

Cell, Volume 184

Supplemental Information

**A circuit logic for sexually shared
and dimorphic aggressive behaviors in *Drosophila***

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Table S1. Genotypes of flies used in each experiment. Related to all figures.

Figure 1	Abbreviation	Genotypes
1B-C		Canton-S
Figure 2	Abbreviation	Genotypes
2B		Eb5-Gal4(attp40) x 20xUAS-CshChrimson-mVenus(attp2)
2C	Eb5>CsChR Eb5>GFP	Eb5-Gal4(attp40) x 20xUAS-CshChrimson-mVenus(attp2) Eb5-Gal4(attp40) x pJFRC82-20xUAS-IVS-Syn21-GFP-p10(attp2)
2Diii & 2Ei		Eb5-Gal4(attp2) x UAS-C3PA-GFP (iii)
2Diii-v	CAP driver	Eb5-Gal4(attp40); 22F05-Gal80(attp2) x 20xUAS-CsChrimson-mVenus(attp2)
2Eii	pC1 driver	NP2631; dsx-Flip x 20xUAS-FRT-myrTopHat2-FRT-Chrimson:tdT3.1(vk5)
2Eiii	MAP driver	Eb5-AD(vk27), 22F05-DBD(attp2) x 20xUAS-CsChrimson-mVenus(attp2)
Figure 3	Abbreviation	Genotypes
3Ai, 3Aiii, & 3B	CAP>CsChR (tester) CAP>GFP (control)	Eb5-Gal4(attp40); 22F05-Gal80(attp2) x 20xUAS-CsChrimson-mVenus(attp2) Eb5-Gal4(attp40); 22F05-Gal80(attp2) x pJFRC82-20xUAS-IVS-Syn21-GFP-p10(attp2)
3Aii	MAP>CsChR (tester) MAP>GFP (control)	Eb5-AD(vk27), 22F05-DBD(attp2) x 20xUAS-CsChrimson-mVenus(attp2) Eb5-AD(vk27), 22F05-DBD(attp2) x pJFRC82-20xUAS-IVS-Syn21-GFP-p10(attp2)
3C	CAP>Kir2.1 (tester) CAP>GFP (control)	Eb5-Gal4(attp40); 22F05-Gal80(attp2) x pJFRC49-10xUAS-eGFP-Kir2.1(attp2) Eb5-Gal4(attp40); 22F05-Gal80(attp2) x pJFRC81-10xUAS-IVS-Syn21-GFP-p10 (attp2)
Figure 4	Abbreviation	Genotypes
4A	CAP>CsChR (tester)	Eb5-Gal4(attp40); 22F05-Gal80(attp2) x 20xUAS-CsChrimson-mVenus(attp2)
4B	CAP>GFP (control)	Eb5-Gal4(attp40); 22F05-Gal80(attp2) x pJFRC82-20xUAS-IVS-Syn21-GFP-p10(attp2) Eb5LexA(attp18); 20xUAS-IVS-Syn21-Chrimson:tdT3.1(su(Hw)attp5); 13xLexAop-IVS-jGCaMP7b(vk5) x Eb5-Gal4(attp40); 22F05-Gal80(attp2)
Figure 5	Abbreviation	Genotypes
5A & 5D	CAP>CsChR (tester) CAP>GFP (control)	Eb5-Gal4(attp40); 22F05-Gal80(attp2) x 20xUAS-CsChrimson-mVenus(attp2) Eb5-Gal4(attp40); 22F05-Gal80(attp2) x pJFRC82-20xUAS-IVS-Syn21-GFP-p10(attp2)
	MAP>CsChR (tester) MAP>GFP (control)	Eb5-AD(vk27), 22F05-DBD(attp2) x 20xUAS-CsChrimson-mVenus(attp2) Eb5-AD(vk27), 22F05-DBD(attp2) x pJFRC82-20xUAS-IVS-Syn21-GFP-p10(attp2)
5B	MAP>Kir2.1 (tester) MAP>GFP (control)	Eb5-AD(vk27), 22F05-DBD(attp2) x pJFRC49-10xUAS-eGFP-Kir2.1(attp2) Eb5-AD(vk27), 22F05-DBD(attp2) x pJFRC81-10xUAS-IVS-Syn21-GFP-p10 (attp2)
5C	CAP>MAP>Chr+MAP>Kir2.1 CAP>MAP>Chr+Empty>Kir2.1	Eb5-LexA(attp18);+; Eb5-AD(vk27); 22F05-DBD(attp2) x 13xLexAop2-IVS-Syn21-Chrimson-tdTomato-3.1(su(Hw)attp5); pJFRC49-10xUAS-eGFP-Kir2.1(attp2) Eb5-LexA(attp18)BDP-AD(attp40); BDP-DBD(attp2) x 13xLexAop2-IVS-Syn21-Chrimson-tdTomato-3.1(su(Hw)attp5); pJFRC49-10xUAS-eGFP-Kir2.1(attp2)
Figure 6	Abbreviation	Genotypes
6Ai	MAP neurons	Eb5-AD(vk27), 22F05-DBD(attp2) x 20xUAS-CsChrimson-mVenus(attp2)
6Aii	CAP(Chrimson)->MAP(jG7b)	Eb5LexA(attp18); 20xUAS-IVS-Syn21-Chrimson:tdT3.1(su(Hw)attp5); 13xLexAop-IVS-jGCaMP7b(vk5) x Eb5-Gal4(attp40); 22F05-Gal80(attp2)
6Bi	fpC1 neurons	26E01-AD(attp40); dsx-DBD x 20xUAS-CsChrimson-mVenus(attp2)
6Bii	CAP(Chrimson)->fpC1(jG7b)	Eb5LexA(attp18); 13xLexAop2-Chrimson:tdT3.1 (su(Hw)attp5); 20xUAS-jGCaMP7b (vk5) x 26E01-AD(attp40); dsx-DBD
6C	fpC1-Chrimson	dsx-Flip x 26E01-Gal4(attp2); 20xUAS-FRT-myrTopHat2-FRT-Chrimson:tdT3.1(vk5) dsx-Flip x BDP-Gal4U(attp2); 20xUAS-FRT-myrTopHat2-FRT-Chrimson:tdT3.1(vk5)
6D	fpC1>Kir2.1 fpC1>GFP	26E01-AD(attp40); dsx-DBD x pJFRC49-10xUAS-eGFP-Kir2.1(attp2) 26E01-AD(attp40); dsx-DBD x pJFRC81-10xUAS-IVS-Syn21-GFP-p10 (attp2)
6E	CAP>Chrimson+ fpC1>Kir2.1 CAP>Chrimson+ Empty>Kir2.1	Eb5LexA(attp18); 13xLexAop2-IVS-Syn21-Chrimson:tdT3.1(su(Hw)attp5); pJFRC49-10xUAS-eGFP-Kir2.1(attp2) x 26E01-AD(attp40); dsx-DBD Eb5LexA(attp18); 13xLexAop2-IVS-Syn21-Chrimson:tdT3.1(su(Hw)attp5); pJFRC49-10xUAS-eGFP-Kir2.1(attp2) x BDP-AD(attp40); BDP-DBD(attp2)
Figure 7	Abbreviation	Genotypes
7Ai	CAP->MAP	Eb5LexA(attp18); 20xUAS-IVS-Syn21-Chrimson:tdT3.1(su(Hw)attp5); 13xLexAop-IVS-jGCaMP7b(vk5) x Eb5-Gal4(attp40); 22F05-Gal80(attp2)
7Aii	CAP->fpC1	Eb5LexA(attp18); 13xLexAop2-Chrimson:tdT3.1 (su(Hw)attp5); 20xUAS-jGCaMP7b (vk5) x 26E01-AD(attp40); dsx-DBD
7B & 7C	CAP>CsChrimson CAP>GFP	Eb5-Gal4(attp40); 22F05-Gal80(attp2) x 20xUAS-CsChrimson-mVenus(attp2) Eb5-Gal4(attp40); 22F05-Gal80(attp2) x pJFRC82-20xUAS-IVS-Syn21-GFP-p10(attp2)
Figure S1	Abbreviation	Genotypes
S1A & S1C	Wild-type approach	Canton-S
S1B	CAP-induced approach	Eb5-Gal4(attp40); 22F05-Gal80(attp2) x 20xUAS-CsChrimson-mVenus(attp2)
S1D	Wild-type approach	Canton-S
Figure S2	Abbreviation	Genotypes
S2A	R60G08>CsChrimson BDP>CsChrimson	R60G08-Gal4(attp2) x 20xUAS-CsChrimson-mVenus(attp2) BDPG4U(attp2) x 20xUAS-CsChrimson-mVenus(attp2)
