

Agilent Technologies  
Next-Generation Sequencing

# SureSelect TARGET ENRICHMENT FROM SAMPLE TO SEQUENCER



The Measure of Confidence



Agilent Technologies

## SURESELECT TARGET ENRICHMENT SOLUTIONS

### Surely Better Target Enrichment from Sample to Sequencer

Agilent's market leading SureSelect platform provides a complete portfolio of catalog to custom products, providing the flexibility you need, from Discovery to Follow-up Studies:

#### Discovery:

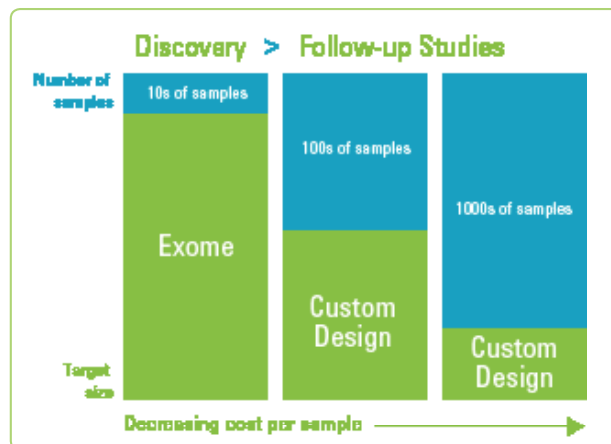
- Broadest selection of catalog products—exomes for human, mouse, and model organisms

#### Follow-up Studies:

- Easy customization to follow up your targets
- Automation and multiplexing for large scale studies

#### Flexible Custom Design Solutions:

- Fast and easy customization using free eArray portal
- Convenient Design Service
- Easily create custom content for targeted DNA or RNA studies



SureSelect<sup>XT</sup> Target Enrichment offers complete solutions for the entire workflow. The smaller your capture, the larger the number of samples you can process, making your experiment more cost effective.

## THE COMPLETE WORKFLOW FOR TARGET ENRICHMENT



#### PREPARATION

- SureSelect<sup>XT</sup> SOLiD
- SureSelect<sup>XT</sup> Illumina
- Up to 96 indexes\*
- Automation
- SureCycler 8800 & Herculase II

#### LIBRARY QC

- Agilent 2100 Bioanalyzer
- Agilent 2200 TapeStation



#### TARGET CAPTURE

- Chrom X
- Array Capture
- Custom <0.2-34Mb+  
\*Up to 100Mb by request
- Human All Exon 50 Mb
- Human All Exon v4
- Human All Exon v5
- Mouse All Exon
- Zebrafish\* All Exon
- Bovine\* All Exon
- Canine\* All Exon
- RNA Capture
- Kinome DNA
- Kinome RNA

#### LIBRARY AMPLIFICATION & QC

- NGS Library Quantification Kit
- Agilent Mx QPCR instrument



#### SUPPORTED PLATFORMS

- Illumina GAIIx
- Illumina HiSeq
- AB 5500\*/SOLiD™
- 4/Ion Torrent\* PGM™
- Roche 454 FLX/GS Jr.

\*By Request



*SureSelect<sup>XT</sup> kits have everything you need – including reagents for DNA isolation, library prep and target enrichment.*

## BETTER TECHNOLOGY PROVEN FOR ANY NGS PLATFORM

### Platform-Independent Target Enrichment Solutions

#### High Throughput Sequencing

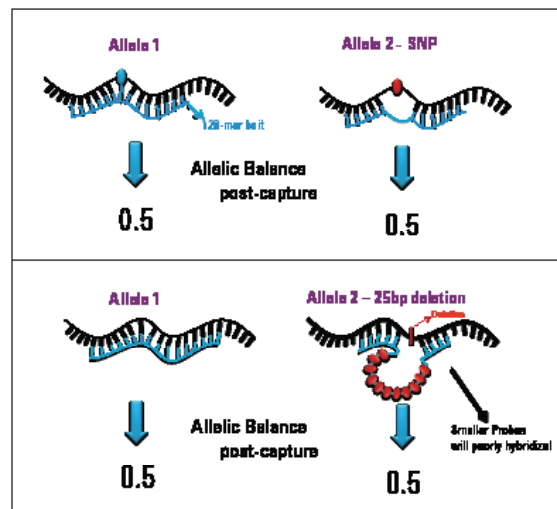
- HiSeq, GAllx, SOLiD™ 4 and 5500, Roche 454
- Ideal for exomes and custom target enrichment

#### Desktop Sequencing

- Ion Torrent PGM™, 454 Junior
- Ideal for custom target enrichment

### Proven Technical Performance

- Fastest hybridization time—up to 3x faster than other systems
- Ultra-long biotinylated 120-mer baits—reliable capture of more small and large variants, including SNPs, CNVs and Indels
- Superior allelic balance and uniformity



**Longer baits.** 120-mer RNA oligo baits, designed using advanced algorithms, ensure greater sensitivity for SNPs and Indels.

