HaloPlex<sup>HS</sup>
NGS Target Enrichment System

Get to Know Your DNA. Every Single Fragment.
How Does Molecular Barcoding Work?

HaloPlex<sup>HS</sup> is a high sensitivity targeted sequencing method that incorporates >10<sup>6</sup> unique molecular barcodes in the DNA library to allow for the identification of duplicate reads. This technology significantly improves base calling accuracy even at low allelic frequencies compared to conventional NGS methods.

Basic molecular barcode (MBC) analysis

Step 1 Align reads
Step 2 Group read pairs to designed probes based on read start-stop position
Step 3 Group reads with an identical molecular barcode sequence for each probe
Step 4 Consolidate read information to one read per molecule (remove PCR duplicates)
What is HaloPlex\(^\text{HS}\)?

HaloPlex\(^\text{HS}\) uniquely tags each DNA library fragment with molecular barcodes, allowing the tracking of molecules through the library preparation process and de-duplication of reads.

What differentiates HaloPlex\(^\text{HS}\) from other amplicon-based target enrichment methods?

The incorporation of molecular barcodes by HaloPlex\(^\text{HS}\) greatly enhances the sensitivity for detection of low allele frequency variants present in heterogeneous cell populations, such as those found in cancer samples. In addition, superior accuracy is achieved by the targeting of both DNA strands which allows for differentiation of true variants from PCR or formalin-fixation artifacts.

How can I create a gene panel?

Easily create gene panels of interest through SureDesign. You can also start customization from our menu of catalog or made-to-order panels.

Which sequencing platforms are compatible with HaloPlex\(^\text{HS}\)?

HaloPlex\(^\text{HS}\) libraries can be sequenced on leading benchtop and high-throughput sequencing platforms.
HaloPlex<sup>HS</sup>: High Sensitivity Detection of Rare Variants Using Molecular Barcodes

**Unparalleled Sensitivity**
- Uniquely tag DNA fragments with more than a million 10-nt molecular barcodes
- Confidently detect mutations present at below 1% allele frequency in genetically heterogeneous samples

**Superior Accuracy**
- Differentiation of true variants from PCR or formalin fixation artifacts by targeting both DNA strands
- Multiple amplicon coverage per base for deep detection of key variants with high on-target specificity

**Accelerated Solution**
- Complete target enrichment in less than 6 hours from only 50 ng of gDNA
- From raw data to categorized mutations in 3-steps using SureCall data analysis software

**Did You Know?**
Simplify data analysis by using SureCall for alignment, de-duplication of reads and variant calling!
HaloPlex<sup>HS</sup> enables fast, simple, and efficient analysis of genomic regions of interest for a large number of samples, covering thousands of targets per sample. It uses single-tube target amplification, removing the need for library preparation to reduce total sample processing time. Incorporation of molecular barcodes during probe-target hybridization and on-bead PCR further streamline the workflow.

**Complete Library Prep-Free Enrichment in <6 hours**

1. **Digest and denature sample DNA**
   - Target Region

2. **Hybridize probe library to DNA targets**
   - Biotin
   - Sequencing primer motif
   - Index
   - Bridge or emulsion
   - PCR primer
   - Target & complementary probe sequence
   - Molecular barcode

3. **Ligate and capture uniquely barcoded targets**
   - Streptavidin

4. **Amplify enriched fragments by PCR**
   - PCR primers
**Product Description**  
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<th>Part Number</th>
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**Did You Know?**

The ClearSeq NGS disease research panels are designs focused on targeted gene sets for comprehensive detection of variants within regions implicated in disease pathogenesis. Developed in collaboration with leading medical genetics and cancer experts, ClearSeq disease research panels provide deep coverage of targets enabling clinical researchers to confidently identify mutations, indels and CNVs.

Learn more:
[www.agilent.com/genomics/HaloPlexHS](http://www.agilent.com/genomics/HaloPlexHS)

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PR7000-0256  
© Agilent Technologies, Inc. 2017  
Printed in USA, November 17, 2017  
5991-5727EN