CARIS MOLECULAR INTELLIGENCE™
ENABLING PRECISION MEDICINE

Comprehensive Genomic Profiling PLUS (CGP+)

The Caris Molecular Intelligence® CGP+ approach to assess DNA, RNA and proteins reveals a reliable molecular blueprint to guide more precise and individualized treatment decisions from among more than 60 FDA-approved therapies.

DNA
Mutations, Indels & Copy Number Variants

RNA
Fusions & Variant Transcripts

Protein
Immunohistochemistry

Technical Specifications

Sufficient tumor must be present to complete all analysis. If you have any questions, please contact Client Services at (888) 979-8669.

Technical Information	IHC	CISH	FISH
Sample Requirements *(see requisition for full details)*	1 unstained slide at 4µm thickness from FFPE block, with evaluable tumor present, per IHC test	1 unstained slide at 4µm thickness from FFPE block, with at least 20-100 evaluable tumor cells present, per CISH test	2 unstained slides at 4µm thickness from FFPE block, with at least 100 evaluable cells present and 10% tumor, per FISH test
Sensitivity/Specificity	>95%	>95%	>95%

Technical Information	Next-Generation Sequencing	
	Mutations and Copy Number Variations (DNA)	Fusions (RNA)
Sample Requirements	FFPE block or 15 unstained slides with a minimum of 20% malignant origin. Needle biopsy is also acceptable (4-6 cores).	FFPE block or 2-5 unstained slides with a minimum of 20% malignant origin. Needle biopsy is also acceptable (4-6 cores).
Tumor Enrichment (when necessary)	Microdissection to increase and isolate a larger portion of cancer cells to improve the chances for successful testing from small tumor samples	
PPV	>99%	>98%
Sensitivity	> 99% for base substitutions at ≥ 5% mutant allele frequency; > 99% for indels at ≥ 5% mutant allele frequency; >95% for copy number variations (amplifications ≥ 8 copies)	>91%
Average Depth of Coverage (DNA) Average Depth/Count (RNA)	>750X	>30,000 Unique RNA Fragments
Number of Genes	592 genes	53 genes

Caris Molecular Intelligence® Associations List

The list below details the biomarkers assessed, technology platforms utilized and associated therapies or clinical trials. **Biomarkers and therapy associations may vary by the tumor type submitted.** The current and definitive list menu can be found online at www.CarisMolecularIntelligence.com/profilemenu. *Individual assay results are always included with the final report.*

Agent	Biomarker	Platform
afatinib (assoc. in NSCLC only)	EGFR	NGS Mutation
	ERBB2 (Her2)	NGS Mutation
afatinib + cetuximab (combination assoc. in NSCLC only)	EGFR T790M	NGS Mutation
alectinib, brigatinib, ceritinib	ALK	IHC; NGS Fusion Analysis (RNA)
aspirin (assoc. in CRC only)	PIK3CA	NGS Mutation
avelumab (assoc. in Merkel cell only)	PD-L1	IHC
cabozantinib	RET	NGS Fusion Analysis (RNA)
	CMET	NGS Fusion Analysis (RNA) Exon 14 skip
capecitabine, fluorouracil, pemetrexed	TS	IHC
carboplatin, cisplatin, oxaliplatin	ATM	NGS Mutation
	BRCA1[1]	NGS Mutation
	BRCA2[1]	NGS Mutation
	ERCC1	IHC
cetuximab, panitumumab[2] (assoc. in CRC only)	BRAF	NGS Mutation
	KRAS	NGS Mutation
	NRAS	NGS Mutation
	PIK3CA	NGS Mutation
	PTEN	IHC
cetuximab	EGFR	NGS CNV
crizotinib	ALK	IHC; NGS Mutation (DNA) & Fusion Analysis (RNA)
	cMET	NGS Mutation, CNV (DNA) NGS Fusion Analysis (RNA) Exon 14 skip
	ROS1	NGS Fusion Analysis (RNA)
dabrafenib, vemurafenib[2]	BRAF	NGS Mutation
dacarbazine, temozolomide	MGMT	IHC
	MGMT-Methylation	Pyrosequencing
	IDH1 (assoc. in High Grade Glioma only)	NGS
docetaxel, paclitaxel, nab-paclitaxel	TUBB3	IHC
doxorubicin, liposomal-doxorubicin, epirubicin	TOP2A	IHC
		CISH (Breast only)
enzalutamide, bicalutamide	AR (assoc. in TNBC only)	IHC
erlotinib, gefitinib (assoc. in NSCLC only)	EGFR	NGS Mutation
	KRAS	NGS Mutation
	PIK3CA	NGS Mutation
	cMET	NGS CNV (DNA)
	PTEN	IHC

