SureSeq myPanel

A Sysmex Group Company

NGS Custom Breast Cancer panel

Features

Hybridisation-based enrichment delivering unparalleled coverage uniformity

- Detect low frequency breast cancer variants consistently with confidence

Bespoke panels with pre-optimised content

- Create your ideal panel and sequence only what's relevant for your research

Panel content designed with experts and from current literature

- Get the most comprehensive insight into disease-driving mutations

Complimentary Interpret NGS data analysis software

- Easy-to-use analysis solution for accurate detection of all variants

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Introduction

Breast cancer is the second most common cancer in women after skin cancer. Approximately one out of eight women will be diagnosed in their lifetime with some form of breast cancer. Next generation sequencing (NGS) has enabled the simultaneous study of mutations in high-penetrance breast cancer predisposition genes. These include *BRCA1*, *BRCA2* and other high-risk breast cancer susceptibility genes such as *TP53* (Li-Fraumeni syndrome), *PTEN* (Cowden's syndrome) and *PIK3CA*, as well as more moderate-risk genes such as *PALB2*, *BRIP1*, *RAD51C* and *RAD51D*.

Choose your ideal breast cancer NGS panel from our range of fully tested and optimised NGS panel content. Simply mix and match the genes or individual exons you require and get the most out of your sequencing runs. Use in conjunction with the SureSeq™ FFPE DNA Repair Mix* for improved NGS library yields, %OTR (on target rate) and mean target coverage from challenging FFPE derived samples.

Select from any of the following myPanel breast cancer whole gene or exonic content below:

APC	*BRCA2*	*CHEK2*	*GATA3*	*PIK3CA*	*RB1*
ATM	*BRIP1*	*EGFR*	*MSH6*	*PTEN*	*SF3B1*
BARD1	*CDH1*	*ERBB2*	*NBN*	*RAD51C*	*STK11*
BRCA1	*CDK12*	*ESR1*	*PALB2*	*RAD51D*	*TP53*

Superior Coverage Uniformity

Mutations in *BRCA1* and *BRCA2* genes lead to an increased susceptibility to breast, ovarian, and other cancers. Figure 1, illustrates the superior uniformity of coverage of key exons of *BRCA1*, and Figure 2, *BRCA2* from an FFPE sample with SureSeq compared to an amplicon-based panel.

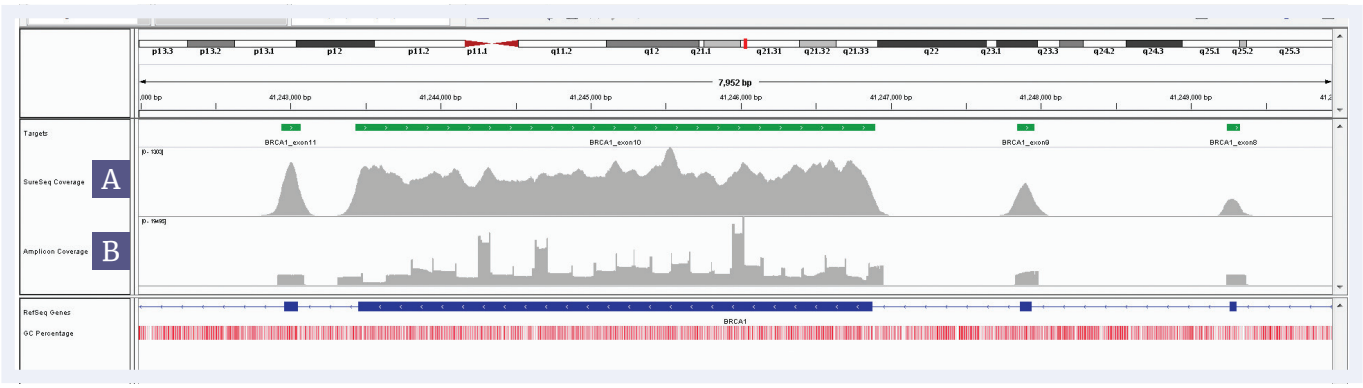

Figure 1: *BRCA1* exons 8, 9, 10 and 11 coverage. A SureSeq, B Amplicon panel. Depth of coverage per base (grey). Targeted region (green). Gene coding region as defined by RefSeq (blue). GC percentage (red).

