



In vitro CRISPR experiment using Zebrafish DNA.

Audrey Chen Lew

School of Biological Sciences, University of California Irvine, 1221 McGraugh Hall, Irvine, CA 92687, USA

Abstract

CRISPR is rapidly revolutionizing biology, biotechnology and biomedicine. This is in part due to the ease in which scientists can design RNA guides to target particular genes in the genome and the simplicity of the system. Only Cas9 and the guide RNA are needed to cut the DNA and introduce an insertion or deletion (indel). Many undergraduates are able to recognize the term “CRISPR” but few students are able to describe the mechanism by which it works or have had hands-on experience with the technique. Capitalizing on the simplicity of the technique, lab instructors can incorporate CRISPR into the laboratory setting in two 3-hr sessions. During the workshop, participants will prepare the ribonucleoprotein complex, perform the in vitro digestion reaction, and load the samples into a MiniONE electrophoresis system. As the gel runs, participants will be given a quick tutorial on how CRISPR guide design can be taught simply to undergraduate students. If time permits, participants will practice designing CRISPR guides using freely available websites.

Keywords: CRISPR, Zebrafish, biotechnology

Citation: Boone E. 2024. In vitro CRISPR experiment using Zebrafish DNA. Abstract 31 In: Boone E and Thuecks S, eds. *Advances in biology laboratory education*. Volume 44. Publication of the 44th Conference of the Association for Biology Laboratory Education (ABLE). DOI: <https://doi.org/10.37590/able.v44.abs31>

Correspondence to: Audrey Chen Lew, lewac@uci.edu

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