NGS TARGET ENRICHMENT

HALOPLEX DISEASE RESEARCH PANELS

Premium Performance with Content You Can Trust

Benefits

Confidence in Genomic Content

- Comprehensive content tailored to specific disease research
- Developed in conjunction with top clinical research leaders

Ease of Use From Sample to Analysis

- Simple, automatable protocol with no library preparation
- SureCall software for intuitive variant analysis and report formats

Results You Can Trust

- Multiple amplicon coverage of targets providing better coverage, less PCR artifacts and more accurate mutation calls
- Premium performance including high sensitivity, specificity, and mutation detection

The ability to detect sequence level variations through next generation sequencing in a fast, cost effective application has revolutionized the field of genetics. In order to harness the power of next generation sequencing for specific disease states, it is critical to target these specific genomic regions. Developed in conjunction with clinical research industry leaders, Agilent Technologies offers HaloPlex next generation sequencing target enrichment panels for researching specific genetic disorders.

From Sample to Result in Less than 2 Days

CATALOG PANELS

ClearSeq AML

The ClearSeq AML, designed in collaboration with Dr. Robert Ohgami and Dr. Daniel Arber at Stanford University, targets 48 selected exons in 20 genes found to be commonly mutated in AML. Research has also shown these genes to be associated with myelodysplastic syndromes, myelodysplastic/myeloproliferative neoplasms and myeloproliferative neoplasms.

The ClearSeq AML was designed for full coverage of targeted regions and provides ≥ 90% coverage at 20X depth, ensuring that important variants are not missed (Figure 1). Furthermore, multiple amplicon coverage of the target regions, a key feature of the HaloPlex technology, confers superior sensitivity and accuracy when compared to other PCR-based methods, eliminating false positive calls.

Gene List (targeted exons)	
ASXL1	12
CSF3R	14, 17
CBL	8, 9
CEBPA	1
DNMT3A	4, 8, 13, 15, 16, 18 19, 20, 22, 23
EZH2	8, 17, 18
FLT3	14, 20
IDH1	4
IDH2	4
JAK2	12, 14
MPL	10
NPM1	11
NRAS	2, 3
RUNX1	3, 4, 8
SETBP1	3
SF3B1	13–15, 17
SRSF2	1
TET2	3, 9, 10, 11
TP53	5–8
U2AF1	2, 6

HaloPlex Cancer

HaloPlex Cancer is a comprehensive next generation sequencing target enrichment panel designed specifically for genetic anomalies in known cancer hotspots. This NGS application targets a set of 47 genes found in previous research to be associated with a broad range of cancer types as well as with published drug targets. The COSMIC database was the primary reference in the design process.

HaloPlex Cancer is uniquely suited for high performance with cancer research samples, which are commonly preserved as formalin fixed and paraffin embedded (FFPE). This FFPE process often results in highly fragmented DNA, resulting in insufficient sequencing target coverage. FFPE also commonly produces small changes in single bases, cytosine to thymine, in DNA sequences. Unlike competitive technologies, HaloPlex covers each base with several amplicons, and smaller fragments function as a backup for longer fragments that may fail. This allows for high sequencing target coverage even in highly degraded FFPE samples.

HaloPlex Cancer Gene List Targeting solid tumors, hematological cancer and actionable mutations		
ABL1	FGFR1	NPM1
AKT1	FGFR2	NRAS
ALK	FGFR3	PDGFRA
AR	FLT3	PIK3CA
ATM	HRAS	PIK3R1
BRAF	IDH1	PTEN
CDKN2A	IDH2	RET
CSF1R	JAK2	RUNX1
CTNNB1	JAK3	SMAD4
EGFR	KIT	SMO
ERBB2	KRAS	SRC
ERBB4	MAP2K1	STK11
FANCA	MAP2K2	TP53
FANCC	MAP2K4	VHL
FANCF	MET	WT1
FANCG	NOTCH1	

HaloPlex Cardiomyopathy

HaloPlex Cardiomyopathy is a next generation sequencing target enrichment panel designed specifically for inherited forms of cardiomyopathy. Following a careful review of cardiomyopathy publications as well as information available from GeneReviews, an NIH online resource, 34 genes known to be associated with hypertrophic cardiomyopathy, dilated cardiomyopathy, and arrythmogenic right ventricular cardiomyopathy have been included.

