

Figure S1. Schematic representation of the forward genetic screen. Animals (P0) were treated with ethylmethanesulfonate (EMS) and the animals of the F1 progeny were self-fertilized. Then, dendrites of F2 animals were analyzed for degeneration, and animals showing any changes were discarded. The mutant animals with normal dendrites were infected with *P. aeruginosa* for 24 h and then screened for dendrite degeneration.

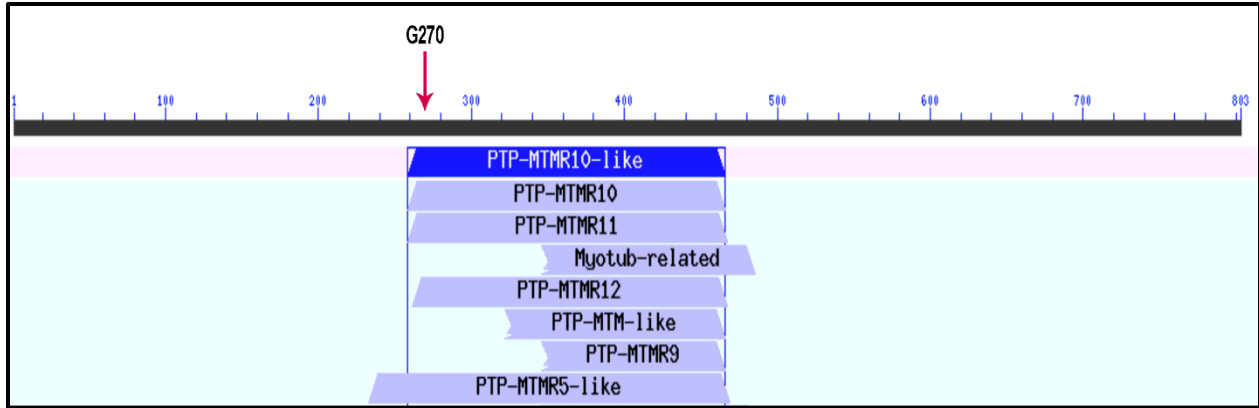


Figure S2. The mutation in the *mtm-10* gene G270A from glycine(G) to arginine(A) at residue 270 is in the conserved PTP-MTMR10-like domain.

Y48G1C.10	225	GFNYAAQgYPVYVVVSNFLDRVDIERQLQHYKQGRFPPIVWWSR-ANGHSALFVSA-D	-----	279
MTM-5	184	KYKLCGS-YPQELIVPAWITDKLELSVSSFRSWKRIPAVIYRHqSNGAVIARCG---	QPEVSWWGWNRNADDEHLVQ	255
MTMR3	182	NYKLCPS-YPQKLLVPVWITDKELENVASFRSWKRIPVVVYRHlRNGAAIARCS---	QPEISWWGWNRNADDEYLVLT	253
MTMR4	232	GKVCER-LPAYFVVVPTPLPEENVQRFQ-----HGPIWCWSC-HNGSALLKMSALP	-----	282
MTMR12	222	GYMISTC-LPEYFVVPSSLADQDLKVFSSHSFVGRMPFCWWSH-SNGSALVR-TALI	-----	275
MTMR10	1026	DYTICPS-YPGNFIVPSETNESELAKVAKGFVEHRLPVVVMN-ENGALLVRASAFPT[14]RRNASKLTGSMTGSQOTLH	-----	1113

Figure S3. The mutation site G270 is conserved among several MTMR family proteins.

Input Order	Search Term	Worm GeneID	WormBaseID	Worm Symbol	Species 2	Human GeneID	Human Species Gene ID	Human Symbol	Ensembl ID (link HPA)	DIOPT Score	Weighted Score	Rank	Best Score	Best Score Reverse	Prediction Derived From	Alignment & Scores	Feedback	Gene Details
1	Y48G1C.10	353378	WBGene00021683	Y48G1C.10	Human	54893	25999	MTMR10	ENSG00000166912	5	4.84	high	Yes	Yes	Compara, eggNOG, OrthoDB, orthoMCL, Panther	View	Add	G2F details (MTMR10) DfscDB Data: (MTMR10) Human Protein Atlas (HPA)
1	Y48G1C.10	353378	WBGene00021683	Y48G1C.10	Human	54545	18191	MTMR12	ENSG00000150712	4	3.94	moderate	No	Yes	Compara, eggNOG, OrthoDB, Panther	View	Add	G2F details (MTMR12) DfscDB Data: (MTMR12) Human Protein Atlas (HPA)
1	Y48G1C.10	353378	WBGene00021683	Y48G1C.10	Human	10903	24307	MTMR11	ENSG0000014914	4	3.94	moderate	No	Yes	Compara, eggNOG, OrthoDB, Panther	View	Add	G2F details (MTMR11) DfscDB Data: (MTMR11) Human Protein Atlas (HPA)
1	Y48G1C.10	353378	WBGene00021683	Y48G1C.10	Human	9108	7454	MTMR7	ENSG00000003987	2	1.83	low	No	No	Compara, eggNOG	View	Add	G2F details (MTMR7) DfscDB Data: (MTMR7) Human Protein Atlas (HPA)
1	Y48G1C.10	353378	WBGene00021683	Y48G1C.10	Human	9107	7453	MTMR6	ENSG00000139505	2	1.83	low	No	No	Compara, eggNOG	View	Add	G2F details (MTMR6) DfscDB Data: (MTMR6) Human Protein

