

The University of Texas at El Paso

**Institutional Biosafety Committee**

**Appendix D Form**

*Instructions:* Forms need to be completed and submitted via [IRBNet](http://www.irbnet.org/) on the 1st of every month. Submissions entered after the two weeks from the meeting date will be considered for review at the following meeting. Meeting dates are posted on the [IBC website](http://research.utep.edu/Default.aspx?tabid=58993). Any questions contact the IBC office at ibc@utep.edu.

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| 1. **APPENDIX D: CRISPR/ Genome Editing Technologies**

**CRISPR, or other genome editing technologies such as Transcription Activator-Like Effector Nucleases (TALENS) and Zinc Finger Nucleases (ZFN), are required to submit and answer the below questions a part of their research protocols****\*\* Note: No gene editing of the germ line, human embryos, or germ cells for clinical or scientific application is allowed. Gene editing of human embryos and germ cells for scientific purpose may be allowed, but must be evaluated on a case-by-case basis by the appropriate federal and local review committees.** |

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| **D.1 Does your research involve CRISPR or another gene editing technology?** | YES | [ ]  |
| NO | [ ]  |
|  **D.1a** If yes, you will need to describe the technology (e.g., CRISPR/Cas9, ZFN, TALENS, Meganucleases) that is being proposed.       |
| **D.2 For CRISPR systems, are the guide RNA (gRNA) and nuclease on the same plasmid, vector, or delivery vehicle?** | YES | [ ]  |
| NO | [ ]  |
|  **D.2a** If yes, can this plasmid, vector, or delivery vehicle transfect or infect a human cell or human cell lines?       |
|  **D.2b** If yes, can the gRNA or CRISPR nuclease be expressed in human cells or human cell lines?        |
| **D.3 For CRISPR research involving viral vectors, a Genome Target Scan (GT-Scan) for off target effects by your gRNA must be completed. This is necessary to determine if there is homology to human DNA and for assessing the risk of potential exposure in the event of an unanticipated incident. (References: Bae et al., 2014; O’Brien and Bailey, 2014). An off-target database is available at** [**http://www.rgenome.net/cas-offinder/**](http://www.rgenome.net/cas-offinder/) |
|  **D.3a** What is the risk of the off-target effects? Please list.       |
| **D.4 Will the genome editing technology be used in prokaryotes, eukaryotes, or mammalian cells?** | YES | [ ]  |
| NO | [ ]  |
|  **D.4a** If yes, please specify which       |
| **D.5 How is the gene editing technology being delivered (e.g., nanoparticles, plasmid, lentivirus, adeno-associated virus, etc.)?**      |
| **D.6 Will the gene editing technology target embryos or germ line cells? \*\*** | YES | [ ]  |
| NO | [ ]  |
| **D.7 Will the gene editing technology be used for human gene transfer research? \*\*** | YES | [ ]  |
| NO | [ ]  |
| **D.8 Will the research involve the creation of a gene drive experiment (i.e., a system that greatly increases the probably that a trait will be passed on to offspring). (Reference: Akbar et al., 2015). For more information about gene drive please visit** [**http://bit.ly/1TYNIAo**](http://bit.ly/1TYNIAo) | YES | [ ]  |
| NO | [ ]  |

**References:**

Akbari, Omar S., et al. "Safeguarding Gene Drive Experiments in the Laboratory." *Science* 349.6251 (2015): 927-9. Web.

Bae S., Park J., & Kim J.-S. Cas-OFFinder: A fast and versatile algorithm that searches for potential off-target sites of Cas9 RNA-guided endonucleases. Bioinformatics 30, 1473-1475 (2014).

O’Brien, Aidan, and Timothy L. Bailey. “GT-Scan: Identifying Unique Genomic Targets.” *Bioinformatics* 30.18 (2014): 2673–2675. *PMC*. Web. 17 May 2016.