

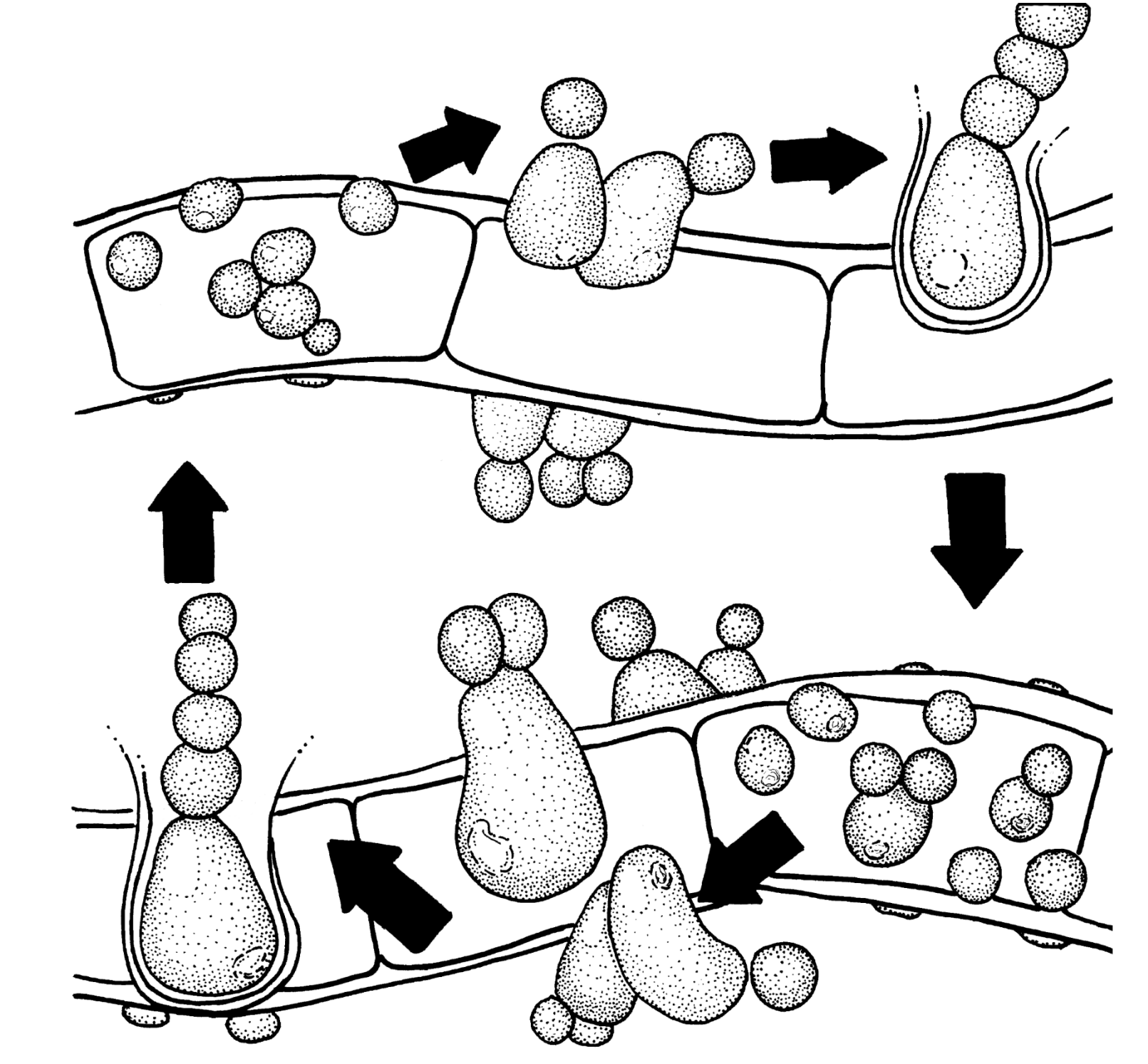
A new species of *Stanieria* (Cyanobacteria) isolated from a small pool on Mexican Riviera

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INTRODUCTION

Among coccoid Cyanobacteria, special reproductive cells have been found: exocytes and baeocytes. These cells can be very different in terms of development. Exocytes are attached to the apical part of the mother cells. Baeocytes develop inside the mother cells, forming robust sheaths (Fig.1.A;B). In the phylogenetic sense, representatives of exocytes production belong to the CHROOCOCCALES, as opposed to baeocytes producers which occur in the PLEUROCAPSALES (Fig.2.). In our research we found coccoid cyanobacteria, that produce baeocytes from the Mexican Riviera on the Yucatan Peninsula.

