Fly-CURE: A consortium of undergraduate genetics laboratory courses mapping and characterizing *Drosophila* EMS mutants

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Questions or interested in joining the Fly-CURE? Contact Jacob Kagey kageyja@udmercy.edu

Fly-CURE: Course Overview

Fly-CURE: The characterization and genetic mapping of a novel mutant was incorporated into undergraduate genetics lab courses. Mutants are mapped by UG researchers as part of a CURE. Students use techniques in classical and molecular genetics as well as bioinformatics during the course. Many of these techniques are commonly taught in traditional UG genetics lab courses.

The Genetic Screen: *Drosophila* EMS mutants were screened in in the background of blocked apoptosis (*Dark^{82}*) to search for genetic regulators of cell growth and cell division.

Fig 1: Example of mosaic mutant identified in genetic screen. Kagey et. al. 2012 Mech. of Dev.

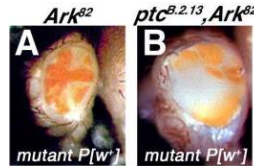**Data Generated:** UG researchers at seven institutions have successfully mapped 12 novel *Drosophila* mutants.
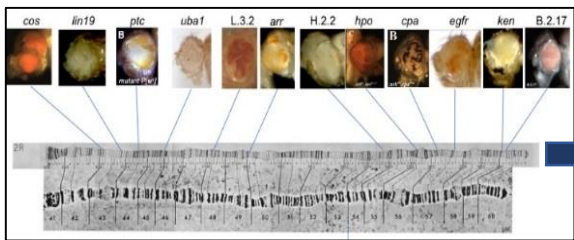

Fig 2: Mutants mapped by UG researchers in the Fly-CURE

Fig 3: Fly-CURE μ-publications. Authors include faculty from five universities and colleges with more than 100 UG researchers.

Fly-CURE: Assessment

Research Questions:
1. How does dosage of UG research experiences impact student gains?
2. What is the impact of Fly-CURE on student self assessment of scientific skills and attitudes towards belonging?
3. What are gains in learning objectives relevant for UG genetics lab courses?

Methodology: Pre- and Post- tests were administered across all participating Fly-CURE sites. Data has been combined across the consortium.

Results: In Fall 2019, 63 of 100 students at 4 partner institutions were analyzed.

	N	# of items (N)	Pre (mean)	Post (mean)	p ≤
Feelings of Belonging	63	4	12.0317	14	0.001
Self-Efficacy	63	8	28.5161	32.1452	0.000
Knowledge Items	63	14	5.1429	6.6508	0.000

Dosage	Yes	No
Previous course incorporating research	33%	66%
Previous mentored research experience	25%	75%
Any previous research experience	48%	52%

Future Directions: Additional pre/post assessment data will be collected in Spring 2020.