. answers. results.

A laboratory test is more than a number; it is a person, an answer, a diagnosis.

ISO 15189
CAP ACCREDITED
COLLEGE of AMERICAN PATHOLOGISTS

MOLECULAR ONCOLOGY SERVICES

Molecular diagnostics is an important component of clinical oncology, supplying pertinent information for diagnosis, prognosis, and prediction of response to tailored chemotherapeutic agents. ARUP Laboratories offers a wide range of molecular diagnostic tests designed to answer important clinical questions regarding diagnosis, prognosis, and pharmacogenetics. Using state-of-the-art methodologies, including fluorescence in situ hybridization (FISH), polymerase chain reaction (PCR), and next-generation sequencing analysis, ARUP Laboratories supplies pertinent clinical information for a variety of cancers.

This brochure has been organized into two sections:

1. **Test Categories, which includes diagnostic markers, pharmacogenetic markers, and prognostic markers**
2. **Diagnostic Categories/Tumor Type**

ARUP Laboratories is committed to supplying high-quality molecular diagnostic testing in a timely fashion and will continuously expand its test menu as new procedures and markers of clinical utility are identified.

TEST CATEGORIES

Diagnostic Markers

Test #	Test Name	Specimen Type
2008604	1p/19q Deletion by FISH	P
2002647	Acute Lymphocytic Leukemia Panel by FISH, Adult	WB, BM
2002719	Acute Lymphocytic Leukemia Panel by FISH, Pediatric	WB, BM
2011132	Acute Myeloid Leukemia Panel by FISH	WB, BM
2002653	Acute Myelogenous Leukemia (AML) with Myelodysplastic Syndrome (MDS) or Therapy-Related AML by FISH	WB, BM
2012710	Aggressive B-Cell Lymphoma FISH Reflex, Tissue	P
2006102	*ALK* Gene Rearrangements by FISH, Lung	P
2006193	B-Cell Clonality Screening (IgH and IgK) by PCR	WB, BM, FF
2010107	*BCL6* (3q27) Gene Rearrangement by FISH	P
2002298	*BCL6* Rearrangement (3q27)	WB, BM
2002298	*BCR-ABL1* Fusion t(9;22)(q34;q11.2) by FISH	WB, BM
2005017	*BCR-ABL1* Major (p210), Quantitative	WB, BM
2005016	*BCR-ABL1* Minor (p190), Quantitative	WB, BM
2005010	*BCR-ABL1,* Qualitative with Reflex to *BCR-ABL1,* Quantitative	WB, BM
2002298	*MALT1* (18q21) gene rearrangement by FISH	WB, BM
2002498	*BRAF* Codon 600 Mutation Detection by Pyrosequencing	P
0051750	*BRAF* Codon 600 Mutation Detection with Reflex to *MLH1* Promoter Methylation	P
2007132	*BRAF* V600E Mutation Detection in Hairy Cell Leukemia by Real-Time PCR, Quantitative	WB, BM
2010673	*CALR* (Calreticulin) Exon 9 Mutation Analysis by PCR	WB, BM
2002298	*CBFB* Rearrangement inv(16)(p13.3q22) by FISH	WB, BM
2011114	*CBFB-MYH11* inv(16) Detection, Quantitative	WB, BM
2010188	Central Nervous System Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 15 Genes	WB
2002292	Chromosone Analysis, Bone Marrow	BM
2002300	Chromosome Analysis, Lymph Node	+
2002290	Chromosome Analysis, Leukemic Blood	WB
2002296	Chromosone Analysis, Solid Tumor	+
2010229	Cytogenomic Molecular Inversion Probe Array, FFPE Tissue—Oncology	P
2006325	Cytogenomic SNP Microarray, Oncology	WB, BM
2002298	*DDIT3* (*CHOP*) (12q13) Gene Rearrangement by FISH	+, TP
2007223	*DDIT3* (*CHOP*) (12q13) Gene Rearrangement by FISH	P
2002440	*EGFR* Mutation Detection by Pyrosequencing	P, FNA
2010193	Endocrine Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 13 Genes	WB
2002378	Eosinophilia Panel by FISH	WB, BM
2002298	*ETV6-RUNX1* (*TEL-AML1*) Fusion, t(12;21)(p13;q22) by FISH	WB, BM

