

Optogenetics Lab Data  
 Sec 003  
 TA: Nadera Dabbain

Group 1: (2 pages)

Jordynn Baldwin  
 Aneesha Laungani  
 Group 1  
 Section 3

**ADULTS**

①

	male	R.L	S.B	Female	S.B
-ATR	2 sec	0 1 0 2 0 3 0 4	0 3 0 2 0 4	2 sec → 0 1 0 2 0 3 0 4	
	5 sec	0 3 0 3 0 5 0 5	0 5 0 4 0 2	5 sec → 0 1 0 2 0 3 0 4	
	10 sec	0 6 0 8 0 9	0 10 0 7 0 5	10 sec → 0 1 0 2 0 3	
+ATR		R.L	S.B	R.L	
	2 sec	0 0 0		2 sec. → 0 2 0 2 0 4	UAS-CHR2-XXL XD42-Gal4 Scattered Blue light
	5 sec	0 0 0		5 sec. → 0 6 0 6 0 4	2 sec. → 0 0 0 0 0 0
	10 sec	0 0 0		10 sec. → 0 9 0 11 0 10	5 sec. → 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

UAS-CHR2-XXL  
 (very sensitive CHR2 variant) **LARVAE**  
 XD42-Gal4  
 (motor neuron driver)

②

	Reg. Light BWC/min	Scattered Blue Light BWC/min	Focused Blue Light BWC/min
-ATR	n= ① 24	1	0
	② 19	5	0
	③ 54	6	3
+ATR Very sensitive	n= ① 1	0	0
	② 1	1	0
	③ 2	0	0

Group 2:

Group 2 Brannan/Demers  
BIO 350-003 Clay Bliznick

UAS-CHR2 -XXL  
X Gad1 -Gal4 (GABAergic neurons)

UAS-CHR2 -XXL x Gad1 -Gal4 - ATR

3 larvae  
dim, scattered, focused

Larvae 1  
dim - 26 faster @ beginning  
scat. blue - 57

focused - 49

Larvae 2  
dim - 31  
scat. blue - 32  
focused - 26

Larvae 3  
dim - 30  
scattered - 0  
focused - 30

+ ATR

Larvae 1  
dim - 0  
scat blue - 0  
focused - 0

Larvae 2  
dim - 0  
Scattered - 0  
Focused - 1

Larvae 3  
dim - 0  
scattered - 0  
focused - 0

Negative Geotaxis assay  
UAS-CHR2-XXL  
male - ATR x Gad1-Gal4

before light

- 1) 7
- 2) 7
- 3) 9

after light

- |      |      |
|------|------|
| 1) 1 | 4) 3 |
| 2) 3 | 5) 3 |
| 3) 2 | 6) 4 |

UAS-CHR2-XXL  
x Gad1-Gal4  
male (+ATR)

before light

- 1) 7
- 2) 10
- 3) 9

after light

- |      |      |
|------|------|
| 1) 0 | 4) 0 |
| 2) 1 | 5) 1 |
| 3) 0 | 6) 1 |

Group 3: (2 pages)

larvae	minute 1	minute 2	
larvae 1	no	no	ATR minus Dim light
larvae 2	no	no	
larvae 3	no	no	
larvae 4	no	no	
larvae 5	no	no	
larvae	minute 1	minute 2	
larvae 1	C, rolling	rolling, C-shape	ATR plus Dim light
larvae 2	nothing	C-shape, rolling	
larvae 3	rolling	C-shape, rolling	
larvae 4	nothing	rolling	
larvae 5	nothing	rolling	
larvae	minute 1	minute 2	
larvae 1	3 yes	1, yes	Rolling? ATR plus Bright light ATR min
larvae 2	5 yes	1, yes	
larvae	minute 1	minute 2	
larvae 1	nothing	nothing	
larvae 2	nothing	nothing	

Group 3  
pg. 1 of 2

Bailey Reed  
Austin Eirk  
003

Adults

ATR<sup>-</sup> females:

<u>light</u>	<u># above</u>
no	11
no	11
no	10
yes	4
yes	11
yes	13
yes	4
yes	13
yes	14

ATR<sup>+</sup> females:

<u>light</u>	<u># above</u>
no	14
no	13
no	11
yes	0
yes	0
yes	1
yes	0
yes	1
yes	0

ATR<sup>-</sup> males:

<u>light</u>	<u># above</u>
no	12
no	12
no	11
no	11
yes	10
yes	13
yes	11
yes	12
yes	12

ATR<sup>+</sup> males:

<u>light</u>	<u># above</u>
no	14
no	14
no	14
yes	4
yes	5
yes	7
yes	9
yes	4
yes	5

Group 4: (2 pages)

