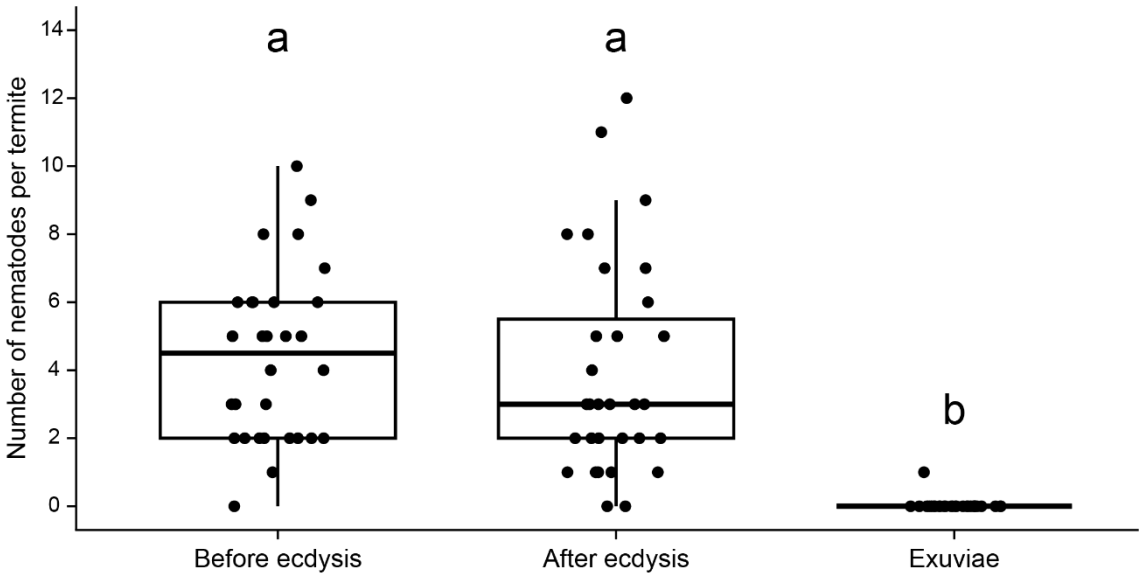

Fig. S1 Effect of host ecdysis on nematode attachment. Number of nematodes detected on termite workers before and after ecdysis and on shed exuviae in the individual molting experiment. Boxes represent medians and interquartile ranges, and points represent individual samples. Different letters indicate significant differences among groups based on multiple comparisons (GLM followed by Tukey-adjusted comparisons, $p < 0.05$).