Test #	Test Name	Specimen Type
2002298	*EWSR1* (22q12) Rearrangement by FISH	+
2007225	*EWSR1* (22q12) Gene Rearrangement by FISH	P
2004920	Familial Adenomatous Polyposis (*APC*) Deletion/ Duplication	WB
2004863	Familial Adenomatous Polyposis (*APC*) Sequencing	WB
2004915	Familial Adenomatous Polyposis Panel: *APC* Sequencing, *(APC)* Sequencing and Deletion/ Duplication, *(MUTYH)* 2 Mutations	WB
2001961	Familial Mutation, Target Sequencing (HNPCC/ Lynch Syndrome)	WB
2002298	*FOXO1* (*FKHR*) (13q13) Gene Rearrangement by FISH	+
2001497	*FOXO1* (*FKHR*) (13q14) Gene Rearrangement by FISH	P
2013449	Gastrointestinal Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 16 Genes	WB
2002674	Gastrointestinal Stromal Tumor Mutation	P
2010757	Hereditary Cancer Panel, Deletion/Duplication, 36 Genes	WB
2007167	Hereditary Paraganglioma-Pheochromocytoma (*SDHB*, *SDHC*, and *SDHD*) Sequencing and Deletion/ Duplication Panel	WB
2007108	Hereditary Paraganglioma-Pheochromocytoma (*SDHB*) Sequencing and Deletion/Duplication	WB
2007117	Hereditary Paraganglioma-Pheochromocytoma (*SDHC*) Sequencing and Deletion/Duplication	WB
2007122	Hereditary Paraganglioma-Pheochromocytoma *(SDHD)* Sequencing and Deletion/Duplication	WB
2007113	Hereditary Paraganglioma-Pheochromocytoma (*SDHB*, *SDHC*, and *SDHD*) Deletion/Duplication	WB
0051650	HNPCC/Lynch Syndrome (*MLH1*) Sequencing and Deletion/Duplication	WB
0051654	HNPCC/Lynch Syndrome (*MSH2*) Sequencing and Deletion/Duplication	WB
0051656	HNPCC/Lynch Syndrome (*MSH6*) Sequencing and Deletion/Duplication	WB
0051737	HNPCC/Lynch Syndrome (*PMS2*) Sequencing and Deletion/Duplication	WB
2001728	HNPCC/Lynch Syndrome Deletion/Duplication—*MLH1*, *MSH2*, *MSH6,* or *PMS2*	WB
2002298	Hyperdiploidy with Trisomy 4 and 10 for Pediatric ALL	WB, BM
2002298	*IGH* Rearrangement 14q32	WB, BM
2001536	*IGH-BCL2* Fusion, t(14;18) by FISH	P
2002298	*IGH-BCL2* Fusion, t(14;18)(q32;q21) by FISH	WB, BM
0055557	*IGH-CCND1* (*BCL1-JH*) Translocation, t(11;14) by PCR	WB, BM, FF, P
2007226	*IGH-CCND1* Fusion, t(11;14) by FISH	P
2002298	*IGH-CCND1* Fusion, t(11;14)(q13;q32) by FISH	WB, BM
2001538	*IGH-MYC* Fusion, t(8;14) by FISH	P

+ Fresh tissue, unfixed specimen. Use test code 2002298 to order and specify probe.	BM—bone marrow	FF—fresh frozen tissue

TEST CATEGORIES

Diagnostic Markers, continued

Test #	Test Name	Specimen Type
2002357	*JAK2* Exon 12 Mutation Analysis by PCR	WB, BM
0051245	*JAK2* Gene, V617F Mutation, Qualitative	WB, BM
2012085	*JAK2* Gene, V617F Mutation, Qualitative with Reflex to *JAK2* Exon 12 Mutation Analysis by PCR	WB, BM
2012084	*JAK2* Gene, V617F Mutation, Qualitative with Reflex to *CALR* (Calreticulin) Exon 9 Mutation Analysis by PCR with Reflex to *MPL* codon 515 Mutation Detection by Pyrosequencing, Quantitative	WB, BM
0040168	*JAK2* Gene, V617F Mutation, Quantitative	WB
2001976	Juvenile Polyposis (*SMAD4*) Deletion/Duplication	WB
0051510	Juvenile Polyposis (*SMAD4*) Sequencing	WB
2001971	Juvenile Polyposis (*SMAD4*) Sequencing and Deletion/Duplication	WB
2004984	Juvenile Polyposis Syndrome (*BMPR1A*) Deletion/Duplication	WB
2004988	Juvenile Polyposis Syndrome (*BMPR1A*) Sequencing	WB
2004992	Juvenile Polyposis Syndrome (*BMPR1A*) Sequencing and Deletion/Duplication	WB
0040137	*KIT* (D816V) Mutation by PCR	WB, BM, P, FF
2002437	*KIT* Mutations in AML by Fragment Analysis and Sequencing	WB, BM
2002695	*KIT* Mutations, Melanoma	P
2009294	Li-Fraumeni Syndrome (*TP53*) Deletion/Duplication	WB
2009302	Li-Fraumeni (*TP53*) Sequencing	WB
2009313	Li-Fraumeni (*TP53*) Sequencing and Deletion/Duplication	WB
2010209	Melanoma Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 6 Genes	WB
2009310	*MGMT* Methylation Detection by PCR	P
0051740	Microsatellite Instability (MSI), HNPCC/Lynch Syndrome by PCR	P
2002499	*MLH1* Promoter Methylation, Paraffin	P
2005545	*MPL* Codon 515 Mutation Detection by Pyrosequencing, Quantitative	WB
2005346	Multiple Endocrine Neoplasia (*MEN1*) Deletion/Duplication	WB
2005359	Multiple Endocrine Neoplasia (*MEN1*) Sequencing	WB
2005360	Multiple Endocrine Neoplasia (*MEN1*) Sequencing and Deletion/Duplication	WB
0051390	Multiple Endocrine Neoplasia Type 2 (MEN2), *RET* Gene Mutations by Sequencing	WB
2004911	*MUTYH*-Associated Polyposis (*MUTYH*) 2 Mutations	WB
2006307	*MUTYH*-Associated Polyposis (*MUTYH*) 2 Mutations with Reflex to Sequencing	WB
2006191	*MUTYH*-Associated Polyposis (*MUTYH*) Sequencing	WB
2002345	*MYC* (8q24) Gene Rearrangement by FISH	P
2002298	*MYC* Rearrangement 8q24 by FISH	WB, BM
2007227	*MYCN* (*N-MYC*) Gene Rearrangement by FISH	P
2009318	*MYD88* L265P Mutation Detection by PCR, Quantitative	WB, BM, P
2002528	Pancreatobiliary FISH	VARIES
2012603	*PAX8-PPARG* Translocations Detection by PCR	P, FNA
2010102	PCA3—Prostate Cancer Biomarker	UR
2002298	*PDGFRA* Rearrangement 4q12 by FISH	WB, BM
2002298	*PDGFRB* Rearrangement 5q33.1 by FISH	WB, BM
2002871	*PML-RARA* Translocation, t(15;17) by RT-PCR, Quantitative	WB, BM
2002363	*PML-RARA* Translocation by FISH	BM
2002726	*PTEN*-Related Disorders (*PTEN*) Deletion/Duplication	WB
2002722	*PTEN*-Related Disorders (*PTEN*) Sequencing	WB
2002470	*PTEN*-Related Disorders (*PTEN*) Sequencing and Deletion/Duplication	WB
2010214	Renal Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 15 Genes	WB
2012605	*RET-CCDC6* and *RET-NCOA4* (*RET-PTC1* and *RET-PTC3*) Translocations Detection by PCR	P, FNA
2002298	*RUNX1-RUNX1T1* (*AML1-ETO*) Fusion, t(8;21)(q22;q22) by FISH	WB, BM
2010138	*RUNX1-RUNX1T1 (AML1-ETO)* t(8;21) Detection, Quantitative	WB, BM
2007222	*SS18* (*SYT*) (18q11) Gene Rearrangement by FISH	P
2002298	*SS18 (SYT)* Rearrangement by FISH	+, TP
2008409	T-Cell Clonality by Next-Generation Sequencing	WB, BM, P
0055567	T-Cell Clonality Screening by PCR	WB, BM, FF, P
2002298	*TCF3* (*E2A*) Rearrangement 19p13 by FISH	WB, BM
2012755	Thyroid Translocation and Mutation Panel	P, FNA
2001181	UroVysion FISH	UR
2002988	von Hippel-Lindau (*VHL*) Deletion/Duplication	WB
2002970	von Hippel-Lindau (*VHL*) Sequencing	WB
2002965	von Hippel-Lindau (*VHL*) Sequencing and Deletion/Duplication	WB