Larvae: - ATR

LED =  
Focused  
light

Jesse Griffin, Jonn  
Jon Reijnen,  
Nicolette Lawrence  
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SEC. 003

Group 4:

trial #	Light type	time	# Body wall contractions
1	Dim light	1:00 min.	37
2	Dim light	1:00 min	39
3	Dim light	1:00 min	47
1	Blue light	1:00 min.	19
2	Blue light	1:00 min.	29
3	Blue light	1:00 min.	26
1	LED light	1:00 min.	7
2	LED light	1:00 min.	14
3	LED light	1:00 min.	30
4	Dim light	1:00	27
5	dim light	1:00	41
4	blue light	1:00	32
5	blue light	1:00	22
4	LED	1:00	36
5	LED	1:00	<del>22</del> 24 NML

trial #	light type	time	# Body wall contractions
1	Dim	1:00	26
2	<del>Blue Dim</del>		28
3	LED Dim		41
4	<del>Blue Dim</del>		30
5	Dim		27
1	Blue		4
2	Blue		3
3	Blue		3
4	Blue		3
5	Blue		13
1	LED		19
2	LED		25
3	LED		20
4	LED		38
5	LED		9

AS-CHR2-XXL x Trn-Gal4  $\ominus$  ATR

before light exposure

N=15 ♀

Trial #/sec # crossed 8cm mark for 10 secs.

Trial #/sec	# crossed 8cm mark for 10 secs.
1 0 sec	15
2 0 sec	15
3 0 sec	15

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Trial # light exposure # crossed 8cm mark for 10 seconds

Trial #	light exposure	# crossed 8cm mark for 10 seconds
1	15 sec	0
2	15	13
3	15	14
4	15	13
5	15	12
6		13

UAS-CHR2-XXL = Trn-Gal4  $\oplus$  ATR

N=15 ♀

Trial #/sec # crosses 8cm mark for 10 sec

Trial #/sec	# crosses 8cm mark for 10 sec
1 0 sec	11
2 0 sec	13
3 0 sec	13

Trial #/sec	# cross 8cm mark for 10 sec
1 15 sec	0
2 OP BKW	0
3 light	0
4	0
5	2
6	5

Group 5: (2 pages)

GROUP 5

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- ATR

	DIM LIGHT	Dispersed Blue Light	Focused Blue Light
1	45	42	51
2	31	26	28
3	41	30	33
4	47	39	51
5			

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+ ATR

	Dim Light	Dispersed Blue Light	Focused Blue Light
1	47	43	7
2	42	36	9
3	30	18	9
4			
5			

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Adult

- ATR Female

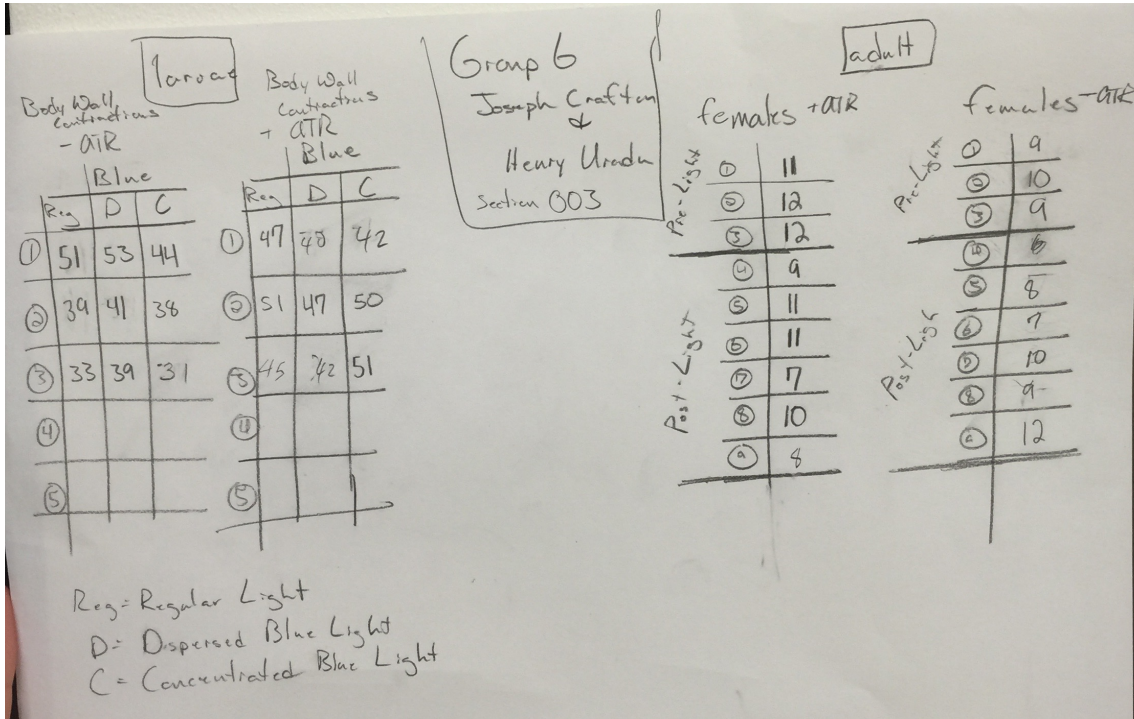
	Dim Light	(5 flies total) Blue Light
1	10	4
2	12	5
3	10	4
		4
		7
		6