Agent	Biomarker	Platform
everolimus, temsirolimus	ER (assoc. in Breast only)	IHC
	PIK3CA (excluding CRC)	NGS Mutation
exemestane + everolimus, fulvestrant, palbociclib combination therapy	ER	IHC
	ESR1	NGS Mutation
gemcitabine	RRM1 (excluding Breast)	IHC
hormone therapies[3]	AR	IHC
	ER	IHC
	PR	IHC
imatinib	cKIT	NGS Mutation
	PDGFRA	NGS Mutation
irinotecan	TOPO1	IHC
topotecan (excluding Breast, CRC, NSCLC)		
lapatinib, pertuzumab, T-DM1	Her2/Neu	NGS CNV (DNA)
mitomycin-c	BRCA1[1]	NGS Mutation
	BRCA2[1]	
atezolizumab, nivolumab, pembrolizumab (assoc. in Bladder, Kidney, Melanoma, NSCLC only)	PD-L1	IHC
nivolumab, pembrolizumab	MSI	NGS Mutation
niraparib, olaparib, rucaparib	ATM (assoc. in Prostate only)	NGS Mutation
	BRCA1[1]	
	BRCA2[1]	
osimertinib (assoc. in NSCLC only)	EGFR T790M	NGS Mutation
palbociclib and ribociclib (assoc. in Breast only)	ER	IHC
	Her2/Neu	IHC
sunitinib (assoc. in GIST only)	cKIT	NGS
trametinib[2] (assoc. in Melanoma and Lung)	BRAF	NGS
trastuzumab	ERBB2 (Her2) (assoc. in NSCLC only)	NGS
	Her2/Neu	IHC; NGS CNV (DNA)
	PTEN (assoc. in Breast only)	IHC
	PIK3CA (assoc. in Breast only)	NGS Mutation
vandetanib	RET	NGS Mutation (DNA) & Fusion Analysis (RNA)

IHC: Immunohistochemistry **CISH:** Chromogenic *in situ* Hybridization
NGS: Next-Generation Sequencing **CNV:** Copy Number Variation by NGS

Note: in certain instances, some biomarkers included in MI Profile or genes ordered individually will not associate with commercially available cancer therapies or clinical trials.

[1] *May not be available for some Medicare patients.*

[2] *In CRC, cetuximab/panitumumab, vemurafenib/dabrafenib, and trametinib may be reported in combination.*

[3] *Hormone therapies may include: tamoxifen, toremifene, fulvestrant, letrozole, anastrozole, exemestane, megestrol acetate, leuprolide, goserelin, bicalutamide, flutamide, abiraterone, enzalutamide, triptorelin, abarelix, degarelix.*

Biomarker Analysis by Tumor Type

The information below details the biomarkers analyzed by technology for the tumor type submitted. Before ordering testing services, please refer to the profile menu online (www.CarisMolecularIntelligence.com/profilemenu) to view the most up-to-date listing of biomarkers that will be performed. Tests may vary if insufficient tumor samples are submitted.

MI Profile™			
Tumor Type	**Immunohistochemistry (IHC)**	**Next-Generation Sequencing (NGS) (see reverse for gene list)**	**Other**
Bladder	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Breast	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, TOPO1, TS	Mutation, CNV (DNA); Fusion Analysis (RNA)	HER2, TOP2A *(Chromogenic in situ Hybridization)*
Cancer of Unknown Primary	ALK, AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Cervix	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Colorectal	AR, ER, ERCC1, Her2/Neu, MGMT, MLH1, MSH2, MSH6, PD-L1, PMS2, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Endometrial	AR, ER, ERCC1, Her2/Neu, MGMT, MLH1, MSH2, MSH6, PD-L1, PMS2, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Gastric	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
GIST	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Glioma	AR, ER, ERCC1, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	MGMT Methylation *(Pyrosequencing)*
Head & Neck	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Kidney	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Melanoma	AR, ER, ERCC1, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Neuroendocrine	AR, ER, ERCC1, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Non-Small Cell Lung	ALK, AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Ovarian	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Pancreatic	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Prostate	AR, ER, ERCC1, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Sarcoma	AR, ER, ERCC1, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Thyroid	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	
Other Tumors	AR, ER, ERCC1, Her2/Neu, MGMT, PD-L1, PR, RRM1, TOPO1, TOP2A, TS, TUBB3	Mutation, CNV (DNA); Fusion Analysis (RNA)	

In certain instances, some biomarkers included in MI Profile or genes ordered individually will not associate with commercially available cancer therapies or clinical trials.
For PD-L1 IHC testing, Dako antibody 22c3 is available upon request.

