

Supplemental data - two figures and thirteen tables

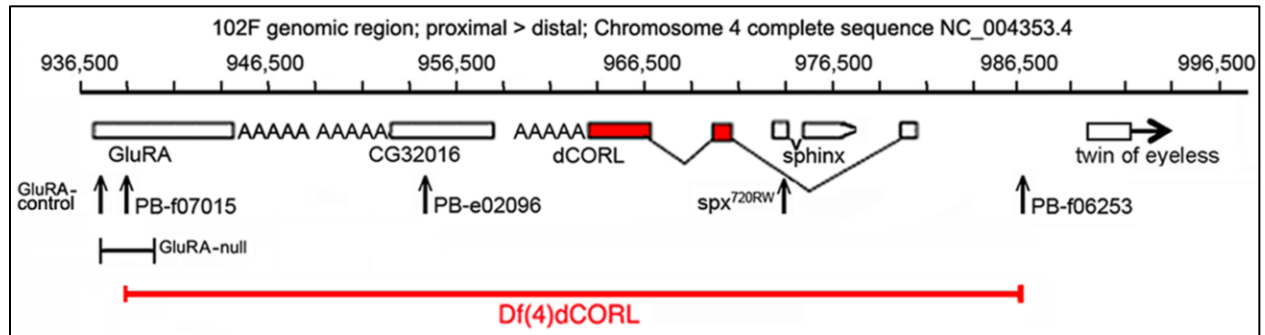


Fig. S1. *dCORL* genomic region displaying the *Df(4)dCORL* deletion and associated mutations. The *dCORL* cDNA (GenBank JX126878) is shown with exons shown as boxes (white - untranslated; red - protein coding). This cDNA is also known as isoformB (Genbank ACZ950983). *dCORL*, *Glu-RA* and *CG2316* transcript directions are shown by a poly-A tail. *sphinx* transcript direction and toy transcript direction (opposite from *dCORL*) are indicated by arrowheads. The only functional *dCORL* start site (as shown in reporter studies; Tran et al. 2018a) is located distal to *sphinx* at 986,265bp. The region precisely deleted via FLP-FRT mediated intrachromosomal recombination resulting in *Df(4)dCORL* is shown in red. The locations of the two FRT-bearing Piggy-bac insertions employed to generate *Df(4)dCORL*, a Piggy-bac insertion in *CG32016*, a splicing mutation in *sphinx* and two mutations impacting *Glu-RA* are also shown (*Glu-RA-control* is a precise excision and *Glu-RA-null* is a large deletion).

A. <i>dCORL</i>^{21B}		
572	597	1251 in frame 654bp deleted
I	I	I
GGCGCCATGCCAGTGAGTTCCCGAC.....ATGGCTCAACCGTCTTA		
B. <i>dCORL</i>^{23C}		
572	599	1250 in frame 651bp deleted
I	I	I
GGCGCCATGCCAGTGAGTTCCCGACGA.....CATGGCTCAACCGTCTTA		

Fig. S2. cDNA junction sequences from two CRISPR mutated *dCORL* alleles. Nucleotide numbers match GenBank. A) *dCORL*^{21B} is missing 654bp encoding an in frame loss of 218aa. B) *dCORL*^{23C} is missing 651bp encoding an in frame loss of 217aa.

Table S1. *Df(4)dCORL* 5 day old adults display defects in climbing speed and completion attributable to *dCORL* (data for Fig. 1 left column).

