

Supporting Information:

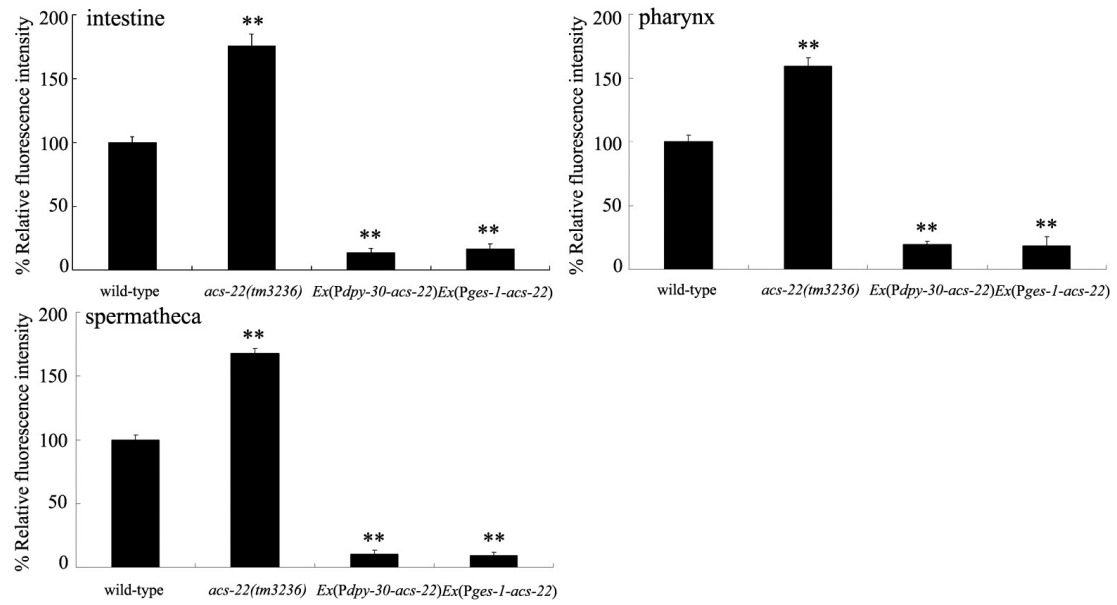


Fig. S1. Comparison of relative fluorescence intensity of MWCNTs/Rho B in intestine, pharynx, and spermatheca. Bars represent means \pm S.E.M. ** $P < 0.01$ vs wild-type.

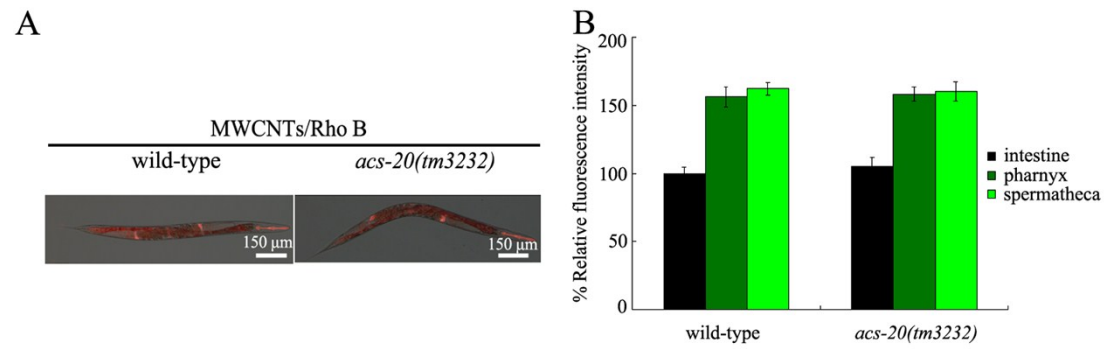
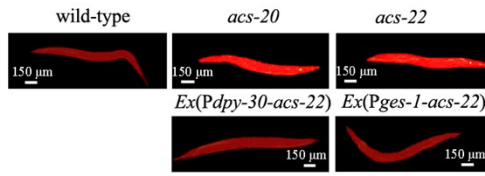


Fig. S2 Comparison of MWCNTs/Rho B in wild-type and *acs-20* mutant nematodes. (A) MWCNTs/Rho B in wild-type and *acs-20* mutant nematodes. (B) Comparison of relative fluorescence intensity of MWCNTs/Rho B in intestine, pharynx, and spermatheca of wild-type and *acs-20* mutant nematodes. Bars represent means \pm S.E.M.

A



B

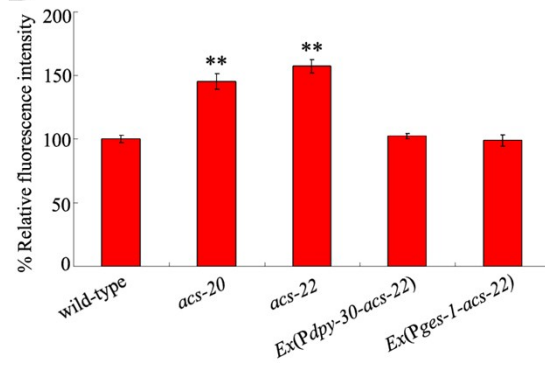


Fig. S3 Distribution of Rho B in wild-type, mutant, and nematodes over-expressing *acs-22* gene. (A) Images of Rho B labeling. (B) Comparison of relative fluorescence intensity of Rho B in intestine. Bars represent means \pm S.E.M. ** $P < 0.01$ vs wild-type.

