Lectotypification of *Euglena tornata* Pérez Reyes & Salas Gómez (*Euglenaceae, Euglenophyceae*)

Anatoliy Levanets[1]

[1] *Unit for Environmental Sciences and Management, North-West University, Potchefstroom, South Africa* (correspondence: Anatoliy.Levanets@nwu.ac.za, 20868421@nwu.ac.za)

In 1960, from polluted water in canals of the Valley of Mexico, which includes most of the Mexico City Metropolitan area, a new species of the genus *Euglena*, *E. tornata* Pérez Reyes & Salas Gómez, was described from several gatherings in canals near the towns (now boroughs) of Xochimilco and San Luis Tlaxialtemalco, now part of Mexico City, collected in early 1959 and September 1959 (Pérez Reyes & Salas Gómez 1960: 2, figs 1–5). This name was made available under the Zoological Code (International Commission on Zoological Nomenclature 1999), making it valid under the ICN (Art. 45.1, Turland & al. 2025). However, the type of this taxon was not indicated as the explicit fixation of name-bearing types only is required for taxa published after 1999 (ICZN Arts. 16.4 and 72.3). Therefore, the type is fixed here with an updated description in English.

Euglena tornata Pérez Reyes & Salas Gómez, *Acta Zoologica Mexicana* 4(3): 2, figs 1–5, 1960.

Description. Cells cylindrical, elongated, with the anterior end obliquely truncated and the posterior end terminating in a sharp, colourless, and well-differentiated point, measuring 5.5 to 11.0 µm. The cell body, during swimming, is typically coiled in a spiral, appearing rigid, so that when moving it gives a helical appearance (Figs 1, 2). Very finely striated pellicle, the striations appear to be arranged spirally, but this may be due to the torsion of the body; it is quite rigid and allows relatively little metabolic movement. Neutral red granules present in the cell, they are ovoid or almost spherical and vary in size between 0.75 and 3.00 µm, distributed irregularly throughout the body. Chromatophores discoid, small, numerous, 3–5 µm in diameter and arranged parietally. 2 to 5 large elongated annular or quadrangular paramylon bodies/granules; of these, one is generally found at the anterior end, attached to the pellicle and lateral to the cytopharynx [cytostome]; 3 to 6 µm in length, and in addition to these, there are other smaller bodies, generally bacillary and arranged in the vicinity of the nucleus. Stigma slightly concave-convex, 3–5 µm in diameter and composed of small brick-red granules. Cytopharynx very delicate, difficult to observe, curved towards the dorsal portion and 3–6 µm in length; observed in very few specimens. Nucleus generally located behind the midpoint of the body, ellipsoidal in shape, and 6–10 x 4–6 µm. Flagellum ⅓ to ⅔ of the body length. Dimensions: Length 41–59 µm, diameter 6.0–10.5 µm [from the Spanish original by Pérez Reyes & Salas Gómez (1960: 2)].

Lectotype (designated here): Icon from Pérez Reyes & Salas Gómez (1960: fig. 1, line drawing of a single cell from a single gathering, ICN Art. 40.6, reproduced here as Fig. 1).

Registration (of lectotype): http://phycobank.org/107306

Note: In haematoxylin-stained preparations, the nucleus can be observed in two forms. In most cases, it appears to contain a small amount of chromatin, organized into coarse granules connected by thinner filaments, without a differentiated endosome. In other cases, a small, irregular endosome is present, surrounded by a narrow clear ring, with the remaining chromatin arranged in small, elongated granules (Pérez Reyes & Salas Gómez 1960).

Pérez Reyes & Salas Gómez (1960: 3) noted that three other species of *Euglena*, when swimming, exhibit a coiled body: *E. convoluta* Korshikov [current name is *Lepocinclis convoluta* (Korshikov) Zakryś & Chaber], *E. sima* Wermel [now considered a synonym of *E. deses* (O.F.Müller) Ehrenberg], and *E. vermiformis* N.Carter. According to Gojdics (1953), the first two species are

large (120–145 µm and 170–200 µm, respectively). *Euglena convoluta* also has an elliptical body in cross-section, while *E. sima* has small, discoid, and generally arched chromatophores and small, elongated paramylon bodies. *Euglena vermiformis* Carter, is close in size to *E. tornata* (45 µm by 5 µm), but has a cylindrical body rounded at the posterior end; a non-striated pellicle and large, oval chromatophores almost attached to the pellicle and approximately 8 in number.

