CRISPR GENOMIC SERVICES
PRODUCT CATALOG

DESIGN | BUILD | ANALYZE

Desktop Genetics can help you prepare, manufacture and analyze the results of your CRISPR genome editing experiment.

We provide high quality library design and sequencing analysis pipeline to get you a clean data report on the outcome of your screen.
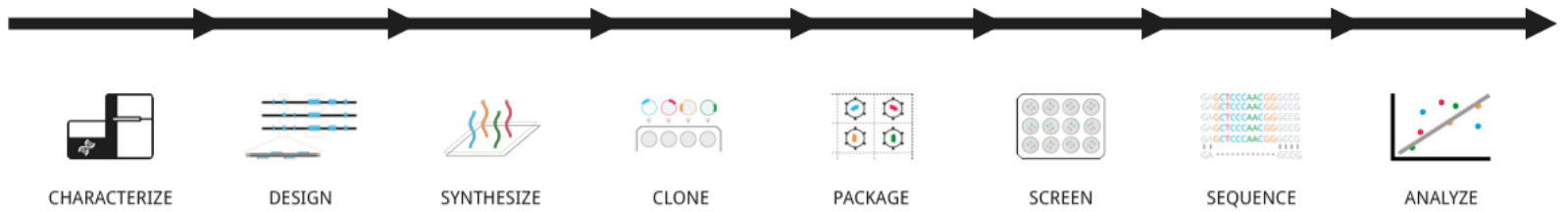
Whatever you need help with, Desktop Genetics can assist you from design to data.

Desktop Genetics Ltd.
www.deskgen.com

London, UK | Cambridge, MA

CRISPR GENOMIC SERVICES

TYPICAL **CRISPR SCREEN WORKFLOW**

CHARACTERIZE · DESIGN · SYNTHESIZE · CLONE · PACKAGE · SCREEN · SEQUENCE · ANALYZE

A typical CRISPR screen can seem daunting for those who have never attempted it before. It is a multistep, customizable process that requires a good understanding of experimental intent, CRISPR technology and the genome editing literature.

DESKTOP GENETICS **CRISPR SCREEN WORKFLOW**

CHARACTERIZE · DESIGN · SYNTHESIZE · CLONE · PACKAGE · SCREEN · SEQUENCE · ANALYZE

With the help of our partners, Desktop Genetics can facilitate nearly every step of the CRISPR library pipeline. From sequencing support and library design to manufacturing and data analysis, our team is here to make this process as simple and straightforward as possible.

EXPERIMENTAL INTENT

Defining experimental intent is the first step in mapping out a CRISPR screen. Is this an epigenetic library? A knockout screen? What sort of phenotypic output are you expecting? Depleted gene expression? Fluorescence? Understanding this goal will shape all of the subsequent choices in the library design process.

EXPERIMENTAL INTENT

CRISPR KNOCKOUT

Gene knockout induced by targeting key exons or functional protein domains
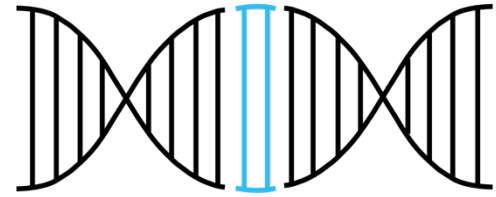
CRISPR KNOCKIN

Insert a gene or correct a point mutation via homology-directed repair.

CRISPR ACTIVATION

Use dCas9 fused to an activator to transiently induce gene expression

CRISPR INTERFERENCE

Insert a gene or correct a point mutation via homology-directed repair.
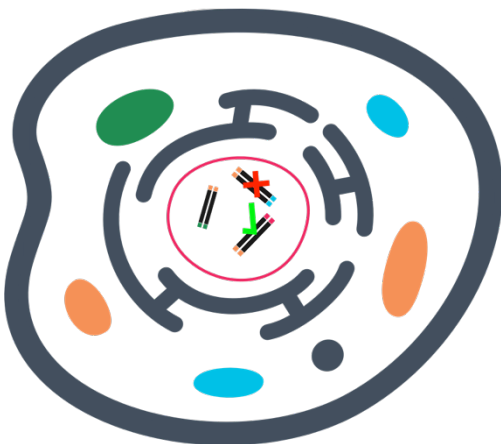
DESIGN OPTIONS

