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TAPHONOMIC OBSERVATIONS AND EVOLUTIONARY IMPLICATIONS IN NEOPROTEROZOIC TESTATE AMOEBAE FROM JACADIGO GROUP, BRAZIL

Luana Morais [1], Thomas Rich Fairchild [2], Daniel J.G. Lahr [3], Isaac D. Rudnitzki [4], J. William Schopf [5, 6, 7, 8], Amanda K. Garcia [5, 6], Anatoliy B. Kudryavtsev [5, 6] & Guilherme R. Romero [1]

[1] Postgraduate program in Geochemistry and Geotectonics, Institute of Geosciences, University of São Paulo, Rua do Lago, 562, Cidade Universitaria, CEP: 05508-080, São Paulo, Brazil - *lumorasoa@yahoo.com.br*; *graffaeli@gmail.com*

[2] Department of Sedimentary and Environmental Geology, Institute of Geosciences, University of São Paulo. Rua do Lago, 562, Cidade Universitária, CEP: 05508-080, São Paulo, Brazil - *trfairch@hotmail.com*

[3] Department of Zoology, Institute of Biosciences, University of São Paulo, Rua do Matão, travessa 14, 101, Cidade Universitária, CEP: 05508-090, São Paulo, Brazil - *dlahr@ib.usp.br*

[4] Departament of Geophysics, Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, Rua do Matão, 1226, CEP: 05508-900 São Paulo, Brazil - *idrgeo@gmail.com*

[5] Department of Earth, Planetary, and Space Sciences, 595 Charles E. Young Drive East, University of California, Los Angeles, CA 90095, United States - *schopf@ess.ucla.edu*; *agarcia9@ucla.edu*; *kudryavtsev@ess.ucla.edu*

[6] Center for the Study of Evolution and the Origin of Life, 595 Charles E. Young Drive East, University of California, Los Angeles, CA 90095, United States

[7] Molecular Biology Institute, 495 Hilgard Avenue, University of California, Los Angeles, CA 90095, United States

[8] University of Wisconsin Astrobiology Research Consortium, Department of Geosciences, 1215 W. Dayton St., University of Wisconsin, Madison, WI 53706, United States

Vase-like vesicles with an aperture at one extremity are here reported from dolomitic clasts of uncertain provenance near the base of the Neoproterozoic Urucum Formation (Jacadigo Group) of south-central Brazil, which have a radiometric age constrained between 889 ± 44 (basement rocks) and 587 ± 7 Ma (metamorphic crystallization age of overlying manganese ore). These structures are attributed to an important paleontological group known as "vase-shaped microfossils" (VSMs) that, on the basis of their morphology, have been generally regarded as ancient tests of Arcellinids, within the Amoebozoa. Many of the Urucum tests are coated by fibrous to bladed dolomite cement, which replaced original aragonite or calcite. This early cement appears to have been responsible for the serendipitous preservation of the original carbonaceous (kerogenous) and siliceous-carbonaceous test compositions, unlike practically all other occurrences of VSMs. At least five different morphotypes may be distinguished in the assemblage whose affinities and taxonomy are under investigation. Although most of the taxonomically important characteristics of these VSMs occur in extant testate amoebae, the occurrence of organic-walled tests having exceptionally long necks exhibiting a terminal aperture are unusual. Our observations suggest that these VSMs provide both evidence of original test compositions, including possible silica biomineralization, and additional important data on the diversity of Neoproterozoic testate protists. Although the provenance of the Urucum VSM-bearing clasts is not firmly established, the possibility exists that the VSMs may rival in age the testate amoebae of the Chuar Group, Grand Canyon, SW USA (742 $\pm$ 6 Ma) currently regarded as the oldest record of protozoans in the geological record.

Key-words: Vase-shaped microfossils; Arcellinids; Biomineralization.