A: EXOCYTES



B: BAEOCYTES

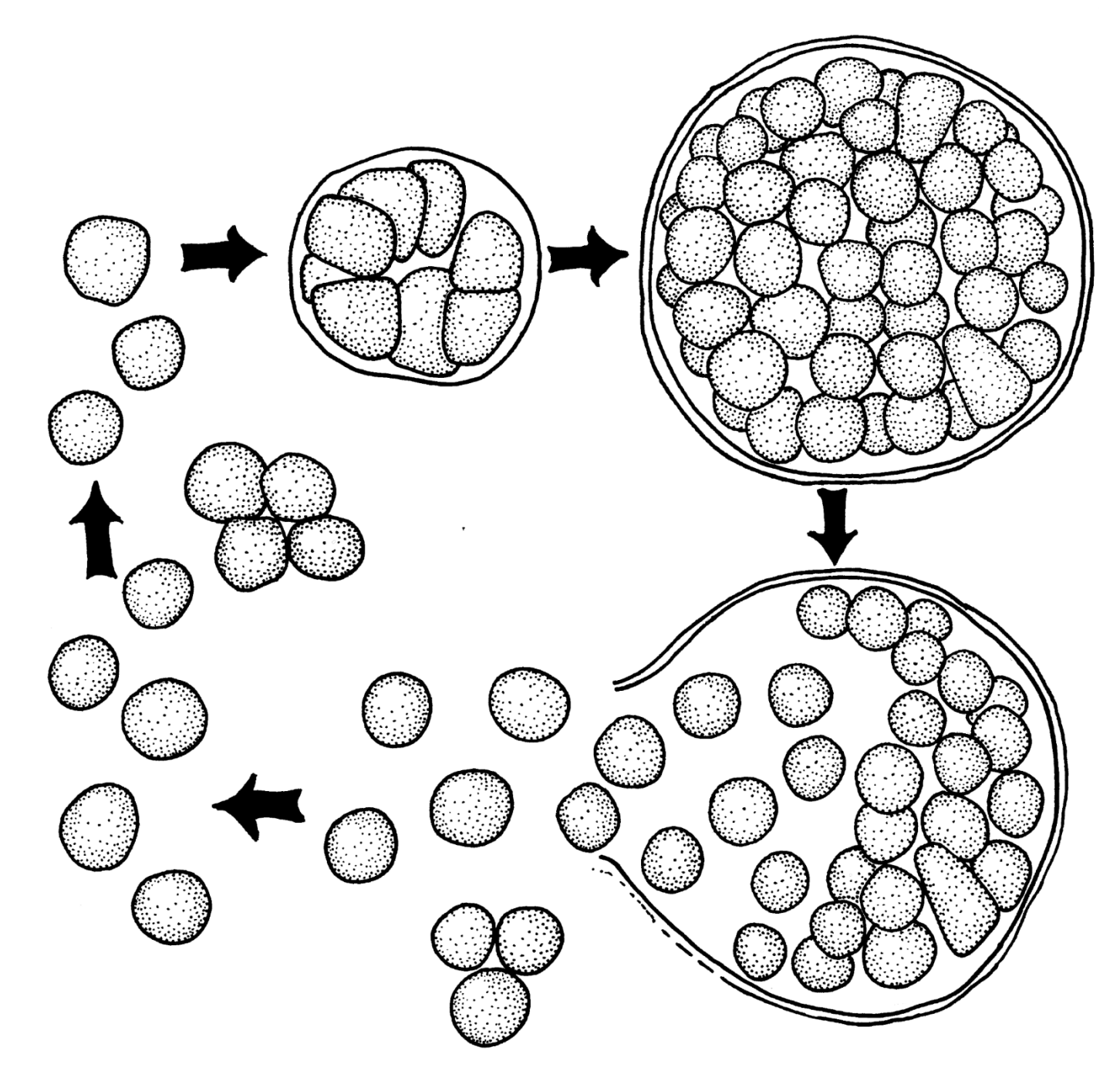


Fig. 1. A: Life cycle of *Chamaesiphon* sp. (CHROOCOCCALES); B: Life cycle of *Stanieria* sp. (PLEUROCAPSALES).

MATERIALS & METHODS

- A sample from a small, freshwater pool in the Mexican Riviera region (the eastern coastline of the Yucatan Peninsula) was collected in January 2015.
- Enrichment cultures from this sample were made, and a small coccoid cyanobacterium was isolated into unialgal culture
- DNA was extracted following standard methods from unialgal culture. Subsequently, PCR amplification, cloning and sequencing were conducted.
- Images were taken with a Zeiss Axioscope HB0 50. All measurements were made using Zeiss Axiovision software.