+ ATR Female (4 flies total)

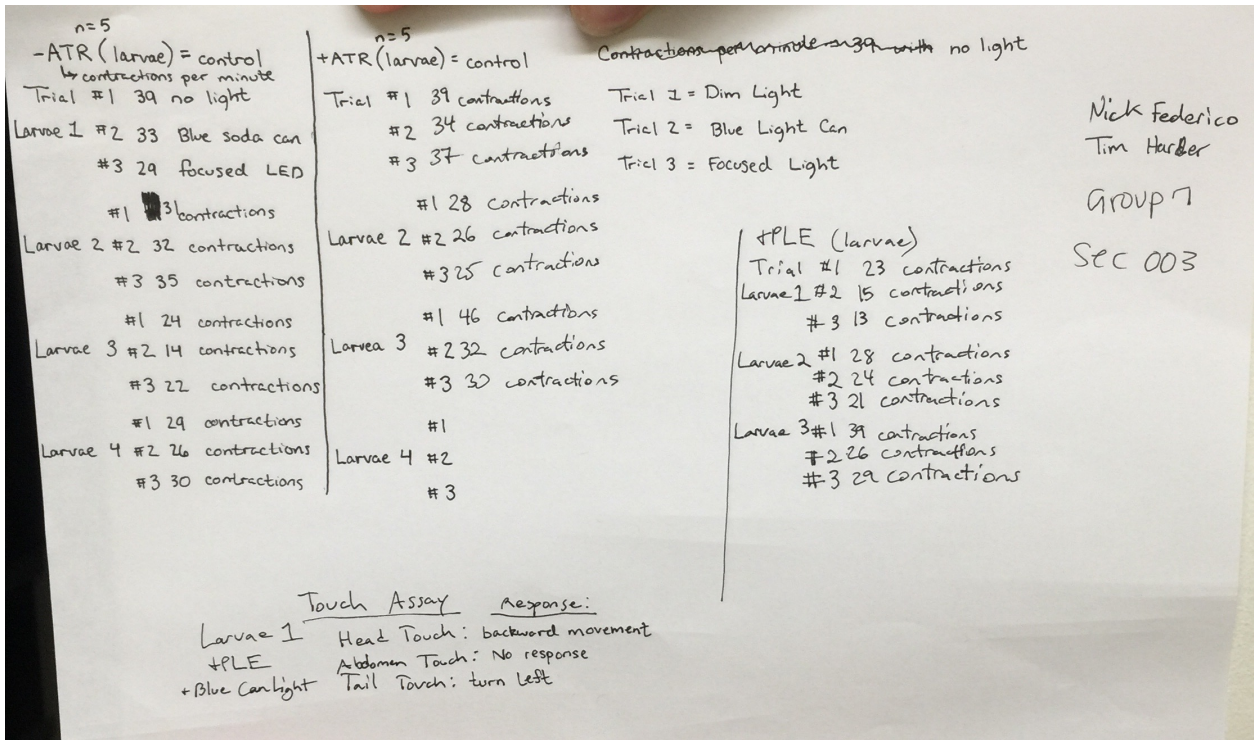
	Dim Light	Blue Light
1	13	8
2	13	11
3	12	11
		11
		8
		12

GROUP 5

### Group 6:



### Group 7:





Group 8: (3 pages)

08/31/05

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Lab 1

Niti Patel  
 Akx Guay  
 Sec #003  
 group 8

(1) VAS-CHR2-xxL ♂

Control - ATR(ETOH)

	Trial	#
w/out light	1	7
	2	8
	3	7

w/Blue light:

Trial	#
1	7
2	6
3	3
4	3
5	4
6	2

(2) VAS-CHR2-xxL ♂

Xple-gala

+ATR(G200)