MODEL CHARACTERIZATION

Characterizing your experimental species can help you better understand and interrogate the genome. A fully sequenced cell or animal model allows the investigator to design more efficient and more specific guides and to create a baseline against which post-editing outcomes can be compared. This is a key step after defining experimental intent.
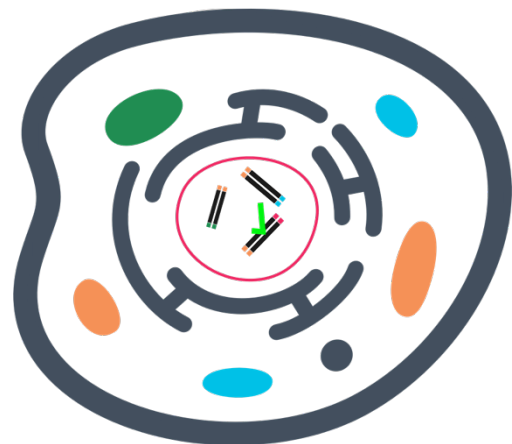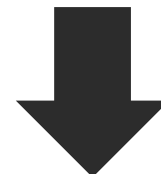
GENOME CHARACTERIZATION

REFERENCE GENOME

Sequence may vary from actual model, affecting specificity and activity

EXPERIMENTAL GENOME

Sequencing experimental model for accurate guide design

Relying on the reference genome could mean missing key off-target editing events in the experimental model.
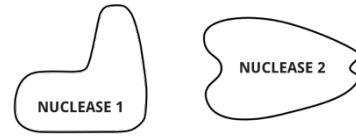
DESIGN OPTIONS

NUCLEASE

SINGLE

Standard CRISPR RGEN (e.g. SpCas9) targets PAM sites unique to that nuclease

MULTIPLE

Include other PAM sites with alternative RGENs (e.g. SaCas9, Cpf1)
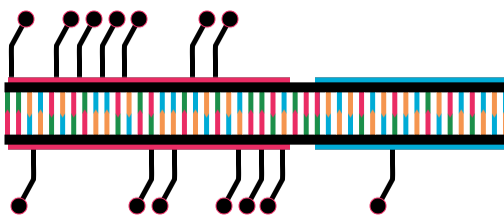
TARGET SELECTION

GENOME-WIDE

Target multiple genes and regions across the genome

REGION-SPECIFIC

Saturate a specific region (enhancer, gene) to elucidate sequence function

GUIDE DESIGN

ALL GUIDES

Saturate using as many guides as possible depending on PAM availability

TOP GUIDES

Filtered by activity/specificity, targeted around predicted functional domains

CRISPR GENOMIC SERVICES

CUSTOM **LIBRARIES**

DESIGN YOUR GUIDE RNAS

Desktop Genetics team can design CRISPR libraries of any size to target a panel of genes or saturate a specific region. The Desktop Genetics approach to library design is flexible and caters to your model or experimental genome. Our process features the latest algorithms to ensure highly efficient and specific guide RNAs. We can also help in the design of highly active, precise positive control guides as well as nontargeting negative controls.

| SCREENING OPTIONS AT DESKTOP GENETICS |
|:---:|
| Pooled DNA Oligos |
| Pooled Plasmids |
| Arrayed Plasmids |
| Arrayed Synthetic RNAs |
| Pooled Lentivirus |
| Arrayed Lentivirus |
| Control Guides (Negative/Positive) |
| Control Cell Lines |
| Next-Generation Sequencing and Analysis |

TARGET OPTIONS

Whether it's a genome-wide screen or a pre-assembled or custom gene list, Desktop Genetics can help you design and build a comprehensive library according to your experimental intent.