S2B		R60G08-Gal4(attp2) x 20xUAS-CsChrimson-mVenus(attp2)
S2C	R60G08>FlipON R60G08>old-Flip>FlipON R60G08>FlipOFF R60G08>old-Flip>FlipOFF	R60G08-Gal4(attp2) x 20xUAS-FRT-myrTopHat2-FRT-Chrimson:tdT3.1(vk5) R60G08>old-Flip(attp40); 20xUAS-FRT-myrTopHat2-FRT-Chrimson:tdT3.1(vk5) R60G08-Gal4(attp2) x 20xUAS-FRT-Chrimson:tdT3.1-FRT-myrTopHat2(vk5) R60G08-Gal4(attp2) x old-Flip(attp40); 20xUAS-FRT-Chrimson:tdT3.1-FRT-myrTopHat2(vk5)
Figure S3	Abbreviation	Genotypes
S3A	Eb2-Gal4(attp2) Eb3-Gal4(attp2) Eb4-Gal4(attp2) Eb5-Gal4(attp2)	Eb2-Gal4(attp40) x 20xUAS-CshChrimson-mVenus(attp2) Eb3-Gal4(attp40) x 20xUAS-CshChrimson-mVenus(attp2) Eb4-Gal4(attp40) x 20xUAS-CshChrimson-mVenus(attp2) Eb5-Gal4(attp40) x 20xUAS-CshChrimson-mVenus(attp2)
S3B	60G08 neurons Eb5 neurons 60G08>Eb5- neurons	R60G08-Gal4(attp2) x 20xUAS-IVS-Syn21-Chrimson-tdTomato-3.1 (su(Hw)attp5) Eb5-Gal4(attp2) x 20xUAS-CsChrimson-mVenus(attp2) R60G08-Gal4(attp2) x 20xUAS-IVS-Syn21-Chrimson-tdTomato-3.1 (su(Hw)attp5); Eb5-Gal80(attp2)
S3Ci-ii	Eb5 vs dsx-Gal4	Eb5LexA(attp18); 20xUAS-Chrimson:tdT3.1(su(Hw)attp5); 13xLexAop-jGCaMP7b(vk5) x dsx-Gal4
S3Ciii	Eb5 vs FruM	Eb5LexA(attp18) x 13xLexAop2-CsChrimson:tdT3.1 (vk5)
S3Ei-ii	CAP vs Eb5	Eb5LexA(attp18); 10xUAS-nls:tdTomato(vk22); 13xLexAop2-nls:GFP(vk40) x Eb5-Gal4(attp40); 22F05-Gal80(attp2)
S3Eiii-iv	MAN vs Eb5	Eb5LexA(attp18); 10xUAS-nls:tdTomato(vk22); 13xLexAop2-nls:GFP(vk40) x Eb5-AD(vk27); 22F05-DBD(attp2)
Figure S4	Abbreviation	Genotypes
S4Ai	MAP	Eb5-AD(vk27), 22F05-DBD(attp2) x 20xUAS-CsChrimson-mVenus(attp2)
S4Aii	MAP>CsChR MAP>GFP(control)	Eb5-AD(vk27), 22F05-DBD(attp2) x 20xUAS-CsChrimson-mVenus(attp2) Eb5-AD(vk27), 22F05-DBD(attp2) x pJFRC82-20xUAS-IVS-Syn21-GFP-p10(attp2)
S4B	Eb5-Gal4 CAP MAP fpC1	Eb5-Gal4(attp40) x 20xUAS-CsChrimson-mVenus(attp2) Eb5-Gal4(attp40); 22F05-Gal80(attp2) x 20xUAS-CsChrimson-mVenus(attp2) Eb5-AD(vk27), 22F05-DBD(attp2) x 20xUAS-CsChrimson-mVenus(attp2) 26E01-AD(attp40); dsx-DBD x 20xUAS-CsChrimson-mVenus(attp2)
S4D		NP2631; Eb5-AD(vk27), 22F05-LexADBBD(attp2) x 10xUAS-nls:tdTomato(vk22); 13xLexAop2-nls:GFP(vk40)
S4Ei	fpC1>CsChrimson	26E01-AD(attp40); dsx-DBD x 20xUAS-CsChrimson-mVenus(attp2)
S4Eii	fpC1>FlipON fpC1>old-Flip>FlipON fpC1>FlipOFF fpC1>old-Flip>FlipOFF	26E01-AD(attp40); dsx-DBD x 20xUAS-FRT-myrTopHat2-FRT-Chrimson:tdT3.1(vk5) 26E01-AD(attp40); dsx-DBD x old-Flip(attp40); 20xUAS-FRT-myrTopHat2-FRT-Chrimson:tdT3.1(vk5) 26E01-AD(attp40); dsx-DBD x 20xUAS-FRT-Chrimson:tdT3.1-FRT-myrTopHat2(vk5) 26E01-AD(attp40); dsx-DBD x old-Flip(attp40); 20xUAS-FRT-Chrimson:tdT3.1-FRT-myrTopHat2(vk5)
S4F	MAP>GCaMP7b fpC1>GCaMP7b	Eb5LexA(attp18); 20xUAS-IVS-Syn21-Chrimson:tdT3.1(su(Hw)attp5); 13xLexAop-IVS-jGCaMP7b(vk5) x Eb5-Gal4(attp40); 22F05-Gal80(attp2) Eb5LexA(attp18); 13xLexAop2-Chrimson:tdT3.1 (su(Hw)attp5); 20xUAS-jGCaMP7b (vk5) x 26E01-AD(attp40); dsx-DBD
Figure S5	Abbreviation	Genotypes
S5A	Eb5>CsChR (tester)	Eb5-Gal4(attp40) x 20xUAS-CsChrimson-mVenus(attp2)
S5B	CAP>CsChR (tester) CAP>GFP (control)	Eb5-Gal4(attp40); 22F05-Gal80(attp2) x 20xUAS-CsChrimson-mVenus(attp2) Eb5-Gal4(attp40); 22F05-Gal80(attp2) x pJFRC82-20xUAS-IVS-Syn21-GFP-p10(attp2)
S5Ci-ii	CAP>Kir2.1 (tester) CAP>GFP (control)	Eb5-Gal4(attp40); 22F05-Gal80(attp2) x pJFRC49-10xUAS-eGFP-Kir2.1(attp2) Eb5-Gal4(attp40); 22F05-Gal80(attp2) x pJFRC81-10xUAS-IVS-Syn21-GFP-p10 (attp2)
S5Ciii	MAP>Kir2.1 (tester) MAP>GFP(control)	Eb5-AD(vk27), 22F05-DBD(attp2) x pJFRC49-10xUAS-eGFP-Kir2.1(attp2) Eb5-AD(vk27), 22F05-DBD(attp2) x pJFRC81-10xUAS-IVS-Syn21-GFP-p10 (attp2)
S5Ciii	fpC1>Kir2.1 (tester) fpC1>GFP (control)	26E01-AD(attp40); dsx-DBD x pJFRC49-10xUAS-eGFP-Kir2.1(attp2) 26E01-AD(attp40); dsx-DBD x pJFRC81-10xUAS-IVS-Syn21-GFP-p10 (attp2)
S5D	MAP>CsChR fpC1>CsChR	Eb5-AD(vk27), 22F05-DBD(attp2) x 20xUAS-CsChrimson-mVenus(attp2) 26E01-AD(attp40); dsx-DBD x 20xUAS-CsChrimson-mVenus(attp2)
Figure S6	Abbreviation	Genotypes
S6A		Eb5LexA(attp18); 20xUAS-IVS-Syn21-Chrimson:tdT3.1(su(Hw)attp5); 13xLexAop-IVS-jGCaMP7b(vk5) x Eb5-Gal4(attp40); 22F05-Gal80(attp2)
S6B		Eb5-AD(vk27), 22F05-DBD(attp2) x 20xUAS-IVS-Syn21-Chrimson:tdT3.1(su(Hw)attp5); 20xUAS-IVS-jGCaMP7b(vk5)
S6C		26E01-AD(attp40); dsx-DBD x 20xUAS-IVS-Syn21-Chrimson:tdT3.1(su(Hw)attp5); 20xUAS-IVS-jGCaMP7b(vk5)
Figure S7	Abbreviation	Genotypes
S7A	Eb5>Chrimson + tk>Kir2.1 Eb5>Chrimson + Empty>Kir2.1	tk-Gal4; Eb5LexA(attp40) x 13xLexAop2-Chrimson:tdT3.1(su(Hw)attp5); 10xUAS-eGFP-Kir2.1(attp2) Eb5LexA(attp40) x 13xLexAop2-Chrimson:tdT3.1(su(Hw)attp5); 10xUAS-eGFP-Kir2.1(attp2)
S7B	tk-Chrimson + Eb5 > Kir2.1 tk-Chrimson + Empty > Kir2.1	tk-Gal4; Eb5LexA(attp40) x 13xLexAop2-eGFP-Kir2.1(attp40); 20xUAS-Chrimson:tdT3.1(vk5) tk-Gal4 x 13xLexAop2-eGFP-Kir2.1(attp40); 20xUAS-Chrimson:tdT3.1(vk5)

