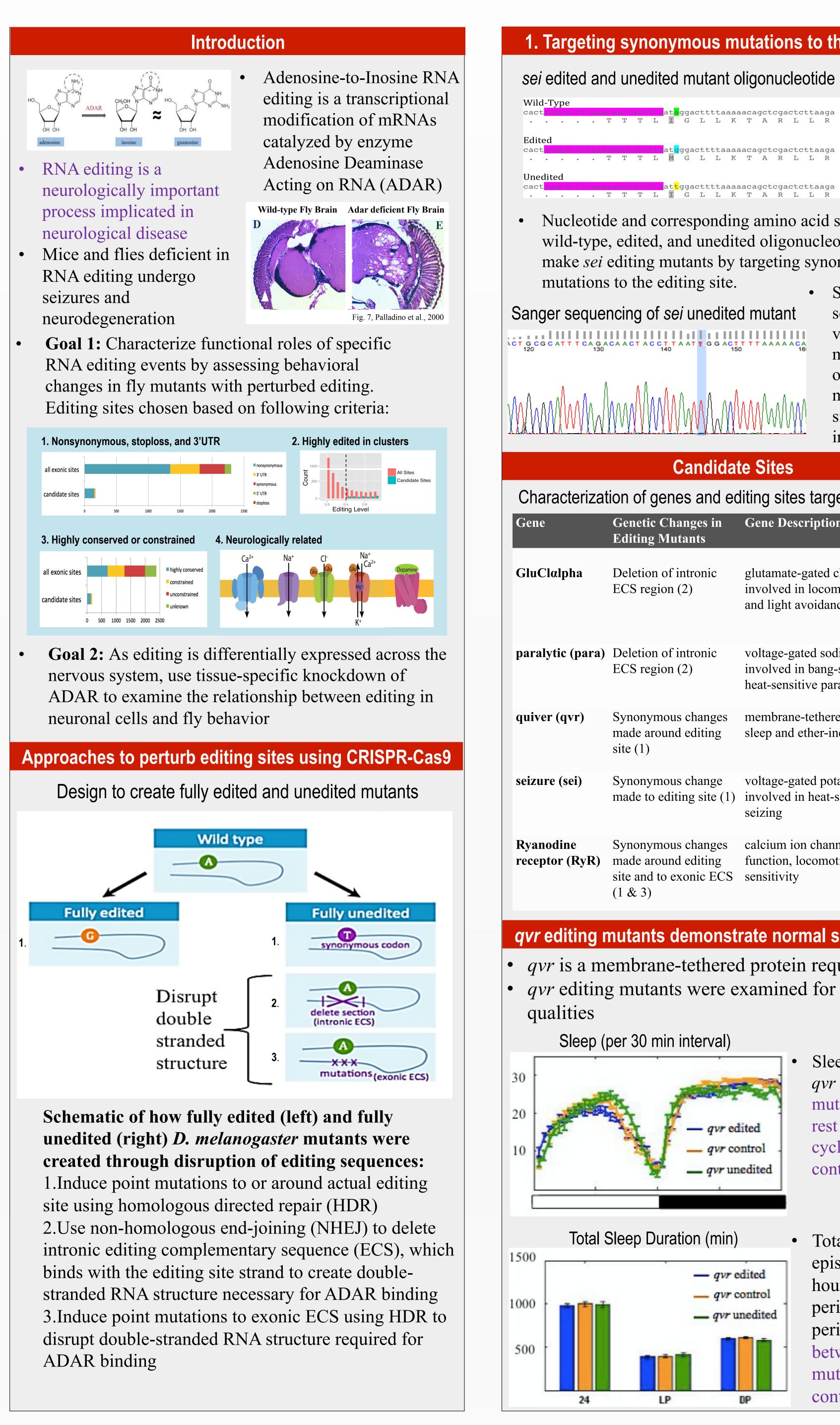


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The functional roles of site-specific and tissue-specific A-to-I RNA editing events in Drosophila melanogaster Dionna S. Jacobson¹, Patricia Deng², Kate Abruzzi³, & Jin B. Li² Department of Biology¹, Stanford University **Department of Genetics², Stanford University**