PUTATIVE DRUG-GENE **INTERACTIONS**
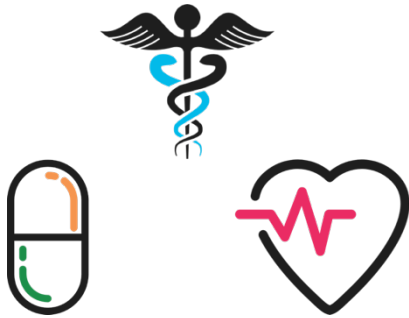
Desktop Genetics works with putative drug-gene interaction databases to provide you with a library of sgRNAs that can reveal novel therapeutic opportunities. These potentially biomedically significant gene panels can be narrowed down according to gene families. Gene-gene and gene-drug interactions can be explored through synthetic lethality

FUNCTIONAL TILING OF CODING/NONCODING DNA

Exploring the function of both protein coding and the noncoding (regulatory) genome requires high-throughput saturation. Desktop Genetics can design guides to target all available PAM sites with single or multiple nucleases to directly associate specific genome sequences with phenotypic outcome.
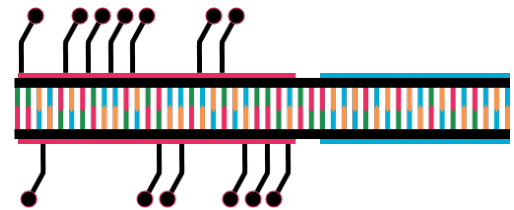
DESKTOP GENETICS **GENOME-WIDE LIBRARY**
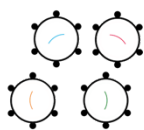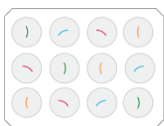
Mouse and human genome-wide libraries have been adopted in standard unbiased genomic investigation. Desktop Genetics can prepare complex, filtered libraries of highly specific and active guides comparable with off-the-shelf libraries available for order. These libraries can target the coding genome, such as a knockout library, as well as the noncoding genome.

INVESTIGATING EDITING OUTCOMES

PUTATIVELY DRUGGABLE GENE PANELS

GENE PANEL NAME	NUMBER OF GENES
G Protein Coupled Receptor (GPCR)	950 genes (Superfamily)
Histone Modification	317 genes
Ubiquitin Ligases	370 genes
Transcription Factor Binding	520 genes
Nuclear Hormone Receptors	58 genes
Transporter	1309 genes
Ion Channels	416 genes
Cell Surface	728 genes
Proteases	698 genes
Protease Inhibitor	194 genes
Tumor Suppressors	951 genes
DNA Repair	433 genes
Protein Phosphatase	181 genes
Kinase	855 genes
Tyrosine Kinases	149 genes
ATP-Binding Cassette Transporter (ABC Transporter)	114 genes
Cytochrome P450	57 genes
Methyl Transferase	67 genes
Apoptosis	84 genes

WHOLE-GENOME LIBRARIES

GENE PANEL NAME	DESCRIPTION
Whole Genome Protein Coding Library	Targets Pfam functional domains
Whole Genome Noncoding Tiling Library	Targets regulatory regions of genome

ANALYSIS **WORKFLOW**

EVALUATING CRISPR EDITS

Following a small-scale CRISPR experiment or large scale library screen, Desktop Genetics can provide you with next-generation sequencing options. This will generate in-depth quantitative data from which we can generate a comprehensive analysis report on the mutations and gene expression patterns in your edited model.