Table S2. Behavioral classifier performance. Related to Figure 1.

Classifiers	Performance		No. of training frames			
	Precision (%) = TP/(TP+FP)	Recall (%) = TP/(TP+FN)	True Positive (TP)	True Negative (TN)	False Positive (FP)	False Negative (FN)
Approach	92.2	89.6	879 (92.2%)	1431 (93.3%)	74 (7.8%)	102 (6.7%)
Lunging	94.4	87.1	304 (94.4%)	1388(96.9%)	18(5.6%)	45(3.1%)
Headbutting	78.4	89.9	1344 (78.4%)	1147(88.4%)	371(21.6%)	151 (11.6%)

Precision (TP/(TP+FP)): percentage of the detected behavioral frames that were true positives

Recall (TP/(TP+FN)): percentage of the true behavioral frames that were detected

True Positive (TP): percentage of the frames in which animals displayed certain behavior and were correctly detected by the classifier

True Negative (TN): percentage of the frames in which animals did not display certain behavior and were correctly distinguished by the classifier

False Positive (FP): percentage of the frames in which animals did not display certain behavior but were incorrectly detected by the classifier

False Negative (FN): percentage of the frames in which animals displayed certain behavior but were not detected by the classifier

Table S3. Statistical parameters of each experiment. Related to all figures.