## SURELY BETTER TRUSTED: MORE THAN 150 PUBLICATIONS IN 2 YEARS!



*Agilent SureSelect is cited in more peer-reviewed publications than all other target enrichment solutions combined.*

To learn more about SureSelect<sup>XT</sup> target enrichment and other Agilent products for next-generation sequencing, please visit [www.agilent.com/genomics/nextgen](http://www.agilent.com/genomics/nextgen)

## SURESELECT ALL EXON: DISCOVER MORE, FASTER

### Focus Your Discovery on the Regions that Matter

Proven **SureSelect All Exon kits** cover the largest number of genes and exons.

#### Most Comprehensive Human Exome Coverage:

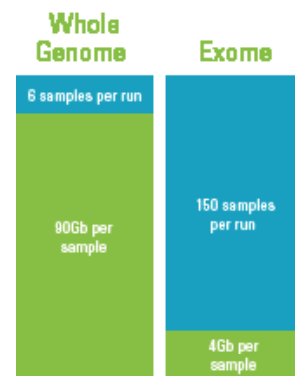
- Updated to cover the primary databases, including CCDS, RefSeq, and GENCODE
- Human All Exon V4 targeting coding exons
- Human All Exon V5 targeting coding exons plus UTRs

#### Higher Sensitivity:

- Capture up to 30% more variants than competitive kits
- Ultra-long RNA baits capture more SNPs, Mutations, and Indels

	Parameter	All Exon V4	All Exon V5
Design Details	Target Size	51Mb	71Mb
	# Genes	20,965	21,058
	# Targeted Exons	334,378	335,765
	Plus Option	Yes	Yes
Design Databases	CCDS version	March 2011	March 2011
	RefSeq version	March 2011	March 2011
	GENCODE version	v6	v6
	miRBase	V17	V17
	TCGA	v6	v6
	UCSC	March 2011	March 2011
Workflow Details	Hyb. Time	1x24hrs	1x24hrs
	Amount of Seq. Required	4Gb	7Gb

#### EXOME CAPTURE ENABLES MORE SAMPLES PER RUN



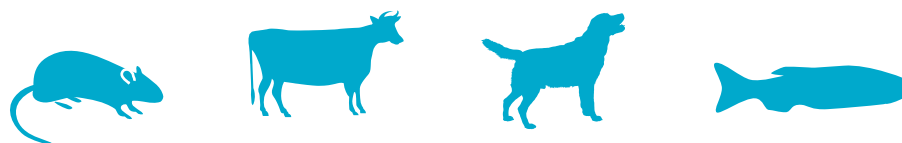
Exome sequencing requires ~23x less sequencing, allowing 25x greater sample throughput and faster time to discovery.

SureSelect Human All Exon V4 and V5 provide you the most complete coverage of the coding content of the genome. Achieve faster results with shorter hybridization times and less sequencing.

## A COMPLETE OFFERING OF MODEL ORGANISM EXOMES

Expanded catalog All Exon kits for the following organisms:

- Mouse
- Canine
- Bovine
- Zebrafish



Develop custom exome designs for any species using eArray or add custom content to any catalog exome kit.

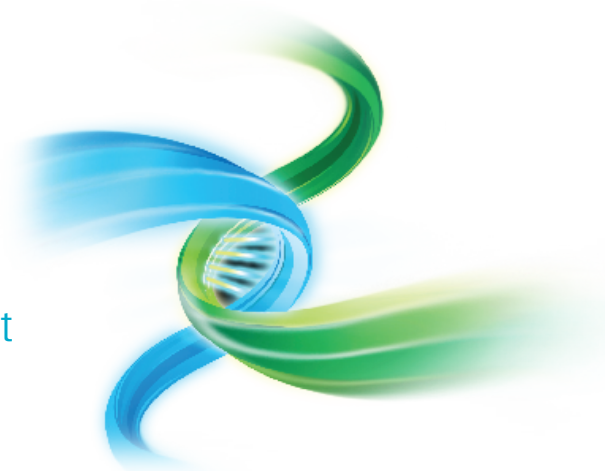
## EASILY CUSTOMIZE FOR YOUR REGIONS OF INTEREST

### Custom Solutions to Follow-up Your Studies

- SureSelect custom designs for DNA & RNA
- Flexibility to capture from <200kb to 34Mb and beyond
- Straightforward custom design with eArray or Agilent's Design Service

