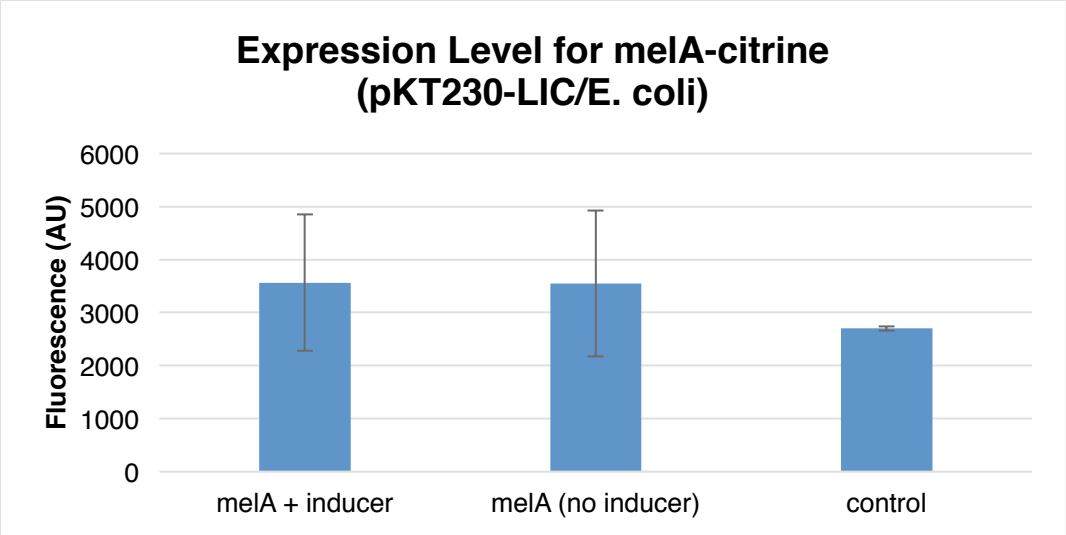
Expression of Promoter-Citrine Constructs in *E. coli* and *S. meliloti 370*

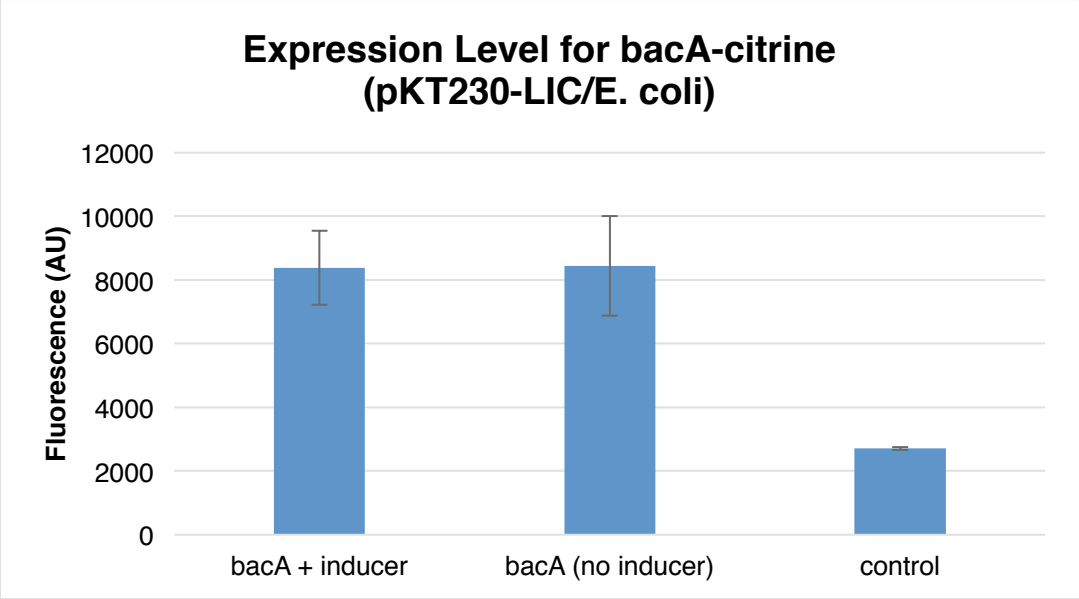
To characterize the efficiency of each promoter, we measured the fluorescence of cells containing promoter citrine constructs in plasmid backbones pKT230 and pYU2585. In *E. coli*, fluorescence was greatest with the lac, tac, and Anderson promoters in pKT, and mel and tac promoters in pYU2585. We expected the constitutive Anderson promoters to function in pYU but fluorescence was not observed.

