



**Supplementary Fig. S2.** Cell cycle characterization showing the number of nuclei inside each cell in different phases of development. The same fields were captured under epifluorescence (A–H) and bright-field microscopy (I–P). Giant uninucleate cells (A & I) can undergo mitosis, dividing into 2 (B & J), 4 (C & K), 8 (D & L), 16 (F & N), or 32 (H & P) cells, all with a single nucleus. Then, we can admit cells grow until reaching a specific size with one nucleus and start progressively dividing them until a  $2^n$  integer number of cells, each also uninucleated. It's possible to differ from multiple fission found in *Chlorella* and *Scenedesmus* cell cycles as no multinuclear stage was detected, except for eight and sixteen-celled coenobia (E & M and G & O, respectively), which revealed a few binucleated cells (inside a red circle). These cells exhibited smaller nuclei than other uninucleated cells in the same coenobia. Thus, it depicts the start of a new round of mitosis and cytokinesis, highlighting the absence of the G3 phase between nuclear and cell division, indicating a multiple fission also found in *Chlamydomonas*. Scale bar represent: A–P, 20  $\mu$ m.