

S2 Table. Strains used in this study**Mutant and integrated transgenic strains**

Strain name	Genotype	Comment
N2	Wild type	Obtained from the CGC
CB120	<i>unc-4(e120) II</i>	Obtained from the CGC
MT6308	<i>eat-4(ky5) III</i>	Obtained from the CGC
LX748	<i>osm-9(ky10) ocr-2(ak47) IV</i>	Obtained from the CGC
CB1472	<i>mec-6(e1342) I</i>	Obtained from the CGC
TR2170	<i>unc-68(r1161) V</i>	Obtained from the CGC
DAG356	<i>domIs355[mec-3p::QF, mec-4p::QS, QUAS::CoChR::GFP, unc122p::RFP]</i>	[<i>FLP::CoChR</i>] FLP optogenetic background, used as background for the mutagenesis screen
DAG411	<i>domIs355; eat-4 (ky5) III</i>	<i>eat-4 (ky5)</i> mutant in FLP optogenetic background
DAG502	<i>domIs355; unc-14(dom8) I</i>	New mutant from the screen in FLP optogenetic background, 3x backcrossed with the parental line DAG356
DAG503	<i>domIs355; unc-4(dom9) II</i>	New mutant from the screen in FLP optogenetic background, 3x backcrossed with the parental line DAG356
DAG505	<i>domIs355 ; syd-2(dom11) X</i>	New mutant from the screen in FLP optogenetic background, 3x backcrossed with the parental line DAG356
DAG506	<i>domIs355; unc-83(dom12) V</i>	New mutant from the screen in FLP optogenetic background, 3x backcrossed with the parental line DAG356
DAG515	<i>domIs355; unc-68(dom13) V</i>	New mutant from the screen in FLP optogenetic background, 3x backcrossed with the parental line DAG356
DAG517	<i>domIs355; eat-4(dom15) III</i>	New mutant from the screen in FLP optogenetic background, 3x backcrossed with the parental line DAG356
DAG618	<i>domIs355;unc-68(r1161) V</i>	<i>unc-68(r1161)</i> mutant in FLP optogenetic background

DAG658	<i>domIs355 ; zwIs100[rab-3p::Myc::ryr-1 + myo-3p::GFP];unc-68 (r1161)</i>	<i>unc-68(r1161)</i> mutant in FLP optogenetic background with neuronal rescue transgene
DAG680	<i>domIs355; zwIs108[myo-3p::Myc::ryr-1 + myo-3p::GFP];unc-68(r1161)</i>	<i>unc-68 (r1161)</i> mutant in FLP optogenetic background with muscle rescue transgene
PHX212	<i>unc-68 (syb212) V</i>	<i>unc-68(syb212)</i> UNC-68 G4996D mutation made by genome editing (SunyBiotech, China)
DAG476	<i>domIs355[mec-3p::QF, mec-4p::QS, QUAS::CoCHR, unc122p::RFP]; domSi453[mec-3p::cmk-1::mNeonGreen::3xFlag::unc-54UTR]</i>	Reporter for <i>mec-3</i> expression and FLP morphology evaluation
DAG477	<i>domIs355[mec-3p::QF, mec-4p::QS, QUAS::CoCHR, unc122p::RFP]; domSi453[mec-3p::cmk-1::mNeonGreen::3xFlag::unc-54UTR];unc-4(dom9)</i>	Reporter for <i>mec-3</i> expression and FLP morphology evaluation
DAG479	<i>domIs355[mec-3p::QF, mec-4p::QS, QUAS::CoCHR, unc122p::RFP]; domSi453[mec-3p::cmk-1::mNeonGreen::3xFlag::unc-54UTR];unc-68(dom13)</i>	Reporter for <i>mec-3</i> expression and FLP morphology evaluation
DAG485	<i>domIs355[mec-3p::QF, mec-4p::QS, QUAS::CoCHR, unc122p::RFP]; domSi453[mec-3p::cmk-1::mNeonGreen::3xFlag::unc-54UTR];unc-83(dom12)</i>	Reporter for <i>mec-3</i> expression and FLP morphology evaluation
DAG498	<i>domIs355[mec-3p::QF, mec-4p::QS, QUAS::CoCHR, unc122p::RFP]; domSi453[mec-3p::cmk-1::mNeonGreen::3xFlag::unc-54UTR];unc-14(dom8)</i>	Reporter for <i>mec-3</i> expression and FLP morphology evaluation
DAG500	<i>domIs355[mec-3p::QF, mec-4p::QS, QUAS::CoCHR, unc122p::RFP]; domSi453[mec-3p::cmk-1::mNeonGreen::3xFlag::unc-54UTR];syd-2(dom11)</i>	Reporter for <i>mec-3</i> expression and FLP morphology evaluation

