Target Enrichment Panels

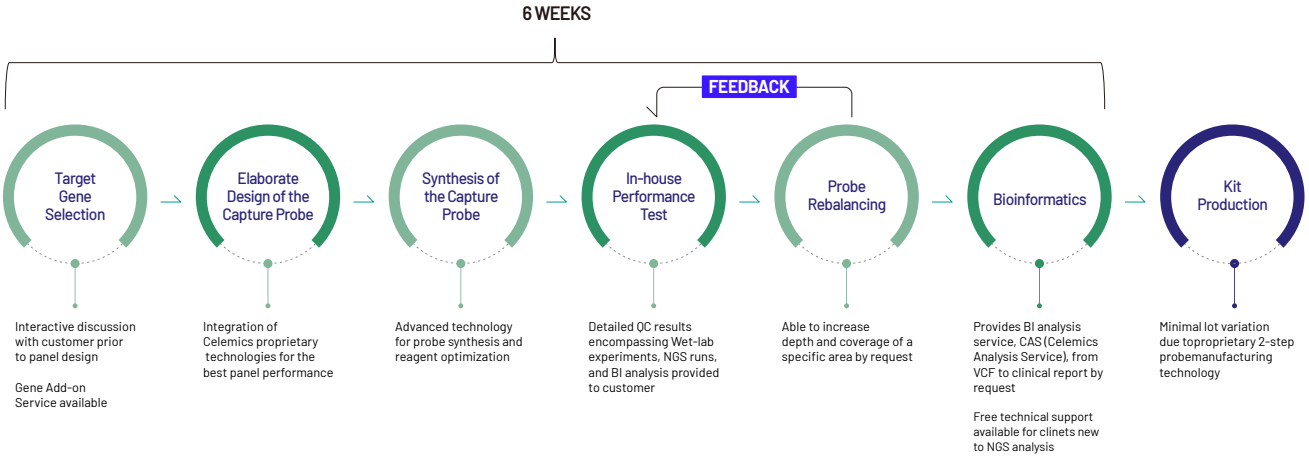
Superior Performance & Flexible Customization

At Celemics, we support our customers with targeted capture-based NGS products, elaborately designed and manufactured by our experienced researchers and technicians. All our Ready-to-Use kits are completely validated and quality-tested, providing unparalleled market performance.

Our research team has extensive experience in the designing and manufacturing over 1,000 different customized panels based on the individual client's specific requirements. With our proprietary technologies, Celemics promises to offer products of the highest quality to our customers.

Panel Manufacturing Process

For every customized panel, we perform an on-site pre-validation test with control samples.
The test results (FASTQ and QC files) are provided to the customer for the performance evaluation of the requested panel.

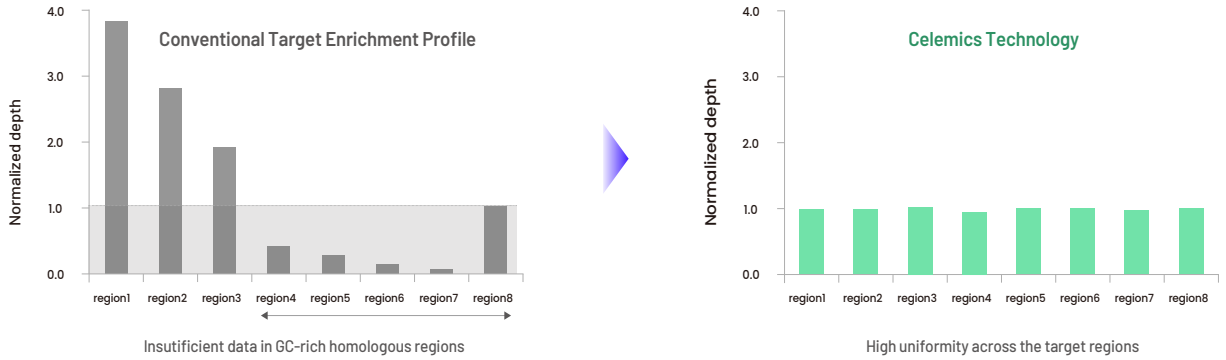


Key Benefits

1. Performance Against Hard-to-Capture Regions

We design probes using our unique and robust rebalancing technology to efficiently analyze hard-to-capture areas, such as GC-rich, repetitive, and homologous regions that are often masked or filtered out by other companies.
With no masking or omission, we provide the maximum number of target regions to our customers.

