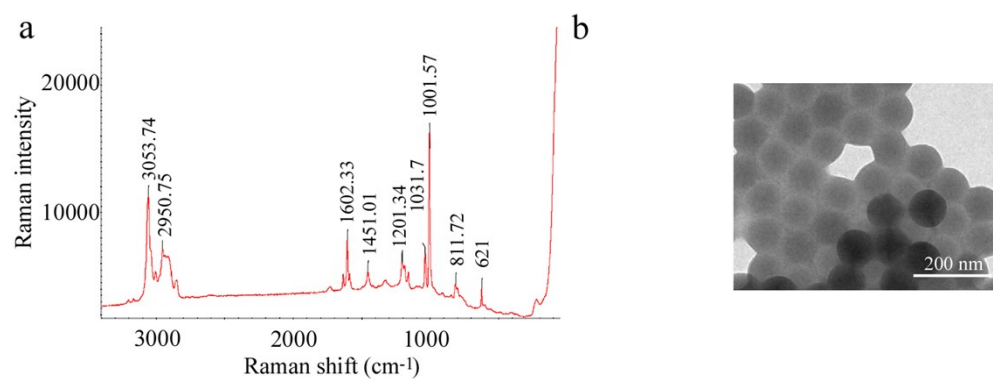**Supporting Information:**

Figure S1. Properties of nanopolystyrene. (a) Raman spectroscopy of nanopolystyrene particles. (b) TEM image of nanopolystyrene particles in K medium before the sonication.
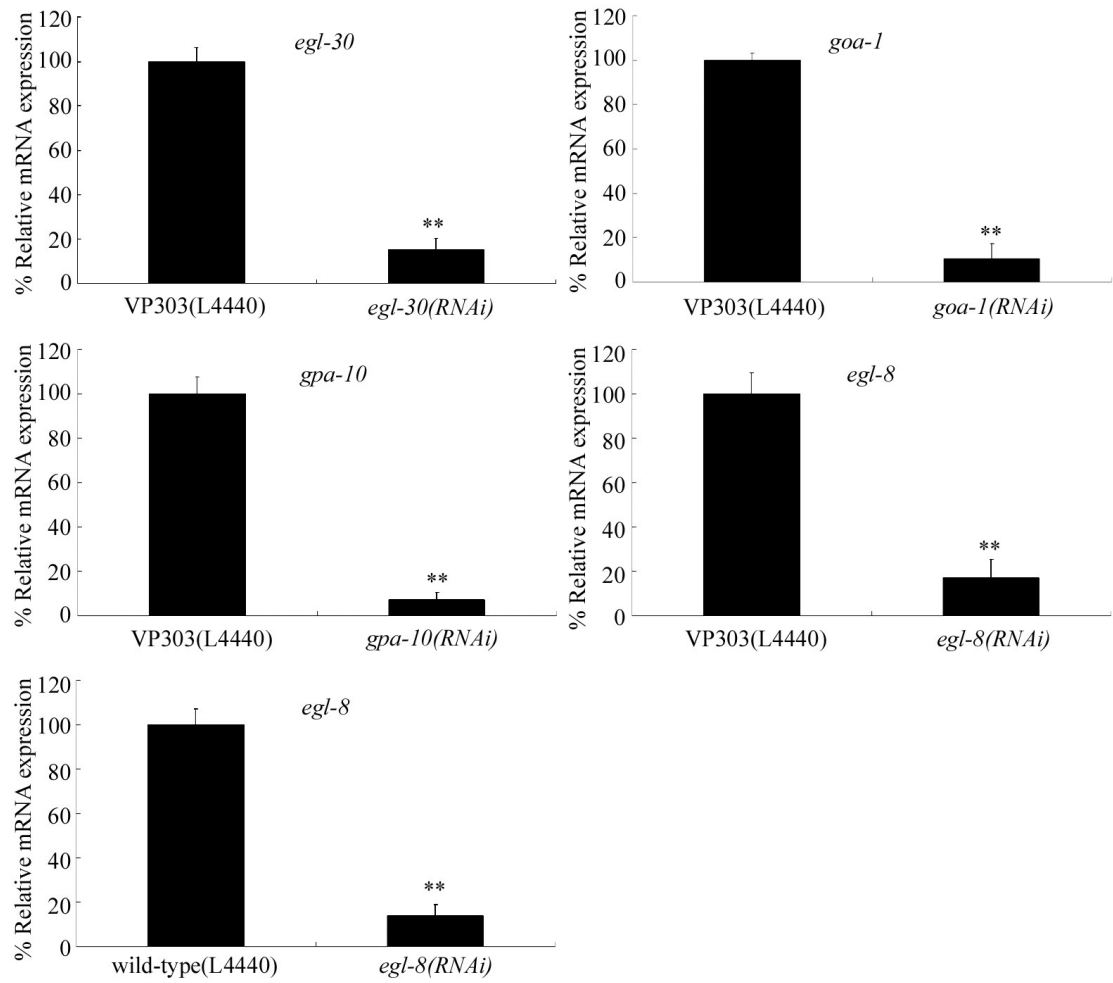
Figure S2. RNAi efficiency confirmed by qRT-PCR.   L4440, empty vector.   Bars represent means ± SD.   **$P < 0.01$ *vs* VP303 or wild-type.
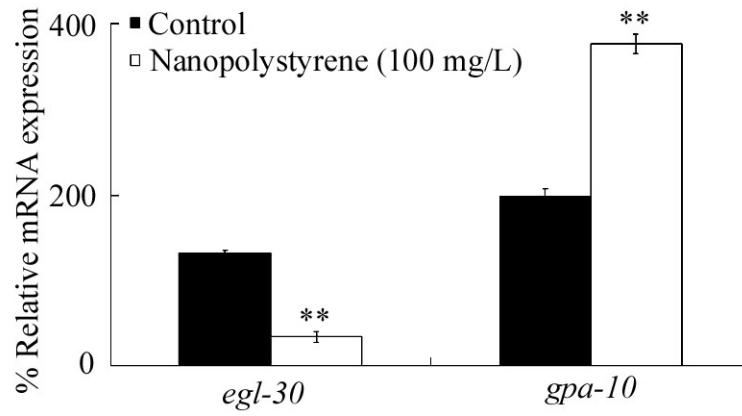
Figure S3. Effect of exposure to nanopolystyrene (100 mg/L) on expressions of *egl-30* and *gpa-10* in wild-type nematodes.   Exposure was performed from L1-larvae to adult day-3. Bars represent means ± SD.   **$P < 0.01$ *vs* Control.
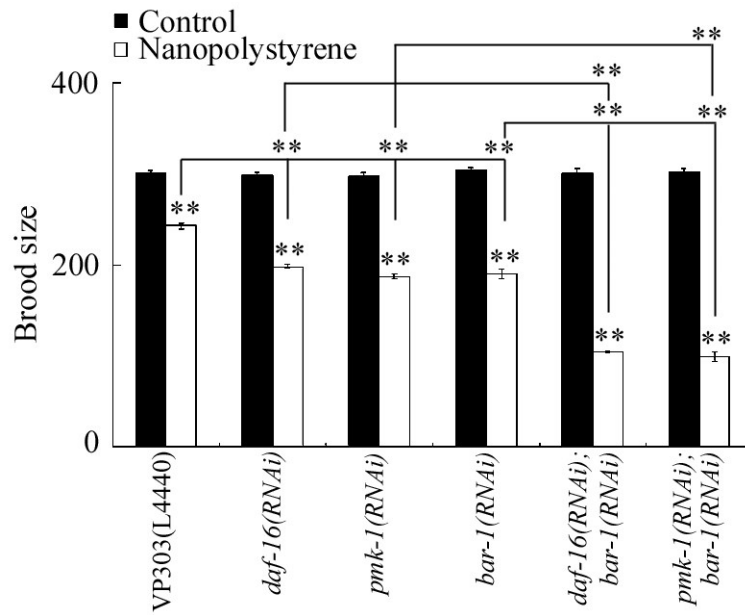
Figure S4. Genetic interaction between BAR-1 and PMK-1 or DAF-16 in the intestine to regulate the toxicity of nanopolystyrene in reducing brood size.   L4440, empty vector. Exposure concentration of nanopolystyrene was 1 μg/L.   Exposure was performed from L1-larvae to adult day-3.   Bars represent means ± SD.   **P < 0.01 *vs* Control (if not specially indicated).