Howard Hughes Medical Institute³, Brandeis University

sqRNA binding site

= synonymous changes

A = edited amino acid

nonsynonymous changes

1. Targeting synonymous mutations to the editing site

sei edited and unedited mutant oligonucleotide sequences

geattteagacaactacettaatagggaettttaaaaacagetegaetettaaga • • • T T T L I G L L K T A R L L R

• Nucleotide and corresponding amino acid sequences of wild-type, edited, and unedited oligonucleotides used to make sei editing mutants by targeting synonymous

• Sanger sequencing verifies changes made to genome of sei unedited mutant (editing site highlighted in blue)

Characterization of genes and editing sites targeted for mutation

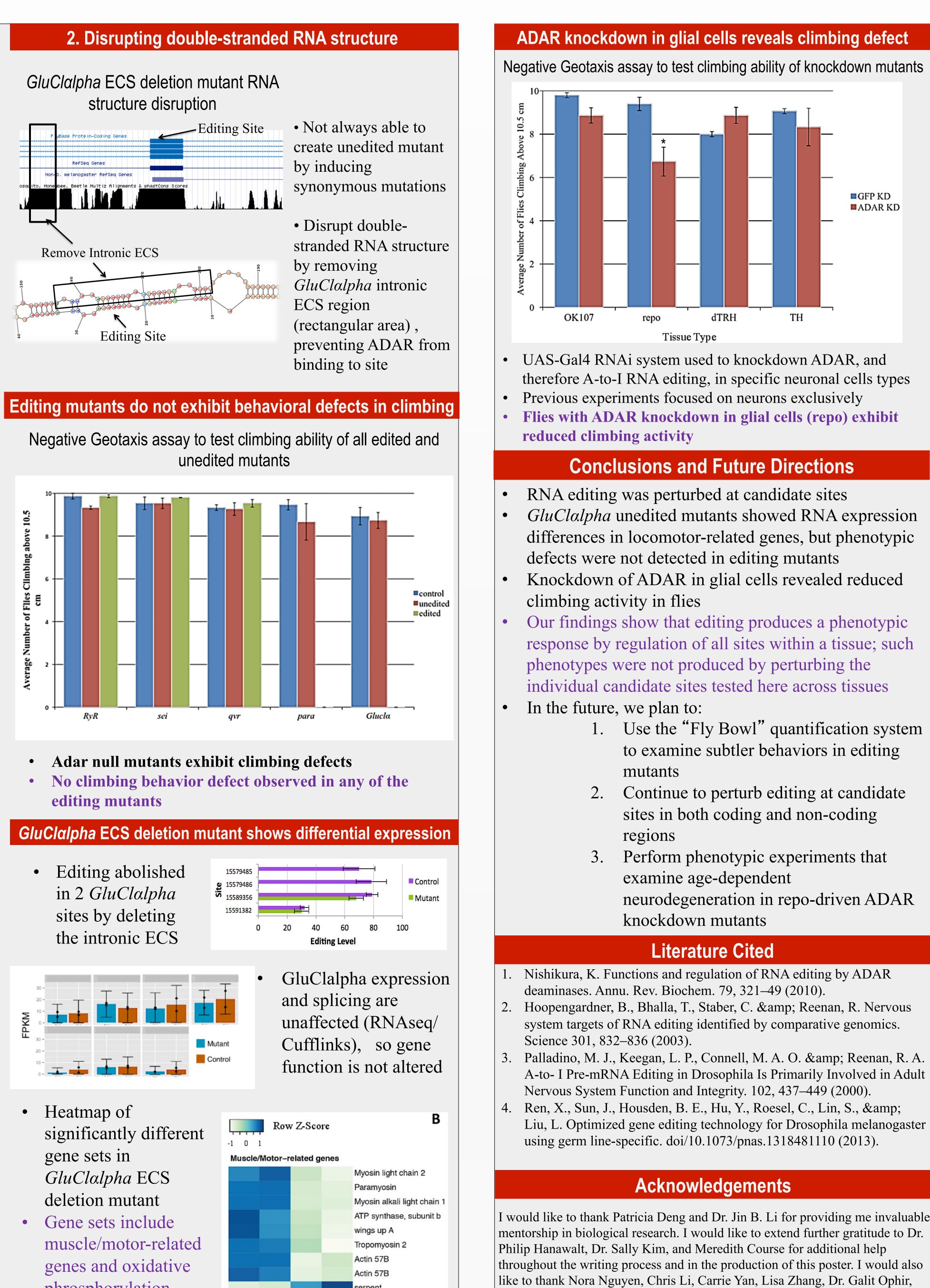
5 5 5		
	Genetic Changes in Editing Mutants	Gene Description
ha	Deletion of intronic ECS region (2)	glutamate-gated chloride ion channel involved in locomotion, odor sensing, and light avoidance at dusk
(para)	Deletion of intronic ECS region (2)	voltage-gated sodium ion channel involved in bang-sensitive seizures and heat-sensitive paralysis
vr)	Synonymous changes made around editing site (1)	membrane-tethered protein involved in sleep and ether-induced twitching
ei)	Synonymous change made to editing site (1)	voltage-gated potassium ion channel involved in heat-sensitive paralysis and seizing
ne (RyR)	Synonymous changes made around editing site and to exonic ECS (1 & 3)	calcium ion channel involved in muscle function, locomotion, and anesthesia sensitivity