HaloPlex Cardiomyopathy Gene List		
TTR	TTN	ABCC9
MYL2	ACTN2	SCN5A
MYL3	CSRP3	TAZ
MYOZ2	PLN	RBM20
NEXN	TNNC1	TGFB3
MYH6	TCAP	DSP
MYH7	DES	PKP2
MYBPC3	LMNA	DSG2
TNNT2	SGCD	DSC2
ACTC1	VCL	TMEM43
TNNI3	LDB3	JUP
TPM1		

MADE TO ORDER PANELS

HaloPlex Arrhythmia

Targeting genomic regions known to be associated with four inherited arrhythmia-related heart disorders, HaloPlex Arrhythmia is a next generation sequencing target enrichment panel. Included are 20 genes known to correlate with long QT syndrome, short QT syndrome, Brugada syndrome, and catecholaminergic polymorphic ventricular tachycardia, developed from information gathered after a thorough review of publications for arrhythmia and from GeneReviews, an NIH resource. The genes associated with different types of arrhythmia are overlapping in some cases, and using HaloPlex Arrhythmia, a comprehensive arrhythmia profile can be assembled for clinical research samples.

HaloPlex Arrhythmia Gene List		
KCNQ1	CAV3	SCN1B
KCNH2	SCN4B	KCNE3
KCNJ2	AKAP9	SCN3B
ANK2	SNTA1	RYR2
KCNE1	SCN5A	CASQ2
KCNE2	GPD1L	
CACNA1C	CACNB2	

HaloPlex Noonan Syndrome

HaloPlex Noonan Syndrome is a next generation sequencing panel designed using information from published literature and the NIH resource GeneReviews. This panel is designed to detect genetic mutations known to be associated with Noonan syndrome and related disorders such as LEOPARD, cardio-facio-cutaneous syndrome, and Costello syndromes.

HaloPlex Noonan Syndrome Gene List		
BRAF	MAP2K2	RAF1
CBL	NRAS	SHOC2
HRAS	PTPN11	SOS1
MAP2K1	KRAS	NF1
SPRED1		

HaloPlex Connective Tissue Disorder

The HaloPlex Connective Tissue Disorder focuses on inherited forms of connective tissue disorders, specifically targeting genetic variations associated with Marfan syndrome, Ehlers-Danlos syndrome, Loeys-Dietz syndrome, thoracic aortic aneurysm and dissection (TAAD), Stickler syndrome, Osteogenesis imperfecta and other related disorders.

HaloPlex Connective Tissue Disorder Gene List		
AMPD1	COL6A2	TCAP
LMNA	DES	SGCB
SEPN1	DYSF	TPM2
TPM3	COL6A3	FKTN
ACTA1	EMD	POMT1
POMGNT1	DMD	TRIM32
ANO5	FHL1	FKRP
PYGM	ITGA7	TNNT1
TNNI2	ISPD	MYOT
CAPN3	SGCE	SGCD
CAV3	LAMA2	SIL1
CHKB	POMT2	PLEC
LARGE	SGCA	SGCG
COL6A1		

HaloPlex ICCG

ICCG, International Collaboration for Clinical Genomics, is the organization formerly named ISCA, International Standards for Cytogenomic Arrays. In the HaloPlex ICCG gene panel, 180 genes as defined by ICCG have been incorporated into a novel next generation sequencing application, following the associated ICCG recommendations for design and resolution.

HaloPlex X Chromosome

A wide variety of genetic disorders have been shown to be correlated to changes in the X chromosome. The HaloPlex X Chromosome panel is designed to interrogate these particular genetic changes on the X chromosome in a new next generation sequencing kit. Together with SureCall analysis software, laboratories are now able to create a comprehensive X chromosome mutation profile for clinical research samples in one efficient, cost effective application.