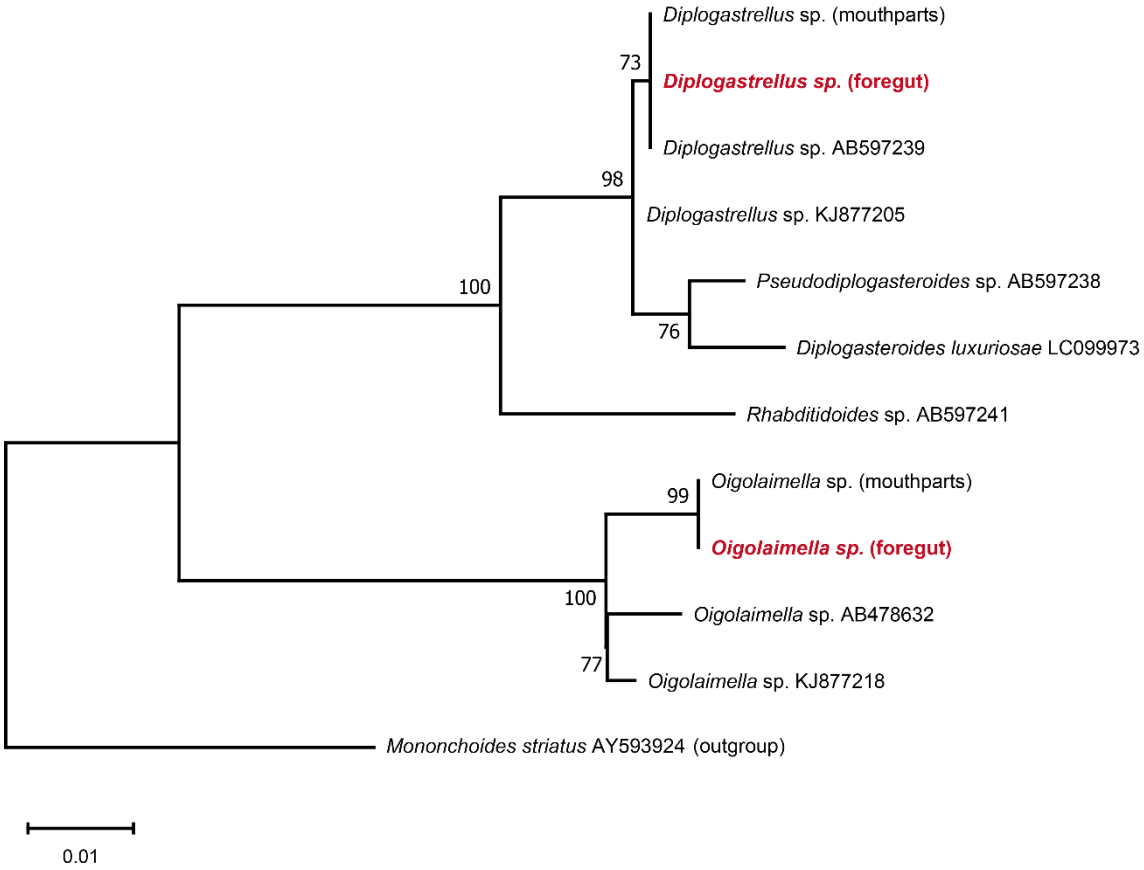

Fig. S2. Molecular phylogenetic placement of nematodes detected in the termite foregut. Maximum likelihood phylogenetic tree based on partial 18S rDNA sequences showing the relationships of phoretic nematodes associated with *Reticulitermes speratus*. Nematodes detected from the foregut of workers during the molting process clustered within the same clades as *Oigolaimella* sp. and *Diplogastrellus* sp. previously isolated from termite mouthparts. Numbers on branches indicate bootstrap support values (%) from 1000 replicates.

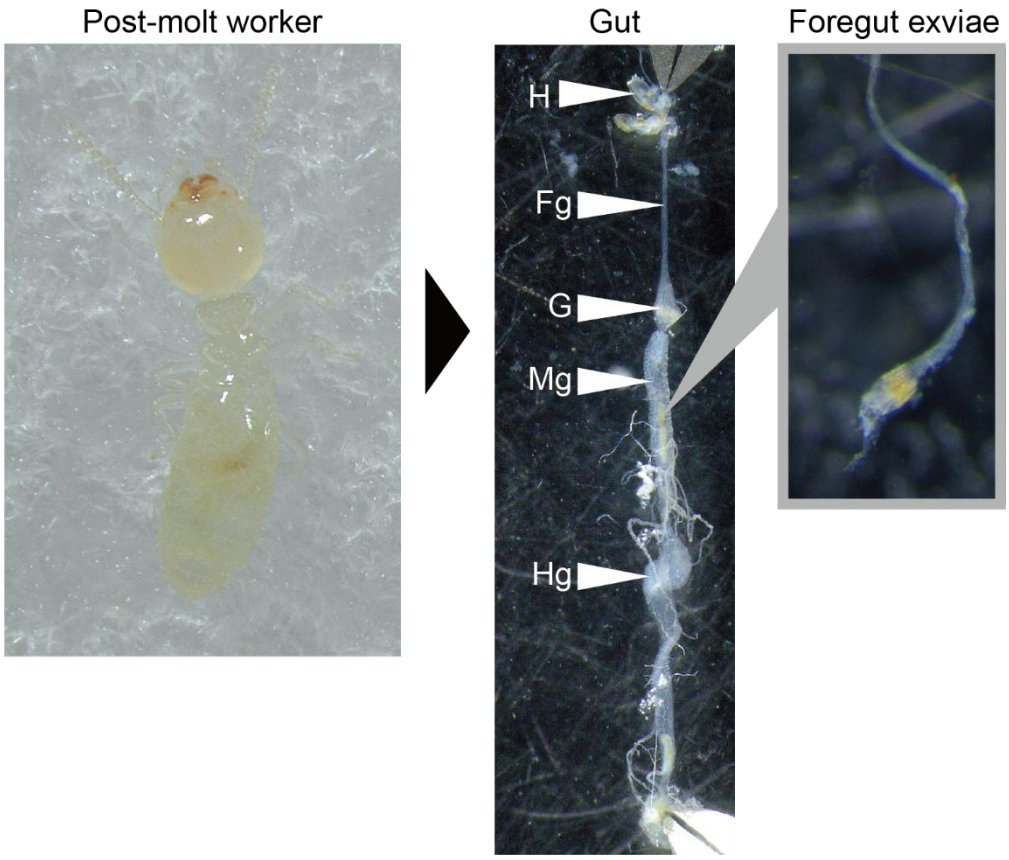

Fig. S3 Shedding and posterior transport of the foregut cuticle during host ecdysis.

