

# Celemics Customized NGS Solution

Taking NGS Customization  
to the Next level

## Key Features

- Provision of end-to-end customized NGS solution
- Industry-leading on-target ratio and uniformity of hybridization-based target enrichment
- Robust performance of assessing DNA and RNA across various specimen quality
- Provision of white-labeled customized product for supporting customer's business expansion
- Simple and rapid workflow

## Celemics Customized NGS Panel



Celemics target enrichment panel employs hybridization-based capture technology to enable targeted sequencing, facilitating the analysis of specific regional sequences of entire genomes. It accurately analyzes various types of mutations, including single nucleotide variants (SNVs), insertions/deletions (InDels), copy number variations (CNVs), and rearrangements. Celemics’ target enrichment panel utilizes our proprietary probe design, rebalancing, blocker, and assay optimization technologies to efficiently analyze not only hard-to-capture areas such as GC-rich and homologous regions, but also tiny amounts of damaged DNA or RNA originated from circulating tumor cells or FFPE samples. Celemics has successfully developed and delivered over 1,000 custom panels. Our target enrichment approach specifically isolates genomic regions of interest, leading to enhanced sensitivity in detecting genetic mutations through increased coverage with cost-effectiveness.

### Customized NGS panel design and manufacture workflow

Celemics’ core technologies are incorporated when designing and manufacturing exclusive customized NGS panels. For every panel Celemics designed, we perform the actual validation NGS run to confirm the panel performance. After our validation run, probe sets are rebalanced and optimized, if necessary, through feedback cycle, and thereby provide robust customized NGS panel with outstanding performance and maximized sequencing efficiency.

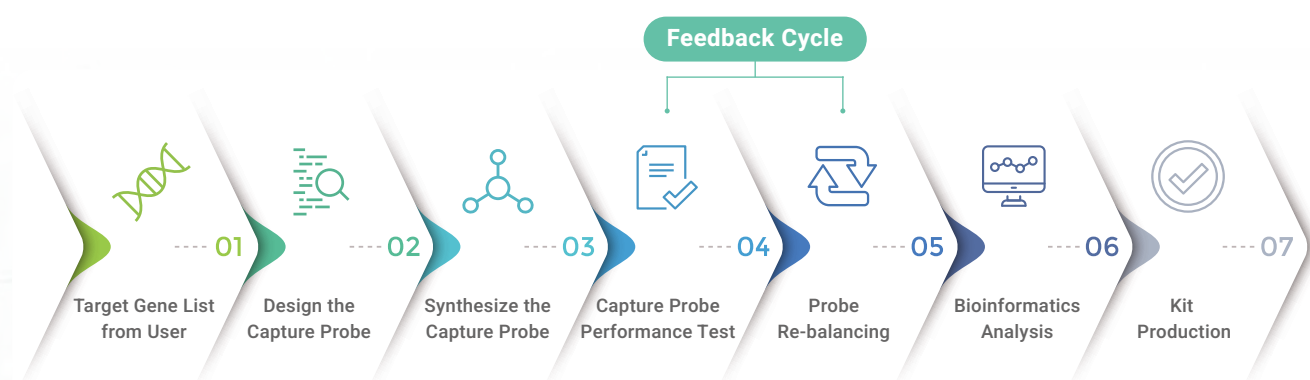


Figure 1. Celemics panel design and manufacturing process.

## Custom Assay Development



We, as NGS experts, provide extensive NGS solutions for new insights into various clinical or research fields. With proprietary probe design and manufacturing technology, Celemics takes Customization to the next level; we offer customized NGS solution for any types of sample you wish to analyze. From simple gene add-on from our existing ready-to-use panel to discovering new targets that you were unable to analyze using current commercially available solutions, we can develop complete set of assay with optimized reagent and buffer for your target of interest. The process of developing and optimizing custom assay will include not only the customizing the panel design but also designing species-specific or sequencer-specific blockers, followed by reagent and buffer conditioning depending on the customer's experiment condition and sequencing platform. Celemics provides tailored-fit customize assay development from designing to validation run; optimizing the custom assay to perfection.

	Species	Sample type	Sequencing Platform	Library Preparation	Multiplexing	Hybridization
Options & Components	Human Plant Animal Fungi Virus Bacteria Etc.	DNA/RNA from Blood, Tissue, FFPE, Saliva, etc.	Illumina	Celemics LP	CeleNM™ Bead	Standard Hybridization
		Liquid Biopsy (cfDNA, cfRNA)	ThermoFisher			
		Environmental Specimen		Celemics EP	Conventional Multiplexing	Enhanced Hybridization
		Etc.	MGI			

Table 1. Options and components for custom assay development.

## High-throughput Genotyping



Celemics provides the solution with our high-throughput genotyping panel. We have utilized NGS and hybridization-based capture technology, whereby a high number of regions of interest are simultaneously enriched using specifically designed probe, to provide genotyping results with maximized analytical efficiency in your area of interest. With our exclusive technologies, we can provide NGS-based target enrichment sequencing assay for comprehensive and highly accurate analyses.

### Comparison with Conventional Technologies

	Advantages	Disadvantage
Conventional GBS	<ul style="list-style-type: none"> <li>Sequencing of multiple samples due to lower amount of data required compared to WGS</li> </ul>	<ul style="list-style-type: none"> <li>Limited biomarkers available due to limited conserved regions, reducing overall resolution</li> <li>Unable to detect SNPs in the restriction sites</li> </ul>
Microarray	<ul style="list-style-type: none"> <li>Higher reproducibility than conventional GBS</li> </ul>	<ul style="list-style-type: none"> <li>Hard to customize new targets (novel biomarkers)</li> <li>Low flexibility to meet various kinds of genotyping</li> </ul>
PCR	<ul style="list-style-type: none"> <li>Cost-effective for low number of markers</li> <li>Easy and fast analysis</li> </ul>	<ul style="list-style-type: none"> <li>Limited number of biomarkers to analyze at once</li> <li>Inappropriate for mass-analysis of biomarkers</li> </ul>
Celemics Target Enrichment	<ul style="list-style-type: none"> <li><b>Cost saving</b> : Highly cost-effective when assessing multiple markers</li> <li><b>Flexible customization</b> : Novel biomarkers can be added or removed</li> <li><b>Comprehensive analysis</b> : Including novel SNP discovery</li> <li><b>Exceptional performance</b> : Celemics proprietary oligo design technology</li> <li><b>Wide compatibility</b> : Compatible with a wide range of sample type</li> </ul>	

## Business Model Consultations from Celemics

Celemics is CE-IVD, ISO 9001, ISO 13485 and KGMP accredited to provide support and consultations for our customers. Through our experience and accreditations, we are eligible to support all kinds of business models including IVD regulation, clinical trial procedures, OEM and ODM, White-labeled products, and technical transfer consults. We can also assist in customers requiring other specific accreditation (CAP, GCLP, and more) upon client's request. For more inquiries regarding prospective consultations, please contact us at [cs@celemics.com](mailto:cs@celemics.com)

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