Dunnett's multiple comparisons test	Mean Diff.	95% CI of Diff.	Significant?	Summary	P Value
Average score Males					
Df(4)dCORL vs. PB-f07015	2.337	0.941 to 3.733	Yes	***	0.0003
Df(4)dCORL vs. PB-f06253	2.665	1.269 to 4.060	Yes	****	< 0.0001
Df(4)dCORL vs. Spx-720RW	2.525	1.130 to 3.921	Yes	****	< 0.0001
Df(4)dCORL vs. PB-e02096	0.779	-0.617 to 2.174	No	ns	0.4902
Df(4)dCORL vs. Glu-RAnull	0.971	-0.425 to 2.366	No	ns	0.2752
Df(4)dCORL vs. Glu-RAcontrol	1.364	-0.101 to 2.830	No	ns	0.0772
Df(4)dCORL vs. yw	2.081	0.7251 to 3.437	Yes	***	0.0007
Average score Females					
Df(4)dCORL vs. PB-f07015	3.791	2.655 to 4.927	Yes	****	< 0.0001
Df(4)dCORL vs. PB-f06253	4.035	2.899 to 5.171	Yes	****	< 0.0001
Df(4)dCORL vs. Spx-720RW	2.665	1.529 to 3.801	Yes	****	< 0.0001
Df(4)dCORL vs. PB-e02096	2.712	1.576 to 3.848	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAnull	2.822	1.686 to 3.957	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAcontrol	3.127	1.965 to 4.288	Yes	****	< 0.0001
Df(4)dCORL vs. yw	3.892	2.797 to 4.986	Yes	****	< 0.0001
Average Best score Males					
Df(4)dCORL vs. PB-f07015	2.075	0.738 to 3.411	Yes	***	0.0007
Df(4)dCORL vs. PB-f06253	2.039	0.702 to 3.375	Yes	***	0.0009
Df(4)dCORL vs. Spx-720RW	1.926	0.589 to 3.262	Yes	**	0.0019
Df(4)dCORL vs. PB-e02096	0.407	-0.929 to 1.743	No	ns	0.9209
Df(4)dCORL vs. Glu-RAnull	0.511	-0.826 to 1.847	No	ns	0.8145
Df(4)dCORL vs. Glu-RAcontrol	0.902	-0.464 to 2.269	No	ns	0.3235
Df(4)dCORL vs. yw	1.295	-0.005051 to	No	ns	0.0513
Average Best score Females					
Df(4)dCORL vs. PB-f07015	3.203	2.111 to 4.296	Yes	****	< 0.0001
Df(4)dCORL vs. PB-f06253	3.651	2.559 to 4.744	Yes	****	< 0.0001
Df(4)dCORL vs. Spx-720RW	2.176	1.084 to 3.269	Yes	****	< 0.0001
Df(4)dCORL vs. PB-e02096	1.906	0.814 to 2.999	Yes	***	0.0001
Df(4)dCORL vs. Glu-RAnull	2.471	1.379 to 3.564	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAcontrol	2.868	1.751 to 3.985	Yes	****	< 0.0001
Df(4)dCORL vs. yw	2.949	1.901 to 3.997	Yes	****	< 0.0001
Average failure rate Males					
Df(4)dCORL vs. PB-f07015	46.68	21.30 to 72.06	Yes	****	< 0.0001
Df(4)dCORL vs. PB-f06253	51.68	26.30 to 77.06	Yes	****	< 0.0001
Df(4)dCORL vs. Spx-720RW	43.35	17.97 to 68.73	Yes	***	0.0002
Df(4)dCORL vs. PB-e02096	43.34	17.96 to 68.72	Yes	***	0.0002
Df(4)dCORL vs. Glu-RAnull	46.67	21.30 to 72.05	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAcontrol	50.00	24.62 to 75.38	Yes	****	< 0.0001
Df(4)dCORL vs. yw	38.33	13.12 to 63.55	Yes	***	0.0008
Average failure rate Females					
Df(4)dCORL vs. PB-f07015	50.01	26.42 to 73.60	Yes	****	< 0.0001
Df(4)dCORL vs. PB-f06253	41.67	18.08 to 65.26	Yes	***	0.0001
Df(4)dCORL vs. Spx-720RW	45.00	21.41 to 68.59	Yes	****	< 0.0001
Df(4)dCORL vs. PB-e02096	45.01	21.42 to 68.61	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAnull	31.69	8.102 to 55.29	Yes	**	0.0041
Df(4)dCORL vs. Glu-RAcontrol	30.01	6.423 to 53.61	Yes	**	0.0071
Df(4)dCORL vs. yw	31.67	7.191 to 56.14	Yes	**	0.0056

Table S2. Df(4)dCORL 10 day old adults display defects only in climbing completion attributable to dCORL (data for Fig. 1 right column).

