

# Enrich DESIGN

## Quality in, confidence out

Probe design is a critical first step in the NGS Target Enrichment process. An optimal design can unlock difficult genomic regions, deliver uniform capture, and provide better coverage of your target regions. The HyperDesign Tool features an intuitive user-friendly interface that makes it easy to create custom probe designs using Roche's proprietary algorithm. Researchers now have the freedom to start from gene names, commonly used sequence identifiers, or genomic coordinates.

## Why choose the HyperDesign Tool?

### Optimal probe selection

Roche's design algorithm selects the right probes for your variant discovery research to provide more comprehensive coverage of target areas.


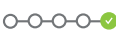

### Exceptionally user-friendly

Easily create one or multiple designs in parallel with an intuitive interface and navigation. Receive selection results quickly and access designs 24/7.

### Flexible input methods

The HyperDesign Tool lets you upload gene names and bed files, input genomic coordinates manually, or choose from a broad list of commonly used gene identifiers.

### Create a design that's uniquely you

- 1  Sign up in the HyperDesign online tool
- 2  Specify your design details in 5 steps
- 3  Order and receive your probes

## Target difficult, previously inaccessible genomic regions

The HyperDesign Tool provides greater total coverage with optimal probes selection from Roche's proprietary algorithm. Now, you can easily design your own custom panel or collaborate with our expert designers.

## More input options, more control

Easily input data manually or simply upload information from a wide range of formats. You can also add data files from a range of external platforms like FTPs or weblinks.

## Enjoy a more user-friendly experience

HyperDesign Tool's highly intuitive user interface provides tips at each step to simplify the probe design process. Move back and forth between steps without losing data and directly access designer support as needed.

## KAPA HyperChoice and KAPA HyperExplore custom designs

Roche's demonstrated probe design and selection expertise grants you access to your regions of interest through our two new custom design products. KAPA HyperChoice Probes enable targeted enrichment of custom-defined regions of the human genome up to 200 Mb. KAPA HyperExplore Probes enable targeted enrichment of custom-defined regions of non-human genomes or complex designs up to 200 Mb. Proprietary algorithms—together with our renowned expertise in probe design and selection—allow access to challenging genomic regions. Together with the KAPA HyperCap Workflow, the KAPA Target Enrichment Probes greatly improve capture uniformity and reduce the amount of sequencing needed to efficiently identify sequence variants.

**Get your research up and running faster with unlimited customization**

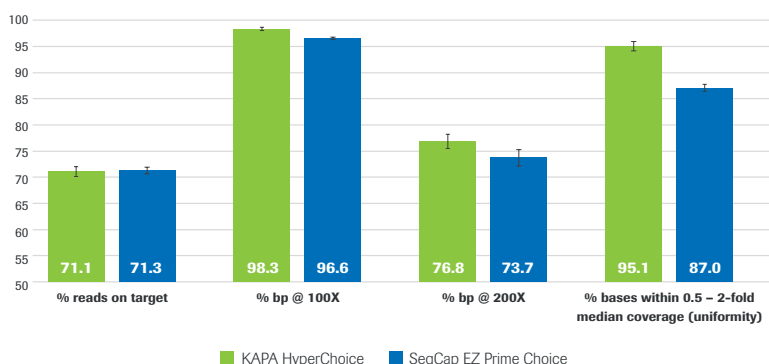
## Better by Design

- Quickly and efficiently cover custom regions with the high-performing KAPA Target Enrichment Probes
  - Rely on Roche's proven design and probe selection expertise to improve on your desired target coverage and maximize the data return from your research. Select from a wide variety of supported input formats—from gene names and accession numbers up to genomic coordinates.
- Get guidance and support from Roche's expert designers
  - Consult with Roche's expert design team for your special design needs or non-human design work. Work with experts that listen, to optimize your probe design and selection.
- Take fewer steps to optimal performance
  - Experience high performance from your very first design iteration as a result of Roche's design expertise, extensive KAPA HyperCap Workflow optimization and high-fidelity KAPA Target Enrichment probes.

## Enrich with high fidelity KAPA HyperChoice and KAPA HyperExplore Probes

- Probes designed with renowned expertise and manufactured with KAPA HiFi Polymerase.
- Consistent oligo quality with NGS-based QC for all probe pools.
- Better target coverage driven by higher uniformity and low PCR duplication

### Specificity and Uniformity deliver better target coverage



**Figure 1. KAPA Target Enrichment probes perform better than SeqCap EZ Prime Probes without additional optimization.** The respective HyperCap Workflow protocols were followed for both technologies, starting from coriell control DNA. 8 DNA libraries were multiplexed in each capture and sequenced proportionally to the capture target size, at 2 x 100 bp on a MiSeq system. A KAPA HyperChoice Probes version of the SeqCap EZ Neurodegenerative design was created in order to compare the performance of the two different technologies. The SeqCap EZ design was empirically rebalanced while the KAPA HyperChoice design is not. The results show that the KAPA HyperChoice Probes outperform the SeqCap EZ Probes version of the design with higher uniformity and better target coverage.

**Table 1. Performance of two KAPA HyperChoice designs**

Design	Genes	Target size (capture)	HQ reads	System	% total duplicates	Fold 80 (uniformity)	% of bases ≥30X
Neurodegenerative	>98	335 Kb	1,75 M	NovaSeq6000	2.78	1.38	99.83
Hereditary disease	>4100	12.3 Mb	20.00 M	NovaSeq6000	1,62	1,43	97.22

First iteration designs, showing very low PCR duplication with high uniformity (low Fold80 base penalty) and broad target coverage (% of bases covered at ≥30X) when run on a NovaSeq6000 system. For both designs, we followed the KAPA HyperCap Workflow v3.0 starting from 100 ng of NA12891 DNA. Metrics are average of six replicates of single captures per design.

Learn more at  
[www.hyperdesign.com](http://www.hyperdesign.com)

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### Ordering information

Mat No	Description
9134336001	KAPA UDI Primer Mixes, 1-96 , 96 rxn
9063781001	KAPA Universal Adapter, 15uM 960 uL
8963835001	KAPA HyperPure Beads 5mL bottle
9075810001	KAPA HyperCapture Reagent Kit 24rxn
9075828001	KAPA HyperCapture Reagent kit, 96 rxn
9075780001	KAPA HyperCapture Bead Kit 24rxn
9075798001	KAPA HyperCapture Bead kit, 96 rxn
9075879001	KAPA Probes resuspension buffer, 1 mL
9075887001	KAPA Probes Resuspension Buffer,5ml

Mat No	Description
custom probe	KAPA HyperChoice Max 0.5MB ~ 20MB
custom probe	KAPA HyperExplore
9075836001	KAPA Universal Enhancing Oligos, 24 rxn
9075852001	KAPA Universal Enhancing Oligos, 96 rxn
9075763001	KAPA Hybrid Enhancer Reagent, 1 mL