

Table S1. The Madds of mutants recovered in the forward genetic screen						
A	Genotype	Muscle arm # (dorsal right)*	Muscle arm # (ventral left) <sup>†</sup>	Dorsal comms (%) <sup>‡</sup>	P-value <sup>§</sup>	
1	control( <i>trls30</i> )	3.7±0.2	3.3±0.17	18.4±0.67		
2	<i>rrf-3(pk1426)</i>	3.7±0.2	3.1±0.1	16.5±0.4	0.22 (1)	
<i>gex-2</i>						
3	<i>tr116</i>	2.7±0.2	2.5±0.1	16.1±0.4	<0.001 (1)	
4	<i>tr116/+</i>	4.0±0.2	3.1±0.1	—	—	
5	<i>ok1603</i>	2.2±0.1	2.3±0.1	18.7±0.5	<0.001 (1)	
6	<i>ok1603/+</i>	3.9±0.1	3.2±0.2	—	—	
7	<i>tr116/ok1603</i>	2.9±0.2	2.2±0.2	—	<0.001 (1)	
8	<i>gex-2(RNAi); rrf-3(pk1426)</i>	1.8±0.2	1.8±0.1	7.9±0.5	<0.001 (2)	
9	<i>gex-2(ok1603); Ex[him-4p::GEX-2::YFP] line 1</i>	—	3.1±0.2 (n15)	—	0.18 (1)	
10	<i>gex-2(ok1603); Ex[him-4p::GEX-2::YFP] line 2</i>	—	2.9±0.2 (n15)	—	0.05 (1)	
11	<i>unc-40(n324); gex-2(ok1603)</i>	0.27±0.08	0.40±0.10	5.97±0.37	0.40 (26)	
<i>unc-33</i>						
12	<i>tr114</i>	2.1±0.2 (n23)	3.0±0.2 (n21)	15.7±0.6	0.11 (1)	
13	<i>tr114/+</i>	3.8±0.1 (n27)	3.3±0.2 (n28)	—	—	
14	<i>e204/+</i>	3.8±0.2	3.1±0.1	—	—	
15	<i>tr114/e204</i>	2.5±0.3	2.9±0.2 (n8)	—	0.11 (1)	
16	<i>mn407</i>	1.2±0.1	2.4±0.1	14.5±0.5	<0.001 (1)	
17	<i>mn407/+</i>	4.3±0.2	3.4±0.1	—	—	
18	<i>tr114/mn407</i>	1.8±0.2 (n=16)	2.8±0.5 (n=4)	—	0.14 (1)	
19	<i>unc-40(n324); unc-33(tr114)</i>	0.33±0.09	0.33±0.11	3.37±0.32	0.41 (26)	
<i>unc-40</i>						
20	<i>tr63</i>	0.8±0.1	0.8±0.1	9.0±0.4	<0.001 (1)	
21	<i>tr63/+</i>	3.3±0.1	2.8±0.2	—	—	
22	<i>tr115</i>	0.5±0.1	0.5±0.1	10.9±0.4	<0.001 (1)	
23	<i>tr115/+</i>	3.5±0.1	3.0±0.2	—	—	
24	<i>tr121</i>	1.2±0.1	1.4±0.1	14.6±0.5	<0.001 (1)	
25	<i>tr121/+</i>	3.5±0.1	3.2±0.1	—	—	
26	<i>n324</i>	0.37±0.13	0.37±0.09	3.90±0.31	<0.001 (1)	
27	<i>n324/+</i>	3.6±0.3 (n10)	2.8±0.3 (n8)	—	—	
28	<i>tr63/n324</i>	0.4±0.1 (n23)	0.8±0.1 (n26)	—	<0.001 (1)	
29	<i>tr115/n324</i>	0.2±0.1 (n27)	0.5±0.1 (n27)	—	<0.001 (1)	
30	<i>tr121/n324</i>	1.2±0.1 (n15)	1.3±0.2 (n10)	—	<0.001 (1)	