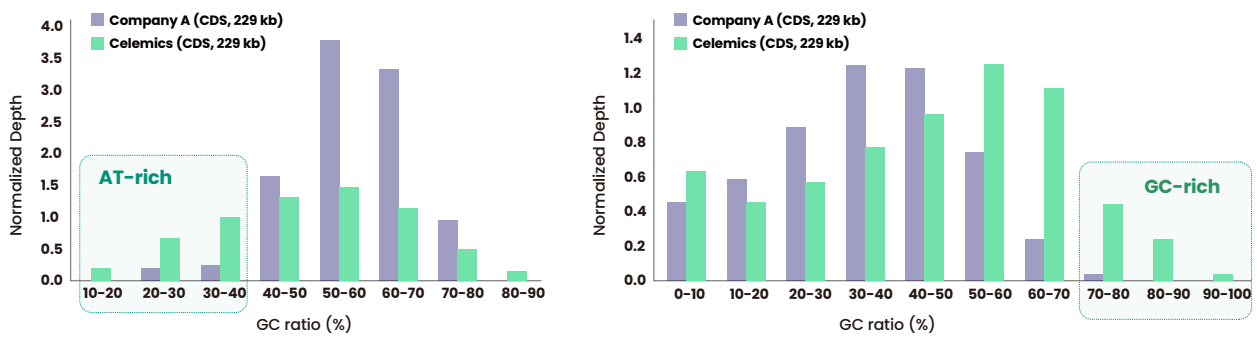
Rebalancing Technology



Rebalancing allows researchers to redesign probes against the requested regions to increase capture efficiency and produce high uniformity.

Better Uniformity across AT-and GC-rich Regions

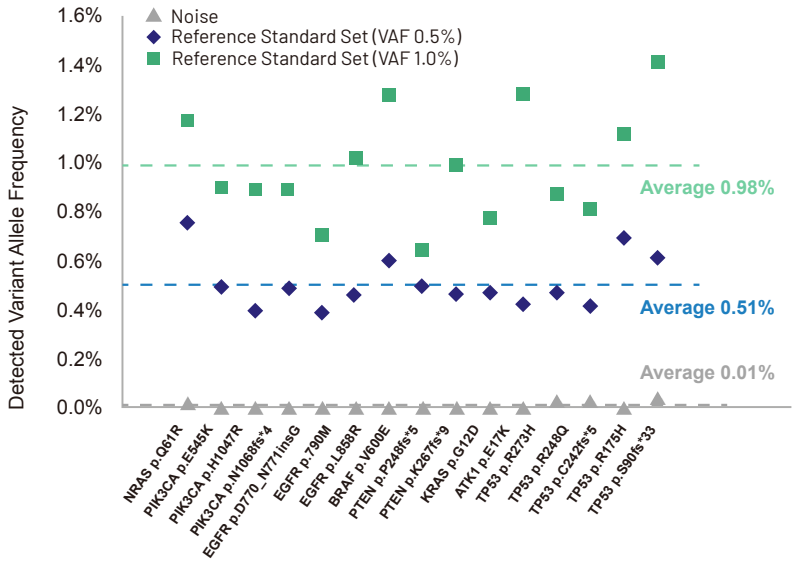
When compared with company A products, Celemics panels show superior performance for the target regions that are AT-and GC-rich, preventing additional experimentation and costs.



2. Accurate Detection of Difficult Samples

Our probe manufacturing technology allows you to overcome the limitations of analyzing low-amount (e.g. ctDNA) and poor-quality (e.g. FFPE) samples through high coverage uniformity.

Performance of Celemics ctDNA Panels Optimized for Liquid Biopsy Sample



ctDNA Lung Cancer Panel

With 20 ng of cfDNA, the 28 variants present at 0.5% and 1% are successfully detected by Celemics ctDNA Lung Cancer Panel with 100% sensitivity and specificity.