Table S1. Primer information for qRT-PCR

Gene	Forward primer (5'-3')	Reverse primer (5'-3')
egl-30	TGGCCTGCTGTTTATCCGAA	CGAATGTGTGCTCGCTTGTC
goa-1	AAGCCCGTTAACGATCTGCT	AATACAAGCCGCATCCACGA
gpa-6	CGTCGCTTTCGATTCGCATT	CCATTTCCGACGTTCGCTTC
gpa-7	GTTGGAGGGCAACGATCAGA	ACGGTCAATGGTGATCGGAC
gpa-10	ACCTGAACTCGCCGATACAC	GTGCAACTCCCGTTGTAGGT
gpa-12	AACGACGCTGCGATTAGAAA	CCGCCAACATCAATGAACCT
gpa-17	AACGGTGTTGGACAAGAGTG	GAGCATCAGTTGCCTGAGTA
gsa-1	TGTGCGACAGAACAACTAC	ATGACACGACACCGAAGGAT
egl-8	AACAGCAGCAAACCAACGTC	TTCACGAGAGATCGGACCCT
age-1	ATGGAAACCGCCGAGTGT	ATTGGCAGTCGGTTCAGG
daf-16	AGGTGTTACACGTGGCCAAT	TGGCTTCTTACGACAACGCT
bar-1	ATGTGACTCCGTGGTTAG	ACTCCTTGTTATGCCTGT
pmk-1	CGACTCCACGAGAAGGAT	ATATGTACGACGGGCATG
mdt-15	AGCGAAGAGGATTGGCCTTC	CCAGCCGGAGTGTTTCCTAA
sbp-1	ACCGTACCCGGAACCAATTC	TCCCTTCCCAGAAAAGCGTC
tba-1	TCAACACTGCCATCGCCGCC	TCCAAGCGAGACCAGGCTTCAG

Table S2. Primer information for DNA constructs

Gene	Forward primer (5'-3')	Reverse primer (5'-3')
Pges-1	ATATCTAGAAGCCACTCAGCCACTT CA	ATAGGATCCCATCTGAATTCAA AGATA
egl-30/ M01D7.7a.1	ATACCCGGGTCCATTTGATTTGG	GCAGGTACCGAGGAAAATGAG AAAATA

Table S3. Expression patterns of genes encoding Gα subunits (https://www.wormbase.org)

Genes	Intestine	Neurons	Germline	Muscle
egl-30	+	+		
goa-1	+	+		
gpa-1		+		
gpa-2		+		+
gpa-3		+		
gpa-4		+		
gpa-5		+		
gpa-6	+			
gpa-7	+	+		+
gpa-8		+		
gpa-9		+		
gpa-10	+	+		
gpa-11		+		
gpa-12	+	+		+
gpa-13		+		
gpa-14		+		
gpa-15			+	
gpa-16			+	
gpa-17	+			
gsa-1	+	+		+
odr-3		+		