DAG483	<i>dom1s355[mec-3p::QF, mec-4p::QS, QUAS::CoCHR, unc122p::RFP]; domSi453[mec-3p::cmk-1::mNeonGreen::3xFlag::unc-54UTR]; eat-4(dom15)</i>	Reporter for <i>mec-3</i> expression and FLP morphology evaluation
DAG871	<i>unc-14(dom8) I</i>	New mutant from the screen outcrossed to wild type background
DAG872	<i>unc-4(dom9) II</i>	New mutant from the screen outcrossed to wild type background
DAG873	<i>syd-2(dom11) X</i>	New mutant from the screen outcrossed to wild type background
DAG874	<i>unc-68(dom13) V</i>	New mutant from the screen outcrossed to wild type background
DAG875	<i>eat-4(dom15) III</i>	New mutant from the screen outcrossed to wild type background
DAG882	<i>unc-83(dom12) V</i>	New mutant from the screen outcrossed to wild type background
AQ2235	<i>lite-1(ce314); ljls114[Pgpa-13::FLPase, Psra6::FTF::Chr2::YFP] X</i>	New mutant from the screen in [ASH:Chr2] optogenetic background
DAG814	<i>lite-1(ce314); ljls114[Pgpa-13::FLPase, Psra6::FTF::Chr2::YFP] X; unc-68(r1161) V</i>	New mutant from the screen in [ASH:Chr2] optogenetic background
DAG919	<i>lite-1(ce314); ljls114[Pgpa-13::FLPase, Psra-6::FTF::Chr2::YFP] X ; eat-4(ky5)III</i>	New mutant from the screen in [ASH:Chr2] optogenetic background
DAG920	<i>lite-1(ce314); ljls114[Pgpa-13::FLPase, Psra-6::FTF::Chr2::YFP] X; unc-68(dom13) V</i>	New mutant from the screen in [ASH:Chr2] optogenetic background
DAG921	<i>lite-1(ce314); ljls114[Pgpa-13::FLPase, Psra-6::FTF::Chr2::YFP] X; unc-4(dom9) II</i>	New mutant from the screen in [ASH:Chr2] optogenetic background
DAG922	<i>lite-1(ce314); ljls114[Pgpa-13::FLPase, Psra-6::FTF::Chr2::YFP] X; unc-83(dom12) V</i>	New mutant from the screen in [ASH:Chr2] optogenetic background
DAG923	<i>lite-1(ce314); ljls114[Pgpa-13::FLPase, Psra-6::FTF::Chr2::YFP] X; unc-14(dom8) I</i>	New mutant from the screen in [ASH:Chr2] optogenetic background
DAG970	<i>lite-1(ce314); ljls114[Pgpa-13::FLPase, Psra-6::FTF::Chr2::YFP] syd-2(dom11) X</i>	New mutant from the screen in [ASH:Chr2] optogenetic background

