Agilent SureSelect CD Clinical Focused Exome

Designs by experts, available to the community

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"The collaboration with the Agilent design specialists allowed us to understand when to 'force' probes into a target region and when it is just not wise to do so if it will result in more off-target reads. This approach has allowed us to maximize the sequencing output for regions that can be targeted by short-read sequencing."

Targeted Next-Generation Sequencing for Inherited Diseases

Agilent Community Designs for next-generation sequencing (NGS) are targeted sequencing panels established in collaboration with subject matter experts in different research fields. These NGS designs are available as custom, made-to-order panels that provide you with robust and cost-effective sequencing results that focus only on your genes of interest.

NGS is now a standard part of the diagnostic pathway for inherited diseases. To help advance sequencing in this field, David Gokhale, Ph.D., and other inherited disease experts at the North West Genomic Laboratory Hub, Saint Mary's Hospital, Manchester, UK, developed the Agilent SureSelect CD Clinical Focused Exome.

The Clinical Focused Exome panel is based on the contents of the Genomics England PanelApp. This panel app-focused exome ensures coverage of content relevant to the diagnostic and scientific community while maintaining the advantages of a targeted enrichment workflow.

Advantages of the Design

- Uses the latest bait manufacturing improvements from Agilent, including double-stranded probes and increased uniformity
- Features a 20.4 Mb design size with 5,629 clinically relevant genes taken from PanelApp databases
- Includes coverage over ISCA regions to call CNV's and difficult-to-capture regions
- Includes non-coding content within the genes from HGMD and ClinVar databases for disease-causing, pathogenic, and likely pathogenic mutations
- Includes Pengelly SNPs for sample tracking[1]
- Pairs with Agilent Magnis automation for walk-away sample preparation

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Features of the Gene Panel Redesign

- PanelApp, hosted by Genomics England, helps maximize clinical relevance of genes
- PanelApp has gained sufficient diagnostic evidence through crowd-sourced consensus knowledge (https://panelapp.genomicsengland.co.uk/)
- Genes were curated into panels and color-coded based on clinical evidence associated with specific diseases[2]
- All RefSeq and Ensembl genes with evidence of gene expression in the Genotype-Tissue Expression (GTEx) portal (https://www.gtexportal.org/home/) were included
- Exons were padded by 15 bp to maintain valuable splicing information and meet UK requirements
- Exon proximal bases were captured to detect variants that may affect splicing and isoform use
- Exome includes non-coding content defined by PanelApp as being disease-causing (from HGMD and ClinVar databases) and extra content within ISCA regions
- Panel uses new bait manufacturing from Agilent and a panel of 24 common SNPs for sample tracking and tracing[1]
- All features were covered to avoid artificial on-target metric inflation
- Difficult-to-capture regions were included

Partner with SureSelect Library Preparation for Optimized Workflow

SureSelect CD Clinical Focused Exome can be paired with Agilent SureSelect XT Low Input, XT HS, or XT HS2 kits to provide rapid turnaround time (TAT). Optimized for low-input, difficult samples and featuring unique dual indexing, SureSelect panels and baits provide an enhanced workflow for every sample path in your lab. Combining the SureSelect CD Clinical Focused Exome with SureSelect reagents and the Agilent Magnis NGS Prep system enables a 72-hour TAT from samples to result.

Table 1. Ordering information for the SureSelect Community Design Clinical Focused Exome.
Note: part numbers cover the capture probe libraries only. Library prep and target enrichment kits must be purchased separately.

Product	Part Number
SureSelect CD Clinical Focused Exome 16	5282-0010
SureSelect CD Clinical Focused Exome 96	5282-0011
SureSelect CD Clinical Focused Exome 96A	5282-0012
Magnis SureSelect CD Clinical Focus Exome 32	G9959A
Magnis SureSelect CD Clinical Focus Exome 96	G9959B

References

1. Pengelly, R. J.; Gibson, J.; Andreoletti, G.; Collins, A.; Mattocks, C. J.; Ennis, S. A SNP Profiling Panel for Sample Tracking in Whole-Exome Sequencing Studies. Genome Med. **2013**, 5 (9), 89. https://doi.org/10.1186/gm492
2. Martin, A. R.; Williams, E.; Foulger, R. E.; Leigh, S.; Daugherty, L. C.; Niblock, O.; Leong, I. U. S.; Smith, K. R.; Gerasimenko, O.; Haraldsdottir, E.; Thomas, E.; Scott, R. H.; Baple, E.; Tucci, A.; Brittain, H.; de Burca, A.; Ibañez, K.; Kasperaviciute, D.; Smedley, D.; Caulfield, M.; Rendon, A.; McDonagh, E. M. PanelApp Crowdsources Expert Knowledge to Establish Consensus Diagnostic Gene Panels. Nat. Genet. **2019**, 51 (11), 1560–1565. https://doi.org/10.1038/s41588-019-0528-2

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Agilent has not performed verification and validation on these panels.

For Research Use Only. Not for use in diagnostic procedures.

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This information is subject to change without notice.

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