Using Synthetic Biology and pClone Red for Authentic Research on Promoter Function: Genetics (analyzing mutant promoters)

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Activity	Format and Approximate Time	Week Number in Lab
pre-lab: take pre-survey	completed individually; ~20 min	prior to lab #1
pre-lab: complete promoter mutation quiz	completed individually; ~40 min	prior to lab #1
pre-lab: create accounts, watch video, answer 4 questions	completed individually; ~30 min	1
In lab: present GGA cloning	instructor presents and narrates more movies; ~ 20 min	1
In lab: present online registries	instructor presents and demo navigates; ~ 5 min	1
In Lab: students present promoter mutation plans and decide	students work as a class; ~ 30 minutes	1
in lab: generate two oligos for each mutation plan	completed as a group; ~15 min	1
in lab: register new promoters	completed as a group; ~30 min	1
in lab: calculate dilution for next week	completed as a group; ~10 min	2
pre-lab: dilute and mix oligos, boil them	one student per group or instructor; ~10 min per promoter	2
in lab: perform GGA	completed as a group; ~105 min including reaction time	2
in lab: complete paper GGA exercise	completed individually; ~20 min - concurrent with GGA	2
in lab: transform and plate cells	completed as a group; ~30 min	2
in lab: discuss how to test hypothesis about promoter	completed as a group; ~15 min	2
pre-lab: pick colonies, start cells growing overnight	one student per group or instructor; ~ 15 min per promoter	3
in lab: collect results, photograph plates and tubes	completed as a group; ~20 min	3
in lab: generate graphic presentation of data	completed as a group; ~60 min	3
in lab: submit results to both registries	completed as a group; ~45 min	3
pre-lab: prepare and rehearse oral presentation	completed as a group; at least 3 hours	4
in lab: give oral presentations	completed as a group; 15 min per group	4
in lab: critique other presentations	completed individually; concurrent with presentations	4