31	<i>trls34(him-4p::UNC-40::YFP)</i>	4.5±0.3	4.2±0.2	—	0.0036 (1)	
32	<i>unc-40(n324); trls34</i>	2.9±0.3	3.6±0.2	—	0.075 (1)	
33	<i>unc-40(n324); Ex[controlJ#1</i>	0.4±0.1	0.5±0.1	5.9±0.3	0.25 (26)	
34	<i>unc-40(n324); Ex[controlJ#2</i>	0.4±0.1	0.3±0.1	5.0±0.4	0.30 (26)	
35	<i>unc-40 (n324); Ex[him-4p::UNC-40::YFP]#1</i>	3.6±0.3	3.6±0.2	—	<0.001 (26)	
36	<i>unc-40 (n324); Ex[him-4p::UNC-40::YFP]#2</i>	3.3±0.3	3.4±0.2	—	<0.001 (26)	
37	<i>unc-40 (n324); Ex[unc-119p::UNC-40::GFP]#1</i>	1.0±0.2	0.6±0.1	18.5±0.7	0.06 (26)	
38	<i>unc-40 (n324); Ex[unc-119p::UNC-40::GFP]#2</i>	0.7±0.1	0.7±0.1	19.1±0.5	0.02 (26)	
<i>unc-51</i>						
39	<i>tr126</i>	0.8±0.1	2.6±0.2 (n23)	—	<0.01 (1)	
40	<i>tr126/+</i>	4.6±0.2	3.1±0.1	—	—	
41	<i>e369/+</i>	4.6±0.3	3.9±0.2 (n14)	—	—	
42	<i>tr126/e369</i>	0.6±0.1	2.3±0.2 (n14)	—	<0.001 (1)	
43	<i>e1189</i>	0.6±0.1	2.9±0.2	2.9±0.3	0.09 (1)	
44	<i>e1189/+</i>	3.9±0.2	3.1±0.1 (n15)	—	—	
45	<i>tr126/e1189</i>	0.7±0.2	2.3±0.3 (n6)	—	0.01 (1)	
B	Genotype	Muscle arm # (dorsal right)*	Muscle arm # (ventral left) <sup>†</sup>	Dorsal comms (%) <sup>‡</sup>	P-value <sup>§</sup>	
1	control( <i>trls30</i> )	3.7±0.2	3.3±0.2	18.4±0.67		
2	<i>rrf-3(pk1426)</i>	3.7±0.2	3.1±0.1	16.5±0.4	0.22 (1)	
<i>unc-54</i>						
46	<i>tr112</i>	2.3±0.2	1.6±0.1	14.9±0.4	<0.001 (1)	
47	<i>tr112/+</i>	—	3.9±0.1	—	—	
48	<i>tr124</i>	2.4±0.1	1.7±0.1	14.6±0.5	<0.001 (1)	
49	<i>tr124/+</i>	—	3.4±0.1	—	—	
50	<i>e190</i>	2.4±0.1	1.7±0.1	15.1±0.4	<0.001 (1)	
51	<i>e190/+</i>	—	3.3±0.1	—	—	
52	<i>tr112/e190</i>	—	1.6±0.1	—	<0.001 (1)	
53	<i>tr124/e190</i>	—	1.6±0.1	—	<0.001 (1)	
<i>unc-60B</i>						
54	<i>tr50</i>	1.2±0.1	1.1±0.1	15.6±0.5	<0.001 (1)	
55	<i>tr50/+</i>	—	3.7±0.1	—	—	
56	<i>tr125</i>	1.9±0.1	1.5±0.1	15.3±0.5	<0.001 (1)	
57	<i>tr125/+</i>	—	3.7±0.1	—	—	
58	<i>su158</i>	1.5±0.1	1.6±0.1	15.2±0.4	<0.001 (1)	
59	<i>su158/+</i>	—	3.8±0.1	—	—	
60	<i>tr50/su158</i>	—	1.5±0.1	—	<0.001 (1)	