Figure 1	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
1Bi	Group-housed (GH) males vs GH females	8 pairs vs 8 pairs	Mann-Whitney U-test	0.006993	8	44					
	Single-housed (SH) males vs SH females	8 pairs vs 8 pairs		2.95E-03	5	95					
	GH males vs SH males	8 pairs vs 8 pairs		1.55E-04	0	36					
	GH females vs SH females	8 pairs vs 8 pairs		3.11E-04	1	37					
1Bii	Group-housed (GH) males vs GH females	8 pairs vs 8 pairs	Mann-Whitney U-test	2	32	68					
	Single-housed (SH) males vs SH females	8 pairs vs 8 pairs		1.55E-04	0	100					
	GH males vs SH males	8 pairs vs 8 pairs		1.55E-04	0	36					
	GH females vs SH females	8 pairs vs 8 pairs		1	28	64					
1Biii	Group-housed (GH) males vs GH females	8 pairs vs 8 pairs	Mann-Whitney U-test	1.40E-03	4	40					
	Single-housed (SH) males vs SH females	8 pairs vs 8 pairs		1.55E-04	0	36					
	GH males vs SH males	8 pairs vs 8 pairs		1	28	64					
	GH females vs SH females	8 pairs vs 8 pairs		1.55E-04	0	36					
1Ci	No Food males vs No Food females	8 pairs vs 8 pairs	Mann-Whitney U-test	0.025641	12	48					
	Food males vs Food females	12 pairs vs 12 pairs		9.53E-04	15		3.304				
	No Food males vs Food males	8 pairs vs 12 pairs		0.047869	28		1.9785				
	No Food females vs Food females	8 pairs vs 12 pairs		4.97E-04	2.5		3.4823				
1Cii	No Food males vs No Food females	8 pairs vs 8 pairs	Mann-Whitney U-test	2	32	68					
	Food males vs Food females	12 pairs vs 12 pairs		1.64E-02	42		2.3993				
	No Food males vs Food males	8 pairs vs 12 pairs		0.047869	28		1.9785				
	No Food females vs Food females	8 pairs vs 12 pairs		2	48		-Inf				
1Ciii	No Food males vs No Food females	8 pairs vs 8 pairs	Mann-Whitney U-test	0.025641	12	48					
	Food males vs Food females	12 pairs vs 12 pairs		1.02E-05	0		4.4136				
	No Food males vs Food males	8 pairs vs 12 pairs		2	48		-Inf				
	No Food females vs Food females	8 pairs vs 12 pairs		7.57E-03	13		2.6708				
Figure 2	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
2Ci	Eb5 > GFP vs Eb5 > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	1.45E-06	0		4.8182				
	Eb5 > CsChR Before vs During Stimulation	16 pairs	Wilcoxon signed-rank test	4.37E-04			-3.517	0			
2Cii	Eb5 > GFP vs Eb5 > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	5.18E-07	0		5.0197				
	Eb5 > CsChR Before vs During Stimulation	16 pairs	Wilcoxon signed-rank test	4.38E-04			-3.516	0			
2Ciii	Eb5 > GFP vs Eb5 > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	1.98E-05	15		4.2671				
	Eb5 > CsChR Before vs During Stimulation	16 pairs	Wilcoxon signed-rank test	2.41E-04			-3.672	13.5			
2Civ	Eb5 > GFP vs Eb5 > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	2.30E-05	16		4.2335				
	Eb5 > CsChR Before vs During Stimulation	16 pairs	Wilcoxon signed-rank test	7.83E-04			-3.359	19			
Figure 3	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
3Ai	(Male) CAP > GFP vs CAP > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	2.90E-06	2		4.6777				
	(Male) CAP > CsChR Before vs During Stimulation	16 pairs	Wilcoxon signed-rank test	7.51E-04			-3.37	3			
	(Female) CAP > GFP vs CAP > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	1.26E-06	0		4.8459				
	(Female) CAP > CsChR Before vs During Stimulation	16 pairs	Wilcoxon signed-rank test	2.63E-04			-3.007	10			
3Aii	(Male) MAP > GFP vs MAP > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	0.71463	133.5		0.3657				
	(Male) MAP > CsChR Before vs During Stimulation	16 pairs	Wilcoxon signed-rank test	0.1942				74			
3Aiii	(Male) CAP > GFP vs CAP > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	1	240.5			1			
	(Male) CAP > CsChR Before vs During Stimulation	16 pairs	Wilcoxon signed-rank test	0.1789				134.42	115		
3Bi	(Fly vs Magnet target-Male tester) CAP > GFP vs CAP > CsChR	12 flies vs 12 flies	Mann-Whitney U-test	0.02623	35.5		2.2228				
	(Fly vs Magnet target-Female tester) CAP > GFP vs CAP > CsChR	8 flies vs 8 flies		0.028594	11.5	47.5					
3Bii	(Male vs Female target-Male tester) CAP > GFP vs CAP > CsChR	15 flies vs 15 flies	Mann-Whitney U-test	1.99E-03	39		3.0922				
	(Male vs Female target-Female tester) CAP > GFP vs CAP > CsChR	15 flies vs 15 flies		2.73E-04	23		3.6399				
3Biii	(Male vs Female target-Male tester) CAP > CsChR vs (Male vs Female target-Female tester) CAP > CsChR	15 flies vs 15 flies	Mann-Whitney U-test	1.30E-04	20		3.8262				
	(Female vs Female target-Male tester) CAP > GFP vs CAP > CsChR	16 flies vs 16 flies		0.061547	78		1.8695				
3Biii	(Female vs Female target-Male tester) CAP > GFP vs CAP > CsChR	16 flies vs 16 flies	Mann-Whitney U-test	0.35969	105		0.9489				
	(Female vs Female target-Male tester) CAP > CsChR vs (Female vs Female target-Female tester) CAP > CsChR	16 flies vs 16 flies		0.16263	90.5		1.3963				
	(Male vs Female target-Male tester) CAP > CsChR vs (Female vs Female target-Male tester) CAP > CsChR	15 flies vs 16 flies		0.03612	72		2.0956				
	(Male vs Female target-Female tester) CAP > CsChR vs (Female vs Female target-Female tester) CAP > CsChR	15 flies vs 16 flies		2.43E-02	68		2.2522				
3Ci	(Male-Approach > attack) CAP > GFP vs CAP > Kir2.1	13 pairs vs 16 pairs	Mann-Whitney U-test	9.22E-06	6		4.4347				
	(Male-Approach) CAP > GFP vs CAP > Kir2.1	13 pairs vs 16 pairs		1.02E-04	15		3.8853				
3Cii	(Male-Lunge) CAP > GFP vs CAP > Kir2.1	13 pairs vs 16 pairs	Mann-Whitney U-test	9.19E-06	6		4.4353				
	(Female-Approach > attack) CAP > GFP vs CAP > Kir2.1	16 pairs vs 16 pairs		4.43E-04	45.5		3.513				
3Cii	(Female-Approach) CAP > GFP vs CAP > Kir2.1	16 pairs vs 16 pairs	Mann-Whitney U-test	1.25E-04	28.5		3.737				
	(Female-Headbutt) CAP > GFP vs CAP > Kir2.1	16 pairs vs 16 pairs		3.92E-04	33.5		3.5454				
Figure 4	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
4Ai	(Stim 1-Female-Approach) CAP > GFP vs CAP > CsChR	16 pairs vs 16 pairs	Mann-Whitney U-test	7.95E-05	29		3.946				
	(Stim 2-Female-Approach) CAP > GFP vs CAP > CsChR	16 pairs vs 16 pairs		5.88E-04	40.5		3.4372				
	(Stim 3-Female-Approach) CAP > GFP vs CAP > CsChR	16 pairs vs 16 pairs		9.33E-07	0		4.9053				
	(Stim 4-Female-Approach) CAP > GFP vs CAP > CsChR	16 pairs vs 16 pairs		1.38E-06	2.5		4.8285				
4Aii	(Stim 1-Female-Approach) CAP > GFP vs CAP > CsChR	16 pairs vs 16 pairs	Mann-Whitney U-test	2.08E-06	4		4.745				
	(Stim 1-Male-Approach) CAP > GFP vs CAP > CsChR	15 pairs vs 15 pairs		0.83118	113.5		0.2132				
	(Stim 2-Male-Approach) CAP > GFP vs CAP > CsChR	15 pairs vs 15 pairs		0.12267	76		1.5437				
	(Stim 3-Male-Approach) CAP > GFP vs CAP > CsChR	15 pairs vs 15 pairs		9.94E-03	50.5		2.578				
4Aiii	(Stim 4-Male-Approach) CAP > GFP vs CAP > CsChR	15 pairs vs 15 pairs	Mann-Whitney U-test	2.98E-06	0.5		4.6723				
	(Stim 5-Male-Approach) CAP > GFP vs CAP > CsChR	15 pairs vs 15 pairs		3.00E-06	0		4.6711				
	(Stim 1-Female-Headbutt) CAP > GFP vs CAP > CsChR	16 pairs vs 16 pairs		0.14251	98		1.4665				
	(Stim 2-Female-Headbutt) CAP > GFP vs CAP > CsChR	16 pairs vs 16 pairs		0.1213	90.5		1.5493				
4Aiii	(Stim 3-Female-Headbutt) CAP > GFP vs CAP > CsChR	16 pairs vs 16 pairs	Mann-Whitney U-test	0.018327	33.5		3.741				
	(Stim 4-Female-Headbutt) CAP > GFP vs CAP > CsChR	16 pairs vs 16 pairs		3.03E-05	25.5		4.1713				
	(Stim 5-Female-Headbutt) CAP > GFP vs CAP > CsChR	16 pairs vs 16 pairs		1.01E-06	8		4.8896				
	(Stim 1-Male-Lunge) CAP > GFP vs CAP > CsChR	15 pairs vs 15 pairs		2	112		-Inf				
4Aiv	(Stim 2-Male-Lunge) CAP > GFP vs CAP > CsChR	15 pairs vs 15 pairs	Mann-Whitney U-test	2	112.5		-Inf				
	(Stim 3-Male-Lunge) CAP > GFP vs CAP > CsChR	15 pairs vs 15 pairs		2	112.5		-Inf				
	(Stim 4-Male-Lunge) CAP > GFP vs CAP > CsChR	15 pairs vs 15 pairs		2	112.5		-Inf				
	(Stim 5-Male-Lunge) CAP > GFP vs CAP > CsChR	15 pairs vs 15 pairs		2	112		-Inf				
4Bi	Male Pre-stim vs Stim mean ΔF/F	15 flies vs 15 flies	Mann-Whitney U-test	0.033998	68		1.825				24.109
	Female Pre-stim vs Stim mean ΔF/F	15 flies	Wilcoxon signed-rank test	6.10E-05				0			
4Bii	(Chrimson) Male intensity vs Female intensity	15 flies vs 15 flies	Mann-Whitney U-test	0.58974	99		0.5392				24.109
	(GCaMP) Male intensity vs Female intensity	15 flies vs 15 flies	Mann-Whitney U-test	0.34009	89		0.954				24.109
Figure 5	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
5Ai	(Male) CAP > GFP vs CAP > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	0.089633	97.5		1.6973				
	(Male) CAP > CsChR Before vs During Stimulation	16 pairs	Wilcoxon signed-rank test	0.25				0			
5Aii	(Male) MAP > GFP vs MAP > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	1.48E-06	17		4.814				
	(Male) MAP > CsChR Before vs During Stimulation	16 pairs	Wilcoxon signed-rank test	1.22E-04				0			
5B	(Male-Approach > attack) MAP > GFP vs MAP > Kir2.1	24 pairs vs 24 pairs	Mann-Whitney U-test	1.49E-03	141		3.1773				
	(Male-Approach) MAP > GFP vs MAP > Kir2.1	24 pairs vs 24 pairs		0.67226	267		0.4231				
5C	(Male-Lunge) MAP > GFP vs MAP > Kir2.1	24 pairs vs 24 pairs	Mann-Whitney U-test	0.005147	168.5		2.5658				
	(Approach>attack) CAP+MAP > ChR & Empty driver > Kir2.1 vs CAP+MAP > ChR & MAP > Kir2.1	16 pairs vs 16 pairs		1.12E-06	0		4.87				
5D	(Approach) CAP+MAP > ChR & Empty driver > Kir2.1 vs CAP+MAP > ChR & MAP > Kir2.1	16 pairs vs 16 pairs	Mann-Whitney U-test	0.057944	77.5		1.8961				
	(Lunge) CAP+MAP > ChR & Empty driver > Kir2.1 vs CAP+MAP > ChR & MAP > Kir2.1	16 pairs vs 16 pairs		3.60E-06	6		4.633				
5D	(Female) CAP > GFP vs CAP > CsChR During Stimulation	16 pairs vs 16 pairs	Mann-Whitney U-test	1.12E-06	0		4.87				
	(Female) CAP > CsChR Before vs During Stimulation	16 pairs		1.22E-04				0			
Figure 6	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
6Aii	MAP mean ΔF/F Pre-stim vs Stim	10 flies	Wilcoxon signed-rank test	2.00E-03				0			
	MAP mean ΔF/F Stim vs fpC1 mean ΔF/F Stim	10 flies vs 8 flies		0.006728	9		2.71				11.255
6Bii	fpC1 mean ΔF/F Pre-stim vs Stim	8 flies	Wilcoxon signed-rank test	1.80E-03				0			
	fpC1 > Chrimson (26E01Gal4 + dsxFlp + FlpOFF cassette) Pre-stim vs Stim	16 pairs vs 16 pairs		1				22.5			
6Ci	fpC1 > STOP (BDPG4U + dsxFlp + FlpOFF cassette) stim vs fpC1 > Chrimson (26E01Gal4 + dsxFlp + FlpOFF cassette) Stim	8 pairs vs 16 pairs	Mann-Whitney U-test	0.20325	85		1.2723				
	fpC1 > Chrimson (26E01Gal4 + dsxFlp + FlpOFF cassette) Pre-stim vs Stim	16 pairs		0.0078				2.5			
6Cii	fpC1 > STOP (BDPG4U + dsxFlp + FlpOFF cassette) stim vs fpC1 > Chrimson (26E01Gal4 + dsxFlp + FlpOFF cassette) Stim	8 pairs vs 16 pairs	Mann-Whitney U-test	0.028589	31.5		2.1891				
	(Approach > attack) fpC1 > GFP vs fpC1 > Kir2.1	8 pairs vs 12 pairs		4.40E-04	4		3.515				
6D	(Approach) fpC1 > GFP vs fpC1 > Kir2.1	8 pairs	Mann-Whitney U-test	0.12398	33		1.5383				
	(Headbutt) fpC1 > GFP vs fpC1 > Kir2.1	8 pairs vs 12 pairs		2.52E-04	2		3.6598				
6E	(Approach > attack) Ctrl vs fpC1 > Kir2.1	16 pairs vs 16 pairs	Mann-Whitney U-test	2.45E-04	24		3.6669				
	(Approach) Ctrl vs fpC1 > Kir2.1	16 pairs vs 16 pairs		0.009466	49.5		2.5947				
6E	(Headbutt) Ctrl vs fpC1 > Kir2.1	16 pairs vs 16 pairs	Mann-Whitney U-test	0.001528	35.5		3.1692				
Figure 7	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
7Ai	(MAP) GH mean ΔF/F Pre-stim vs Stim	14 flies	Wilcoxon signed-rank test	0.583				43			
	(MAP) SH mean ΔF/F Pre-stim vs Stim	14 flies		1.22E-04				0			
7Ai	(MAP) GH mean ΔF/F stim vs SH mean ΔF/F stim	14 flies vs 14 flies	Mann-Whitney U-test	0.005439	37		2.7798				21.764
	(fpC										

