Access Array

Superior library preparation on the widest scale with a streamlined workflow

FLUIDIGM

- Accuracy: > 90% mapping to target, > 85% mapping to genome
- Yield: 480 targets across 48 samples with up to 384 unique sample indexes
- Simplicity: 12 pipette steps, 20 minutes hands-on time, 5 hrs to a sequence ready library

The Access Array system is a unique target enrichment platform designed for sequencing selected regions from large numbers of samples. The system combines the cost and throughput benefits of Fluidigm integrated fluidic circuits (IFCs) with the proven performance and flexibility of PCR. Obtain quality results while minimizing the time, cost and labor required for targeted sequencing projects.

The Access Array system is an open platform allowing for a diverse primer design strategy through D3 Assay Design or our Assay Design Group.

TARGET ENRICHMENT

Target enrichment using the Access Array System combines thermal mixing with an optimized PCR protocol for unparalleled uniformity across the target regions.

SAMPLE BARCODING FOR MULTIPLEXED SEQUENCING

One of the greatest challenges facing nextgeneration sequencing today is how to use the massive amounts of throughput enabled by the new generation of sequencers. Fluidigm Access Array barcodes provide a simple and reliable method for running multiple samples per sequencing run. Barcoding samples during the target enrichment process enables the users to pool multiple samples per sequencing run, and simplifies the sample de-multiplexing during the data analysis step based on the barcode.

LIBRARY PREPARATION USING AMPLICON TAGGING

Library preparation for next-generation sequencing is the foundation for a successful targeted sequencing run. However, it can also be the biggest source of error, or contamination in the workflow. While necessary, the process can be streamlined by encapsulating a PCR amplicon tagging strategy that incorporates the Fluidigm universal CS tags with the target specific primers into the 48.48 Access Array IFC.

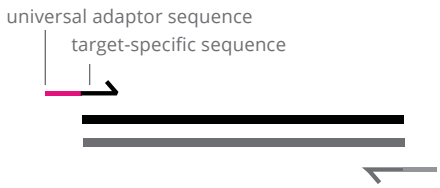
ACCESS ARRAY TARGET-SPECIFIC PRIMERS

Fluidigm Access Array target-specific primers and the Access Array system allows researchers to rapidly and cost-effectively pursue high-sample throughput amplicon sequencing studies to better understand genetic or genomic variation.

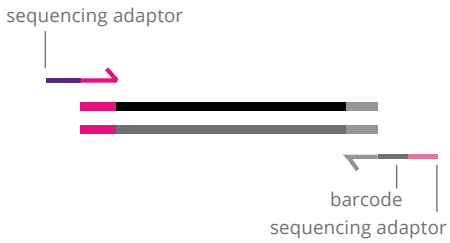
Access Array target-specific primers are custom-designed to optimize coverage and performance. When used with the Access Array system, these primers allow for fast, simple and inexpensive preparation of up to 480 amplicons across 48 samples in a single Access Array IFC run. Our sample barcode sequences allow up to 384 unique samples per sequencing lane, maximizing the utility of your sequencing run.

Simply submit your genes or genomic regions of interest from the human genome to D3 Assay Design and Fluidigm will design and deliver primers.

1 Hybridization of sequence-specific primers to appropriate region of genomic DNA. Primers contain universal tag sequences to allow binding of barcode primers.



2 Hybridization of barcode primers, which also contain a capture sequence appropriate for sequencer chemistry.



3 Final amplicon contains barcode sequence to identify parent DNA sample and is tagged for capture and entry into emPCR.

Figure 1: Amplicon tagging, barcoding and sequencing

The Access Array system is compatible with multiple system components to meet a variety of application and sample throughput needs.

IFC CONTROLLER COMPATIBILITY

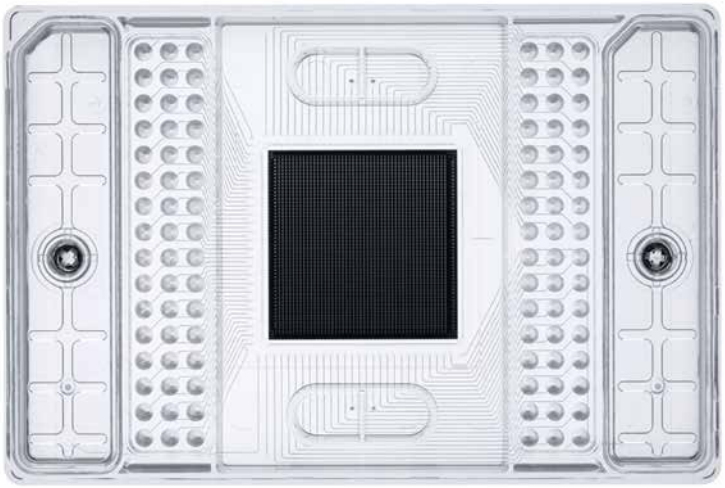
Parameter	IFC Controller AX
Targeted Resequencing	48.48 Access Array IFC
Experiment tracking	Barcode
Gas pressure	Internal compressor
Interface	USB and ethernet
IFC Controller AX software	Touchscreen interface for operating and tracking
Dimensions (approx.)	19 x 9.5 x 13 inches; 48.5 x 24 x 33 cm

THERMAL CYCLER COMPATABILITY

Parameter	FC1 Cycler
Targeted Sequencing	48.48 Access Array IFC
Connectivity	USB and Ethernet
Interface	Touchscreen
Dimensions (approx.)	19″ (48cm) x 9″ (23 cm) x 8″ (20cm)

IFCs FOR TARGETED RESEQUENCING

Parameter	48.48 Access Array IFC
Inlet spacing on input frame	4.5 mm pitch
Dimensions	SBS-compatible (128 mm x 85 mm x 14 mm)
Liquid transfer steps	96
Primer inlets	48
Samples	48
Reaction chambers	2,304
Reaction volume	30 nL
Instrument compatibility	FC1 cycler, IFC Controller AX



FLUIDIGM SOLUTION FOR NEXT-GENERATION SEQUENCING

System Components

Each system has two IFC controller AX's and a single FC1 cycler. The complete system allows you to load the 48.48 Access Array IFC, amplify and tag the regions of interest and recover the product.

48.48 Access Array IFC

Unique IFC designed to multiplex 48 samples against 48 assay reactions in 35 nL reaction volumes. The 48.48 Access Array IFC prepares 2,304 individual reactions at a time with less than 50 ng of template DNA.

Access Array Barcode Library

Use the 48.48 Access Array IFC with a set of 48 barcodes integrated with sequencing adaptors to pool the PCR products from different samples, then sequence them as a single sample without additional library preparation. Fluidigm provides indexes for up to 384 samples.

D3 Assay Design

Getting to your genes or genomic regions of interest has never been easier than with D3. D3 Assay Design is your fast track to targeted sequencing primer design. Simply Define, and Fluidigm will Design and Deliver.

ORDERING INFORMATION

Barcode Libraries	P/N
Access Array Barcode Library for Illumina Sequencers—384 (Bidirectional)	100-3771
Access Array Barcode Library for Illumina Sequencers—384 (Single direction)	100-4876
Access Array Barcode Library for Ion Torrent PGM—96	100-4911

Target-Specific Primers	
Access Array Target-Specific Primers (wet tested)	ASY-AA
Access Array Multiplex Target-Specific Primers (non-wet tested)	ASY-AAX

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