

gRNA BioDesign Tool

Introduction

The **CRISPR/Cas9** system has revolutionized gene editing in biologic systems and promises to bring hitherto unimaginable breakthroughs and advances in basic science, biotechnology and biomedical research. However, off-target interactions are a serious drawback to using the technology and pose considerable threat to the advancement of many applications.

In an effort to mitigate these issues, KBioBox has developed **a new gRNA BioDesign tool that generates optimal CRISPR designs to target specific genes, while minimizing off-target interactions.**

To use the tool, simply select a reference sequence and a coding region. The tool then rapidly generates several optimal design possibilities (e.g. several 23 base pair gRNA's for a Cas9 application), and **displays the results in an intuitive visualization containing exon/annotation information.** Advanced options allow the user to restrict the decision to discrete sections of a coding region (e.g. within the first three exons). Each generated CRISPR design is accompanied by a full genome off-target analysis.

System Highlights

Fast Turnaround

Our BioDesign tool quickly identifies the top ten designs, and generates a detailed off-target analysis report for each design

Customizable

Any reference sequence or chemistry can be quickly added to the system (e.g. TALEN, custom enzymes). Additional design requirements are easily incorporated into the process.

Integratable

Job submission form and reports are easily embedded into existing websites or pipelines

Extensible

Customize reports and forms with additional information pertinent to your project, to help simplify your decision process

| Rank | Sequence | Offset | Direction | Additional Design Info |
|------|--------------------------------|----------|-----------|--|
| 1 | GAAACCGGAAGTCTCCGTACAGG | 11882329 | forward | View Off-Target Analysis |
| 2 | TGGATTCCCCTGAATCCGGAGG | 11880619 | reverse | View Off-Target Analysis |
| 3 | GCCTCTCCTCCGGAATTCACGGG | 11880613 | forward | View Off-Target Analysis |
| 4 | ACATGGATTCCCCTGAATCCGG | 11880622 | reverse | View Off-Target Analysis |
| 5 | TTCTTCGCTTACTTCCCACGG | 11876313 | reverse | View Off-Target Analysis |
| 6 | TGCCTCTCCTCCGGAATTCACGG | 11880612 | forward | View Off-Target Analysis |
| 7 | AGCTGGGTATGAGCTAGCCGTGG | 11876296 | forward | View Off-Target Analysis |
| 8 | TACGGAGACTTCCGGTTTCTTGG | 11882325 | reverse | View Off-Target Analysis |
| 9 | TGGCGACACAACGTGAACCTGG | 11898086 | forward | View Off-Target Analysis |
| 10 | GCTGGGTATGAGCTAGCCGTGGG | 11876297 | forward | View Off-Target Analysis |

