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SUPPLEMENTARY ONLINE MATERIAL FOR

X-ray tomographic microscopy tightens affinity of the early Cambrian *Oymurania* to the brachiopod stem group

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Published in *Acta Palaeontologica Polonica* 2017 62 (1): 39-43.
<https://doi.org/10.4202/app.00320.2016>

Supplementary Online Material

SOM 1. Stem-group brachiopod *Oymurania gravestocki* Ushatinskaya in Kouchinsky et al. 2015 from the lower Cambrian Perekhod Formation, Achchagyi-Kyyry-Taas section, Siberia. SRXTM volumetric renderings through the proximal part of SMNH X5299 (video 1, 2) and distal part of SMNH X5302 (video 3–7).

Video 1. Virtual section through the shell in radial direction showing the inner compact layer consisting of perpendicularly oriented prismatic columns and the outer spacious layer featuring the acrotretoid columnar microstructure; note perpendicular *Micrina–Setatella* type canals penetrating the shell.

available at http://app.pan.pl/SOM/app62-Kouchinsky_Bengtson_SOM/SOM1_Video1

Video 2. Virtual tangential section through the shell showing the outer layer consisting of the lamellar acrotretoid columnar microstructure and the inner layer of prismatic columnar microstructure.

available at http://app.pan.pl/SOM/app62-Kouchinsky_Bengtson_SOM/SOM1_Video2

Video 3. Virtual section through the shell in radial direction showing intercalating acrotretoid columnar and more massive laminae.

available at http://app.pan.pl/SOM/app62-Kouchinsky_Bengtson_SOM/SOM1_Video3

Video 4. Virtual section through the shell in the opposite direction (with respect to Video 3).

available at http://app.pan.pl/SOM/app62-Kouchinsky_Bengtson_SOM/SOM1_Video4

Video 5. Virtual slices through the wall sub-parallel to the growth lines showing cross-section of a phosphatized seta inside a tangential canal.

available at http://app.pan.pl/SOM/app62-Kouchinsky_Bengtson_SOM/SOM1_Video5

Video 6. Virtual slices through the wall in the tangential direction, from the outer to inner surface, showing longitudinal section of a phosphatized seta inside a tangential canal.

available at http://app.pan.pl/SOM/app62-Kouchinsky_Bengtson_SOM/SOM1_Video6

Video 7. Virtual slices through the wall in the radial direction, showing longitudinal section of a phosphatized seta inside a tangential canal.

available at http://app.pan.pl/SOM/app62-Kouchinsky_Bengtson_SOM/SOM1_Video7

SOM 2. Figs. 1–4 (stereo). Stem-group brachiopod *Oymurania gravestocki* Ushatinskaya in Kouchinsky et al. 2015 from the lower Cambrian Perekhod Formation, Achchagyi-Kyyry-Taas section, Siberia. SRXTM volumetric rendering through the distal part of SMNH X5302 showing intersecting systems of canals inside the wall fragment. Note the tangential (setigerous) canals with closed inner terminations and the perpendicular *Micrina–Setatella* type canals.







