Supplement of J. Micropalaeontol., 45, 455–474, 2026
https://doi.org/10.5194/jm-45-455-2026-supplement

Journal of Micropalaeontology
Open Access

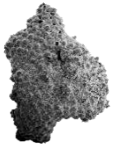
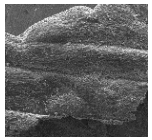
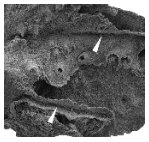
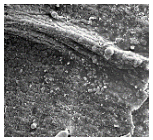
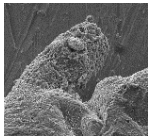
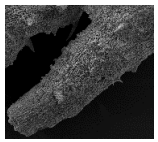
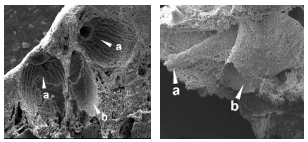
Supplement of

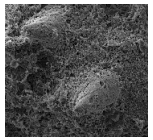
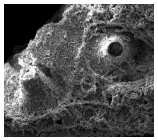
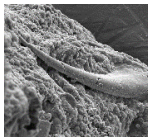
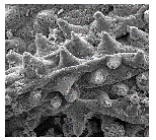
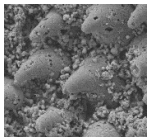
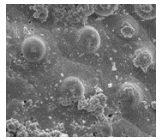
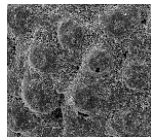
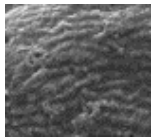
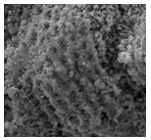
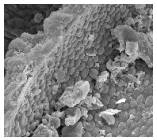
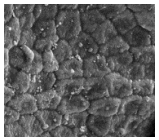
Cuticular microfragments from the lower Cambrian Yanjiahe Formation, China: insights into ecdysozoan biodiversity at the dawn of animal radiation

Lei Zhang et al.

Correspondence to: Xianguo Lang (langxianguo19@cdut.edu.cn)

Table S1. Summary of the key cuticular features across different forms.

Cuticle form / Features	Form A	Form B	Form C	Form D	Form E	Form F
						
Macroannuli or zonites*	✓? Broad, sinuous ridges oriented obliquely at approximately 30 to 90° to the long axis 	✓ Segmentations of the trunk that resemble zonites of modern kinorhynch (arrows) 	×	✓ Parallel ridge-like bulges on the surface of the fossil 	×	×
Appendage-like structures	✓ Small tubular branches extending laterally from the main cylindrical body 	×	×	×	×	×
Setae-like structures	×	×	×	✓ Depressed pores on the fossil, some displaying concentric marginal rings 	×	×
Larger spines	×	✓ Lateral tubular branch-like structures extending laterally from the main body 	✓ Two types of larger spines (arrows a and b, respectively) 	×	×	×

Smaller spines	✗	✓ Spines on the trunk, conical to bladelike in shape, with their apices slightly curved 	✓ Two types of smaller spines: conical (figure on the left) to bladelike (figure on the right) in shape  	✗	✗	✓ Two types of spines: conical (figure on the left) and beak-like spines (figure on the right)  
Other sclerites	✗	✗	✗	✗	✓ Two types of sclerites: one surrounded with the polygonal boundaries (figure on the left) and the other without (figure on the right)  	✗
Polygonal structures	✓ Fine uniform striations and localized transitions to weak polygonal patterns 	✓ Closely packed polygonal units 	✓ Continuous polygonal ornamentation on the inner side of the spines 	✓ Regular polygonal reticulation units on the cuticle 	✗	✗
Possible attributions	Panarthropoda?	Stem group kinorhynch?	Saccorhytida?	Cycloneuralian?	Uknown	Uknown

* **Zonites:** A zonite is one of the external, cuticular segments of a kinorhynch's trunk. Unlike the true internal segmentation (metamerism) of annelids or arthropods, the kinorhynch's body is divided into a serial repetition of cuticular plates, spines, and sensory organs. These units are the zonites.

Table S2**.** Statistics regarding the fossils from the lower part of the Yanjiahe Formation (Cambrian Fortunian) in the Muyangxi section, eastern Three Gorges area.