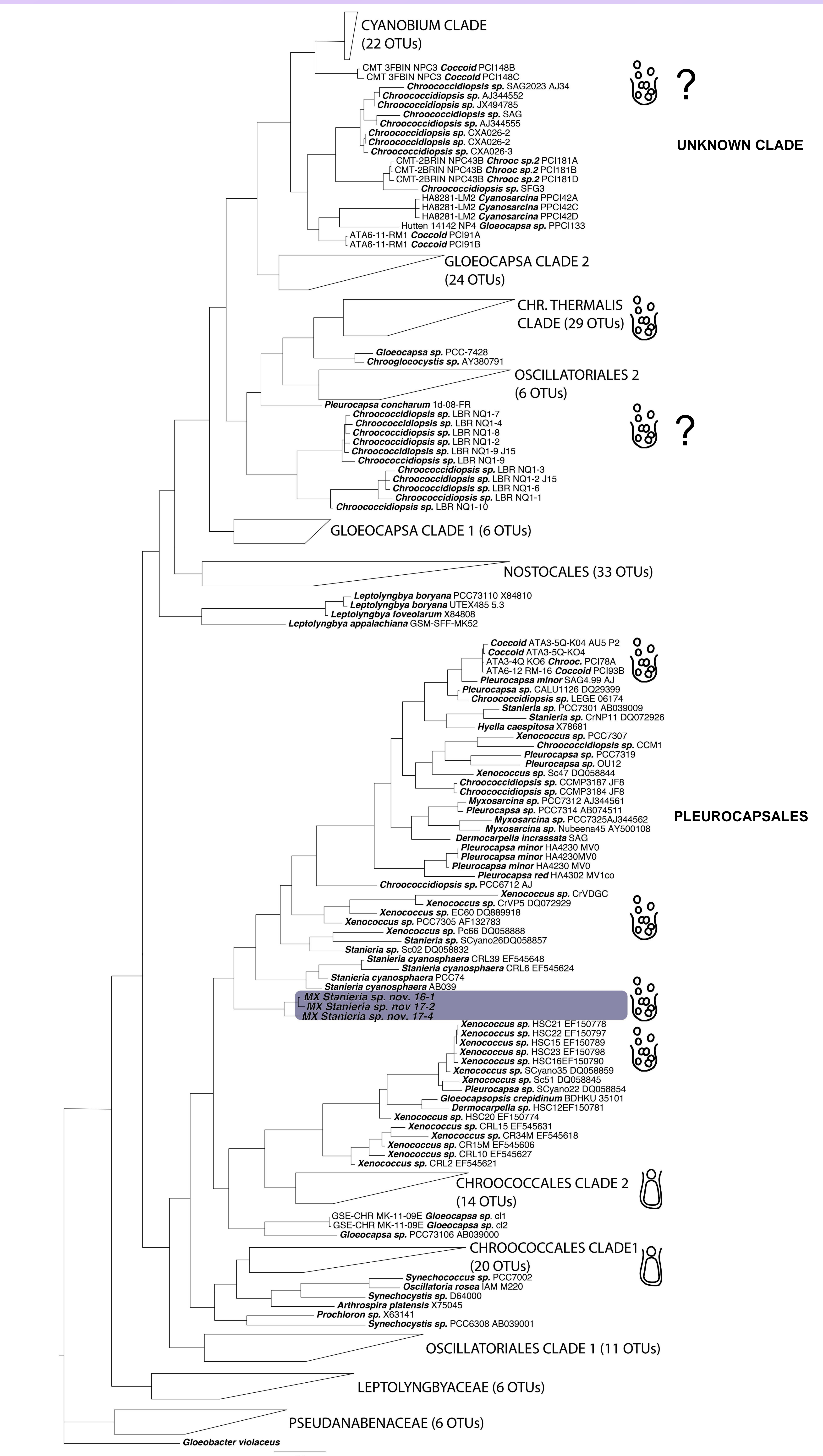


Fig. 2. Maximum Parsimony tree base on 16S rRNA gene sequences

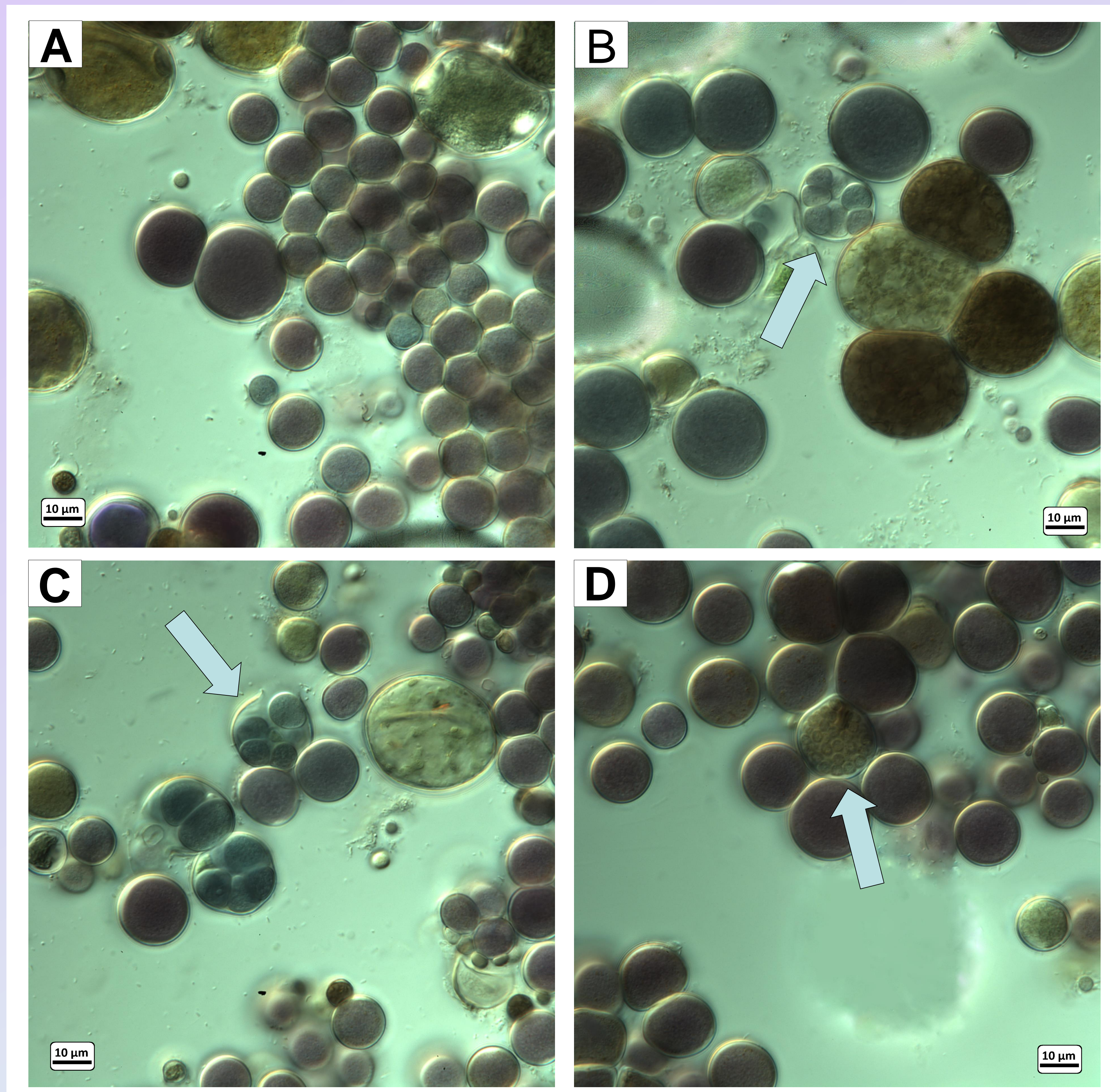


Fig. 3. Images showing different stages of baeocyte production. A: Exponentially growing baeocytes after release; B,C: Beginning of multiple successive fission and release of baeocytes, indicated by arrow; D: Baeocytes inside firm sheath, indicated by arrow.

RESULTS & DISCUSSION

Morphological description: In the natural populations epiphytic on the other algae, in cultural conditions, forming concentric brownish-violet mucilaginous colonies. Vegetative cells blue-green of purple by color spherical, rarely slightly irregular, with homogeneous content, 8-25 μm in diameter, old cells up to 40 μm, forming irregular aggregates. Baeocytes, brownish, 3-4 μm in diameter, surrounded by firm sheath. Morphologically, this taxon belongs to the genus *Stanieria*, which currently has 4 species, mostly isolated from marine habitats. Our taxon is most similar to the type species, *S. cyanosphaera*, but differs in its purplish color and larger baeocytes, and freshwater habitat as well. In a phylogenetic analysis, it is distant from the type species and paraphyletic to the *Stanieria* clade. We conclude it is certainly a new species, but it could represent a new genus sister to *Stanieria*, based on p-distance analysis.