FNA—FNA smear	P—paraffinized tissue	PL—plasma	TP—touch prep	WB—whole blood	UR—urine

TEST CATEGORIES

Pharmacogenetic and Targeted Therapy Markers

Test #	Test Name	Specimen Type
2007228	5-Fluorouracil (5-FU) Toxicity and Chemotherapeutic Response, 7 Mutations	WB
2006102	*ALK* Gene Rearrangements by FISH, Lung	P
2002298	*BCR-ABL1* Fusion, t(9;22)(q34;q11.2) by FISH	+
2008420	*BCR-ABL1* Mutation Analysis by Next-Generation Sequencing	WB, BM
2013921	*BRAF* V600E Mutation Detection in Circulating Tumor DNA by Digital Droplet PCR	WB
2011616	Colon Cancer Gene Panel, Somatic	P
0051104	Cytochrome P450 2C19 (*CYP2C19*) 9 Mutations	WB
0051103	Cytochrome P450 2C9 (*CYP2C9*) 2 Mutations	WB
0051232	Cytochrome P450 2D6 (*CYP2D6*) 14 Mutations and Gene Duplication	WB
2002440	*EGFR* Mutation Detection by Pyrosequencing	P, FNA
2012868	*EGFR* T790M Mutation Detection in Circulating Tumor DNA by Digital Droplet PCR	WB
2008603	*ERBB2* (HER-2/*neu*) Gene Amplification by FISH	P
2002674	Gastrointestinal Stromal Tumor Mutation	P
0040137	*KIT* (D816V) Mutation by PCR	WB, BM, P, FF

Test #	Test Name	Specimen Type
2002695	*KIT* Mutations, Melanoma	P
0040248	*KRAS* Mutation Detection	P
2001932	*KRAS* Mutation Detection with Reflex to *BRAF* Codon 600 Mutation Detection	P
2008894	Lung Cancer Panel	P
2008895	Lung Cancer Panel with *KRAS*	P
0055655	Methylenetetrahydrofolate Reductase (*MTHFR*) 2 Mutations	WB
2003123	*NRAS* Mutation Detection by Pyrosequencing	P
2002298	*PDGFRA* by FISH	WB, BM
2002298	*PDGFRB* by FISH	WB, BM
2002363	*PML-RARA* Translocation by FISH	WB, BM
2002871	*PML-RARA* Translocation, t(15;17) by RT-PCR, Quantitative	WB, BM
2007991	Solid Tumor Mutation Panel by Next-Generation Sequencing	P, FNA
2012755	Thyroid Translocation and Mutation Panel	P, FNA
0051332	UDP-Glucuronosyltransferase 1A1 (*UGT1A1*) Genotyping	WB

Prognostic Markers

Test #	Test Name	Specimen Type
2012710	Aggressive B-Cell Lymphoma FISH Reflex, Tissue	P
2002298	*BCR-ABL1* Fusion, t(9;22)(q34;q11.2) by FISH	WB, BM
2008420	*BCR-ABL1* Mutation Analysis by Next-Generation Sequencing	WB, BM
2005017	*BCR-ABL1* Major (p210), Quantitative	WB, BM
2005016	*BCR-ABL1* Minor (p190), Quantitative	WB, BM
2005010	*BCR-ABL1* Qualitative with Reflex to *BCR-ABL1* Quantitative	WB, BM
2011915	Breast and Ovarian Hereditary Cancer Syndrome (*BRCA1* and *BRCA2*) Deletion/Duplication	WB
2011954	Breast and Ovarian Hereditary Cancer Syndrome (*BRCA1* and *BRCA2*) Sequencing	WB
2011949	Breast and Ovarian Hereditary Cancer Syndrome (*BRCA1* and *BRCA2*) Sequencing and Deletion/Duplication	WB
2012026	Breast and Ovarian Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 20 Genes	WB