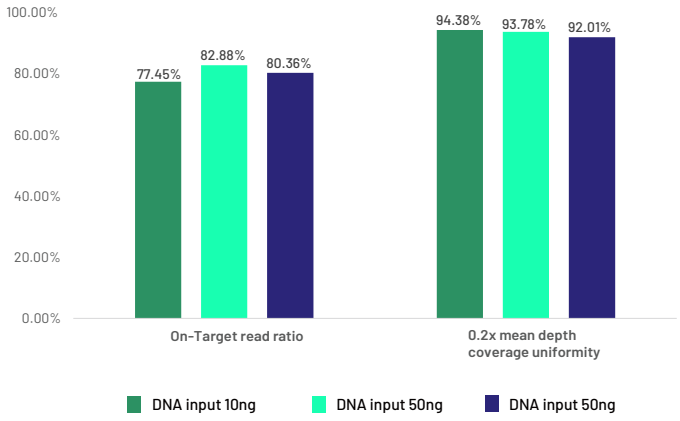
Average depth

Conventional Method: **6,502.32X**
Molecular barcode analysis applied: **12,716.43X**

Performance of Celemics Solid Tumor Custom Panel with 10 and 50 ng of DNA from Clinical Samples

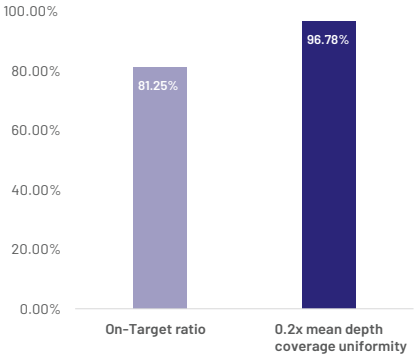
Experimental Condition

- Sample type: Highly degraded FFPE samples
- DNA input: 10 / 50 ng



Experimental Condition

- Sample type: Clinical samples
- DNA input: 50 ng

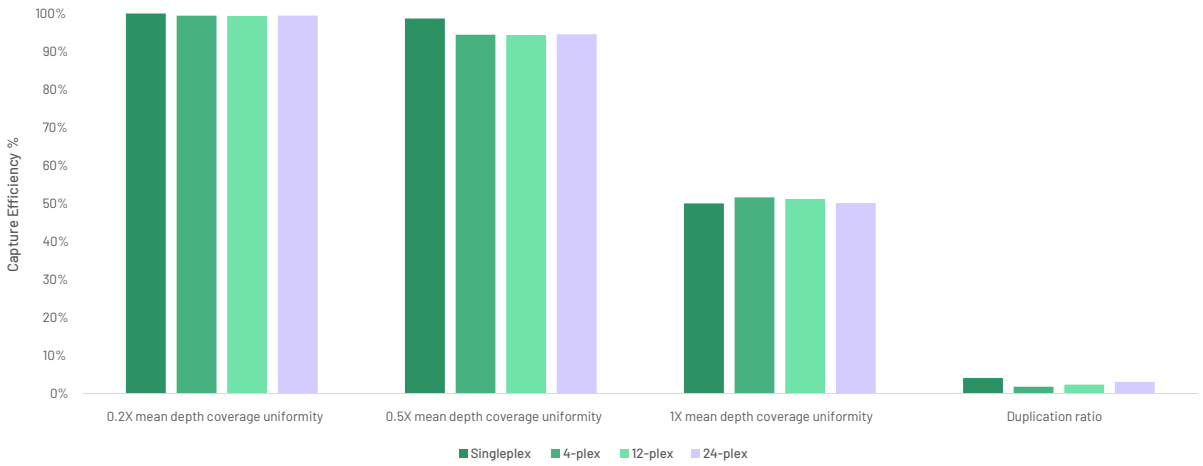


Three replicates of 10 highly degraded samples were analyzed with Celemics solid Tumor Panel. The result showed 77.45% of high on-target ratio and 94.38% of 0.2x mean depth coverage uniformity with 10ng DNA samples.

3. Flexibility and Panel Diversity for Different Needs

Panel customization is frequently demanded by NGS customers, but only a few companies can support customers' different needs and goals. Celemics excels in such customization, fully supporting our customers from panel design to data interpretation and allowing them to build unique designs compatible with any type of sample, platform, and multiplexing level. Our customers who do not have required equipment are also supported with alternative protocols.

Coverage Uniformity of Pre-capture Pooling Methods using Celemics OncoRisk Panel



*Highly uniform coverage for all levels of pre-capture multiplexing allows our customers to save their valuable time and cost.