7Aii	(fpC1) SH mean $\Delta F/F$ Pre-stim vs Stim (fpC1) GH mean $\Delta F/F$ stim vs SH mean $\Delta F/F$ stim	16 files 16 files vs 16 files	Wilcoxon signed-rank test Mann-Whitney U-test	6.10E-05 4.43E-03	52		2.8455	0				
7Bi	(Approach / GH-GH) CAP > GFP vs CAP > CsChrimson (Approach / GH-SH) CAP > GFP vs CAP > CsChrimson (Approach / GH-SH) CAP > CsChrimson vs No light control (Approach) CAP > CsChrimson GH-GH vs GH-SH	16 pairs vs 16 pairs 16 pairs vs 20 pairs 20 pairs vs 20 pairs 16 pairs vs 20 pairs	Mann-Whitney U-test Mann-Whitney U-test Mann-Whitney U-test Mann-Whitney U-test	0.055295 4.50E-06 9.71E-03 4.39E-05	79 17 104 32		1.9166 4.5867 2.5859 4.086					
7Bii	(Lunge / GH-GH) CAP > GFP vs CAP > CsChrimson (Lunge / GH-SH) CAP > GFP vs CAP > CsChrimson (Lunge / GH-SH) CAP > CsChrimson vs No light control (Lunge) CAP > CsChrimson GH-GH vs GH-SH	16 pairs vs 16 pairs 16 pairs vs 20 pairs 20 pairs vs 20 pairs 16 pairs vs 20 pairs	Mann-Whitney U-test	2 0.075269 0.090535 0.01264	128 121 165 112		-lnF 1.7788 1.3375 2.3332					
7Ci	(Approach / GH-GH) CAP > GFP vs CAP > CsChrimson (Approach / GH-SH) CAP > GFP vs CAP > CsChrimson (Approach / GH-SH) CAP > CsChrimson vs No light control (Approach) CAP > CsChrimson GH-GH vs GH-SH	16 pairs vs 15 pairs 16 pairs vs 16 pairs 16 pairs vs 16 pairs 15 pairs vs 16 pairs	Mann-Whitney U-test	0.001385 6.23E-06 9.04E-05 0.010924	40 11.5 28.5 67		3.1978 4.5184 3.915 2.3093					
7Cii	(Headbutt / GH-GH) CAP > GFP vs CAP > CsChrimson (Headbutt / GH-SH) CAP > GFP vs CAP > CsChrimson (Headbutt / GH-SH) CAP > CsChrimson vs No light control (Headbutt) CAP > CsChrimson GH-GH vs GH-SH	16 pairs vs 15 pairs 16 pairs vs 16 pairs 16 pairs vs 16 pairs 15 pairs vs 16 pairs	Mann-Whitney U-test	0.91885 0.001478 0.009518 0.003082	118 58 70 57.5		0.1019 3.1789 2.5929 2.9594					