Cuticle forms	Specimens	Description of data	No. of data	Mean (μm)	Median (μm)	Min (μm)	Max (μm)	Standard deviation	Maximum size of the fragments of each fossil form (mm)	Percentage size of the cuticle of each fossil form (%)*
Form A	Specimen 1 (MYX-YJH-1-019)	Distance between the broad, sinuous ridges	13	105.68	107.25	51.51	279.20	54.10	3.10	12.74
		Distance between the finer, more uniform striations	20	5.23	5.06	4.71	6.18	0.43		
		Length of the branch	1	279.20	null	null	null	null		
		Width of the branch	1	118.03	null	null	null	null		
	Specimen 2 (MYX-YJH-1-079)	Distance between the broad, sinuous ridges	4	118.52	122.28	104.46	126.41	8.65		
		Length of the branches	2	97.60	102.31	71.63	133.00	30.68		
		Width of the branches	2	124.60	124.90	116.32	133.48	8.58		
		Maximum width of the weak polygonal pattern	8	6.49	6.52	4.43	9.78	1.70		
	Specimen 3 (MYX-YJH-1-25444)	Distance between the broad, sinuous ridge	4	594.36	587.49	552.56	654.46	37.20		
Form B	Specimen 3 (MYX-YJH-1-2407013)	Height of the spines	12	138.19	131.05	96.00	191.67	30.98	2.70	3.96
		Maximum width of the polygonal pattern	17	4.69	4.82	3.63	5.36	0.48		
Form C	Based on 17 specimens (MYX-YJH-1-027, 039, 044, 048, 053, 054, 074, 083, 115, 124, 130, 133, 187, 283, 303, 1053, 25095)	Height of the larger tubular spines with dome-shaped bases	6	397.58	386.21	311.78	595.11	88.94	4.32	53.07
		Maximum width of the larger tubular spines with dome-shaped bases	2	164.83	165.48	150.77	180.19	14.71		
		Height of the	4	221.09	230.60	173.57	259.04	31.33		

			larger coniform spines with depressed funnel-shaped bases								
			Maximum width of the larger coniform spines with depressed funnel-shaped bases	3	197.52	197.70	177.19	219.97	17.47		
			Height of the smaller coniform spines with flared trumpet-shaped bases	7	111.21	111.21	65.08	182.76	39.54		
Form D		Specimen 1 (MYX-YJH-1-25108)	Maximum width of the polygonal ornamentations	51	11.17	11.16	7.54	14.54	1.36	1.78	3.13
			Maximum width of the pores/pits	14	8.72	8.83	5.15	13.23	1.99		
			Distance between the pores/pits	10	48.37	48.83	34.12	69.69	11.00		
			Distance between the ridge-like bulges	5	172.6	179.3	132.5	216.72	27.47		
Form E	Subtype 1	Specimen 1 (MYX-YJH-1-1-068)	Maximum width of papillate knobs	30	25.19	24.76	20.44	32.28	2.72	4.94	4.77
			Distance between the papillate knobs	49	44.86	46.01	29.80	65.16	8.07		
	Subtype 2	Specimen 1 (MYX-YJH-1-234)	Maximum width of papillate knobs	45	45.02	44.11	38.23	60.04	5.46		
			Distance between the papillate knobs	47	69.66	68.74	51.39	106.96	9.61		
Form F	Subtype 1	Specimen 1 (MYX-YJH-1-010)	Maximum width of spines	39	38.84	39.63	29.22	50.71	5.73	8.64	22.32
			Height of the spines	7	40.42	38.46	36.27	46.01	3.75		
			Distance between the spines	39	54.59	54.58	39.55	76.99	7.36		
		Specimen 2 (MYX-YJH-1-24137) Specimen 3 (MYX-YJH-1-25001)	Maximum width of spines	40	39.93	39.77	29.93	48.68	4.08		
			Distance between the spines	21	85.91	92.40	64.70	115.14	16.51		
			null	null	null	null	null	null	null		
	Subtype	Specimen 1	Maximum width of	29	46.63	48.25	31.88	59.29	6.95		

	2	(MYX-YJH-1-25085) Specimen 2 (MYX-YJH-1-25008)	spines								
			Distance between the spines	50	47.84	50.35	27.03	69.54	9.83		
			null	null	null	null	null	null	null		

*Total area of the cuticles is 70.17 mm^2.