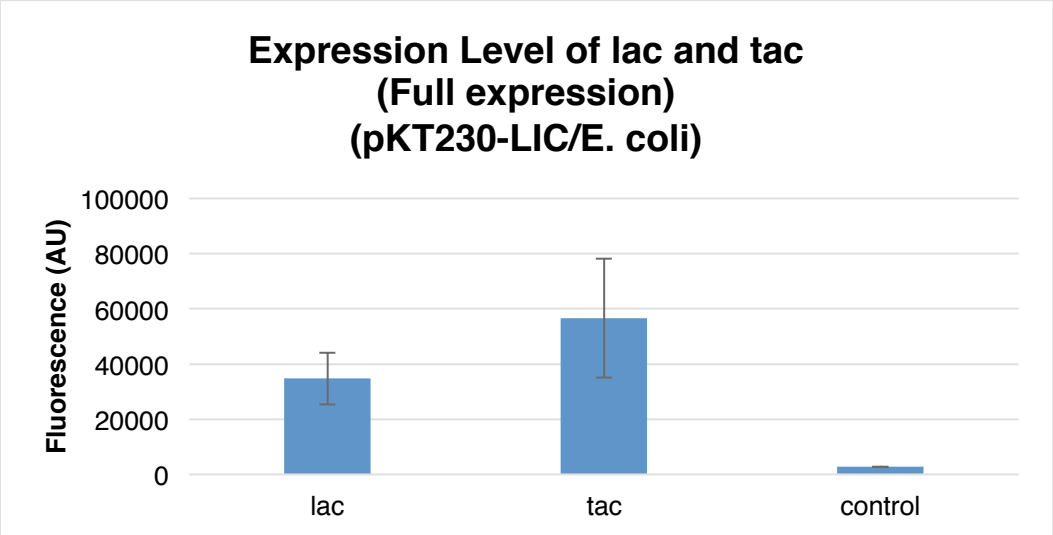
Table 1: Fluorescence Reading of Promoter-Citrine Construct in *E. coli*

Backbone	*Promoter*	*Inducer +*	*Inducer -*
pKT	mel	5495	5616
	bac	9679	10170
	lac	46037	38655
	tac	67299	89423
	AS	-	31110
	AM	-	58720
	AW	-	47635
Backbone	*Promoter*	*Inducer +*	*Inducer -*
pYU	mel	10173	10880
	bac	2853	2853
	lac 1	2775	2902
	lac 2	6086	5613
	tac	35388	11233
	AS	-	2838
	AM	-	2825
	AW	-	2781

In *S. meliloti 370*, we tested the efficiency of each inducible promoter with varying amounts of inducer (4.5 μL, 1.5 μL, 0.5 μL, and 0 μL). We observed greatest fluorescence in cells containing the tac promoter, and no fluorescence in cells containing other inducible promoters. For the constitutive promoters, we observed fluorescence with the Anderson Medium promoter.


Expression Level for melA-citrine
(pKT230-LIC/E. coli)
Fluorescence (AU)
6000
5000
4000
3000
2000
1000
0
melA + inducer
melA (no inducer)
control


Expression Level for bacA-citrine
(pKT230-LIC/E. coli)
Fluorescence (AU)
12000
10000
8000
6000
4000
2000
0
bacA + inducer
bacA (no inducer)
control


Expression Level of lac and tac
(Full expression)
(pKT230-LIC/E. coli)
Fluorescence (AU)
100000
80000
60000
40000
20000
0
lac
tac
control