HALOPLEX DISEASE RESEARCH PANELS

Performance Data

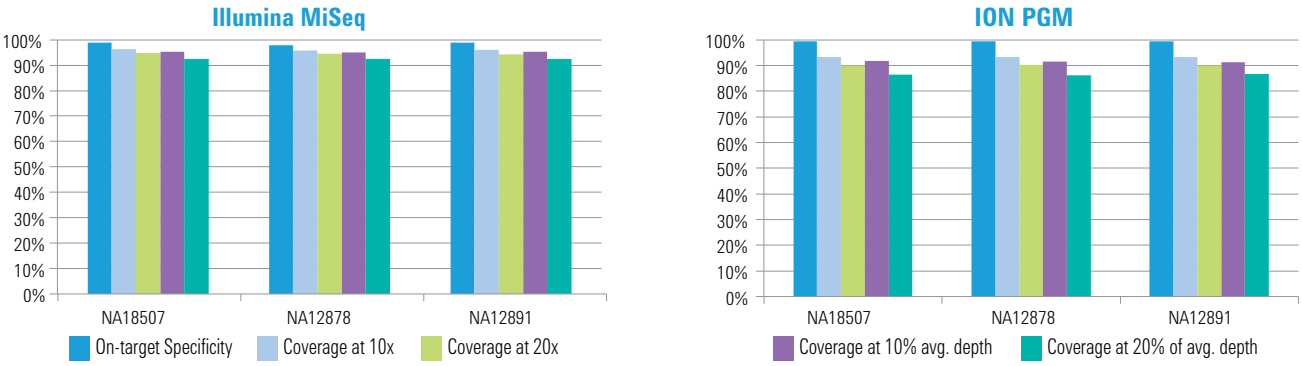
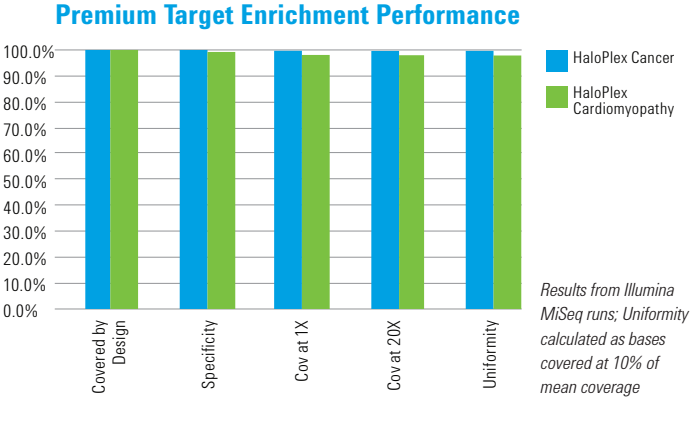
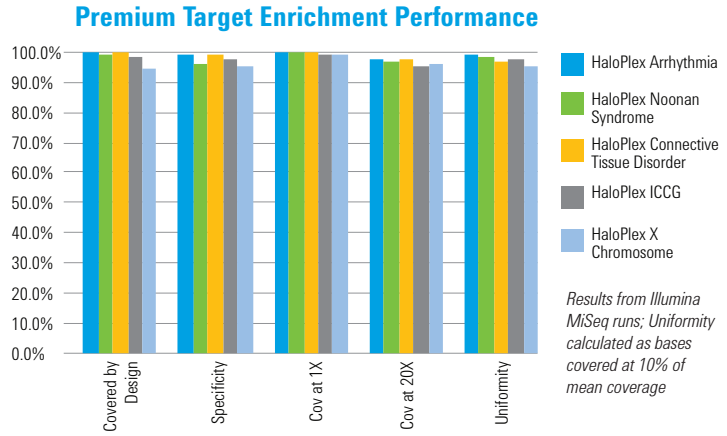


Figure 1. The ClearSeq AML provides excellent on-target specificity and uniform coverage of target regions so important mutations are not missed.





Catalog, Ready to Order Panels

Panel	PN	Size
AML	G9913A (ILM) G9914A (ION)	16 Rxn
	G9913B (ILM) G9914B (ION)	96 Rxn
Cancer	G9903A (ILM), G9904A (ION)	16 Rxn
	G9903B (ILM), G9904B (ION)	96 Rxn
Cardiomyopathy	G9908A (ILM), G9909A (ION)	16 Rxn
	G9908B (ILM), G9909B (ION)	96 Rxn

Pre-Designed, Made-to-Order Panels

Panel	Design ID (ILM)	Design ID (ION)	Ordering
ICCG	00100-1358263628	00100-1360592497	Order each Design ID using a Custom PN, through SureDesign www.agilent.com/genomics/suredesign
Connective Tissue Disorder	00100-1358243605	00100-1360592472	
X-Chromosome	00100-1358242818	N/A	
Arrhythmia	00100-1358263563	00100-1360592417	
Noonan Syndrome	00100-1358243073	00100-1360592460	

References

1. ICCG website, https://www.iccg.org/

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