Next-Generation Sequencing Gene List

Next-Generation Sequencing – Genomic Stability Testing (DNA)

Microsatellite Instability (MSI)	Tumor Mutational Load (TML)

Next-Generation Sequencing – Point Mutations and Indels (DNA)

ABI1	BRD4	CRLF2	FOXO4	HOXC11	KLF4	MUC1	PAK3	RHOH	TAL2
ABL1	BTG1	DDB2	FSTL3	HOXC13	KLK2	MUTYH	PATZ1	RNF213	TBL1XR1
ACKR3	BTK	DDIT3	GATA1	HOXD11	LASP1	MYCL (MYCL1)	PAX8	RPL10	TCEA1
AKT1	C15orf65	DNM2	GATA2	HOXD13	LMO1	NBN	PDE4DIP	SEPT5	TCL1A
AMER1 (FAM123B)	CBLC	DNMT3A	GNA11	HRAS	LMO2	NDRG1	PHF6	SEPT6	TERT
AR	CD79B	EIF4A2	GPC3	IKBKE	MAFB	NKX2-1	PHOX2B	SFPQ	TFE3
ARAF	CDH1	ELF4	HEY1	INHBA	MAX	NONO	PIK3CG	SLC45A3	TFPT
ATP2B3	CDK12	ELN	HIST1H3B	IRS2	MECOM	NOTCH1	PLAG1	SMARCA4	THRAP3
ATRX	CDKN2B	ERCC1	HIST1H4I	JUN	MED12	NRAS	PMS1	SOCS1	TLX3
BCL11B	CDKN2C	ETV4	HLF	KAT6A (MYST3)	MKL1	NUMA1	POU5F1	SOX2	TMPRSS2
BCL2	CEBPA	FAM46C	HMGN2P46	KAT6B	MLLT11	NUTM2B	PPP2R1A	SPOP	UBR5
BCL2L2	CHCHD7	FANCF	HNF1A	KCNJ5	MN1	OLIG2	PRF1	SRC	VHL
BCOR	CNOT3	FEV	HOXA11	KDM5C	MPL	OMD	PRKDC	SSX1	WAS
BCORL1	COL1A1	FOXL2	HOXA13	KDM6A	MSN	P2RY8	RAD21	STAG2	ZBTB16
BRD3	COX6C	FOXO3	HOXA9	KDSR	MTCP1	PAFAH1B2	RECQL4	TAL1	ZRSR2

Next-Generation Sequencing – Point Mutations, Indels and Copy Number Variations (DNA)