Specification of Celemics Products

Input Sample Type	Genomic DNA and RNA / Cell-free DNA / FFPE DNA and RNA
Input DNA	20 ng to 1 µg
Compatible Platforms	Illumina / MGI / Ion Torrent / Pacific BioScience
Variant Types	SNVs, InDels / CNVs, large InDels, gene fusions / splice variants / TMB, MSI, ITD, etc.

Panel Contents (configurable)

1. Library Preparation Kit
- Sonicator-based standard kit
- Fragmentase-based standard kit
- Enzymatic Preparation kit
  (Fragmentation to ER /A-tailing in a single reaction)

2. Hybridization Kit
- Standard hybridization kit
- Enhanced hybridization kit

3. Sample Pooling Options
- Singleplex
- Multiplex

4. Double-Stranded cDNA Synthesis Kit

5. CeleMag™ Beads
- CeleMag™ Clean-up Beads
- CeleMag™ Streptavidin Beads

6. Polymerase Amplification Kit

7. CAS Bioinformatics Service

Overview of Celemics Ready-to-Use Kits

Category	Products	Gene / Virus Information	Covered Region	Target Size
ONCOLOGY	BRCA 1/2 Panel	BRCA 1, BRCA 2	Whole CDS (+/- 40 bp), UTR, Promoter	23 kb
	OncoRisk Panel	31 genes	Whole CDS	96 kb
	CancerScreen Panel Core	13 genes	Whole CDS, Rearrangement	61 kb
	CancerScreen Panel 50	58 genes		197 kb
	CancerScreen Panel 100	99 genes	CDS	299 kb
	CancerScreen Panel 400	407 genes		1,123 kb
	CancerMaster Panel	524 genes	Whole CDS, Custom regions of oncogenes, Immune response genes, EBV & HPV viruses	2.5 Mb
INHERITED DISEASE	G-Mendeliome Clinical Exome Sequencing (CES) Panel Standard	5,508 genes	CDS, Hotspots, Mitochondrial genome	13.8 Mb
		7,513 genes		19.6 Mb
	G-Mendeliome Disease Specific Panel (17 Disease Specific Panels)	14-293 genes	Whole CDS, Hotspots	37 kb - 1.16 Mb
PHARMACOGENOMICS	PharmacoScreen Standard Panel	122 genes	Whole CDS, Hotspots	534 kb
	PharmacoScreen Epilepsy Panel	91 genes		575 kb
	PharmacoScreen Anti-tuberculosis Panel	132 genes		186 kb
LIQUID BIOPSY	ctDNA Colorectal Cancer Panel	16 genes	Whole CDS	18 kb
	ctDNA Breast Cancer Panel	27 genes		99 kb
	ctDNA Lung Cancer Panel	28 genes	Whole CDS, 4 intronic regions	116 kb
MITOCHONDRIAL DNA	Mitochondrial DNA Sequencing Panel	Whole mitochondrial genome	Whole mitochondrial genome	16.6 kb
TRANSCRIPTOME	Targeted RNA Sequencing	Selective genes of Interest	Selective regions	-
VIRUS RESEARCH	Comprehensive Respiratory Virus Panel	9 types / 39 strains, including SARS-CoV-2	-	706 kb
	African Swine Fever Virus Panel	ASFV 26 strains	-	192 kb

Publication

1. Jason D. Merker et al. "An Overview of Characteristics of Clinical Next-Generation Sequencing-Based Testing for Hematologic Malignancies." Arch Pathol Lab Med (2021)
2. Yoon, Jihoon G et al. "Molecular Characterization of Biliary Tract Cancer Predicts Chemotherapy and Programmed Death 1 /Programmed Death-Ligand 1 Blockade Responses." Hepatology (Baltimore, Md.)(2021)
3. Lee HB, Lee SB, Kim M, et al. Development and Validation of a Next-Generation Sequencing-Based Multigene Assay to Predict the Prognosis of Estrogen Receptor-Positive, HER2-Negative Breast Cancer. Clin Cancer Res. (2020)
4. Lee, Dae-Won et al. "Tumor Mutation Burden and Prognosis in Patients with Colorectal Cancer Treated with Adjuvant Fluoropyrimidine and Oxaliplatin." Clinical cancer research: an official journal of the American Association for Cancer Research vol. 25,20 (2019)

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