Dunnett's multiple comparisons test	Mean Diff.	95% CI of Diff.	Significant?	Summary	P Value
Average score Males					
Df(4)dCORL vs. PB-f07015	0.1670	-0.5346 to 0.8686	No	ns	0.9848
Df(4)dCORL vs. PB-f06253	0.3103	-0.3913 to 1.012	No	ns	0.7492
Df(4)dCORL vs. Spx-720RW	0.4416	-0.2600 to 1.143	No	ns	0.3963
Df(4)dCORL vs. PB-e02096	-0.1078	-0.8094 to 0.5938	No	ns	0.9978
Df(4)dCORL vs. Glu-RAnull	-0.1339	-0.8442 to 0.5764	No	ns	0.9949
Df(4)dCORL vs. Glu-RAcontrol	-0.2363	-0.9466 to 0.4740	No	ns	0.9167
Df(4)dCORL vs. yw	-0.02953	-0.7311 to 0.6721	No	ns	0.9999
Average score Females					
Df(4)dCORL vs. PB-f07015	0.4460	-0.1873 to 1.079	No	ns	0.2825
Df(4)dCORL vs. PB-f06253	0.1447	-0.4965 to 0.7858	No	ns	0.9890
Df(4)dCORL vs. Spx-720RW	0.5768	-0.05649 to 1.210	No	ns	0.0898
Df(4)dCORL vs. PB-e02096	-0.03673	-0.6779 to 0.6044	No	ns	0.9998
Df(4)dCORL vs. Glu-RAnull	-0.5774	-1.219 to 0.06370	No	ns	0.0957
Df(4)dCORL vs. Glu-RAcontrol	0.2750	-0.3582 to 0.9083	No	ns	0.7637
Df(4)dCORL vs. yw	0.5530	-0.08033 to 1.186	No	ns	0.1131
Average Best score Males					
Df(4)dCORL vs. PB-f07015	0.4111	-0.2925 to 1.115	No	ns	0.4758
Df(4)dCORL vs. PB-f06253	0.5166	-0.1870 to 1.220	No	ns	0.2437
Df(4)dCORL vs. Spx-720RW	0.6861	-0.01751 to 1.390	No	ns	0.0592
Df(4)dCORL vs. PB-e02096	0.0006110	-0.7030 to 0.7042	No	ns	> 0.9999
Df(4)dCORL vs. Glu-RAnull	0.2061	-0.4975 to 0.9097	No	ns	0.9542
Df(4)dCORL vs. Glu-RAcontrol	-0.05020	-0.7625 to 0.6621	No	ns	0.9997
Df(4)dCORL vs. yw	0.3421	-0.3615 to 1.046	No	ns	0.6653
Average Best score Females					
Df(4)dCORL vs. PB-f07015	0.5094	-0.09815 to 1.117	No	ns	0.1387
Df(4)dCORL vs. PB-f06253	0.1581	-0.4570 to 0.7732	No	ns	0.9765
Df(4)dCORL vs. Spx-720RW	0.7114	0.1038 to 1.319	Yes	*	0.0141
Df(4)dCORL vs. PB-e02096	0.02284	-0.5922 to 0.6379	No	ns	0.9999
Df(4)dCORL vs. Glu-RAnull	-0.4871	-1.095 to 0.1204	No	ns	0.1707
Df(4)dCORL vs. Glu-RAcontrol	0.2369	-0.3707 to 0.8444	No	ns	0.8395
Df(4)dCORL vs. yw	0.5899	-0.01765 to 1.197	No	ns	0.0609
Average failure rate Males					
Df(4)dCORL vs. PB-f07015	31.67	13.08 to 50.26	Yes	****	< 0.0001
Df(4)dCORL vs. PB-f06253	33.33	14.74 to 51.92	Yes	****	< 0.0001
Df(4)dCORL vs. Spx-720RW	30.00	11.41 to 48.59	Yes	***	0.0002
Df(4)dCORL vs. PB-e02096	28.33	9.745 to 46.92	Yes	***	0.0006
Df(4)dCORL vs. Glu-RAnull	33.33	14.74 to 51.92	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAcontrol	20.00	1.412 to 38.59	Yes	*	0.0291
Df(4)dCORL vs. yw	21.67	3.078 to 40.26	Yes	*	0.0147
Average failure rate Females					
Df(4)dCORL vs. PB-f07015	30.00	10.55 to 49.45	Yes	***	0.0005
Df(4)dCORL vs. PB-f06253	26.67	7.219 to 46.11	Yes	**	0.0025
Df(4)dCORL vs. Spx-720RW	30.00	10.55 to 49.45	Yes	***	0.0005
Df(4)dCORL vs. PB-e02096	21.67	2.219 to 41.11	Yes	*	0.0219
Df(4)dCORL vs. Glu-RAnull	20.00	0.5522 to 39.45	Yes	*	0.0410
Df(4)dCORL vs. Glu-RAcontrol	25.00	5.552 to 44.45	Yes	**	0.0054
Df(4)dCORL vs. yw	25.00	5.552 to 44.45	Yes	**	0.0054

Table S3. 5 and 10 day old *Df(4)dCORL* adults display persistent defects in phototaxis attributable to *dCORL* that are not due to a vision defect (data for Fig. 2).