Test #	Test Name	Specimen Type
2010673	*CALR* (Calreticulin) Exon 9 Mutation Analysis by PCR	WB, BM
2012032	Cancer Panel, Hereditary, Sequencing and Deletion/Duplication, 47 Genes	WB
2002298	*CBFB* Rearrangement inv(16)(p13.3q22) by FISH	WB, BM
2011114	*CBFB-MYH11* inv(16) Detection, Quantitative	WB, BM
2004247	*CEBPA* Mutation Detection	WB, BM
2002295	Chronic Lymphocytic Leukemia (CLL) Panel by FISH	WB, BM
2008605	*EGFR* Gene Amplification by FISH	P
2002440	*EGFR* Mutation Detection by Pyrosequencing	P, FNA
2002378	Eosinophilia Panel by FISH	WB, BM
2002298	*ETV6-RUNX1* (*TEL-AML1*) Fusion, t(12;21)(p13;q22) by FISH	WB, BM
2004920	Familial Adenomatous Polyposis (*APC*) Deletion/Duplication	WB
2004863	Familial Adenomatous Polyposis (*APC*) Sequencing	WB

+ Fresh tissue, unfixed specimen. Use test code 2002298 to order and specify probe.	BM—bone marrow	FF—fresh frozen tissue

TEST CATEGORIES

Prognostic Markers, continued

Test #	Test Name	Specimen Type
2004915	Familial Adenomatous Polyposis Panel: *(APC)* Sequencing and Deletion/Duplication, *(MUTYH)* 2 Mutations	WB
2001961	Familial Mutation, Targeted Sequencing (HNPCC/ Lynch Syndrome)	WB
2005400	*FLT3* Mutation Detection by PCR	WB, BM
2011806	*FLT3* Signal Ratio Mutation Detection by PCR	WB, BM
2007167	Hereditary Paraganglioma-Pheochromocytoma (*SDHB*, *SDHC*, and *SDHD*) Sequencing and Deletion/ Duplication Panel	WB
2007108	Hereditary Paraganglioma-Pheochromocytoma (*SDHB*) Sequencing and Deletion/Duplication	WB
2007117	Hereditary Paraganglioma-Pheochromocytoma (*SDHC*) Sequencing and Deletion/Duplication	WB
2007122	Hereditary Paraganglioma-Pheochromocytoma (*SDHD*) Sequencing and Deletion/Duplication	WB
2007113	Hereditary Paraganglioma-Pheochromocytoma (*SDHB*, *SDHC*, and *SDHD*) Deletion/Duplication	WB
0051650	HNPCC/Lynch Syndrome (*MLH1*) Sequencing and Deletion/Duplication	WB
0051654	HNPCC/Lynch Syndrome (*MSH2*) Sequencing and Deletion/Duplication	WB
0051656	HNPCC/Lynch Syndrome (*MSH6*) Sequencing and Deletion/Duplication	WB
0051737	HNPCC/Lynch Syndrome (*PMS2*) Sequencing and Deletion/Duplication	WB
2006444	*IDH1* and *IDH2* Mutation Analysis, Exon 4	WB, BM
2014188	*IDH1* and *IDH2* Mutation Analysis, Exon 4, Formalin-Fixed, Paraffin-Embedded (FFPE) Tissue	P
0040227	*IGHV* Mutation Analysis by Sequencing	WB, BM
2002437	*KIT* Mutations in AML by Fragment Analysis and Sequencing	WB, BM
2009302	Li-Fraumeni (*TP53*) Sequencing	WB
2009313	Li-Fraumeni (*TP53*) Sequencing and Deletion/ Duplication	WB

Test #	Test Name	Specimen Type
2013082	*MET* Gene Amplification by FISH	P
0051740	Microsatellite Instability (MSI), HNPCC/Lynch Syndrome by PCR	P
2002298	*MLL* Rearrangement 11q23 by FISH	WB, BM
2005346	Multiple Endocrine Neoplasia (*MEN1*) Deletion/ Duplication	WB
2005359	Multiple Endocrine Neoplasia (*MEN1*) Sequencing	WB
2005360	Multiple Endocrine Neoplasia (*MEN1*) Sequencing and Deletion/Duplication	WB
0051390	Multiple Endocrine Neoplasia Type 2 (*MEN2*), *RET* Gene Mutations by Sequencing	WB
2002294	Multiple Myeloma Panel by FISH	WB, BM
2006307	*MUTYH*-Associated Polyposis (*MUTYH*) 2 Mutations with Reflex to Sequencing	WB
2006191	*MUTYH*-Associated Polyposis (*MUTYH*) Sequencing	WB
2004911	*MUTYH*-Associated Polyposis (*MUTYH*) 2 Mutations	WB
2002709	Myelodysplastic Syndrome (MDS) Panel by FISH	BM, WB
0040174	*NPM1* Mutation by PCR and Fragment Analysis	WB, BM, P
2010102	PCA3—Prostate Cancer Biomarker by Transcription-Mediated Amplification	UR
2004510	*PIK3CA* Mutation Detection	P
2002363	*PML-RARα* FISH	WB, BM
2002871	*PML-RARA* Translocation, t(15;17) by RT-PCR, Quantitative	WB, BM
2010248	Prosigna Breast Cancer Prognostic Gene Signature	P
2002298	*RUNX1-RUNX1T1* (*AML1-ETO*) Fusion, t(8;21) (q22;q22) by FISH	WB, BM
2010138	*RUNX1-RUNX1T1 (AML1-ETO)* t(8;21) Detection, Quantitative	WB, BM
2002298	*TCF3* (*E2A*) Rearrangement	WB, BM
2012755	Thyroid Translocation and Mutation Panel	P, FNA
2005766	*WT1* Mutations by Sequencing	WB, BM