### Get Consistent, Reliable Results You Can Trust

- Highest levels of sensitivity, specificity and accuracy
- Accurately call heterozygous and homozygous variants
- Rigorous quality control and ISO13485-certified facility



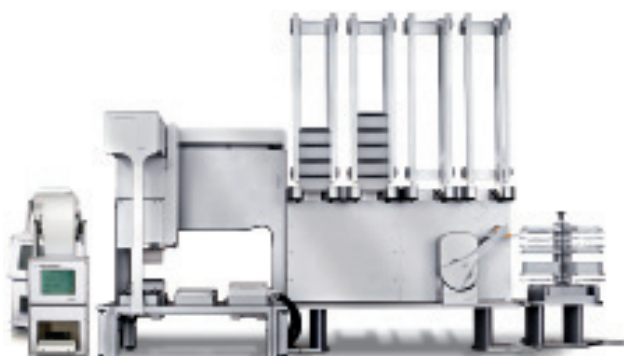
### SEE WHAT RNA ENRICHMENT REVEALS!

	WITH RNA Target Enrichment	WITHOUT RNA Target Enrichment
Novel Variants	16	4
Gene Fusions	5	2
Splice Junctions	4720	2958
Alternatively Spliced Genes	177	52
Average Coverage	606X	14.4X*

\* Levin, Joshua Z. et al. Targeted next-generation sequencing of a cancer transcriptome enhances detection of sequence variants and novel fusion transcripts. *Genome Biology* 2009, 10:115

## COMPLETE, WALKAWAY AUTOMATION

### NGS Workstation: Boost Sample Throughput 10x!



- Automate virtually every step of the workflow, including:
  - plate handling
  - library prep
  - SPRI purification
  - capture
- Reduce variability and improve efficiency at any scale
- Plug-and-play with pre-programmed target enrichment protocols—no down time for methods development and programming

[www.agilent.com/genomics/automation](http://www.agilent.com/genomics/automation)

### SureSelect<sup>XT</sup>: The Most Complete Target Enrichment Kit

SureSelect<sup>XT</sup> gives you all of the components you need from one source, for any NGS platform:

- ✓ DNA Isolation
- ✓ Library Prep
- ✓ Target Enrichment: Baits, Buffers, Primers, Adapters, Indexes, Blockers

*Now you don't need to buy  
reagents from different providers.*



### qPCR NGS Library Quant Kit: Accurate and Sensitive

Quantify NGS libraries prior to sequencing to reduce variability and improve throughput

- Accurate and sensitive library quantification leading to optimal cluster densities/emPCR
- Optimize representation of your sample pool by accurate quantification
- Quantify large numbers of libraries simultaneously, even low concentration (below <5pg/μL)

[www.agilent.com/genomics/qpcr](http://www.agilent.com/genomics/qpcr)

[www.agilent.com/genomics/pcr](http://www.agilent.com/genomics/pcr)

Agilent PCR and qPCR instruments and reagents provide accurate, reliable library amplification and quantification.



Mx qPCR Instrument



QPCR & PCR Reagents



SureCycler 8800 Thermal Cycler



## EASILY CUSTOMIZED CONTENT

### Agilent eArray: Powerful online design application enables experimental flexibility

- Ability to combine a custom design with any catalog kit – all in one capture
- Flexibility to use more stringent or more permissive repeat masking to maximize your capture size
- Bait boosting option improves capture of small exons and GC rich regions for improved uniformity

[www.agilent.com/genomics/earray](http://www.agilent.com/genomics/earray)



## NGS SAMPLE AND LIBRARY CONTROL

### Agilent 2100 Bioanalyzer System

The Agilent 2100 Bioanalyzer makes it easy to verify the quality of your DNA or RNA library to ensure yield, fragment size, and fragment homogeneity before moving to target enrichment or sequencing.

- Improved data precision and reproducibility
- Short analysis times
- Minimal sample consumption

[www.agilent.com/genomics/bioanalyzer](http://www.agilent.com/genomics/bioanalyzer)



### Agilent 2200 TapeStation System

The Agilent 2200 TapeStation system is a new, automated solution for sample analysis. Simply place the ScreenTape, loading tips and samples into the TapeStation and let it load, separate, image, analyze and present the results within 1 minute per sample.

- Ease-of-use enabled by ready-to-use consumables and automated sample loading
- Increased automation means less hands-on time and a faster time to result
- Discrete ScreenTape channels allow scalable throughput at a constant cost per sample

[www.agilent.com/genomics/tapestation](http://www.agilent.com/genomics/tapestation)



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