Dunnett's multiple comparisons test	Mean Diff.	95% CI of Diff.	Significant?	Summary	P Value
Phototactic response Males 5 days old					
Df(4)dCORL vs. PB-f07015	-75.14	-84.01 to -66.27	Yes	****	< 0.0001
Df(4)dCORL vs. PB-f06253	-86.75	-95.62 to -77.87	Yes	****	< 0.0001
Df(4)dCORL vs. Spx-720RW	-81.44	-90.32 to -72.57	Yes	****	< 0.0001
Df(4)dCORL vs. PB-e02096	-68.89	-77.76 to -60.02	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAnull	-62.33	-71.21 to -53.46	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAcontrol	-63.89	-72.76 to -55.02	Yes	****	< 0.0001
Df(4)dCORL vs. yw	-72.56	-81.43 to -63.68	Yes	****	< 0.0001
Phototactic response Females 10 days old					
Df(4)dCORL vs. PB-f07015	-66.11	-75.60 to -56.62	Yes	****	< 0.0001
Df(4)dCORL vs. PB-f06253	-81.33	-90.83 to -71.84	Yes	****	< 0.0001
Df(4)dCORL vs. Spx-720RW	-77.92	-87.41 to -68.42	Yes	****	< 0.0001
Df(4)dCORL vs. PB-e02096	-63.53	-73.02 to -54.04	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAnull	-57.89	-67.39 to -48.40	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAcontrol	-61.18	-70.67 to -51.68	Yes	****	< 0.0001
Df(4)dCORL vs. yw	-66.67	-76.16 to -57.17	Yes	****	< 0.0001
Phototactic response Males 10 days old					
Df(4)dCORL vs. PB-f07015	-66.96	-76.93 to -56.99	Yes	****	< 0.0001
Df(4)dCORL vs. PB-f06253	-67.08	-77.05 to -57.11	Yes	****	< 0.0001
Df(4)dCORL vs. Spx-720RW	-68.07	-78.04 to -58.10	Yes	****	< 0.0001
Df(4)dCORL vs. PB-e02096	-76.30	-86.27 to -66.33	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAnull	-47.55	-57.52 to -37.58	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAcontrol	-53.41	-63.38 to -43.44	Yes	****	< 0.0001
Df(4)dCORL vs. yw	-48.90	-57.53 to -40.26	Yes	****	< 0.0001
Phototactic response Females 10 days old					
Df(4)dCORL vs. PB-f07015	-66.96	-75.59 to -58.33	Yes	****	< 0.0001
Df(4)dCORL vs. PB-f06253	-70.03	-78.66 to -61.40	Yes	****	< 0.0001
Df(4)dCORL vs. Spx-720RW	-71.22	-79.85 to -62.59	Yes	****	< 0.0001
Df(4)dCORL vs. PB-e02096	-67.47	-76.10 to -58.84	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAnull	-41.52	-50.15 to -32.89	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAcontrol	-48.18	-56.81 to -39.55	Yes	****	< 0.0001
Df(4)dCORL vs. yw	-51.36	-58.84 to -43.89	Yes	****	< 0.0001
Electroretinogram					
Unpaired 2-tailed Student's t test	t value	Degree Freedom	Significant?	Summary	P Value
Df(4)dCORL vs. Glu-RAcontrol	4.119	18	Yes	***	0.0006

Table S4. *Df(4)dCORL* males display social-context dependent plasticity in courtship index not attributable to *dCORL* (data for Fig. 3A).

Dunn's multiple comparisons test	Mean Diff.	Significant?	Summary	P Value
Courtship Index (5 day old males as singles prior to courtship)				
Df(4)dCORL vs. Canton-S	-33.08	No	ns	0.1544
Df(4)dCORL vs. yw	37.05	No	ns	0.0703
Df(4)dCORL vs. PB-f07015	46.65	No	ns	0.1763
Df(4)dCORL vs. Spx-720RW	-29.66	No	ns	0.3240
Df(4)dCORL vs. PB-e02096	35.23	No	ns	0.1574
Df(4)dCORL vs. Glu-RAcontrol	69.82	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAnull	15.56	No	ns	> 0.9999
Df(4)dCORL vs. PB-f06253	59.24	Yes	*	0.0125
Courtship Index (5 day old males in groups prior to courtship)				
Df(4)dCORL vs. Canton-S	-34.69	No	ns	0.3899
Df(4)dCORL vs. yw	61.04	Yes	***	0.0008
Df(4)dCORL vs. PB-f07015	68.37	Yes	****	< 0.0001
Df(4)dCORL vs. Spx-720RW	19.15	No	ns	> 0.9999
Df(4)dCORL vs. PB-e02096	104.40	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAcontrol	103.00	Yes	****	< 0.0001
Df(4)dCORL vs. Glu-RAnull	12.27	No	ns	> 0.9999
Df(4)dCORL vs. PB-f06253	103.10	Yes	****	< 0.0001
Courtship Index (5 day old males single vs. group)				
2-tailed Mann-Whitney test	U value	Significant?	Summary	P Value
Canton S	120.5	No	ns	0.0730
yw	0.0	Yes	****	< 0.0001
Df(4)dCORL	37.5	Yes	****	< 0.0001
PB-f07015	0.0	Yes	****	< 0.0001
Spx-720RW	48.5	Yes	****	< 0.0001
PB-e02096	0.0	Yes	****	< 0.0001
Glu-RAcontrol	6.0	Yes	****	< 0.0001
Glu-RAnull	21.0	Yes	****	< 0.0001
PB-f06253	0.0	Yes	****	< 0.0001

Table S5. *Df(4)dCORL* males display social-context dependent plasticity in time to orientation during courtship not attributable to *dCORL* (data for Fig. 3B).