61	tr125/su158	-	2.0±0.1	-	<0.001 (1)
<b>unc-73</b>					
62	tr117	1.4±0.1	1.5±0.1	13.2±0.42	<0.001 (1)
63	tr117/+	3.4±0.2	2.9±0.1	-	-
64	e936	1.5±0.1	1.9±0.2	6.6±2.1	<0.001 (1)
65	e936/+	3.8±0.2	3.5±0.1	-	-
66	tr117/e936	1.6±0.3	1.7±0.2	-	<0.001 (1)
67	tr117/n324	2.6±0.2 (n14)	2.6±0.3 (n13)	-	<0.01 (1)
68	tr117/tr121	3.0±0.1 (n27)	2.7±0.2 (n29)	-	<0.01 (1)
69	unc-73(e936); Ex[him-4p::UNC-73::CFP] line 1	3.3±0.3	3.3±0.2	-	<0.001 (64)
70	unc-73(e936); Ex[him-4p::UNC-73::CFP] line 2	4.1±0.3	4.3±0.2	-	<0.001 (64)
71	unc-73(e936); Ex[unc-119p::UNC-73::CFP]line 1	1.9±0.2	1.6±0.2	-	0.06 (64)
<b>unc-93<sup>d</sup></b>					
72	tr120	1.3±0.1	1.7±0.1	17.3±0.6	<0.001 (1)
73	tr120/+	3.6±0.1	3.9±0.1	-	-
74	e1500	2.4±0.2	2.6±0.2	16.1±0.6	0.003 (1)
75	e1500/+	3.8±0.2	3.9±0.2	-	-
76	tr120/e1500	1.7±0.3	1.5±0.3 (n6)	-	<0.001 (1)
77	e1500n234	3.1±0.2	3.3±0.1	18.3±0.5	0.21 (1)
<b>unc-95</b>					
78	tr60	2.7±0.2	1.7±0.1	16.3±0.4	<0.001 (1)
79	tr60/+	-	3.4±0.1	-	-
80	su33	2.2±0.1	1.7±0.1	16.7±0.4	<0.001 (1)
81	su33/+	-	3.7±0.1 (n29)	-	-
82	tr60/su33	-	1.4±0.1	-	<0.001 (1)
83	unc-40(n324) unc-95(su33)	0.30±0.10	0.47±0.11	5.90±0.27	0.25 (26)
<b>Mutants not yet cloned</b>					
84	tr98	3.1±0.2	2.0±0.1 (n27)	20.4±0.6	<0.001 (1)
85	tr105	1.8±0.2	3.1±0.1	4.3±0.3	0.186 (1)
86	tr119	1.9±0.1	2.3±0.1	16.0±0.4	<0.001 (1)
87	tr123	3.4±0.2	2.4±0.1	20.3±0.7	<0.001 (1)
<b>C</b>					
Genotype		Muscle arm # (dorsal right)*	Muscle arm # (ventral left) <sup>†</sup>	Dorsal comm <sup>s</sup> (%) <sup>‡</sup>	P-value <sup>§</sup>
1	control(trls30)	3.7±0.2	3.3±0.2	18.4±0.67	
2	rrf-3(pk1426)	3.7±0.2	3.1±0.1	16.5±0.4	0.22 (1)
26	n324	0.37±0.13	0.37±0.09	3.90±0.31	-
88	RNAi negative control	-	3.7±0.1	-	0.22 (1)
<b>Other components</b>					
89	unc-5(e53)	0.2±0.1	3.4±0.1	0.0±0.2	0.26 (1)
91	unc-6(ev400)	0.2±0.1	3.6±0.2	0.0±0.0	0.19 (1)
91	unc-6(e78)	0.3±0.1	3.2±0.2	0.1±0.0	0.38 (1)
92	gex-3(zu196)	2.4±0.1	2.4±0.2 (n15)	15.9±0.4	<0.01 (1)
93	rrf-3(pk1426); gex-3(RNAi)	2.2±0.2	1.9±0.1	8.3±0.5	<0.001 (2)
94	unc-40(n324); gex-3(zu196)	0.1±0.1	0.33±0.1	5.6±0.4	0.41 (12)
95	rrf-3(pk1426); wve-1(RNAi)	2.0±0.2	1.9±0.2	9.9±0.5	<0.001 (2)
96	unc-40(n324); rrf-3(pk1426); wve-1(RNAi)	0.4±0.1	0.47±0.1	4.77±0.36	0.26 (26)
97	wsp-1(RNAi) <sup>¶</sup>	-	3.3±0.1	-	0.02 (88)
98	wsp-1(gm324)	3.3±0.1	3.3±0.1	-	0.45 (1)
99	rrf-3(pk1426); wsp-1(RNAi)	-	3.5±0.1	-	0.32 (2)
100	unc-89(e1460)	3.4±0.1	3.6±0.1	-	0.06 (1)
101	unc-97(su110)	2.3±0.1	1.8±0.1	16.7±0.5	<0.001 (1)
102	unc-98(su130)	3.0±0.2	2.5±0.1	20.0±0.5	<0.001 (1)
103	unc-40(n324); eva-1(ok1133)	0.17±0.07	0.13±0.06	3.83±0.37	0.0186 (2)

This table does not include information on *madd-2*, which will be published elsewhere. All counts were performed on young adults raised at 20°C.

\*The average number of muscle arms from dorsal right muscle number 15 (n=30, unless otherwise indicated).

<sup>†</sup>The average number of muscle arms from ventral left muscle number 11 (n=30, unless otherwise indicated).

<sup>‡</sup>The percentage of commissural axons on the right side that reach the dorsal nerve (n=30 animals).

<sup>§</sup>The P-value of the difference in the number of muscle arms for ventral left muscle number 11 in the experimental versus the control data point in the indicated row (in brackets). A Mann-Whitney test was used to derive P-values. –, not determined.

<sup>¶</sup>The muscle arm numbers of trls30; wsp-1(RNAi) animals were examined in parallel to treating trls30; unc-34(e566) animals with the same batch of *wsp-1(RNAi)*, which is used as a positive control for *wsp-1(RNAi)* activity as the *wsp-1(RNAi)*-treated trls30; unc-34(e566) animals produced a synthetic lethal phenotype, as predicted (Withee et al., 2004).