Strains carrying non-integrated extra-chromosomal arrays

Strain	Genotype	Comment
DAG624-625	<i>domIs355; unc-14(dom8) I; domEx624-625[unc-14p::unc 14CDS::SL2::mCherry, unc122p::GFP]</i>	<i>unc-14(dom8)</i> rescue with the endogenous <i>unc-14</i> promoter driving <i>unc-14</i> coding sequence (CDS)
DAG609	<i>domIs355; unc-4(dom9) II; domEx609[unc-4p::unc-4CDS::SL2::mCherry::unc122p::GFP]</i>	<i>unc-4(dom9)</i> rescue with the endogenous <i>unc-4</i> promoter driving <i>unc-4</i> coding sequence (CDS)
DAG629-630	<i>domIs355; syd-2(dom11) X; domEx629-630[syd-2p::syd2CDS::SL2::mCherry, unc122p::GFP]</i>	<i>syd-2(dom11)</i> rescue with the endogenous <i>syd-2</i> promoter driving <i>syd-2</i> coding sequence (CDS)
DAG631-632	<i>domIs355; unc-83(dom12) V; domEx631-632[W01A11cosmid, unc122p::GFP]</i>	<i>unc-83(dom12)</i> rescue with <i>unc-83</i> cosmid W01A11
DAG638/688	<i>domIs355; unc-68(dom13) V; domEx638/688[WRM069cA02fosmid, unc122p::GFP]</i>	<i>unc-68(dom13)</i> rescue with <i>unc-68</i> fosmid WRM069cA02
DAG952	<i>domIs355; eat-4(dom15) III; domEx952(F23K23 fosmid, unc122p::GFP)</i>	<i>eat-4(dom15)</i> rescue with <i>eat-4</i> fosmid F23K23
DAG787-788/861	<i>domIs355; unc68(r1161) V; domEx787-788/861[unc-68p_QF,SL2mCherry_ unc122p::GFP];QUAS_ unc-68fosmid(exon1(fs))</i>	<i>unc-68(r1161)</i> rescue with frameshift <i>unc-68</i> fosmid driven by <i>unc-68</i> promoter
DAG869	<i>domIs355; unc-68(r1161) V; domEx869[mec-3p::QF::SL2::mCherry, unc122p::GFP]; domEx681[QUAS_ unc-68fosmid]</i>	<i>unc-68(r1161)</i> rescue with <i>unc-68</i> fosmid driven by <i>mec-3</i> promoter
DAG683-684	<i>domIs355 ; unc-68(r1161) V; domEx683-684[WRM069cA02fosmid_ unc122p::GFP]</i>	<i>unc-68 (r1161)</i> rescue with fosmid WRM069cA02
DAG778-779	<i>domIs355; domEx778-779[unc-68p_ unc-68 RNAisense,SL2mCherry_ unc122p::GFP]</i>	<i>unc-68</i> RNAi sense control with <i>unc-68</i> promoter
DAG780-781	<i>domIs355; domEx778-779[mec-3p_ unc-68 RNAisense,SL2mCherry_ unc122p::GFP]</i>	<i>unc-68</i> RNAi sense control with <i>mec-3</i> promoter
DAG832-834	<i>domIs355]; domEx832-834[mec-3p::unc-68RNAi_sense::SL2mCherry, mec-3p::unc-68RNAi_antisense::SL2mCherry, unc122p::GFP]</i>	<i>unc-68</i> RNAi double-strand with <i>mec-3</i> promoter

DAG837-839	<i>domIs355; domEx837-839[unc-68p::unc-68RNAi_sense::SL2mCherry, unc-68p::unc-68RNAi_antisense::SL2mCherry, unc122p::GFP]</i>	<i>unc-68</i> RNAi double-strand with <i>unc-68</i> promoter
AQ2145	<i>ljEx19[pegl-46::YC2.3 lin-15(+)]</i>	Calcium response assessment
DAG815	<i>ljEx19[pegl-46::YC2.3 lin-15(+)]; unc-68(dom13) V</i>	Calcium response assessment
DAG747	<i>ljEx19[pegl-46::YC2.3 lin-15(+)]; unc-68(r1161) V</i>	Calcium response assessment
DAG960-961	<i>domSi439[mec3p::cmk1::mNeonGreen::3xFlag::unc-4UTR] II; domEx960961[rab-3_1208prom::NLSegl-13::wrmScarlet::unc-54UTR]</i>	<i>rab-3p</i> expression reporter in red with FLP identification in green
DAG1071-1072	<i>domIs355; unc-14(dom8) I; domEx1071-1072[mec-3p::unc-14CDS::SL2::mCherry, unc122p::GFP]</i>	<i>unc-14(dom8)</i> rescue with <i>mec-3</i> promoter driving <i>unc-14</i> coding sequence (CDS)
DAG1082-1083	<i>domIs355; unc-4(dom9) II; domEx1082-1083[mec-3p::unc-4CDS::SL2::mCherry::unc122p::GFP]</i>	<i>unc-4(dom9)</i> rescue with <i>mec-3</i> promoter driving <i>unc-4</i> coding sequence (CDS)
DAG1070; DAG1073-1074	<i>domIs355; syd-2(dom11) X; domEx1070;1073-1074[mec-3p::syd-2CDS::SL2::mCherry, unc122p::GFP]</i>	<i>syd-2(dom11)</i> rescue with <i>mec-3</i> promoter driving <i>syd-2</i> coding sequence (CDS)
DAG1076-1078	<i>domIs355; eat-4(dom15) III; domEx1076-1078 [eat-4-p::eat-4CDS::SL2::mCherry, unc122p::GFP]</i>	<i>eat-4(dom15)</i> rescue with the endogenous <i>eat-4</i> promoter driving <i>eat-4</i> coding sequence (CDS)
DAG1079-1081	<i>domIs355; eat-4(dom15) III; domEx1079-1081[mec-3p::eat-4CDS::SL2::mCherry, unc122p::GFP]</i>	<i>eat-4(dom15)</i> rescue with <i>mec-3</i> promoter driving <i>eat-4</i> coding sequence (CDS)