Dunn's multiple comparisons test	Mean Diff.	Significant?	Summary	P Value
Orientation (5 day old males as singles prior to courtship)				
Df(4)dCORL vs. Canton-S	-8.247	No	ns	> 0.9999
Df(4)dCORL vs. yw	-13.81	No	ns	> 0.9999
Df(4)dCORL vs. PB-f07015	-50.89	No	ns	> 0.9999
Df(4)dCORL vs. Spx-720RW	13.04	No	ns	> 0.9999
Df(4)dCORL vs. PB-e02096	-86.58	Yes	***	0.0004
Df(4)dCORL vs. Glu-RAcontrol	-65.10	Yes	*	0.0254
Df(4)dCORL vs. Glu-RAnull	-25.48	No	ns	> 0.9999
Df(4)dCORL vs. PB-f06253	-81.64	Yes	*	0.0376
Orientation (5 day old males in groups prior to courtship)				
Df(4)dCORL vs. Canton-S	-19.14	No	ns	> 0.9999
Df(4)dCORL vs. yw	-68.56	Yes	***	0.0009
Df(4)dCORL vs. PB-f07015	-51.01	No	ns	0.0716
Df(4)dCORL vs. Spx-720RW	-52.78	Yes	*	0.0211
Df(4)dCORL vs. PB-e02096	-78.52	Yes	**	0.0019
Df(4)dCORL vs. Glu-RAcontrol	-80.70	No	ns	0.0964
Df(4)dCORL vs. Glu-RAnull	-29.02	No	ns	> 0.9999
Df(4)dCORL vs. PB-f06253	-65.21	No	ns	0.3503
Orientation (5 day old males single vs. group)				
2-tailed Mann-Whitney test	U value	Significant?	Summary	P Value
Canton S	110.0	Yes	*	0.0220
yw	62.0	Yes	****	< 0.0001
Df(4)dCORL	224.5	Yes	**	0.0088
PB-f07015	34.0	No	ns	0.612
Spx-720RW	49.5	Yes	****	< 0.0001
PB-e02096	34.5	Yes	**	0.0017
Glu-RAcontrol	23.5	Yes	*	0.0459
Glu-RAnull	80.0	Yes	**	0.0027
PB-f06253	13.00	No	ns	0.0682

Table S6. *Df(4)dCORL* larvae do not display defects in crawling speed (data for Fig. 4A,B).

Dunn's multiple comparisons test	Mean Diff.	Significant	Summary	P Value
Average score				
Df(4)dCORL vs. PB-f07015	36.06	No	ns	0.1874
Df(4)dCORL vs. PB-f06253	-35.12	No	ns	0.1725
Df(4)dCORL vs. Spx-720RW	22.17	No	ns	> 0.9999
Df(4)dCORL vs. PB-e02096	63.44	Yes	***	0.0003
Df(4)dCORL vs. Glu-RAnull	60.13	Yes	***	0.0002
Df(4)dCORL vs. Glu-RAcontrol	00.20	No	ns	> 0.9999
Average Best score				
Df(4)dCORL vs. PB-F07015	35.31	No	ns	0.1890
Df(4)dCORL vs. PB-F06253	-38.53	No	ns	0.0868
Df(4)dCORL vs. Spx-720RW	23.28	No	ns	0.8359
Df(4)dCORL vs. PB-e02096	57.70	Yes	**	0.0010
Df(4)dCORL vs. Glu-RAnull	58.85	Yes	***	0.0002
Df(4)dCORL vs. Glu-RAcontrol	02.75	No	ns	> 0.9999

Table S7. *Df(4)dCORL* larvae do not display defects in crawling distance (data for Fig. 4D).

Spearman Rank-Order Correlation	Spearman R	P value	Summary	Number of pairs
Df(4)dCORL vs. PB-f07015	0.174	0.700	ns	7
Df(4)dCORL vs. PB-f06253	0.590	0.195	ns	7
Df(4)dCORL vs. Spx-720RW	0.476	0.381	ns	7
Df(4)dCORL vs. PB-e02096	-0.132	0.676	ns	7
Df(4)dCORL vs. Glu-RAnull	-0.046	0.898	ns	7
Df(4)dCORL vs. Glu-RAcontrol	0.231	0.622	ns	7

Table S8. Two dCORL CRISPR mutations phenocopy *Df(4)dCORL* climbing defects for Average score (data for Fig. 6A).