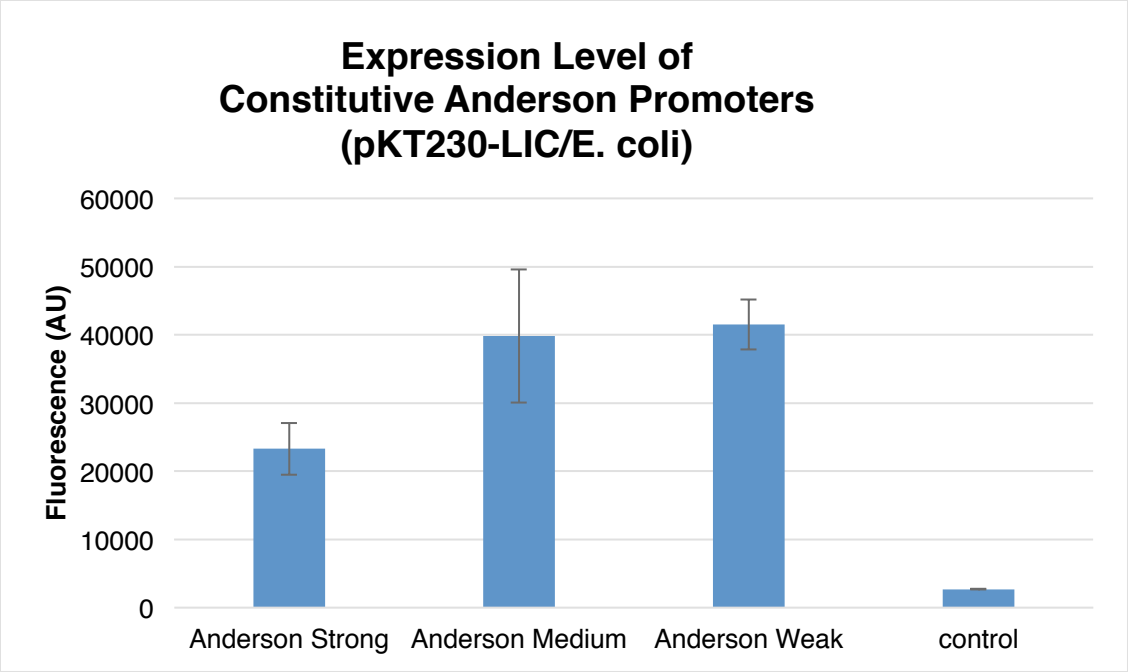
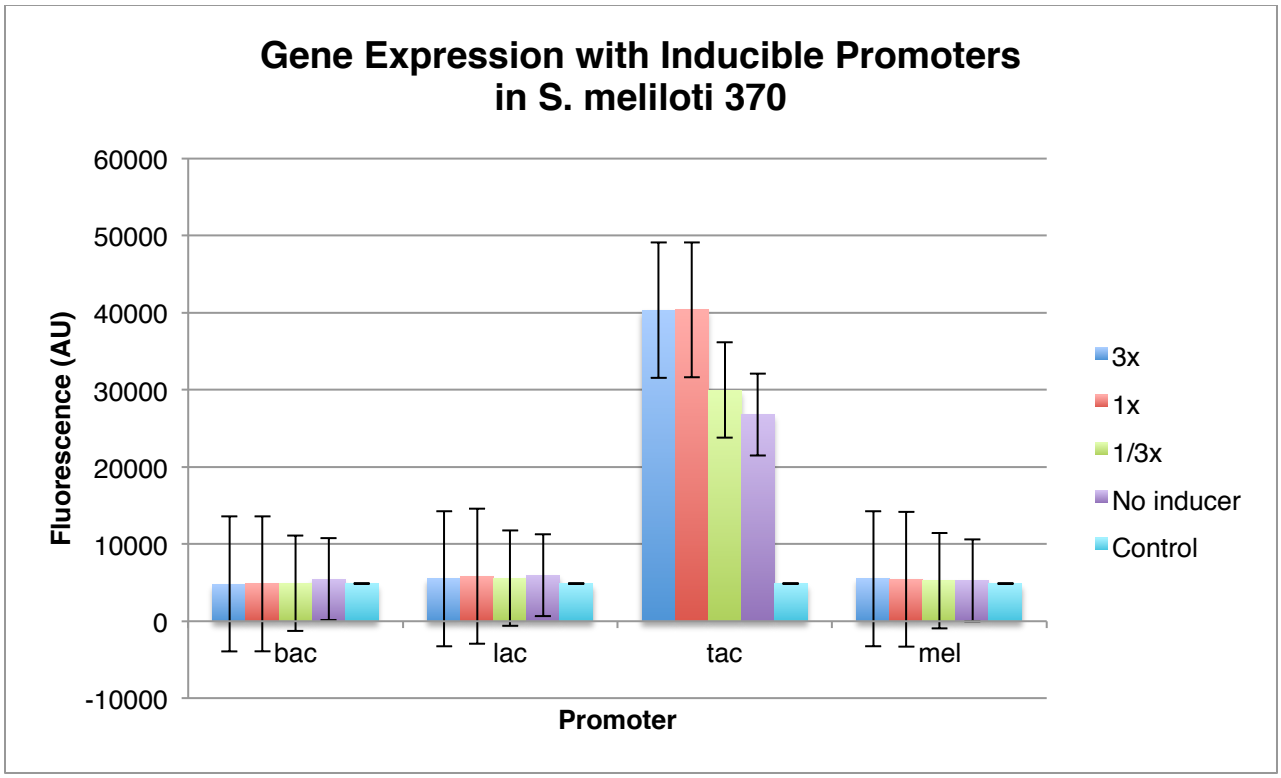


Figure 1: These graphs represent expression levels of promoter-citrine constructs in *E. coli*. From top to bottom, they are: melA, bacA, lac and tac, and the constitutive Anderson promoters.



