Ultrastructural Identification of Intraflagellar Transport Trains-Like Structures in the human parasite *Trichomonas vaginalis*

ABIGAIL MIRANDA-MAGALHÃES[1], REGINA CÉLIA BRESSAN QUEIROZ DE FIGUEIREDO[1], ANTONIO PEREIRA-NEVES[1]

[1] INSTITUTO AGGEU MAGALHÃES/FIOCRUZ-PE, PERNAMBUCO, RECIFE

Trichomonas vaginalis (*Tv*) is a pathogenic protist, diffused worldwide, that infects the human urogenital tract, causing trichomoniasis [1]. *Tv* has five flagella: four anterior (AF) and one recurrent flagellum (RF) associated with the undulating membrane. In addition to motility, *Tv* flagella are important roles in pathogenesis, such as phagocytosis [3], and intercellular communication [1]. However, the biogenesis of this organelle in *Tv* is still unknown. Most eukaryotic flagella rely on intraflagellar transport (IFT): the bidirectional movement of multi-megadalton particles that organize themselves into train-like structures along the axoneme [4]. Studies on IFT in *Tv* are scarce, and the existence of this mechanism in the parasite need more investigation. This work aimed to identify IFT train-like structures in *Tv*. For this, *Tv* was cultured in TYM (tryptose, yeast extract and maltose) medium, as previously described [1]. Next, parasites were prepared for transmission electron microscopy (TEM), using negative staining and ultrathin section techniques, as previously described [1]. TEM revealed IFT train-like structures in the AF and RF of *Tv,* exhibiting typical morphological features of IFT trains previously described for other flagellated cells: a thin electrondense filament between the outer doublet of the axoneme and the flagellar membrane. Two types of IFT trains were identified: (a) compact short trains, with a mean thickness of 5 nm and a length up to 115 nm; and (b) long trains exhibiting a mean thickness of 28 nm and a variable length from 300 nm to 1.300 nm. Transversal ultrathin sections revealed that trains were almost exclusively along two sets of outer doublets (5-6 and 6-7). Thin electrondense links were seen connecting the trains to those doublets possibly representing the molecular motors (kinesin 2 and cytoplasmic dynein 1b) responsible for the movement of the trains. Our results provide the first ultrastructural evidence of IFT trains in *Tv*.

Keywords: Axoneme; Ciliogenesis; Electron Microscopy.

Reference

[1] V.M. Coceres, et al. Frontiers in Cell. and Infect. Microb. 11 (2021) 757185
[2] L.H. Monteiro-Leal, et. Al. J. Eukaryot Microb. 42 (1995) 709-14
[3] A. Pereira-Neves, et al. Biol. of the Cell. 99 (2007) 81-101
[4] E. Vannuccini, et. Al. J. Cell Biol. 129 (2016) 2064-2074