

Access Array™ System

- Flexibility—sequence any region, sample type or species
- High throughput—sequence up to 384 samples in a single sequencing run
- Time savings—four hours from start to finish with minimal hands-on time



The Access Array System is a unique target enrichment platform designed for resequencing selected regions from large numbers of samples. The system combines the cost and throughput benefits of 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 resequencing projects.

The Access Array System is an open platform allowing you to use any appropriate source for primers, whether they are user designed or simply ordered through our Assay Design Group.

TARGET ENRICHMENT

Target enrichment refers to the ability to select a specific region of interest prior to sequencing. For example, if you were interested in examining 20 specific genes from a large cohort of individuals, it would be both wasteful and prohibitively expensive to sample the entire genome of each individual. Instead, target enrichment technologies allow you to select regions for amplification from each individual and, thus, only sequence the specific area of interest.

SAMPLE BARCODING FOR MULTIPLEXED SEQUENCING

One of the greatest challenges facing next-generation sequencing operators today is how to use the massive amounts of throughput enabled by the new generation of sequencing equipment. While all of the systems in use today generate massive amounts of data on a per-sample basis, they lack 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 source during the data analysis step based on the barcode.

LIBRARY PREPARATION USING AMPLICON TAGGING

Library preparation for next-generation sequencing is by far the most time and labor consuming part of the entire next-generation sequencing process. While necessary for whole genome sequencing studies, the process can be almost entirely eliminated for resequencing projects by using PCR and amplicon tagging. By incorporating the adaptor sequences into the primer design, the amplicon product is ready to go directly into clonal amplification since it already contains the necessary capture sequences.

ACCESS ARRAY™ TARGET-SPECIFIC PRIMERS

Fluidigm Access Array Target-Specific Primers and the Access Array System permit researchers to rapidly and cost effectively pursue high sample amplicon resequencing studies to better understand human genetic variation.

Access Array Target-Specific Primers are custom designed with Fluidigm Bioinformatics 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 per 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 provide Fluidigm with your genes or genomic regions of interest from the human genome and we will design and deliver primers for amplifying next-generation, sequencer-ready amplicons with the Access Array System.

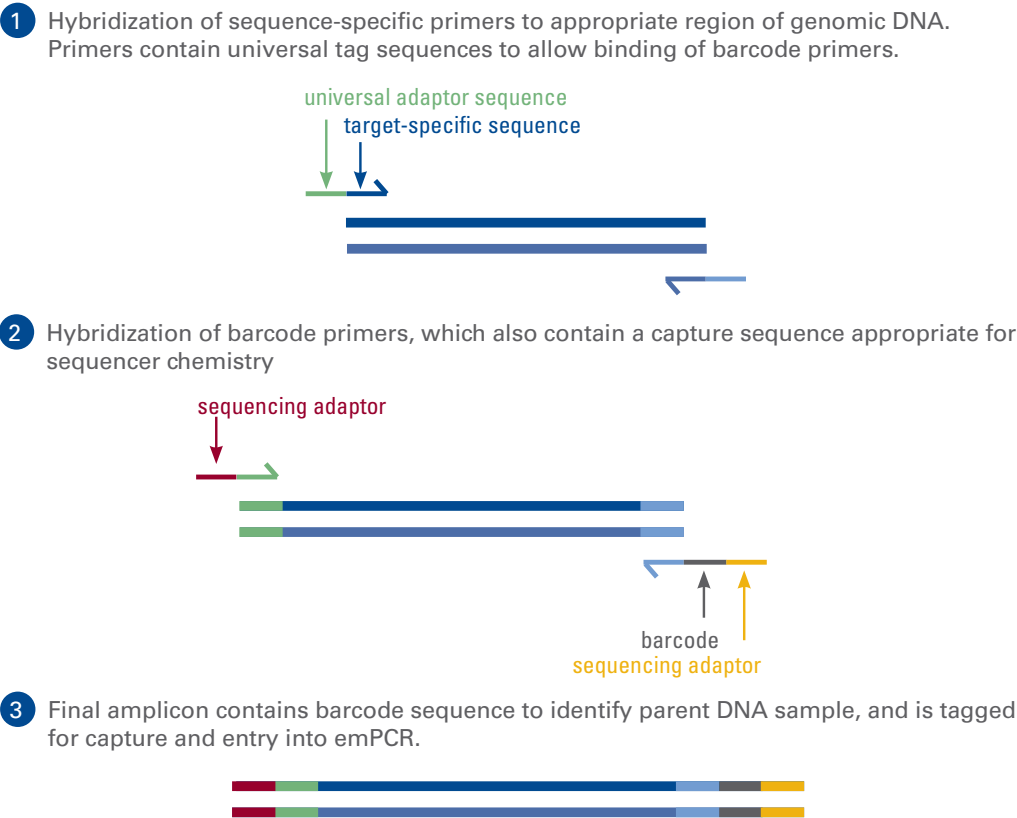


Figure 1: Amplicon tagging, barcoding and sequencing

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

IFC CONTROLLER COMPATIBILITY

PARAMETER	
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

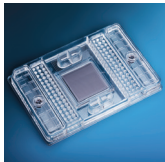
IFC Controller AX



IFCs FOR TARGETED RESEQUENCING

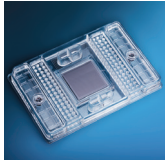
PARAMETER	
Inlet spacing on input frame	4.5 mm pitch
Dimensions	SBS compatible (128 mm x 85 mm x 14 mm)
Liquid transfer steps	96
Primer inlets	48
Samples	48
Reaction chambers	2,304
Reaction volume	30 nL
Instrument compatibility	FC1™ Cyclor, IFC Controller AX

48.48 Access Array IFC



PARAMETER	
Number of primer pairs	48
Primer concentration	20X
Primer volume	60 µL
Average amplicon length	250 bp
Barcode Library compatibility	Access Array Barcode Library for Illumina Sequencers – 384 Access Array Barcode Library for Roche 454 Sequencers – 96
Primer annealing temperature	60 °C
Instrument compatibility	FC1 Cyclor, IFC Controller AX

EGFR-MET Gene Panel



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 Roche 454 Sequencers – 96	100-3347
Access Array Barcode Library for Ion Torrent PGM™ Sequencer – 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

FLUIDIGM SOLUTION FOR NEXT-GENERATION SEQUENCING

System Components

Each system has two Access Array IFC Controllers 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 then recover the product.

48.48 Access Array IFC

Unique Integrated Fluidic Circuit (IFC) designed to multiplex 48 samples against 48 reactions in 30 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, and then sequence them as a single sample without additional library preparation.

Design Service

For those without predesigned primer sets, Fluidigm scientists will work closely with the user in designing, optimizing, and validating primers to ensure a fast, simple, and trouble-free experiment.

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Corporate Headquarters

7000 Shoreline Court, Suite 100
South San Francisco, CA 94080 USA
Toll-free: 1.866.FLUIDLINE | Fax: 650.871.7152
www.fluidigm.com

Sales

North America | +1 650 266 6170 | info-us@fluidigm.com
Europe/EMEA | +33 1 60 92 42 40 | info-europe@fluidigm.com
Japan | +81 3 3662 2150 | info-japan@fluidigm.com
China (including Hong Kong) | +86 21 3255 8368 | info-china@fluidigm.com
Asia | +1 650.266.6170 | info-asia@fluidigm.com
Latin America | +1 650 266 6170 | info-latinamerica@fluidigm.com