FNA—FNA smear	P—paraffinized tissue	PL—plasma	TP—touch prep	WB—whole blood	UR—urine

DIAGNOSTIC CATEGORIES/TUMOR TYPE

Test #	Test Name	Specimen Type
Alveolar Rhabdomyosarcoma		
2002298	*FKHR* (*FOX01*) 13q13 by FISH	+
2001497	*FOXO1* (*FKHR*) (13q14) Gene Rearrangement by FISH	P
Bladder Cancer (Urothelial Carcinoma)		
2001181	UroVysion FISH	UR
Breast Cancer (Breast Carcinoma)		
2011915	Breast and Ovarian Hereditary Cancer Syndrome (*BRCA1* and *BRCA2*) Deletion/Duplication	WB
2011954	Breast and Ovarian Hereditary Cancer Syndrome (*BRCA1* and *BRCA2*) Sequencing	WB
2011949	Breast and Ovarian Hereditary Cancer Syndrome (*BRCA1* and *BRCA2*) Sequencing and Deletion/Duplication	WB
2012026	Breast and Ovarian Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 20 Genes	WB
2008603	*ERBB2 (HER-2/neu)* Gene Amplification by FISH	P
2004510	*PIK3CA* Mutation Detection	P
2010248	Prosigna Breast Cancer Prognostic Gene Signature	P
2002726	*PTEN*-Related Disorders (*PTEN*) Deletion/Duplication	WB
2002722	*PTEN*-Related Disorders (*PTEN*) Sequencing	WB
2002470	*PTEN*-Related Disorders (*PTEN*) Sequencing and Deletion/Duplication	WB
2009294	Li-Fraumeni Syndrome (*TP53*) Deletion/Duplication	WB
2009302	Li-Fraumeni (*TP53*) Sequencing	WB
2009313	Li-Fraumeni (*TP53*) Sequencing and Deletion/Duplication	WB
2008394	Peutz-Jeghers Syndrome (*STK11*) Sequencing	WB
2008398	Peutz-Jeghers Syndrome (*STK11*) Sequencing and Deletion/Duplication	WB
Colon Cancer (Colonic Adenocarcinoma)		
2007228	5-Fluorouracil (5-FU) Toxicity and Chemotherapeutic Response, 7 Mutations	WB
2002498	*BRAF* Codon 600 Mutation Detection by Pyrosequencing	P
2013921	*BRAF* V600E Mutation Detection in Circulating Tumor DNA by Digital Droplet PCR	WB
0051750	*BRAF* Codon 600 Mutation Detection with Reflex to *MLH1* Promoter Methylation	P
2010757	Cancer Panel, Hereditary, Deletion/Duplication, 46 Genes	WB
2012032	Cancer Panel, Hereditary, Sequencing and Deletion/Duplication, 47 Genes	WB
2011616	Colon Cancer Gene Panel, Somatic	P
2013906	Epi proColon	WB
2004920	Familial Adenomatous Polyposis (*APC*) Deletion/Duplication	WB
2004863	Familial Adenomatous Polyposis (*APC*) Sequencing	WB
2004915	Familial Adenomatous Polyposis Panel: *(APC)* Sequencing and Deletion/Duplication, *(MUTYH)* 2 Mutations	WB
2001961	Familial Mutation, Targeted Sequencing (HNPCC/Lynch Syndrome)	WB
2013449	Gastrointestinal Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 16 genes	WB
0051650	HNPCC/Lynch Syndrome (*MLH1*) Sequencing and Deletion/Duplication	WB
0051654	HNPCC/Lynch Syndrome (*MSH2*) Sequencing and Deletion/Duplication	WB
0051656	HNPCC/Lynch Syndrome (*MSH6*) Sequencing and Deletion/Duplication	WB
0051737	HNPCC/Lynch Syndrome (*PMS2*) Sequencing and Deletion/Duplication	WB
2001728	HNPCC/Lynch Syndrome Deletion/Duplication—*MLH1*, *MSH2*, *MSH6*, or *PMS2*	WB
2001976	Juvenile Polyposis (*SMAD4*) Deletion/Duplication	WB
0051510	Juvenile Polyposis (*SMAD4*) Sequencing	WB
2001971	Juvenile Polyposis (*SMAD4*) Sequencing and Deletion/Duplication	WB
2004984	Juvenile Polyposis Syndrome (*BMPR1A*) Deletion/Duplication	WB
2004988	Juvenile Polyposis Syndrome (*BMPR1A*) Sequencing	WB
2004992	Juvenile Polyposis Syndrome (*BMPR1A*) Sequencing and Deletion/Duplication	WB
0040248	*KRAS* Mutation Detection	P
2001932	*KRAS* Mutation Detection with Reflex to *BRAF* Codon 600 Mutation Detection	P
2009294	Li-Fraumeni Syndrome (*TP53*) Deletion/Duplication	WB
2009302	Li-Fraumeni (*TP53*) Sequencing	WB
2009313	Li-Fraumeni (*TP53*) Sequencing and Deletion/Duplication	WB
0051740	Microsatellite Instability (MSI), HNPCC/Lynch Syndrome by PCR	P
2002327	Mismatch Repair by IHC with Reflex to *BRAF* Codon 600 Mutation and *MLH1* Promoter Methylation	P
2002499	*MLH1* Promoter Methylation, Paraffin	P
2006307	*MUTYH*-Associated Polyposis (*MUTYH*) 2 Mutations with Reflex to Sequencing	WB
2006191	*MUTYH*-Associated Polyposis (*MUTYH*) Sequencing	WB
2004911	*MUTYH*-Associated Polyposis (*MUTYH*) 2 Mutations	WB
2003123	*NRAS* Mutation Detection by Pyrosequencing	P
2008394	Peutz-Jeghers Syndrome (*STK11*) Sequencing	WB
2008398	Peutz-Jeghers Syndrome (*STK11*) Sequencing and Deletion/Duplication	WB
2004510	*PIK3CA* Mutation Detection	P
2007991	Solid Tumor Mutation Panel by Next-Generation Sequencing	P, FNA
0051332	UDP-Glucuronosyltransferase 1A1 (*UGT1A1*) Genotyping	WB
CNS/ Renal Cell Carcinoma/ Pheochromocytoma		