Figure S1	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	ranksum	tstat	df	sd
S1Aii	Peak Value of angular velocity Male vs Female approach	125 bouts vs 191 bouts	Mann-Whitney U-test	0.6677	10943		0.4293				
	Distance to other at the beginning of the bouts Male vs Female	125 bouts vs 191 bouts	Mann-Whitney U-test	0.42908	11309		0.7908				
	Distance to other at the end of the bouts Male vs Female	125 bouts vs 191 bouts	Mann-Whitney U-test	0.11992	10702		1.5551				
	Facing angle at the beginning of the bouts Male vs Female	125 bouts vs 191 bouts	Mann-Whitney U-test	0.055465	10416		1.9152				
	Facing angle at the end of the bouts Male vs Female	125 bouts vs 191 bouts	Mann-Whitney U-test	0.24057	11005		1.1736				
S1B	Peak Value of acceleration Male vs Female approach	125 bouts vs 191 bouts	Mann-Whitney U-test	0.84072	10039		0.201				
	Bout duration Male vs Female	125 bouts vs 191 bouts	Mann-Whitney U-test	0	10179		10.306				
	Peak Value of angular velocity Male vs Female approach	197 bouts vs 230 bouts	Mann-Whitney U-test	0.31229	21370		1.0104				
	Distance to other at the beginning of the bouts Male vs Female	197 bouts vs 230 bouts	Mann-Whitney U-test	0.059701	19593		1.883				
	Distance to other at the end of the bouts Male vs Female	197 bouts vs 230 bouts	Mann-Whitney U-test	0.12348	21884		1.5403				
S1C	Facing angle at the beginning of the bouts Male vs Female	197 bouts vs 230 bouts	Mann-Whitney U-test	0.22468	21111		1.2142				
	Facing angle at the end of the bouts Male vs Female	197 bouts vs 230 bouts	Mann-Whitney U-test	0.31683	21382		1.001				
	Peak Value of acceleration Male vs Female approach	197 bouts vs 230 bouts	Mann-Whitney U-test	0.12827	20721		1.521				
	Bout duration Male vs Female	197 bouts vs 230 bouts	Mann-Whitney U-test	0.4163	21622		0.8129				
	Duration Approach vs headbutt	191 bouts vs 394 bouts	Mann-Whitney U-test	2.71E-106			21.898	93590			
S1D	Distance to other at the beginning of the bouts Approach vs headbutt	191 bouts vs 394 bouts	Mann-Whitney U-test	1.35E-67			17.372	89265			
	Facing angle at the beginning of the bouts Approach vs headbutt	191 bouts vs 394 bouts	Mann-Whitney U-test	4.62E-32			11.786	78557			
S1D	(Precision) Male vs Female	40 files vs 40 files	Mann-Whitney U-test	0.76737	769		0.2958				
	(Recall) Male vs Female	40 files vs 40 files	Mann-Whitney U-test	0.93843	791.5		0.0772				