	Trial	#
Without light	1	4
	2	6
	3	7

w/Blue light

1	3
2	9
3	9
4	8
5	4
6	1

870109

(3) VAS-CHR2 - XXL ♂

control

+ATR (200mV)

w/out light

+nal

1	10
2	7
3	9

#

w/ Blue light

1	3
2	6
3	8
4	4
5	7
6	8

(4) VAS CHR2 - XXL ♀

↓ pre-Gala

+ATR (200mV)

w/out light

1	2
2	3
3	2

w/ Blue light

1	6
2	5
3	5
4	6
5	3
6	6

cont  
lab 1 data... pg 3 of 3

Niti Patel  
Alex Gray  
Se #003  
group B

(5) VAS-CHR2-XXG ♀  
Control -ATR (E10H)

trial	without light	#
1	3	
2	5	
3	8	

	w/Blue light
1	9
2	9
3	10
4	11
5	9
6	6

Justin Lewis  
 Branda Alvarez

350-3

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group 9

UAS-CHR2-XXL

X Trh-Gal4 (serotonergic neurons)

- Body wall contractions in larvae

Larval locomotion behavior (-/+ATR)

5 trials  
 ATR

	Dim light	Blue light	Soda can	total 5min
① - ATR	22 bwc's	20 bwc's	123 Bwc	
② - ATR	25 bwc's	22 bwc's	68 bwc	
③ - ATR	20 bwc's	28 bwc's	76 bwc	
① + ATR	13 Bwc's/min	3 bwc's	43 bwc's	
② + ATR	13 bwc	10 Bwc	58 bwc	
③ + ATR	12	9 Bwc	64 Bwc	

Recovery w/o blue light from soda can

	Recovery after 5 min		
	Bwc's ① + ATR	Bwc's + ATR ②	+ ATR Bwc's ③
1 min	13 bwc's	8 bwc's	9 bwc's
2 min	21 bwc's	18 bwc's	15 bwc's
3 min	32 bwc's	30 bwc's	17 bwc's
4 min	37 bwc's	30 bwc's	20 bwc's
5 min	42 bwc's	0 bwc's	23 bwc's

	Bwc's - ATR ①	Recovery after 5 min	
		② - no bwc's	③ - no bwc's
1 min	28 Bwc	24	23
2 min	30 Bwc	28	23
3 min	23 Bwc	20	15
4 min	5 Bwc	10	9
5 min	5 Bwc	6	3

	Dim light Blue Soda can	head	middle T.M.H.	tail tail flip
ATR	Dim light	C-shaped	pauses	tail flip
	Blue	turn left	pauses	tail flip
	Soda can	bite it stop		
ATR-		Head	abdomen	tail
ATR-	D.L.	C-shaped	No response	tail flip
	B.L.	turn right	Pause, roll	tail flip/roll
	S.C.	Pause, C-shape	N.R.	roll
ATR-		Head	abdomen	tail
D.L.		Pause	Pause	Pause
B.L.		Stop moving	Stop moving	Stop moving
S.C.		C-shape	Stop C	N.R.
ATRt		Head	abdomen	tail
D.L.		Stop	C-shape	Stop
B.L.		Stop	Stop	C-shaped
S.C.		turn left	Stop	NR
P.L.		N.R.	roll over	roll over
B.L.		turn left	Stop	N.R.
S.C.		tail flip	C-shaped	N.R.
D.L.		Stop	roll	tail flip
B.L.		turn left	C-shaped	N.R.
S.C.		backwards	C-shaped	N.R.

SEC  
003

Desiree Southerland  
Christen Wansstrath

Group  
10

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With Blue Light \* Shined blue light for each trial except for trial 10

Minus Trials	10 cm	20 cm
1	4.06 min. sec	4.12 min. sec
2	3.34	3.56
3	2.08	2.14
4	3.11	3.17
5	in 5 min fly did not progress (fly in tube 2)	
6	no progress after 5 min	
7	1.02	3.02
8	3.51	3.58
9	4.18	4.22
10	.39	.47

did not shine → 10

blu light \* paralyze easier, seems disoriented after recovery  
again \* takes much longer for flies to recover after blue light exposure, longer than ATB plus

Plus Trials	10 cm	20 cm
1	.52 <del>min</del> min	.56 min
2	.31 <del>min</del> min	.56 min
3	1.02 min	1.58 min
4	.41	.50
5	.14	.20
6	1.19	1.34
7	.44	.54
8	.43	1.26
9	1.09	1.13
10	1.05	1.12

\* seemed disoriented after exposure to blue light - moved slower  
\* needed a lot more stimulation (near constant tapping) to move towards the white light  
\* blue light paralyzed some of the flies

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NO BLUE Light

Minus Trial	10 <del>sec</del> cm	20 <del>sec</del> cm
1	9 sec	47 sec
2	8 sec	15
3	5	10
4	3	9
5	8	14
6	5	12
7	7	13
8	20	36
9	5	10
10	7	10

Plus Trials	10cm	20cm
1	5 sec	11 sec
2	4	9
3	12	10
4	8	14
5	4	18
6	6	12
7	4	12
8	9	15
9	4	9
10	4	7