+ Fresh tissue, unfixed specimen. Use test code 2002298 to order and specify probe.	BM—bone marrow	FF—fresh frozen tissue

DIAGNOSTIC CATEGORIES/TUMOR TYPE

Test #	Test Name	Specimen Type
2010188	Central Nervous System Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 15 Genes	WB
2002988	von Hippel-Lindau (*VHL*) Deletion/Duplication	WB
2002970	von Hippel-Lindau (*VHL*) Sequencing	WB
2002965	von Hippel-Lindau (*VHL*) Sequencing and Deletion/Duplication	WB
Endometrial Carcinoma		
2005270	Mismatch Repair by IHC with Reflex to *MLH1* Promoter Methylation	P
Ewing Sarcoma		
2007225	*EWSR1* (22q12) Gene Rearrangement by FISH	P
2002298	*EWSR1* Rearrangement by FISH	+
Gastrointestinal Stromal Tumor (GIST)		
2002674	Gastrointestinal Stromal Tumor Mutation	P
2007991	Solid Tumor Mutation Panel by Next-Generation Sequencing	P
Glioblastoma		
2008605	*EGFR* Gene Amplification by FISH	P
2002440	*EGFR* Mutation Detection by Pyrosequencing	P, FNA
2014188	*IDH1* and *IDH2* Mutation Analysis, Exon 4	P
2009310	*MGMT* Methylation Detection by PCR	P
Lung Carcinoma		
2006102	*ALK* Gene Rearrangements by FISH, Lung	P
2002498	*BRAF* Codon 600 Mutation Detection by Pyrosequencing	P
2013921	*BRAF* V600E Mutation Detection in Circulating Tumor DNA by Digital Droplet PCR	WB
2002440	*EGFR* Mutation Detection by Pyrosequencing	P, FNA
2012868	*EGFR* T790M Mutation Detection in Circulating Tumor DNA by Digital Droplet PCR	WB
0040248	*KRAS* Mutation Detection	P
2008894	Lung Cancer Panel	P
2008895	Lung Cancer Panel with *KRAS*	P
2013082	*MET* Gene Amplification by FISH	P
2012654	*RET* Gene Rearrangements by FISH	P
2008418	*ROS1* by FISH	P
2007991	Solid Tumor Mutation Panel by Next-Generation Sequencing	P, FNA
Melanoma		
2002498	*BRAF* Codon 600 Mutation Detection by Pyrosequencing	P
2013921	*BRAF* V600E Mutation Detection in Circulating Tumor DNA by Digital Droplet PCR	WB
2010757	Cancer Panel, Hereditary, Deletion/Duplication, 46 Genes	WB
2002695	*KIT* Mutations, Melanoma	P
2010209	Melanoma Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 6 Genes	WB

Test #	Test Name	Specimen Type
2003123	*NRAS* Mutation Detection by Pyrosequencing	P
2007991	Solid Tumor Mutation Panel by Next-Generation Sequencing	P, FNA
Neuroblastoma		
2007227	*MYCN* (*N-Myc*) Gene Amplification by FISH	P
Oligodendroglioma		
2008604	1p/19q Deletion by FISH	P
Paraganglioma/Pheochromocytoma		
2007167	Hereditary Paraganglioma-Pheochromocytoma (*SDHB*, *SDHC*, and *SDHD*) Sequencing and Deletion/Duplication Panel	WB
2007108	Hereditary Paraganglioma-Pheochromocytoma (*SDHB*) Sequencing and Deletion/Duplication	WB
2007117	Hereditary Paraganglioma-Pheochromocytoma (*SDHC*) Sequencing and Deletion/Duplication	WB
2007122	Hereditary Paraganglioma-Pheochromocytoma (*SDHD*) Sequencing and Deletion/Duplication	WB
2007113	Hereditary Paraganglioma-Pheochromocytoma (*SDHB*, *SDHC*, and *SDHD*) Deletion/Duplication	WB
Parathyroid/Pituitary/Pancreatic		
2005346	Multiple Endocrine Neoplasia (*MEN1*) Deletion/Duplication	WB
2005359	Multiple Endocrine Neoplasia (*MEN1*) Sequencing	WB
2005360	Multiple Endocrine Neoplasia (*MEN1*) Sequencing and Deletion/Duplication	WB
Round Cell/Myxoid Liposarcoma		
2002298	*DDIT3* (*CHOP*) (12q13) Gene Rearrangement by FISH	TOUCH PREP, +
2007223	*DDIT3* (*CHOP*) (12q13) Gene Rearrangement by FISH	P
2003016	*MDM2* Gene Amplification by FISH	P
Synovial Sarcoma		
2007222	*SS18* (*SYT*) (18q11) Gene Rearrangement by FISH	P
Systemic Mastocytosis		
0040137	*KIT* (D816V) Mutation by PCR	WB, BM, FF, P
Thyroid Carcinoma		
2002498	*BRAF* Codon 600 Mutation Detection by Pyrosequencing	P
2013921	*BRAF* V600E Mutation Detection in Circulating Tumor DNA by Digital Droplet PCR	WB
0051390	Multiple Endocrine Neoplasia Type 2 (MEN2), *RET* Gene Mutations by Sequencing	WB
2012603	*PAX8-PPARG* Translocations Detection by PCR	P, FNA
2012605	*RET-CCDC6* and *RET-NCOA4* (*RET-PTC1* and *RET-PTC3*) Translocations Detection by PCR	P, FNA
2012654	*RET* Gene Rearrangements by FISH	P
2007991	Solid Tumor Mutation Panel by Next-Generation Sequencing	P, FNA
2012755	Thyroid Translocation and Mutation Panel	P, FNA