Tukey's multiple comparisons test	Mean Diff.	95% CI of Diff.	Significant?	Summary	P Value
Average score Males 5 days old					
w-1118 vs. dCORL-4 control	0.005222	-1.294 to 1.305	No	ns	> 0.9999
w-1118 vs. dCORL-21B	-2.999	-4.298 to -1.699	Yes	****	< 0.0001
w-1118 vs. dCORL-23C	-2.493	-3.793 to -1.193	Yes	****	< 0.0001
dCORL-21B vs. dCORL-23C	0.5054	-0.7942 to 1.805	No	ns	0.9935
dCORL-21B vs. dCORL-4 control	3.004	1.704 to 4.303	Yes	****	< 0.0001
dCORL-23C vs. dCORL-4 control	2.498	1.199 to 3.798	Yes	****	< 0.0001
Average score Females 5 days old					
w-1118 vs. dCORL-4 control	0.4774	-0.8452 to 1.800	No	ns	0.9970
w-1118 vs. dCORL-21B	-2.672	-3.995 to -1.349	Yes	****	< 0.0001
w-1118 vs. dCORL-23C	-2.826	-4.149 to -1.504	Yes	****	< 0.0001
dCORL-21B vs. dCORL-23C	-0.1541	-1.454 to 1.146	No	ns	> 0.9999
dCORL-21B vs. dCORL-4 control	3.150	1.850 to 4.449	Yes	****	< 0.0001
dCORL-23C vs. dCORL-4 control	3.304	2.004 to 4.603	Yes	****	< 0.0001
Average score Males 10 days old					
w-1118 vs. dCORL-4 control	-0.1160	-1.416 to 1.184	No	ns	> 0.9999
w-1118 vs. dCORL-21B	0.08871	-1.234 to 1.411	No	ns	> 0.9999
w-1118 vs. dCORL-23C	-0.2744	-1.653 to 1.104	No	ns	> 0.9999
dCORL-21B vs. dCORL-23C	-0.3631	-1.763 to 1.037	No	ns	> 0.9999
dCORL-21B vs. dCORL-4 control	-0.2047	-1.527 to 1.118	No	ns	> 0.9999
dCORL-23C vs. dCORL-4 control	0.1584	-1.220 to 1.537	No	ns	> 0.9999
Average score Females 10 days old					
w-1118 vs. dCORL-4 control	-0.4090	-1.732 to 0.9136	No	ns	0.9995
w-1118 vs. dCORL-21B	0.7398	-0.6089 to 2.089	No	ns	0.8723
w-1118 vs. dCORL-23C	-0.1917	-1.540 to 1.157	No	ns	> 0.9999
dCORL-21B vs. dCORL-23C	-0.9315	-2.328 to 0.4645	No	ns	0.6140
dCORL-21B vs. dCORL-4 control	-1.149	-2.520 to 0.2221	No	ns	0.2211
dCORL-23C vs. dCORL-4 control	-0.2173	-1.588 to 1.154	No	ns	> 0.9999

Table S9. Two dCORL CRISPR mutations phenocopy *Df(4)dCORL* climbing defects for Average Best score (data for Fig. 6B).

Tukey's multiple comparisons test	Mean Diff.	95% CI of Diff.	Significant?	Summary	P Value
Average Best score Males 5 days old					
w-1118 vs. dCORL-4 control	-0.09533	-1.317 to 1.126	No	ns	> 0.9999
w-1118 vs. dCORL-21B	-3.161	-4.383 to -1.940	Yes	****	< 0.0001
w-1118 vs. dCORL-23C	-2.785	-4.007 to -1.564	Yes	****	< 0.0001
dCORL-21B vs. dCORL-23C	0.3760	-0.8453 to 1.597	No	ns	0.9995
dCORL-21B vs. dCORL-4 control	3.066	1.845 to 4.287	Yes	****	< 0.0001
dCORL-23C vs. dCORL-4 control	2.690	1.469 to 3.911	Yes	****	< 0.0001
Average Best score Females 5 days old					
w-1118 vs. dCORL-4 control	0.2107	-1.032 to 1.454	No	ns	> 0.9999
w-1118 vs. dCORL-21B	-2.987	-4.230 to -1.744	Yes	****	< 0.0001
w-1118 vs. dCORL-23C	-3.009	-4.252 to -1.766	Yes	****	< 0.0001
dCORL-21B vs. dCORL-23C	-0.0220	-1.243 to 1.199	No	ns	> 0.9999
dCORL-21B vs. dCORL-4 control	3.198	1.977 to 4.419	Yes	****	< 0.0001
dCORL-23C vs. dCORL-4 control	3.220	1.999 to 4.441	Yes	****	< 0.0001
Average Best score Males 10 days old					
w-1118 vs. dCORL-4 control	-0.1760	-1.419 to 1.067	No	ns	> 0.9999
w-1118 vs. dCORL-21B	-0.07446	-1.342 to 1.193	No	ns	> 0.9999
w-1118 vs. dCORL-23C	0.07817	-1.217 to 1.374	No	ns	> 0.9999
dCORL-21B vs. dCORL-23C	0.1526	-1.186 to 1.492	No	ns	> 0.9999
dCORL-21B vs. dCORL-4 control	-0.1015	-1.390 to 1.187	No	ns	> 0.9999
dCORL-23C vs. dCORL-4 control	-0.2542	-1.570 to 1.062	No	ns	> 0.9999
Average Best score Females 10 days old					
w-1118 vs. dCORL-4 control	-0.5973	-1.819 to 0.6240	No	ns	0.9458
w-1118 vs. dCORL-21B	0.1544	-1.113 to 1.422	No	ns	> 0.9999
w-1118 vs. dCORL-23C	-0.3926	-1.660 to 0.8748	No	ns	0.9995
dCORL-21B vs. dCORL-23C	-0.5469	-1.859 to 0.7649	No	ns	0.9870
dCORL-21B vs. dCORL-4 control	-0.7517	-2.019 to 0.5157	No	ns	0.7899
dCORL-23C vs. dCORL-4 control	-0.2048	-1.472 to 1.063	No	ns	> 0.9999

Table S10. Two dCORL CRISPR mutations phenocopy *Df(4)dCORL* climbing defects for Average Failures score (data for Fig. 6C).