AMPLIFY TARGET REGIONS

GENERATE AMPLICONS

POOL AMPLICONS

NEXT-GENERATION SEQUENCING

RAW SEQUENCING DATA

GAGCTCCCAACGGGCCG
GAGCTCCCAACGGGCCG
GAGCTCCCAACGGGCCG
GAGCTCCCAACGGGCCG
GAGCTCCCAACGGGCCG
GA ----------- GCCG

DESKTOP GENETICS DATA REPORT
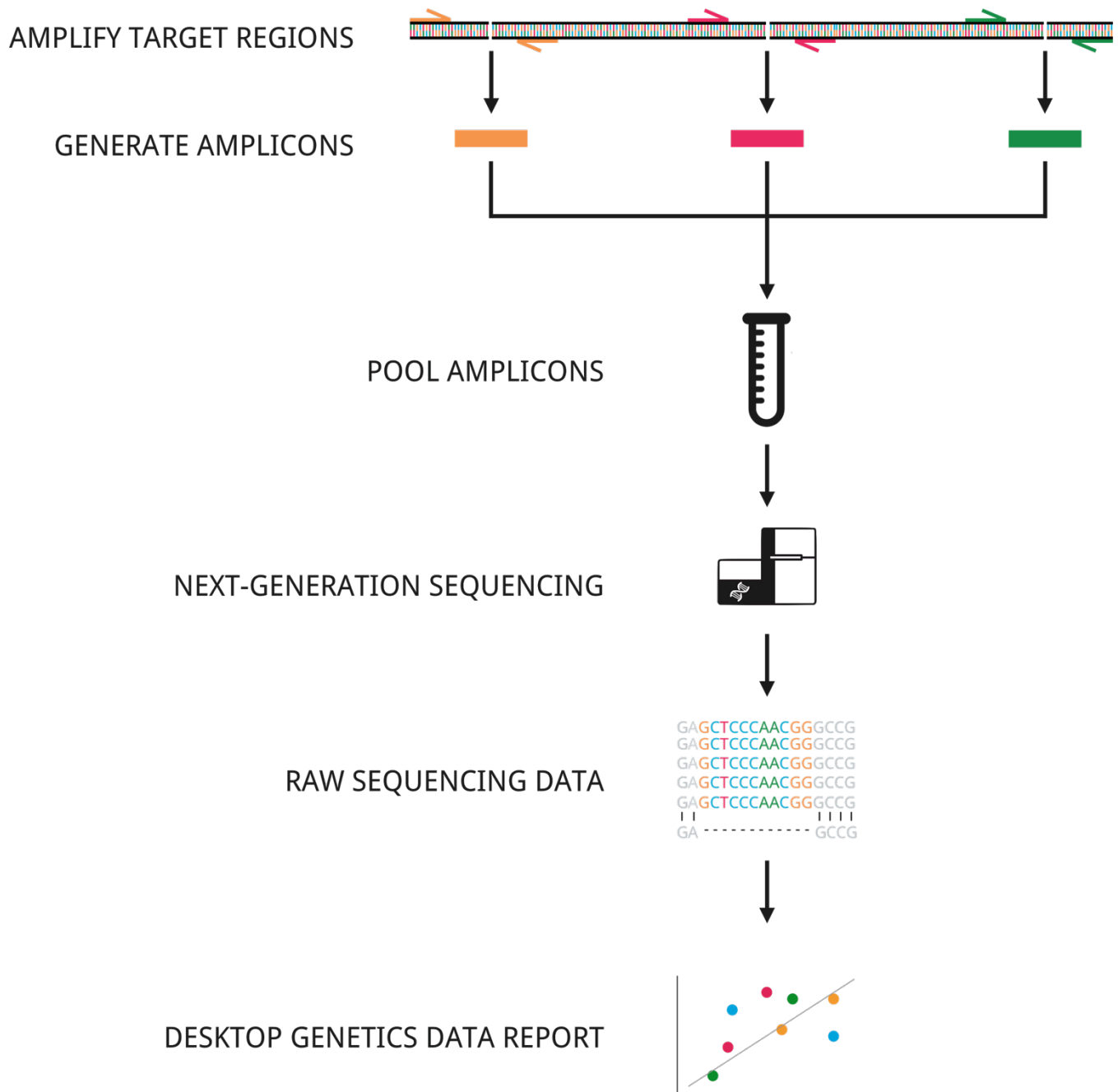
CRISPR SCREEN ANALYSIS

SAMPLE **REPORT**

KNOCKOUT LIBRARY SGRNAS
GUIDE SELECTION FOR KO LIBRARY

sgRNA Pool vs Selected sgRNAs

sgRNA Pool =
all possible NGG sgRNAs in **n genes**
n Genes =
n sgRNAs Search Space

Selected sgRNAs =
sgRNAs selected for KO library
Aimed for **10 sgRNAs per gene** →
n sgRNAs

