

# 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 gene edit designs to target specific genes, while minimizing off-target interactions.** The tool designs for standard gene editing chemistries such as CRISPR/Cas9 and TALEN, and extends to design custom and proprietary enzymes.

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 biodesign is accompanied by a full genome off-target analysis report.**

## 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	<b>GAAACCGGAAGTCTCCGTACAGG</b>	11882329	forward	<a href="#">View Off-Target Analysis</a>
2	<b>TGGATTCCCCTGAATCCGGAGG</b>	11880619	reverse	<a href="#">View Off-Target Analysis</a>
3	<b>GCCTCTCCTCCGGAATCACGGG</b>	11880613	forward	<a href="#">View Off-Target Analysis</a>
4	<b>ACATGGATTCCCCTGAATCCGG</b>	11880622	reverse	<a href="#">View Off-Target Analysis</a>
5	<b>TTTCTTCGCTTACTTCCCACGG</b>	11876313	reverse	<a href="#">View Off-Target Analysis</a>
6	<b>TGCCTCTCCTCCGGAATCACGG</b>	11880612	forward	<a href="#">View Off-Target Analysis</a>
7	<b>AGCTGGGTATGAGCTAGCCGTGG</b>	11876296	forward	<a href="#">View Off-Target Analysis</a>
8	<b>TACGGAGACTTCCGGTTTCTTGG</b>	11882325	reverse	<a href="#">View Off-Target Analysis</a>
9	<b>TGGCGACACAACCTGTGAACCTGG</b>	11898086	forward	<a href="#">View Off-Target Analysis</a>
10	<b>GCTGGGTATGAGCTAGCCGTGGG</b>	11876297	forward	<a href="#">View Off-Target Analysis</a>