FNA—FNA smear	P—paraffinized tissue	PL—plasma	TP—touch prep	WB—whole blood	UR—urine

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LEUKEMIA/LYMPHOMA

Test #	Test Name	Specimen Type
Acute Lymphoblastic Leukemia (ALL)		
2002647	Acute Lymphocytic Leukemia (ALL) Panel by FISH, Adult	BM, WB
2002719	Acute Lymphocytic Leukemia (ALL) Panel by FISH, Pediatric	BM, WB
2002298	*BCR-ABL1* Fusion, t(9;22)(q34;q11.2) by FISH	WB, BM
2005010	*BCR-ABL1* Qualitative with Reflex to *BCR-ABL1* Quantitative	WB, BM
2005016	*BCR-ABL1* Minor (p190), Quantitative	WB, BM
2008420	*BCR-ABL1* Mutation Analysis by Next-Generation Sequencing	WB, BM
2002298	*CDKN2* p16 Deletion 9p21 by FISH	WB, BM
2007130	Chromosome Analysis, Bone Marrow with Reflex to Genomic Microarray	BM
2007131	Chromosome Analysis, Leukemic Blood with Reflex to Genomic Microarray	WB
2006325	Cytogenomic SNP Microarray—Oncology	BM, WB
2002298	*ETV6-RUNX1* (*TEL-AML1*) Fusion, t(12;21)(p13;q22) by FISH	WB, BM
2002298	Hyperdiploidy with Trisomy 4 and 10	WB, BM
2002298	*IGH* Rearrangement 14q32 by FISH	WB, BM
0055655	Methylenetetrahydrofolate Reductase (*MTHFR*) 2 Mutations	WB
2002298	*MLL* Rearrangement 11q23 by FISH	WB, BM
2002298	*TCF3* (*E2A*) Rearrangement 19p13 by FISH	WB, BM
Acute Myelogenous Leukemia (AML)		
2011132	Acute Myeloid Leukemia Panel by FISH	WB, BM
2002653	Acute Myelogenous Leukemia (AML) with Myelodysplastic Syndrome (MDS) or Therapy-Related AML by FISH	WB, BM
2012222	Bone Marrow Failure Sequencing, 35 Genes	WB
2002298	*CBFB* Rearrangement inv(16)(p13.3q22) by FISH	WB, BM
2011114	*CBFB-MYH11* inv(16) Detection, Quantitative	WB, BM
2004247	*CEBPA* Mutation Detection	WB, BM
2007130	Chromosome Analysis, Bone Marrow with Reflex to Genomic Microarray	BM
2006325	Cytogenomic SNP Microarray—Oncology	BM, WB
2005400	*FLT3* Mutation Detection by PCR	WB, BM
2011806	*FLT3* Signal Ratio Mutation Detection by PCR	WB, BM
2006444	*IDH1* and *IDH2* Mutation Analysis, Exon 4	WB, BM
2002437	*KIT* Mutations in AML by Fragment Analysis and Sequencing	WB, BM
2002298	*MLL* Rearrangement 11q23 by FISH	WB, BM
2011117	Myeloid Malignancies Panel by Next-Generation Sequencing	WB, BM
2012182	Myeloid Malignancies Somatic Mutation and Copy Number Analysis Panel	WB, BM