Figure S2	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
S2Ai	(Male/Approach) BDP > CsChr stim vs R60G08 > CsChr stim	16 pairs vs 15 pairs	Mann-Whitney U-test	4.20E-05	16.5		4.0963				
S2Aii	(Male/Approach) R60G08 > CsChr Pre-stim vs Stim	15 pairs	Wilcoxon signed-rank test	0.00105				13			
	(Male/Lunge) BDP > CsChr stim vs R60G08 > CsChr stim	16 pairs vs 15 pairs	Mann-Whitney U-test	3.66E-07	0		5.0857				
S2Aiii	(Male/Lunge) R60G08 > CsChr Pre-stim vs Stim	15 pairs	Wilcoxon signed-rank test	6.10E-05				0			
	(Female/Approach) BDP > CsChr stim vs R60G08 > CsChr stim	13 pairs vs 16 pairs	Mann-Whitney U-test	5.28E-06	0		4.5534				
S2Aiv	(Female/Approach) R60G08 > CsChr Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	4.16E-04			-3.53	0			
	(Female/Headbutt) BDP > CsChr stim vs R60G08 > CsChr stim	13 pairs vs 16 pairs	Mann-Whitney U-test	4.78E-06	0		4.5744				
S2Ci	(Female/Headbutt) R60G08 > CsChr Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	4.36E-04			-3.517	0			
	(Male) R60G08-Gal4 + Flip-ON cassette Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	0.25			9				
S2Cii	(Male) R60G08-Gal4 + Flip-ON cassette Pre-stim vs Stim	17 pairs	Wilcoxon signed-rank test	2.91E-04			-3.623	0			
	(Male) R60G08-Gal4 + Flip-OFF cassette Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	4.37E-04			-3.517	0			
S2Cii	(Male) R60G08-Gal4 + Flip-OFF cassette Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	0.25			0				
	(Male) R60G08-Gal4 + Flip-ON cassette Stim vs R60G08-Gal4 + Flip-ON cassette Stim	16 pairs vs 17 pairs	Mann-Whitney U-test	4.71E-07	0		5.0379				
S2Cii	(Male) R60G08-Gal4 + Flip-OFF cassette Stim vs R60G08-Gal4 + Flip-OFF cassette Stim	16 pairs vs 16 pairs	Mann-Whitney U-test	6.54E-07	0		4.9746				
	(Male) R60G08-Gal4 + Flip-OFF cassette Stim vs R60G08-Gal4 + Flip-OFF cassette Stim	17 pairs vs 16 pairs	Mann-Whitney U-test	4.71E-07	0		5.0379				
S2Cii	(Female) R60G08-Gal4 + Flip-ON cassette Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	0.123			50.5				
	(Female) R60G08-Gal4 + Flip-ON cassette Pre-stim vs Stim	24 pairs	Wilcoxon signed-rank test	1.81E-05			-4.288	0			
S2Cii	(Female) R60G08-Gal4 + Flip-OFF cassette Pre-stim vs Stim	24 pairs	Wilcoxon signed-rank test	1.81E-05			-4.288	0			
	(Female) R60G08-Gal4 + Flip-OFF cassette Pre-stim vs Stim	24 pairs	Wilcoxon signed-rank test	0.3594			25				
S2Cii	(Female) R60G08-Gal4 + Flip-ON cassette Stim vs R60G08-Gal4 + Flip-ON cassette Stim	16 pairs vs 24 pairs	Mann-Whitney U-test	9.68E-08	0		5.3326				
	(Female) R60G08-Gal4 + Flip-OFF cassette Stim vs R60G08-Gal4 + Flip-OFF cassette Stim	24 pairs vs 24 pairs	Mann-Whitney U-test	9.13E-10	0		6.1239				
S2Cii	(Female) R60G08-Gal4 + Flip-OFF cassette Stim vs R60G08-Gal4 + Flip-OFF cassette Stim	24 pairs vs 24 pairs	Mann-Whitney U-test	9.15E-10	0		6.1235				

Figure S3	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
S3Bi	(Male) R60G08 neurons Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	4.36E-04			-3.517	0			
	(Male) Eb5 neurons Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	4.38E-04			-3.516	0			
S3Bi	(Male) R60G08 neurons Stim vs R60G08-Eb5 neurons Stim	16 pairs	Wilcoxon signed-rank test	0.0156			13				
	(Male) R60G08 neurons Stim vs R60G08-Eb5 neurons Stim	16 pairs vs 16 pairs	Mann-Whitney U-test	1.52E-06	0		4.8084				
S3Bii	(Female) R60G08 neurons Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	6.10E-05			0				
	(Female) Eb5 neurons Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	4.30E-04			-3.521	0			
S3Bii	(Female) R60G08-Eb5 neurons Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	0.4375			6				
	(Female) R60G08 neurons Stim vs R60G08-Eb5 neurons Stim	16 pairs vs 16 pairs	Mann-Whitney U-test	2.94E-06	1.5		4.6752				