Pérez Reyes & Salas Gómez (1960: 1) noted that after April 1958 they found a small *Euglena* in water collected from a small storage tank (the exact location was not indicated) but questioned the identification as they observed only a few specimens. The following year the same *Euglena* was discovered in large numbers, and authors were able to gather enough data to consider it a new species. Fifty-five years after its description *E. tornata* was re-discovered in the same Xochimilco Canal (Figueroa-Torres & al. 2015).

We are grateful to María Guadalupe Figueroa-Torres (Autonomous Metropolitan University, Xochimilco Unit, Mexico) for the help with Mexican literature, and Michael D. Guiry and Eduardo Molinari Novoa for their helpful comments leading to improvement of the manuscript.

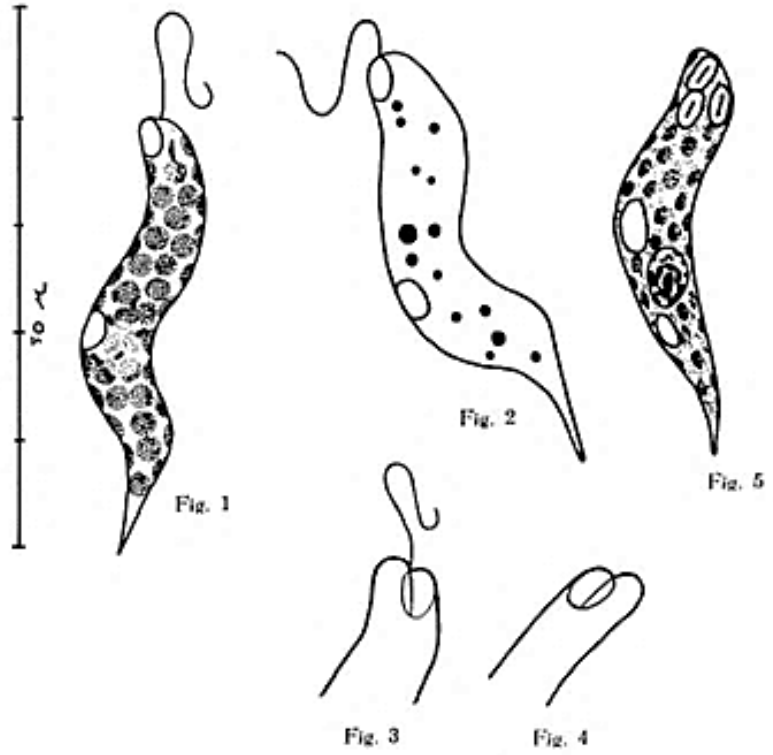
Figueroa-Torres, M.G., Arana-Magallón, F., Almanza-Encarnación, S., Ferrara-Guerrero, M.J., & Ramos-Espinosa, M.G. (2015). Microalgas del Área Natural Protegida Ejidos de Xochimilco y San Gregorio Atlapulco, México. *CienciaUAT [Universidad Autónoma de Tamaulipas]* 9(2): 15–29, 3 figs, 1 table [in Spanish].

Gojdics, M. (1953). *The genus Euglena*. pp. [i]–viii, [1]–268, 39 pls. Madison: The University of Wisconsin Press.

International Commission on Zoological Nomenclature (1999). *International Code of Zoological Nomenclature, 4th edition*. pp. [i]–xxix, 1–306. London: International Trust for Zoological Nomenclature.

Pérez Reyes, R. & Salas Gómez, E. (1960). Euglenae del Valle de México III. *Euglena tornata* sp. nov. *Acta Zoologica Mexicana* 4(3): 1–5, 5 figures [in Spanish].

Turland, N.J., Wiersema, J.H., Barrie, F.R., Gandhi, K.N., Gravendyck, J., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Klopper, R.R., Knapp, S., Kusber, W.-H., Li, D.-Z., May, T.W., Monro, A.M., Prado, J., Price, M.J., Smith, G.F. & Zamora Señoret, J.C. editors (2025). International code of nomenclature for algae, fungi, and plants (2025 Edition Madrid Code) Regnum Vegetabile, Volume 162. pp. [i]–xlvii, 1–303. Chicago & London: The University of Chicago Press.



Figs 1–5. Morphological characteristics of vegetative cells of *Euglena tornata* Pérez Reyes & Salas Gómez (after Pérez Reyes & Salas Gómez 1960). **Fig. 1**. General view of living cell, showing the flagellum, chromatophores, the stigma and the paramylon bodies (lectotype of *E. tornata*). **Fig. 2**. Distribution of neutral red granules. **Figs 3–4**. Anterior end, showing the position of the paramylon body. **Fig. 5.** Specimen fixed with Schaudinn's Fluid and stained with ferric haematoxylin, showing the peculiar appearance of the nucleus. Scale 50 μm.