KNOCKOUT LIBRARY SGRNAS
GUIDE SELECTION FOR KO LIBRARY

sgRNA Pool   vs   Selected sgRNAs
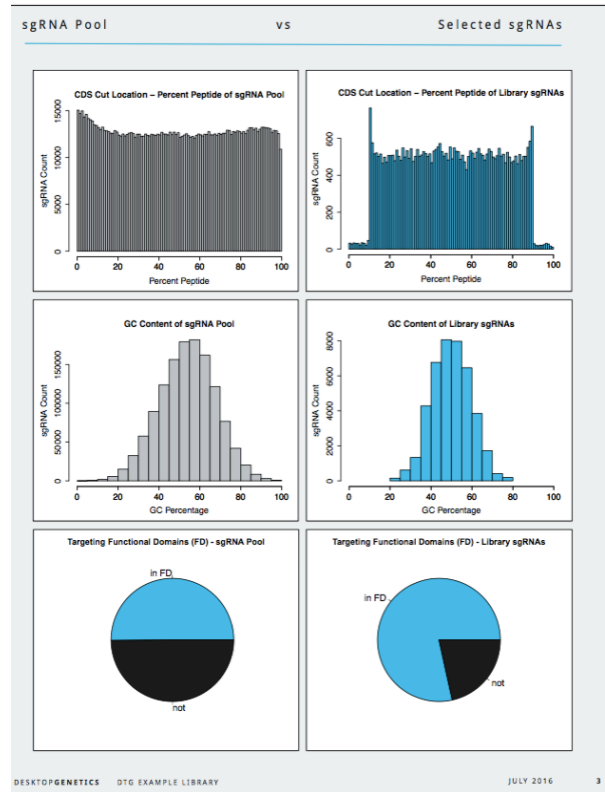
LIBRARY DESIGN REPORT
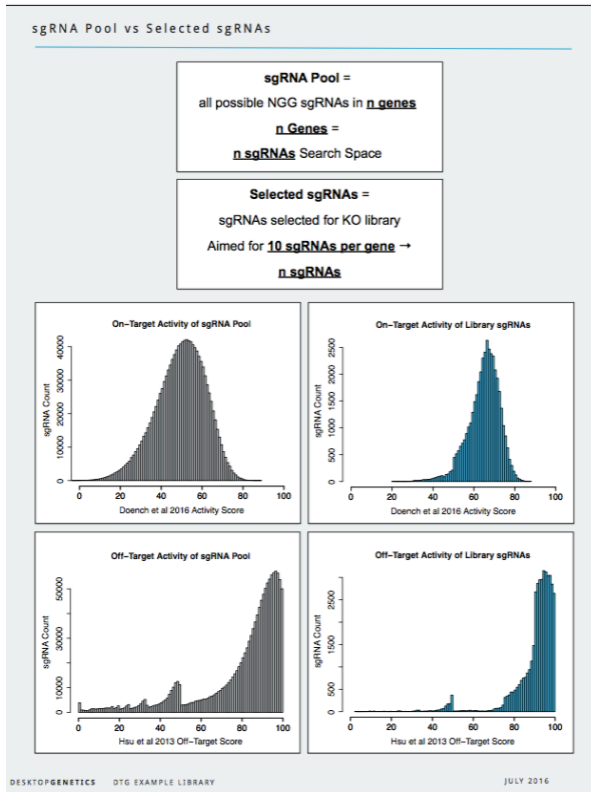KO LIBRARY BREAKDOWN, FINAL COUNTS

KO Library

Final sgRNA Counts:
- KO Library, 10 sgRNAs per gene:
  n sgRNAs
- Non-Targeting Controls:
  n sgRNAs
  - **Total: n sgRNAs**

Files Included:
- *ko_info.csv* - Information file for KO library sgRNAs
- *ko_clone.csv* - Cloning sequences for KO library sgRNAs
- *non_targeting_ko_info.csv* - Information file for Non-targeting control sgRNAs
- *non_targeting_ko_clone.csv* - Cloning sequences for Non-targeting control sgRNAs
- *dtg_ko_grch38.bed* - IGV-readable .bed file for KO sgRNAs
- *ko_library/gene_pdfs/* - Individual gene plots for KO sgRNA selection (see below)