Figure S4	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
S4Aii	(Female/Approach) MAP > GFP Stim vs MAP > CsChr Stim	16 pairs vs 16 pairs	Mann-Whitney U-test	0.54	111.5		0.6128				
	(Female/Approach) MAP > CsChr Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	0.6931				59.5			
S4Eii	(Female/Headbutt) MAP > GFP vs MAP > CsChr	16 pairs vs 16 pairs	Mann-Whitney U-test	0.15745	92		1.4137				
	(Female/Headbutt) MAP > CsChr Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	0.5515			54.5				
S4Eii	(Female) fpC1 driver + Flip-ON cassette Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	0.1997			-1.283				
	(Female) fpC1 driver + Flip-ON cassette Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	3.83E-07			-5.077				
S4Eii	(Female) fpC1 driver + Flip-OFF cassette Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	7.54E-06			-4.478				
	(Female) fpC1 driver + Flip-OFF cassette Pre-stim vs Stim	16 pairs	Wilcoxon signed-rank test	0.526373			0.6336				
S4Eii	(Female) fpC1 driver + Flip-ON cassette Stim vs fpC1 driver + Flip-ON cassette Stim	16 pairs vs 16 pairs	Mann-Whitney U-test	7.74E-07	0		4.9417				
	(Female) fpC1 driver + Flip-OFF cassette Stim vs fpC1 driver + Flip-OFF cassette Stim	16 pairs vs 16 pairs	Mann-Whitney U-test	1.79E-06	9		4.776				
SAF	(Female) fpC1 driver + Flip-ON cassette Stim vs fpC1 driver + Flip-OFF cassette Stim	16 pairs vs 16 pairs	Mann-Whitney U-test	3.83E-07	0		5.0774				
	MAP>GCaMP7b vs fpC1>GCaMP7b	10 files vs 10 files	Mann-Whitney U-test	0.96985	49		0.0378				13.229

Figure S5	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
S5A	(Male to Male Aggression) Pre-stim vs Stim	8 pairs	Wilcoxon signed-rank test	0.0078			0				
	(Male to Female Aggression) Pre-stim vs Stim	8 pairs	Wilcoxon signed-rank test	1			0				
S5B	(30s Baseline / Male vs Female target-Male tester) CAP > GFP vs CAP > CsChr	15 files vs 15 files	Mann-Whitney U-test	1.99E-03	39		3.0922				
	(30s Baseline / Male vs Female target-Female tester) CAP > GFP vs CAP > CsChr	15 files vs 15 files	Mann-Whitney U-test	2.73E-04	23		3.6399				
S5B	(30s Baseline / Male vs Female target-Male tester) CAP > CsChr vs (Male vs Female target-Female tester) CAP > CsChr	20 files vs 15 files	Mann-Whitney U-test	1.30E-04	20		3.8262				
	(2MIN Baseline / Male vs Female Target - Male tester) CAP>GFP vs CAP>CsChr	16 files vs 16 files	Mann-Whitney U-test	3.42E-03	50		2.9271				
S5B	(2MIN Baseline / Male vs Female Target - Female tester) CAP>GFP vs CAP>CsChr	16 files vs 16 files	Mann-Whitney U-test	4.59E-04	31		3.5036				
	(2MIN Baseline / Male vs Female Target - Male tester) CAP>CsChr vs (Female tester) CAP>CsChr	16 files vs 16 files	Mann-Whitney U-test	0.010281	66		2.3401				
S5B	(30s Baseline / Male vs Female Target - Male tester) CAP>GFP vs (2MIN) CAP>GFP	15 files vs 16 files	Mann-Whitney U-test	0.54348	104.5		0.60756				
	(30s Baseline / Male vs Female Target - Male tester) CAP>CsChr vs (2MIN) CAP>CsChr	15 files vs 16 files	Mann-Whitney U-test	0.6774	109		0.41601				
S5B	(30s Baseline / Male vs Female Target - Female tester) CAP>GFP vs (2MIN) CAP>GFP	15 files vs 16 files	Mann-Whitney U-test	1	111.5		0				
	(30s Baseline / Male vs Female Target - Female tester) CAP>CsChr vs (2MIN) CAP>CsChr	15 files vs 16 files	Mann-Whitney U-test	0.87389	115.5		0.15872				
SSCi	(Mean Velocity (Male) CAP > GFP vs CAP > KiR2.1	15 pairs vs 16 pairs	Mann-Whitney U-test	0.1571	325		1.415				
SSCii	(Mean Velocity (Female) CAP > GFP vs CAP > KiR2.2	15 pairs vs 16 pairs	Mann-Whitney U-test	0.0967	572		1.6809				
SSCiii	(Mean Velocity (Male) MAP > GFP vs MAP > KiR2.3	24 pairs vs 24 pairs	Mann-Whitney U-test	0.4795	1055		0.7071				
SSCiv	(Mean Velocity (Male) CAP > GFP vs CAP > KiR2.4	8 pairs vs 12 pairs	Mann-Whitney U-test	0.8357	215		0.2074				

Figure S6	Comparisons (Group 1 (G1) vs Group 2 (G2))	N number	Methods	p value	U value	W value	z value	signedrank	tstat	df	sd
S6A	(CAP/Male) GH Pre-stim vs Stim	15 files	Wilcoxon signed-rank test	6.10E-05				0			
	(CAP/Male) SH Pre-stim vs Stim	15 files	Wilcoxon signed-rank test	6.10E-05				0			
	(CAP/Male) GH Stim vs SH Stim	15 files vs 15 files	Mann-Whitney U-test	0.4553	94		0.7466				24.109
	(CAP/Female) GH Pre-stim vs Stim	16 files	Wilcoxon signed-rank test	4.38E-04				0			
	(CAP/Female) SH Pre-stim vs Stim	16 files	Wilcoxon signed-rank test	2.93E-04				0			
	(CAP/Female) GH Stim vs SH Stim	16 files vs 16 files	Mann-Whitney U-test	0.50954	110		0.6596				26.533
	(CAP) GH male stim vs GH female stim	15 files vs 16 files	Mann-Whitney U-test	0.012071	56		2.5101				25.298
	(CAP) SH male stim vs SH female stim	15 files vs 16 files	Mann-Whitney U-test	0.040388	70		1.9567				25.298
S6B	(MAP/Male) GH Pre-stim vs Stim	10 files	Wilcoxon signed-rank test	2.00E-03				0			
	(MAP/Male) SH Pre-stim vs Stim	10 files	Wilcoxon signed-rank test	2.00E-03				0			
	(MAP/Male) GH Stim vs SH Stim	10 files vs 10 files	Mann-Whitney U-test	0.79134	46		0.2646				13.229
S6C	(fpC1/Female) GH Pre-stim vs Stim	15 files	Wilcoxon signed-rank test	6.10E-05				0			
	(fpC1/Female) SH Pre-stim vs Stim	17 files	Wilcoxon signed-rank test	2.93E-04				-3.621	0		
	(fpC1/Female) GH Stim vs SH Stim	15 files vs 17 files	Mann-Whitney U-test	0.2127	94		1.2462				26.481