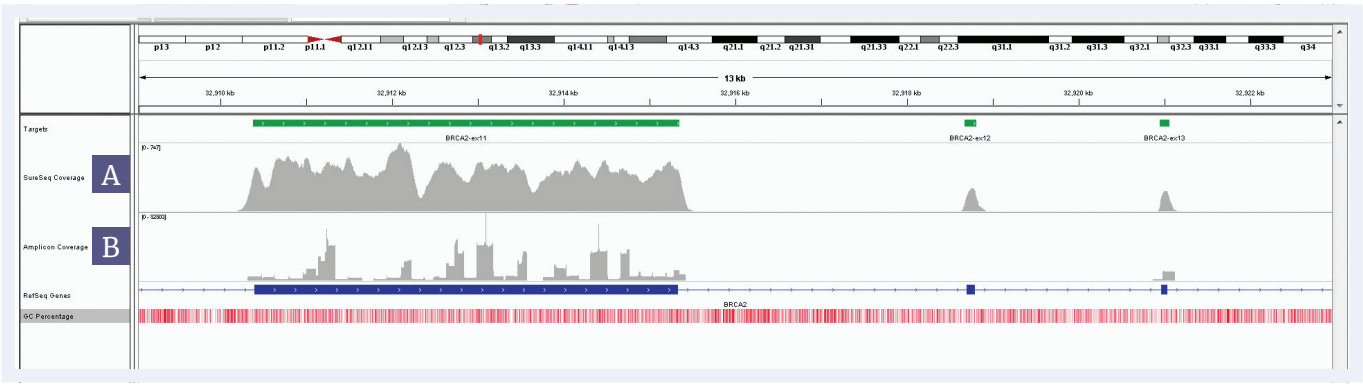

Figure 2: *BRCA2* exons 11, 12 and 13 coverage. A SureSeq, B Amplicon panel. Depth of coverage per base (grey). Targeted region (green). Gene coding region as defined by RefSeq (blue). GC percentage (red).

Key Genomic Regions Covered

The PI3K pathway is the most frequently enhanced oncogenic pathway in breast cancer. Among mechanisms of PI3K enhancement, *PIK3CA* mutations are most frequently (~30%) observed, with the majority of *PIK3CA* somatic mutations located in 2 "hot spots": E542K or E545K in exon 9, and H1047R or H1047L in exon 20[1], Figure 3.

Figure 3: Illustration of the excellent uniformity of coverage of *PIK3CA* A exon 9 and B exon 20. Depth of coverage per base (grey). Targeted region (green). Gene coding region as defined by RefSeq (blue). GC percentage (red).

GC-rich regions: handled with ease

Sequencing of another frequently mutated breast cancer gene, *TP53*, where point mutations are predominantly located in exons 5-8[2], is often hampered by the GC-rich content, which can lead to technical challenges in assay design and analysis. OGT's innovative bait design overcomes this issue, offering a high level of uniform coverage for these difficult genes to sequence in FFPE samples, Figure 4.

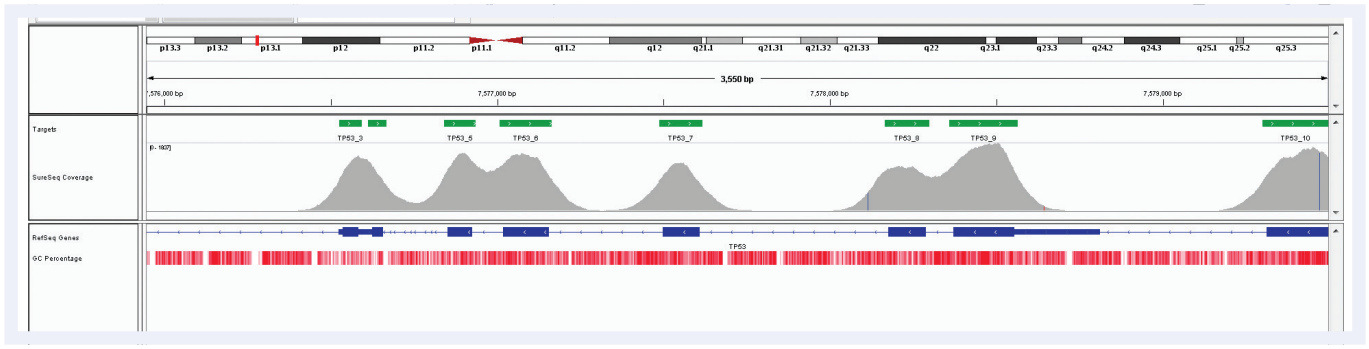

Figure 4: *TP53* exons 3 – 9, exceptional uniformity of coverage in spite of the high GC content of the region. Depth of coverage per base (grey). Targeted region (green). Gene coding region as defined by RefSeq (blue). GC percentage (red).

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Getting started with your next SureSeq myPanel™ NGS Custom Cancer panel could not be simpler

Talk to us about your custom breast cancer NGS requirements and let our expertise work in helping you to advance your cancer research.

NGS Custom Breast Cancer panel

Ordering information

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Product	Contents	Cat. No.
SureSeq myPanel NGS Custom Breast Cancer Panel	Enrichment baits; SureSeq Interpret Software	various
SureSeq FFPE DNA Repair Mix*	Enzyme, mix and buffers sufficient for 16 FFPE DNA samples	500079
SureSeq NGS Library Preparation Complete Solution (16)	Bundle of 1x SureSeq NGS Library Preparation Kit (16), containing adaptors, PCR primers and enzymes, 1x SureSeq NGS Index Kit – Collection A, 1x SureSeq NGS Hyb & Wash Kit (16), 1x Dynabeads M270 Streptavidin (2ml) and 1x AMPure XP beads (10ml). Sufficient for 16 samples	500084
SureSeq NGS Library Preparation Complete Solution (48)	Bundle of 1x SureSeq NGS Library Preparation Kit (48), containing adaptors, PCR primers and enzymes, 1x SureSeq NGS Index Kit – Collection B, 3x SureSeq NGS Hyb & Wash Kit (16), 3x Dynabeads M270 Streptavidin (2ml) and 3x AMPure XP beads (10ml). Sufficient for 48 samples	500085

*The SureSeq FFPE DNA Repair Mix can only be purchased in conjunction with SureSeq NGS panels, not as a standalone product.

References:

1. Mukohara, Breast Cancer (Dove Med Press). 2015; 7: 111–123.
2. Langerød *et al.*, Clin Cancer Res; 2013; 3569–80

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What binds us, makes us.

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