Test #	Test Name	Specimen Type
0040174	*NPM1* Mutation by PCR and Fragment Analysis	WB, BM, FF, P
2010138	*RUNX1-RUNX1T1 (AML1-ETO)* t(8;21) Detection, Quantitative	WB, BM
2002298	*RUNX1-RUNX1T1* (*AML1-ETO*) Fusion, t(8;21)(q22;q22) by FISH	WB, BM
2005766	*WT1* Mutations by Sequencing	WB, BM
Acute Promyelocytic Leukemia (APL)		
2002363	*PML-RARA* Translocation by FISH	WB, BM
2002871	*PML-RARA* Translocation, t(15;17) by RT-PCR, Quantitative	WB, BM
B- and T-Cell Markers Lymphoma		
2006193	B-Cell Clonality Screening (IgH and IgK) by PCR	WB, BM, FF
2009318	*MYD88* L265P Mutation Detection by PCR, Quantitative	WB, BM, P
2008409	T-Cell Clonality by Next-Generation Sequencing	WB, BM, P
0055567	T-Cell Clonality Screening by PCR	WB, BM, FF, P
Burkitt Lymphoma		
2012710	Aggressive B-Cell Lymphoma FISH Reflex, Tissue	P
2010107	*BCL6* (3q27) Gene Rearrangement by FISH	P
2001538	*IGH-MYC* Fusion t(8;14) by FISH	P
2002345	*MYC* (8q24) Gene Rearrangement by FISH	P
2002298	*MYC* Rearrangement 8q24 by FISH	WB, BM
Chronic Lymphocytic Leukemia (CLL)		
2002295	Chronic Lymphocytic Leukemia (CLL) Panel by FISH	WB, BM
0040227	*IGHV* Mutation Analysis by Sequencing	WB, BM
Chronic Myelogenous Leukemia (CML)		
2002298	*BCR-ABL1* Fusion, t(9;22)(q34;q11.2) by FISH	WB, BM
2008420	*BCR-ABL1* Mutation Analysis by Next-Generation Sequencing	WB, BM
2005017	*BCR-ABL1* Major (p210), Quantitative	WB, BM
2005016	*BCR-ABL1* Minor (p190), Quantitative	WB, BM
2005010	*BCR-ABL1* Qualitative with Reflex to *BCR-ABL1* Quantitative	WB, BM
0055655	Methylenetetrahydrofolate Reductase (*MTHFR*) 2 Mutations	WB
Follicular Lymphoma/Diffuse Large-Cell Lymphoma		
2012710	Aggressive B-Cell Lymphoma FISH Reflex, Tissue	P
2002298	*BCL6* Rearrangement (3q27) by FISH	WB, BM
2010107	*BCL6* (3q27) Gene Rearrangement by FISH	P
2002298	*IGH-BCL2* Fusion, t(14;18)(q32;q21) by FISH	WB, BM
2001536	*IGH-BCL2* Fusion, t(14;18) by FISH	P

+ Fresh tissue, unfixed specimen. Use test code 2002298 to order and specify probe.

BM—bone marrow

FF—fresh frozen tissue

LEUKEMIA/LYMPHOMA

Test #	Test Name	Specimen Type
Hairy Cell Leukemia		
2007132	*BRAF* V600E Mutation Detection in Hairy Cell Leukemia by Real-Time PCR, Quantitative	WB, BM
Lymphoproliferative Disorders (LPD)		
2002650	Lymphoma (Aggressive) Panel by FISH	BM, WB
2002298	Trisomy 12 by FISH	WB, BM
Mantle Cell Non-Hodgkins Lymphoma		
2002298	*IGH* Rearrangement by FISH	WB, BM
2007226	*IGH-CCND1* Fusion, t(11;14) by FISH	P
2002298	*IGH-CCND1* Fusion, t(11;14)(q13;q32) by FISH	WB, BM
Marginal Zone B-Cell Lymphoma		
2002298	*MALT1* (18q21) gene rearrangement by FISH	BM, WB
Multiple Myeloma		
2002294	Multiple Myeloma Panel by FISH	BM, WB
Myelodysplastic Syndrome (MDS)		
2002298	20q Deletion (*D20S108*) del(20)(q12) by FISH	WB, BM
2002298	5q Deletion (*EGR1*)/Monosomy 5 del(5)(q31)/-5 by FISH	WB, BM
2002298	7q Deletion (*D7S486*)/Monosomy 7 del(7)(q31)/-7 by FISH	WB, BM
2012222	Bone Marrow Failure Sequencing, 35 Genes	WB
2010229	Cytogenomic Molecular Inversion Probe Array, FFPE Tissue—Oncology	P
2002709	Myelodysplastic Syndrome (MDS) Panel by FISH	BM, WB
2011117	Myeloid Malignancies Panel by Next-Generation Sequencing	WB, BM
2012182	Myeloid Malignancies Somatic Mutation and Copy Number Analysis Panel	WB, BM

Test #	Test Name	Specimen Type
2002298	Trisomy 8 by FISH	WB, BM
Myeloproliferative Neoplasms (MPN)		
2010673	*CALR* (Calreticulin) Exon 9 Mutation Analysis by PCR	WB, BM
2002378	Eosinophilia Panel by FISH	WB, BM
2002357	*JAK2* Exon 12 Mutation Analysis by PCR	BM, WB
0051245	*JAK2* Gene, V617F Mutation, Qualitative	BM, WB
0040168	*JAK2* Gene, V617F Mutation, Quantitative	WB
2012085	*JAK2* Gene, V617F Mutation, Qualitative with Reflex to JAK2 Exon 12 Mutation Analysis by PCR	WB, BM
2012084	*JAK2* Gene, V617F Mutation, Qualitative with Reflex to *CALR* (Calreticulin) Exon 9 Mutation Analysis by PCR with Reflex to *MPL* codon 515 Mutation Detection by Pyrosequencing, Quantitative	WB, BM
2005545	*MPL* Codon 515 Mutation Detection by Pyrosequencing, Quantitative	WB
2011117	Myeloid Malignancies Mutation Panel by Next Generation Sequencing	WB, BM
2012182	Myeloid Malignancies Somatic Mutation and Copy Number Analysis Panel	WB, BM
2002360	Myeloproliferative Disorders Panel by FISH	BM, WB
2002298	*PDGFRA-FIP1L1* Fusion by FISH (*CHIC2* Deletion)	WB, BM
2002298	*PDGFRB* Rearrangement 5q33.1 by FISH	WB, BM
2002298	Trisomy 8 by FISH	WB, BM
2002298	Trisomy 9 by FISH	WB, BM
Primary Effusion Lymphoma		
2002902	Epstein-Barr Virus (EBV) by in situ Hybridization, Paraffin	P

FNA—FNA smear	P—paraffinized tissue	PL—plasma	TP—touch prep	WB—whole blood	UR—urine

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