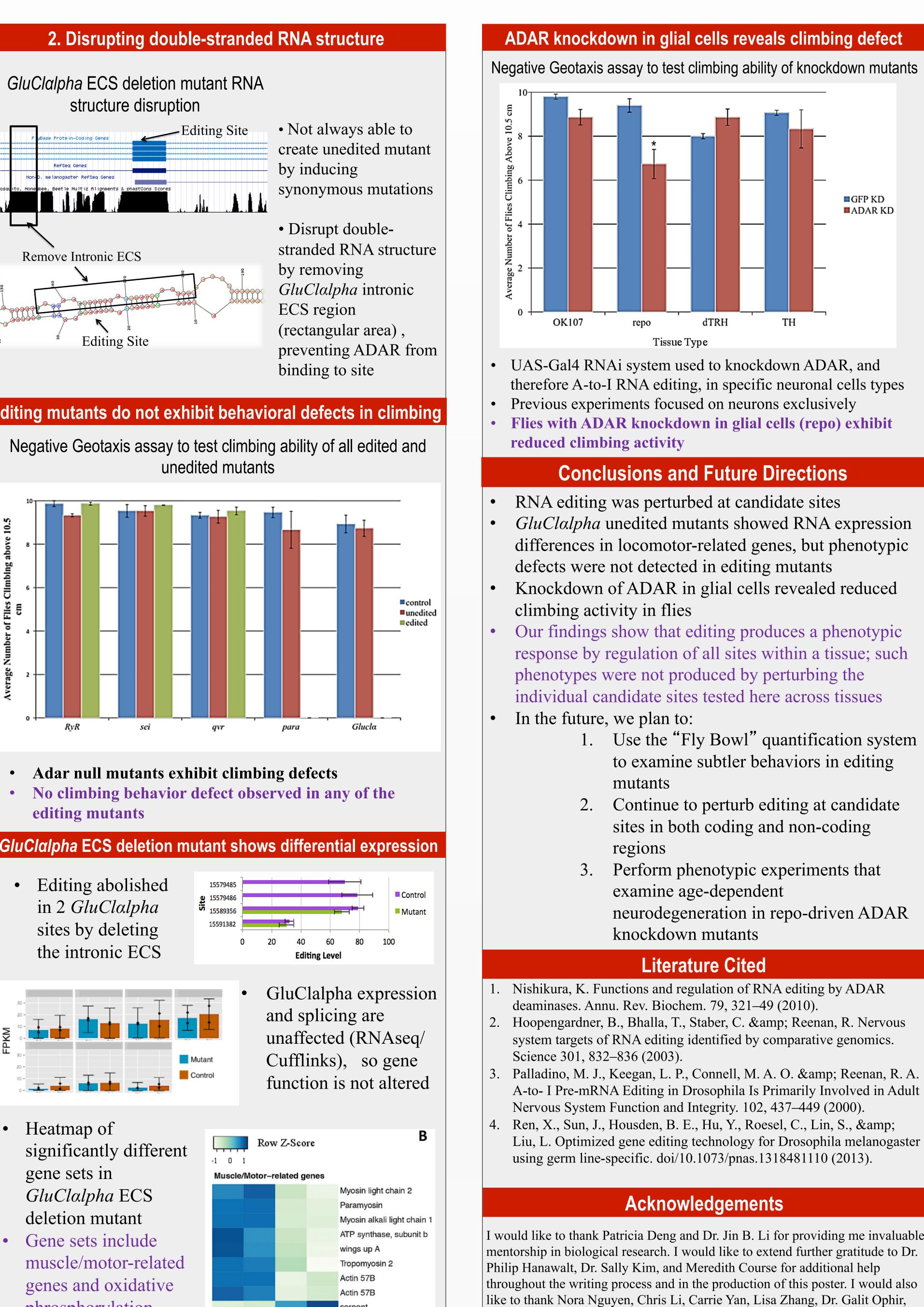
qvr editing mutants demonstrate normal sleep behaviors