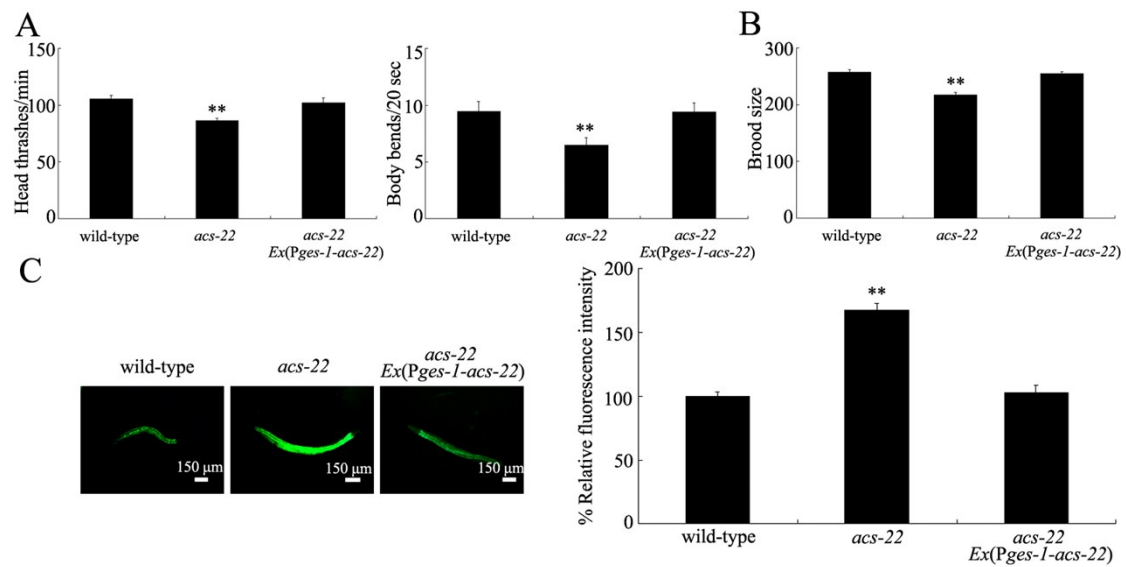


Fig. S4 Expression of *acs-22* in intestine rescued the susceptible phenotype of *acs-22* mutant nematodes exposed to MWCNTs. (A) Assay of locomotion behavior. (B) Assay of brood size. (C) Assay of ROS production. The left shows the pictures of intestinal ROS production in MWCNTs exposed nematodes, and the right indicates the comparison of relative fluorescence intensity for signals labeling ROS production in intestine of nematodes. Relative quantification of fluorescence signals labeling ROS production in comparison to the autofluorescence in nematodes without labeling was determined. MWCNTs exposure was performed from L1-larvae to young adult in 12-well sterile tissue culture plates at 20°C in the presence of food (OP50). Expression concentration of MWCNTs was 1 mg L⁻¹. Bars represent means \pm S.E.M. ** $P < 0.01$ vs wild-type.

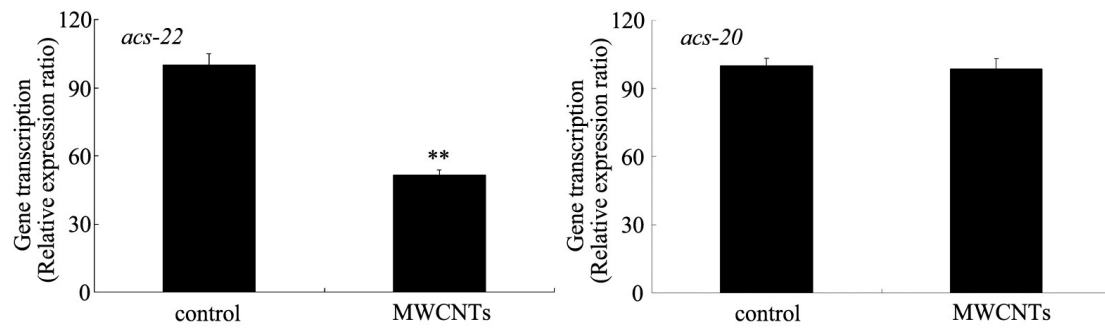


Fig. S5 Effects of MWCNTs exposure on transcriptional expression of *acs-20* and *acs-22* genes in nematodes. Relative quantification of targeted genes in comparison to the reference *tba-1* gene encoding a tubulin was determined. MWCNTs exposure was performed from L1-larvae to young adult in 12-well sterile tissue culture plates at 20°C in the presence of food (OP50). Expression concentration of MWCNTs was 1 mg L⁻¹. Bars represent means \pm S.E.M. ** $P < 0.01$ vs control.

Table S1 Primers used for the assay of qRT-PCR

Gene	Forward primer	Reverse primer
<i>tba-1</i>	TCAACACTGCCATCGCCGCC	TCCAAGCGAGACCAGGCTTCAG
<i>acs-20</i>	GGAGACGTTGTCGCCTTGTACATG	ACTGAGGAATCGCGTAGCTGGTAA
<i>acs-22</i>	TGTATTTAGGCTGCTTCGCACTGA	TCACGTTCAAGCTCTCCAGTGGCT