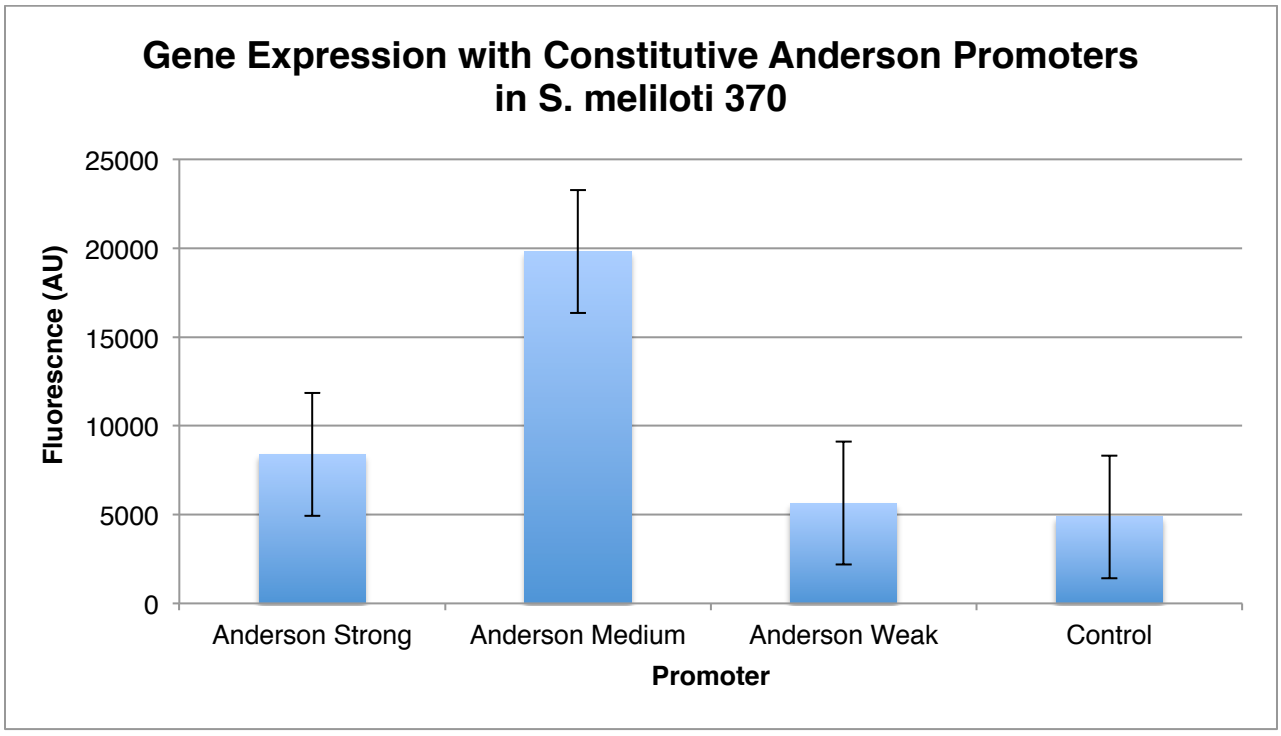


Figure 2: These graphs represent the fluorescence test results of the promoter-citrine constructs in *Sinorhizobium meliloti* 370.

Table 2: Fold fluorescence of cells with promoter-citrine constructs.

Inducible Promoters	4.5 μL	1.5 μL	0.5 μL	0 μL (no inducer)
bac	0.98726263	0.996495136	1.005727641	1.113850544
lac	1.128690942	1.191061649	1.143462952	1.226965838
tac	8.273898222	8.288943787	6.149943145	5.500316675
mel	1.132315556	1.120621048	1.073569463	1.080476745

Constitutive Promoters	Average Fluorescence
AS	1.719930361
AM	4.062080327
AW	1.156166196