# SureSelect CD Heidelberg CardioGenetics Panel

Innovation powered by you

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*"For more than 10 years, we have a strong interaction with Agilent, which helped us to continuously develop our SureSelect target enrichment-based cardiomyopathy panel.*

*Workflows for both low- and high-throughput custom kits result in comprehensive, reproducible coverage, enabling precise detection of variants."*

## Targeted Next-Generation Sequencing to Identify Cardiomyopathy Mutations

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 made-to-order panels that provide you with robust and cost-effective sequencing results that focus only on your genes of interest.

Benjamin Meder, Ph.D. and Jan Haas, Ph.D., from the Institute of Cardiomyopathies (ICH), Heidelberg, Germany, are experts in the application of NGS technologies for clinical research of cardiomyopathy. They developed the SureSelect CD Heidelberg CardioGenetics panel now offered by Agilent.

Familial clusters among cardiomyopathy patients are not uncommon because genetic factors play a fundamental role in the etiology of the diseases. Genetic testing can help clinical researchers find the causative gene in 25 to 60% of individuals tested for cardiomyopathy.[1] By detecting mutations in genes associated with cardiomyopathies, researchers can make strides toward improved patient therapy, aimed at increasing the quality of life, and identify any family members who may also carry the mutation. A well-curated, targeted panel of cardiomyopathy gene candidates is crucial when investigating the cause of cardiomyopathies.

### Advantages of the Design

- Features 1.246 Mb designed to genome build Hg38, covering all coding exons and UTRs
- Includes 117 clinically relevant genes, curated by ICH experts
- Contains 25 bp of flanking sequence into each intron to identify variants that may influence splicing
- Includes 24 Pengelly SNPs for sample tracking[2]

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## Targeted NGS Performance at ICH

The ICH has shown that with improved accuracy and efficiency, targeted NGS is the technique for selected high-throughput gene sequencing in their laboratory. Consistent performance in a large clinical research cohort demonstrated that targeted NGS can be well-suited to routine cardiac diagnostics, substantiating the ongoing paradigm shift from low- to high-throughput genomics in medicine.[3]

**Table 1.** Complete 117 gene list included in the SureSelect CD Heidelberg CardioGenetics panel

| Genes | Genes | Genes | Genes | Genes | Genes |
|---|---|---|---|---|---|
| ABCC9 | CRYAB | KCND3 | MLYCD | PTPN11 | TAZ |
| ACTC1 | CSRP3 | KCNE1 | MMACHC | RAF1 | TCAP |
| ACTN2 | CTNNA3 | KCNE2 | MYBPC3 | RBM20 | TECRL |
| ADRB3 | DES | KCNE3 | MYH6 | RBM24 | TGFB3 |
| AKAP9 | DMD | KCNE5 | MYH7 | RPS6KA3 | TMEM43 |
| ALPK3 | DNAJC19 | KCNH2 | MYL1 | RYR2 | TMPO |
| ANK2 | DSC2 | KCNJ2 | MYL2 | SCN10A | TNNC1 |
| ARFGEF2 | DSG2 | KCNJ5 | MYL3 | SCN1B | TNNI3 |
| ATP2A2 | DSP | KCNJ8 | MYPN | SCN2B | TNNT2 |
| BAG3 | DTNA | KCNQ1 | NEBL | SCN3B | TPM1 |
| CACNA1C | EMD | KCNQ2 | NEXN | SCN4B | TRDN |
| CACNA2D1 | EYA4 | KRAS | NKX2-5 | SCN5A | TRPM4 |
| CACNB2 | FLNC | LAMA2 | NNT | SGCB | TTN |
| CALM1 | GLA | LAMA4 | NSD1 | SGCD | TTR |
| CALM2 | GPD1L | LAMP2 | PGM1 | SHOC2 | TUBB |
| CALM3 | HCN4 | LDB3 | PKP2 | SLMAP | VCL |
| CASQ2 | HRAS | LIMS1 | PLEKHM2 | SNTA1 | YWHAE |
| CAV3 | ILK | LIMS2 | PLN | SOS1 | |
| COA5 | JPH2 | LMNA | PRDM16 | SYNE1 | |
| CPT2 | JUP | MIB1 | PRKAG2 | SYNE2 | |

**Table 2.** Core genes and database representation within the SureSelect CD Heidelberg CardioGenetics panel

| | DCM | HCM | ARVC |
|---|---|---|---|
| MYH7 | ● | ● | ● |
| TTN | ● | ● | ● |
| LMNA | ● | ● | ● |
| SCN5A | ● | ● | ● |
| DES | ● | ● | ● |
| TNNT2 | ● | ● | ● |
| TNNC1 | ● | ● | ● |
| BAG3 | ● | ● | ● |
| FLNC | ● | ● | ● |
| RBM20 | ● | ● | ● |
| DSP | ● | ● | ● |
| DSG2 | ● | ● | ● |
| LDB3 | ● | ● | ● |
| MYBPC3 | ● | ● | ● |
| MYL2 | ● | ● | ● |
| CSRP3 | ● | ● | ● |
| ACTC1 | ● | ● | ● |
| TNNI3 | ● | ● | ● |
| TPM1 | ● | ● | ● |
| NEXN | ● | ● | ● |
| VCL | ● | ● | ● |
| PKP2 | ● | ● | ● |
| MYL3 | ● | ● | ● |
| JUP | ● | ● | ● |
| CTNNA3 | ● | ● | ● |
| TGFB3 | ● | ● | ● |
| PLN | ● | ● | ● |

Gene-Disease Validity **DCM** (Clingen)

Gene-Disease Validity **HCM** (Clingen)

Gene-Disease Validity **ARVC** (Clingen)

| | |
|---|---|
| ● | Definitive |
| ● | Strong |
| ● | Limited |
| ● | Moderate |
| ● | Disputed |
| ● | No Known Disease Relationship/#NA |

**Table 3.** Ordering information for the SureSelect Community Design Heidelberg CardioGenetics panel. Note: part numbers cover the capture probe libraries only. Library prep and target enrichment kits must be purchased separately.

| Product | Part Number |
|---|---|
| SureSelect CD Heidelberg CardioGen 16 | 5282-0022 |
| SureSelect CD Heidelberg CardioGen 96 | 5282-0023 |
| SureSelect CD Heidelberg CardioGen 96A | 5282-0024 |

## References


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2. 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
3. Haas, J.; Frese, K.S.; Peil, B.; et al. Atlas of the Clinical Genetics of Human Dilated Cardiomyopathy. European Heart Journal. **2015**, 36 (18), 1123-1135. https://doi.org/10.1093/eurheartj/ehu301


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Agilent has not performed verification and validation on these panels.

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PR7001-0156


This information is subject to change without notice.




Published in the USA, December 01, 2022
5994-5483EN


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