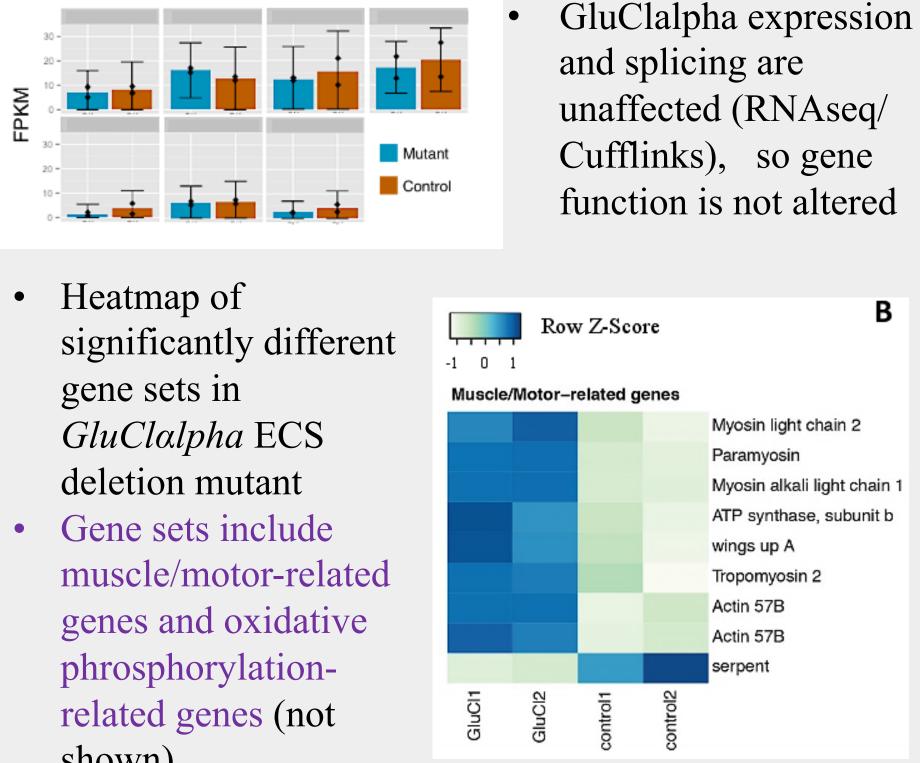
qvr is a membrane-tethered protein required for sleep *qvr* editing mutants were examined for different sleep

Sleep profiles of qvr editing mutants show rest and wake cycles similar to controls

• Total sleep duration episodes in a 24 hour period, light period, and dark period do not differ between *qvr* editing mutants and controls







- shown)

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