ABL2	BRCA2	COPB1	ESR1	FUS	KIT	MYB	PER1	RUNX1	TFG
ACSL3	BRIP1	CREB1	ETV1	GAS7	KLHL6	MYC	PICALM	RUNX1T1	TFRC
ACSL6	BUB1B	CREB3L1	ETV5	GATA3	KMT2A (MLL)	MYCN	PIK3CA	SBDS	TGFBR2
AFF1	C11orf30 (EMSY)	CREB3L2	ETV6	GID4 (C17orf39)	KMT2C (MLL3)	MYD88	PIK3R1	SDC4	TLX1
AFF3	C2orf44	CREBBP	EWSR1	GMPS	KMT2D (MLL2)	MYH11	PIK3R2	SDHAF2	TNFAIP3
AFF4	CACNA1D	CRKL	EXT1	GNA13	KRAS	MYH9	PIM1	SDHB	TNFRSF14
AKAP9	CALR	CRTC1	EXT2	GNAQ	KTN1	NACA	PML	SDHC	TNFRSF17
AKT2	CAMTA1	CRTC3	EZH2	GNAS	LCK	NCKIPSD	PMS2	SDHD	TOP1
AKT3	CANT1	CSF1R	EZR	GOLGA5	LCP1	NCOA1	POLE	SEPT9	TP53
ALDH2	CARD11	CSF3R	FANCA	GOPC	LGR5	NCOA2	POT1	SET	TPM3
ALK	CARS	CTCF	FANCC	GPHN	LHFP	NCOA4	POU2AF1	SETBP1	TPM4
APC	CASC5	CTLA4	FANCD2	GPR124	LIFR	NF1	PPARG	SETD2	TPR
ARFRP1	CASP8	CTNNA1	FANCE	GRIN2A	LPP	NF2	PRCC	SF3B1	TRAF7
ARHGAP26	CBFA2T3	CTNNB1	FANCG	GSK3B	LRIG3	NFE2L2	PRDM1	SH2B3	TRIM26
ARHGEF12	CBFB	CYLD	FANCL	H3F3A	LRP1B	NFIB	PRDM16	SH3GL1	TRIM27
ARID1A	CBL	CYP2D6	FAS	H3F3B	LYL1	NFKB2	PRKAR1A	SLC34A2	TRIM33
ARID2	CBLB	DAXX	FBXO11	HERPUD1	MAF	NFKBIA	PRRX1	SMAD2	TRIP11
ARNT	CCDC6	DDR2	FBXW7	HGF	MALT1	NIN	PSIP1	SMAD4	TRRAP
ASPSCR1	CCNB1IP1	DDX10	FCRL4	HIP1	MAML2	NOTCH2	PTCH1	SMARCB1	TSC1
ASXL1	CCND1	DDX5	FGF10	HMGA1	MAP2K1	NPM1	PTEN	SMARCE1	TSC2
ATF1	CCND2	DDX6	FGF14	HMGA2	MAP2K2	NR4A3	PTPN11	SMO	TSHR
ATIC	CCND3	DEK	FGF19	HNRNPA2B1	MAP2K4	NSD1	PTPRC	SNX29	TTL
ATM	CCNE1	DICER1	FGF23	HOOK3	MAP3K1	NT5C2	RABEP1	SOX10	U2AF1
ATP1A1	CD274 (PDL1)	DOT1L	FGF3	HSP90AA1	MCL1	NTRK1	RAC1	SPECC1	USP6
ATR	CD74	EBF1	FGF4	HSP90AB1	MDM2	NTRK2	RAD50	SPEN	VEGFA
AURKA	CD79A	ECT2L	FGF6	IDH1	MDM4	NTRK3	RAD51	SRGAP3	VEGFB
AURKB	CDC73	EGFR	FGFR1	IDH2	MDS2	NUP214	RAD51B	SRSF2	VTI1A
AXIN1	CDH11	ELK4	FGFR1OP	IGF1R	MEF2B	NUP93	RAF1	SRSF3	WHSC1
AXL	CDK4	ELL	FGFR2	IKZF1	MEN1	NUP98	RALGDS	SS18	WHSC1L1
BAP1	CDK6	EML4	FGFR3	IL2	MET (cMET)	NUTM1	RANBP17	SS18L1	WIF1
BARD1	CDK8	EP300	FGFR4	IL21R	MITF	PALB2	RAP1GDS1	STAT3	WISP3
BCL10	CDKN1B	EPHA3	FH	IL6ST	MLF1	PAX3	RARA	STAT4	WRN
BCL11A	CDKN2A	EPHA5	FHIT	IL7R	MLH1	PAX5	RB1	STAT5B	WT1
BCL2L11	CDX2	EPHB1	FIP1L1	IRF4	MLLT1	PAX7	RBM15	STIL	WWTR1
BCL3	CHEK1	EPS15	FLCN	ITK	MLLT10	PBRM1	REL	STK11	XPA
BCL6	CHEK2	ERBB2 (HER2)	FLI1	JAK1	MLLT3	PBX1	RET	SUFU	XPC
BCL7A	CHIC2	ERBB3 (HER3)	FLT1	JAK2	MLLT4	PCM1	RICTOR	SUZ12	XPO1
BCL9	CHN1	ERBB4 (HER4)	FLT3	JAK3	MLLT6	PCSK7	RMI2	SYK	YWHAE
BCR	CIC	ERC1	FLT4	JAZF1	MNX1	PDCD1 (PD1)	RNF43	TAF15	ZMYM2
BIRC3	CIITA	ERCC2	FNBP1	KDM5A	MRE11A	PDCD1LG2 (PDL2)	ROS1	TCF12	ZNF217
BLM	CLP1	ERCC3	FOXA1	KDR (VEGFR2)	MSH2	PDGFB	RPL22	TCF3	ZNF331
BMPR1A	CLTC	ERCC4	FOXO1	KEAP1	MSH6	PDGFRA	RPL5	TCF7L2	ZNF384
BRAF	CLTCL1	ERCC5	FOXP1	KIAA1549	MSI2	PDGFRB	RPN1	TET1	ZNF521
BRCA1	CNBP	ERG	FUBP1	KIF5B	MTOR	PDK1	RPTOR	TET2	ZNF703
	CNTRL							TFEB	

Next-Generation Sequencing – Gene Fusions (RNA)

AKT3	EGFR	ESR1	MAST1	NOTCH2	PDGFRA	RAF1	TFE3
ALK	EWSR1	ETV1	MAST2	NRG1	PDGFRB	RELA	TFEB
ARHGAP26	FGR	ETV4	MET	NTRK1	PIK3CA	RET	THADA
AXL	FGFR1	ETV5	MSMB	NTRK2	PKN1	ROS1	TMPRSS2
BRAF	FGFR2	ETV6	MUSK	NTRK3	PPARG	RSPO2	
BRD3	FGFR3	INSR	MYB	NUMBL	PRKCA	RSPO3	
BRD4	ERG	MAML2	NOTCH1	NUTM1	PRKCB	TERT	

Variant Transcripts (RNA)

EGFR vIII

[1] *May not be available for some Medicare patients.* For Next-Generation Sequencing testing in the state of New York, please view the NY Profile Menu at www.CarisMolecularIntelligence.com//tumor-profiling-menu.

TN9335 v1 August 29, 2017

To order or learn more, visit **www.CarisMolecularIntelligence.com.**
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