Figure S4. Orthology analysis of the gene *Y48G1C.10* with the human *MTMR* (myotubularin related proteins genes) using the online tool DRSC Integrative Ortholog Prediction Tool (DIOPT).

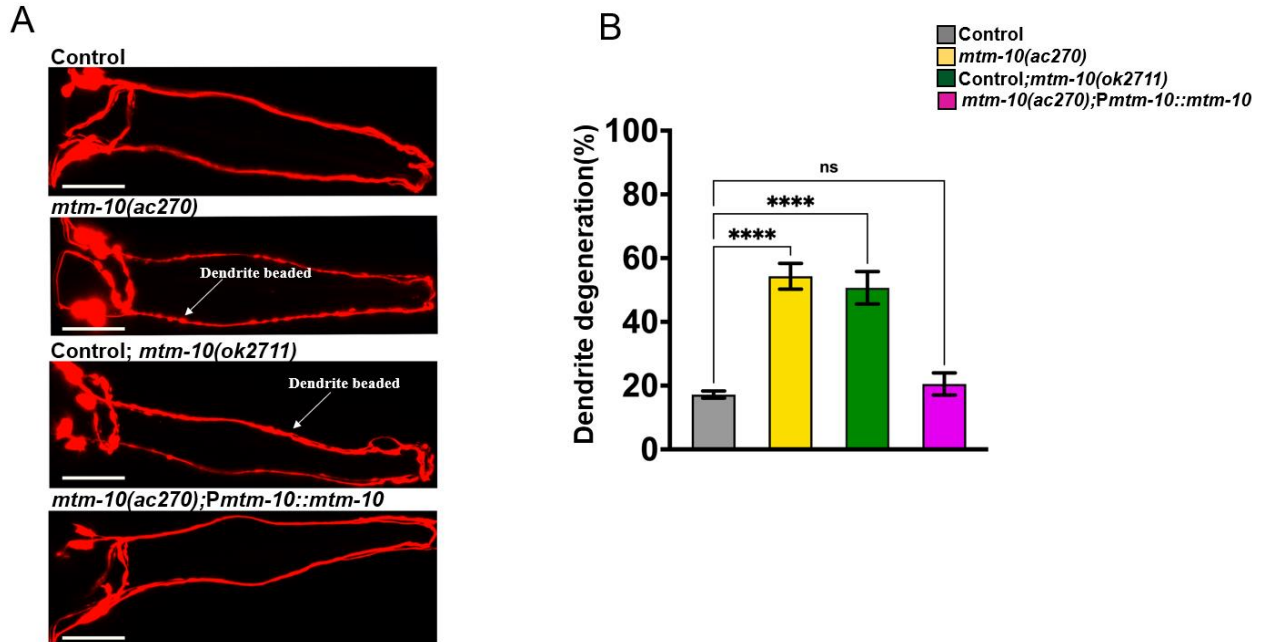


Figure S5. (A) Representative photomicrographs of dendrite degeneration in control CX5974 (Parent strain), *mtm-10(ac270)*, *mtm-10(ok2711)*, and *mtm-10(ac270);Pmtm-10::mtm-10* animals expressing RFP in AWC after exposure to paraquat(5mM) for 24 hours. The scale bars represent 10 μ m. Different morphological changes in the dendrites are indicated with white arrows. **(B)** Quantification of the dendrite degeneration phenotype in control, *mtm-10(ac270)*, *mtm-10(ok2711)*, and *mtm-10(ac270);Pmtm-10::mtm-10* animals expressing RFP in AWC neurons. N=3, number of animals=150. Control vs. *mtm-10(ac270)* ($p < 0.0001$), *mtm-10(ac270)* vs. *mtm-10(ac270);Pmtm-10::mtm-10* ($p < 0.0001$) via one-way ANOVA test.