Tukey's multiple comparisons test	Mean Diff.	95% CI of Diff.	Significant?	Summary	P Value
Average Failures score Males 5 days old					
w-1118 vs. dCORL-4 control	-2.222	-22.73 to 18.28	No	ns	0.9917
w-1118 vs. dCORL-21B	-31.11	-51.62 to -10.61	Yes	***	0.0010
w-1118 vs. dCORL-23C	-28.89	-49.39 to -8.384	Yes	**	0.0025
dCORL-21B vs. dCORL-23C	2.222	-18.28 to 22.73	No	ns	0.9917
dCORL-21B vs. dCORL-4 control	28.89	8.384 to 49.39	Yes	**	0.0025
dCORL-23C vs. dCORL-4 control	26.67	6.162 to 47.17	Yes	**	0.0059
Average Failures score Females 5 days old					
w-1118 vs. dCORL-4 control	4.444	-17.57 to 26.46	No	ns	0.9503
w-1118 vs. dCORL-21B	-26.67	-48.68 to -4.650	Yes	*	0.0116
w-1118 vs. dCORL-23C	-22.22	-44.24 to -0.2056	Yes	*	0.0471
dCORL-21B vs. dCORL-23C	4.444	-17.57 to 26.46	No	ns	0.9503
dCORL-21B vs. dCORL-4 control	31.11	9.094 to 53.13	Yes	**	0.0024
dCORL-23C vs. dCORL-4 control	26.67	4.650 to 48.68	Yes	*	0.0116
Average Failures score Males 10 days old					
w-1118 vs. dCORL-4 control	-24.44	-52.40 to 3.511	No	ns	0.1067
w-1118 vs. dCORL-21B	-24.44	-52.40 to 3.511	No	ns	0.1067
w-1118 vs. dCORL-23C	-31.11	-59.07 to -3.156	Yes	*	0.0235
dCORL-21B vs. dCORL-23C	-6.667	-34.62 to 21.29	No	ns	0.9215
dCORL-21B vs. dCORL-4 control	2.035e-006	-27.96 to 27.96	No	ns	> 0.9999
dCORL-23C vs. dCORL-4 control	6.667	-21.29 to 34.62	No	ns	0.9215
Average Failures score Females 10 days old					
w-1118 vs. dCORL-4 control	-15.56	-43.86 to 12.75	No	ns	0.4711
w-1118 vs. dCORL-21B	-6.667	-34.97 to 21.64	No	ns	0.9241
w-1118 vs. dCORL-23C	-17.78	-46.08 to 10.53	No	ns	0.3527
dCORL-21B vs. dCORL-23C	-11.11	-39.42 to 17.20	No	ns	0.7272
dCORL-21B vs. dCORL-4 control	-8.889	-37.20 to 19.42	No	ns	0.8393
dCORL-23C vs. dCORL-4 control	2.222	-26.08 to 30.53	No	ns	0.9968

Table S11. Two dCORL CRISPR mutations phenocopy *Df(4)dCORL* phototaxis defects (data for Fig. 6D).

Tukey's multiple comparisons test	Mean Diff.	95% CI of Diff.	Significant?	Summary	P Value
Phototactic response Males 5 days old					
w-1118 vs. dCORL-4 control	-4.667	-15.70 to 6.370	No	ns	0.6791
w-1118 vs. dCORL-21B	23.81	12.77 to 34.85	Yes	****	< 0.0001
w-1118 vs. dCORL-23C	33.81	22.77 to 44.85	Yes	****	< 0.0001
dCORL-21B vs. dCORL-23C	-10.00	-21.04 to 1.037	No	ns	0.0889
dCORL-21B vs. dCORL-4 control	28.48	17.44 to 39.51	Yes	****	< 0.0001
dCORL-23C vs. dCORL-4 control	38.48	27.44 to 49.51	Yes	****	< 0.0001
Phototactic response Females 5 days old					
w-1118 vs. dCORL-4 control	-19.54	-32.13 to -6.950	Yes	***	0.0007
w-1118 vs. dCORL-21B	24.22	11.63 to 36.81	Yes	****	< 0.0001
w-1118 vs. dCORL-23C	18.00	5.412 to 30.59	Yes	**	0.0021
dCORL-21B vs. dCORL-23C	6.222	-6.366 to 18.81	No	ns	0.5613
dCORL-21B vs. dCORL-4 control	43.76	31.17 to 56.35	Yes	****	< 0.0001
dCORL-23C vs. dCORL-4 control	37.54	24.95 to 50.13	Yes	****	< 0.0001
Phototactic response Males 10 days old					
w-1118 vs. dCORL-4 control	1.852	-7.792 to 11.50	No	ns	0.9576
w-1118 vs. dCORL-21B	22.03	12.39 to 31.67	Yes	****	< 0.0001
w-1118 vs. dCORL-23C	29.05	19.40 to 38.69	Yes	****	< 0.0001
dCORL-21B vs. dCORL-23C	-7.019	-18.15 to 4.117	No	ns	0.3533
dCORL-21B vs. dCORL-4 control	20.18	9.041 to 31.31	Yes	****	< 0.0001
dCORL-23C vs. dCORL-4 control	27.20	16.06 to 38.33	Yes	****	< 0.0001
Phototactic response Females 10 days old					
w-1118 vs. dCORL-4 control	-13.64	-25.69 to -1.598	Yes	*	0.0201
w-1118 vs. dCORL-21B	25.05	13.00 to 37.10	Yes	****	< 0.0001
w-1118 vs. dCORL-23C	23.68	11.63 to 35.73	Yes	****	< 0.0001
dCORL-21B vs. dCORL-23C	1.373	-12.54 to 15.28	No	ns	0.9938
dCORL-21B vs. dCORL-4 control	38.70	24.79 to 52.61	Yes	****	< 0.0001
dCORL-23C vs. dCORL-4 control	37.32	23.41 to 51.23	Yes	****	< 0.0001