Gene Plot Example

Non-selected sgRNAs (grey)   Selected sgRNAs (blue)

Activity Score →

CDS Regions
(height = number of transcripts expressed in)

Percent Peptide (bp ATG → STOP)

Functional Domains
(orange)

ORDERING & PRICING

PRICING SPECIFICATIONS

TIER	OLIGO RANGE	REFERENCE DESIGN ACADEMIC	REFERENCE DESIGN INDUSTRY	CUSTOM DESIGN ACADEMIC	CUSTOM DESIGN INDUSTRY	PRICE PER POOL <120 BP
1	0–2,000	2,091	3,176	5,178	8,371	1,600
2	2,001–6,000	2,320	3,563	5,854	9,509	2,400
3	6,001–12,000	2,465	3,807	6,281	10,227	3,120
4	12,001–18,000	2,550	3,950	6,530	10,647	4,056
5	18,001–24,000	2,610	4,051	6,707	10,944	5,273
6	24,001–30,000	2,657	4,130	6,845	11,176	6,855
7	30,001–36,000	3,793	6,041	10,185	16,796	6,946
8	36,001–40,000	3,826	6,096	10,283	16,960	7,037
9	40,001–44,000	3,856	6,147	10,371	17,108	7,741
10	44,001–48,000	3,883	6,193	10,451	17,243	8,515
11	48,001–56,000	3,932	6,274	10,593	17,483	9,367
12	56,001–62,000	3,964	6,328	10,687	17,641	10,304
13	62,001–74,000	4,019	6,421	10,850	17,916	10,819
14	74,001–86,000	4,066	6,501	10,989	18,149	11,197
15	86,001–98,000	4,107	6,570	11,110	18,352	11,502
16	98,001–120,000	4,171	6,677	11,297	18,667	11,629
17	120,001–150,000	4,241	6,795	11,503	19,013	13,284
18	150,001–180,000	4,298	6,891	11,671	19,296	14,613
19	180,001–210,000	4,347	6,972	11,813	19,536	15,479
20	210,001–240,000	4,388	7,043	11,937	19,743	17,027
21	240,001–300,000	4,459	7,161	12,143	20,090	20,432
22	300,001–360,000	4,516	7,257	12,311	20,373	25,540
23	360,001–420,000	4,564	7,338	12,453	20,613	33,202
24	420,001–48,000	4,606	7,409	12,577	20,820	43,162
25	48,001-600,000	4,676	7,527	12,783	21,167	56,111
26	600,001–720,000	4,733	7,623	12,951	21,450	75,750

ALL NUMBERS IN USD — PRICES VALID FOR STANDARD KO, CRISPRa, CRIPRi LIBRARIES. FOR OTHER LIBRARY TYPES, PLEASE ENQUIRE.

STOCK LIBRARIES

LIBRARY	PRICE
Desktop Genetics Essential Gene Library	???
Genome-Wide Noncoding Tiling Library	???

DESKTOP GENETICS SEQUENCING SERVICES

SERVICE NAME	DESCRIPTION	PRICE
Experimental Model Characterization	Whole genome sequencing for guide design	$5,000 per genome
CRISPR Screen Data Analysis	Detailed analysis of screen outcome	Price upon request

FAQS

HOW LONG DOES IT TAKE TO **DESIGN, BUILD AND RECEIVE A LIBRARY?**

Design takes… manufacturing takes… analysis takes...

DO YOU PROVIDE **GECKO OR SANGER LIBRARIES?**

Desktop Genetics provides our own genome-wide essential gene library which follows...

I ALREADY DID A CRISPR SCREEN. **CAN YOU ANALYZE MY DATA?**

Reproducibility, cost, efficiency, time, etc....

WHY DO LIBRARY **DESIGN PARAMETERS MATTER?**

Reproducibility, cost, efficiency, time, etc....

WHAT ARE THE STANDARD SPECIFICATIONS **FOR LIBRARY SEQUENCING?**

Yes. Site-Seq can be ordered for low-throughput projects. Customers with sequencing and analysis requirements less than 10 samples can order Site-Seq at a fixed price of $1,250.

DESKTOP
GENETICS

GENOMIC SERVICES

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