Foregut exuviae detected in the midgut of a post-molt worker are shown. The digestive tract dissected from a post-molt worker is presented (H, hypopharynx; Fg, foregut; G, gizzard; Mg, midgut; Hg, hindgut). Foregut exuviae were detected inside the midgut. The orange structure corresponds to the gizzard cuticle shed during ecdysis. This observation indicates that the foregut is detached from the exoskeleton during molting and transported posteriorly through the digestive tract.

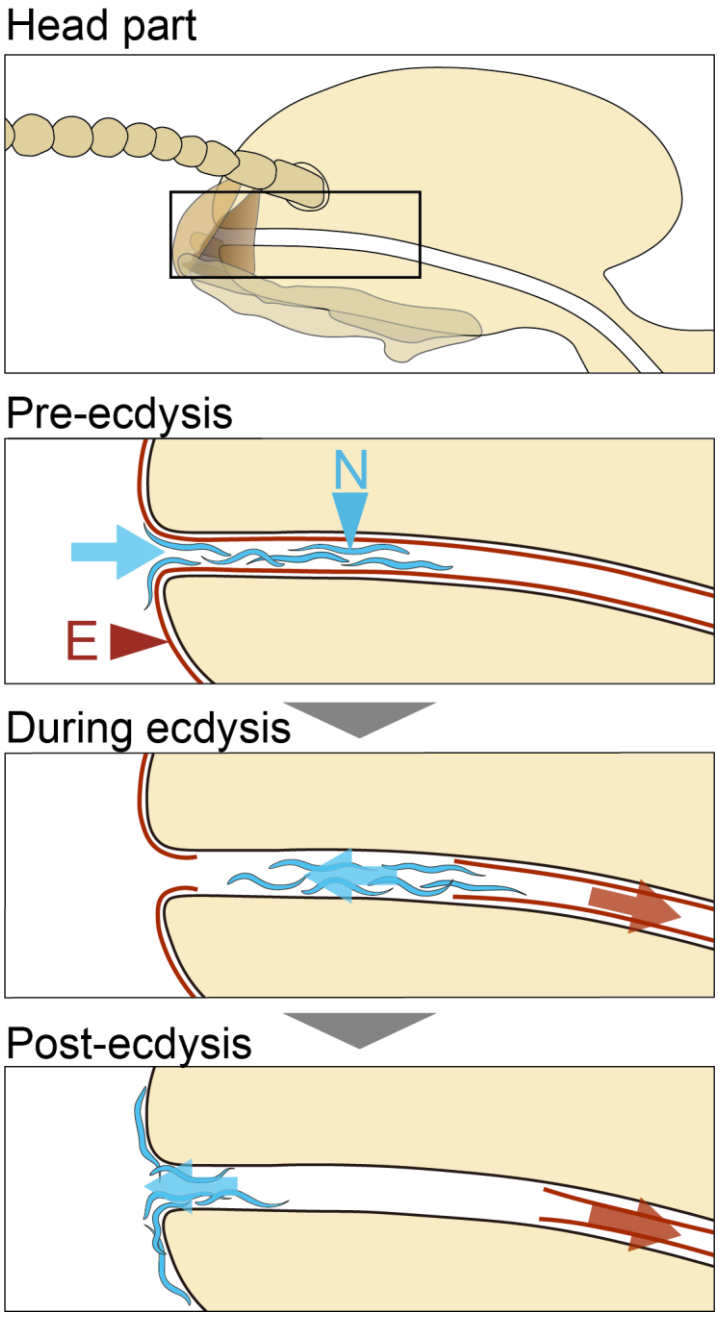

Fig. S4 Schematic illustration of the persistence mechanism of phoretic nematodes during host ecdysis. At the pre-ecdysis stage, nematodes move from their usual attachment site on the mouthparts into the foregut (N, nematodes; E, exuvia). During ecdysis, the exoskeletal cuticle separates from the foregut cuticle, and nematodes move into the newly formed foregut. After the old exoskeletal cuticle is shed, nematodes that temporarily entered the foregut return to the mouthparts at the post-ecdysis stage.