Table S12. Quantification of age-dependent plasticity for climbing defects in two dCORL CRISPR mutations (data for Fig. 7. A,B,C).

2-tailed unpaired Student's t test	t value, dg fr*	Significant?	Summary	P Value
Average score Males (improvement of 10 day olds vs 5 day olds)				
w-1118	t=0.418 df=28	No	ns	0.6792
dCORL-4 control	t=0.037 df=28	No	ns	0.9706
dCORL-21B	t=9.846 df=27	Yes	****	< 0.0001
dCORL-23C	t=6.639 df=25	Yes	****	< 0.0001
Df(4)dCORL	t=7.693 df=23	Yes	****	< 0.0001
Average score Females (improvement of 10 day olds vs 5 day olds)				
w-1118	t=0.433 df=27	No	ns	0.0668
dCORL-4 control (got worse)	t=2.768 df=27	No	ns	0.1010
dCORL-21B	t=6.819 df=26	Yes	****	< 0.0001
dCORL-23C	t=6.639 df=25	Yes	****	< 0.0001
Df(4)dCORL	t=10.47 df=23	Yes	****	< 0.0001
Average Best score Males (improvement of 10 day olds vs 5 day olds)				
w-1118	t=0.240 df=28	No	ns	0.8121
dCORL-4 control	t=0.044 df=27	No	ns	0.9652
dCORL-21B	t=7.432 df=26	Yes	****	< 0.0001
dCORL-23C	t=6.608 df=26	Yes	****	< 0.0001
Df(4)dCORL	t=2.530 df=23	Yes	*	0.0187
Average Best score Females (improvement of 10 day olds vs 5 day olds)				
w-1118	t=0.206 df=27	No	ns	0.8384
dCORL-4 control (got worse)	t=2.198 df=28	Yes	*	0.0364
dCORL-21B	t=6.608 df=26	Yes	****	< 0.0001
dCORL-23C	t=7.974 df=26	Yes	****	< 0.0001
Df(4)dCORL	t=6.928 df=23	Yes	****	< 0.0001
Average Failures Males (improvement of 10 day olds vs 5 day olds)				
w-1118	t=0.390 df=28	No	ns	0.6994
dCORL-4 control (got worse)	t=1.275 df=28	No	ns	0.2128
dCORL-21B	t=2.198 df=28	Yes	*	0.0364
dCORL-23C	t=2.315 df=28	Yes	*	0.0282
Df(4)dCORL	t=1.050 df=28	No	ns	0.3025
Average Falures Females (improvement of 10 day olds vs 5 day olds)				
w-1118	t=2.3e-7 df=28	No	ns	>0.9999
dCORL-4 control (got worse)	t=1.877 df=28	No	ns	0.0710
dCORL-21B	t=0.4350 df=28	No	ns	0.6120
dCORL-23C	t=2.369 df=28	Yes	*	0.0249
Df(4)dCORL	t=0.9880 df=28	No	ns	0.3316

* degrees of freedom

Table S13. Two dCORL CRISPR mutations display longevity defects that are not as severe as *Df(4)dCORL* (data for Fig. 7D).

Virgin Males			Mated Males		
Genotype	Mean Lifespan	P-value vs. dCORL-4	Genotype	Mean Lifespan	P-value vs. dCORL-4
Df(4)dCORL	15.33+/-07.91	9.53E-46	Df(4)dCORL	21.17+/-10.64	1.92E-36
dCORL-4	79.92+/-26.39	n/a	dCORL-4	65.28+/-21.51	n/a
dCORL-21B	49.38+/-20.40	1.30E-16	dCORL-21B	57.52+/-24.01	0.021
dCORL-23C	64.61+/-20.83	1.27E-05	dCORL-23C	63.02+/-29.55	0.557
Virgin Females			Mated Females		
Df(4)dCORL	16.70+/-09.05	1.45E-51	Df(4)dCORL	23.76+/-13.00	4.06E-37
dCORL-4	85.65+/-25.23	n/a	dCORL-4	67.28+/-21.82	n/a
dCORL-21B	57.32+/-15.50	2.19E-17	dCORL-21B	47.37+/-21.78	1.18E-9
dCORL-23C	71.78+/-18.05	1.87E-5	dCORL-23C	53.65+/-26.32	1.70E-4