Fig. S1. (A). Western blot analysis showing over-expression of S4D protein in 4 different colonies. (a) Coomassie blue-stained 12% SDS-PAGE of total cell lysates showing equal loading of the samples. (b) Western blot of (a) using polyclonal rabbit anti-LdCof antibodies, which detected a specific protein band of about 17 kDa in total cell lysates, and polyclonal rabbit anti-*Leishmania* actin antibodies for detection of actin as a loading control.(B). DIC images of S4D over-expressing cells. Bar: 5µm.

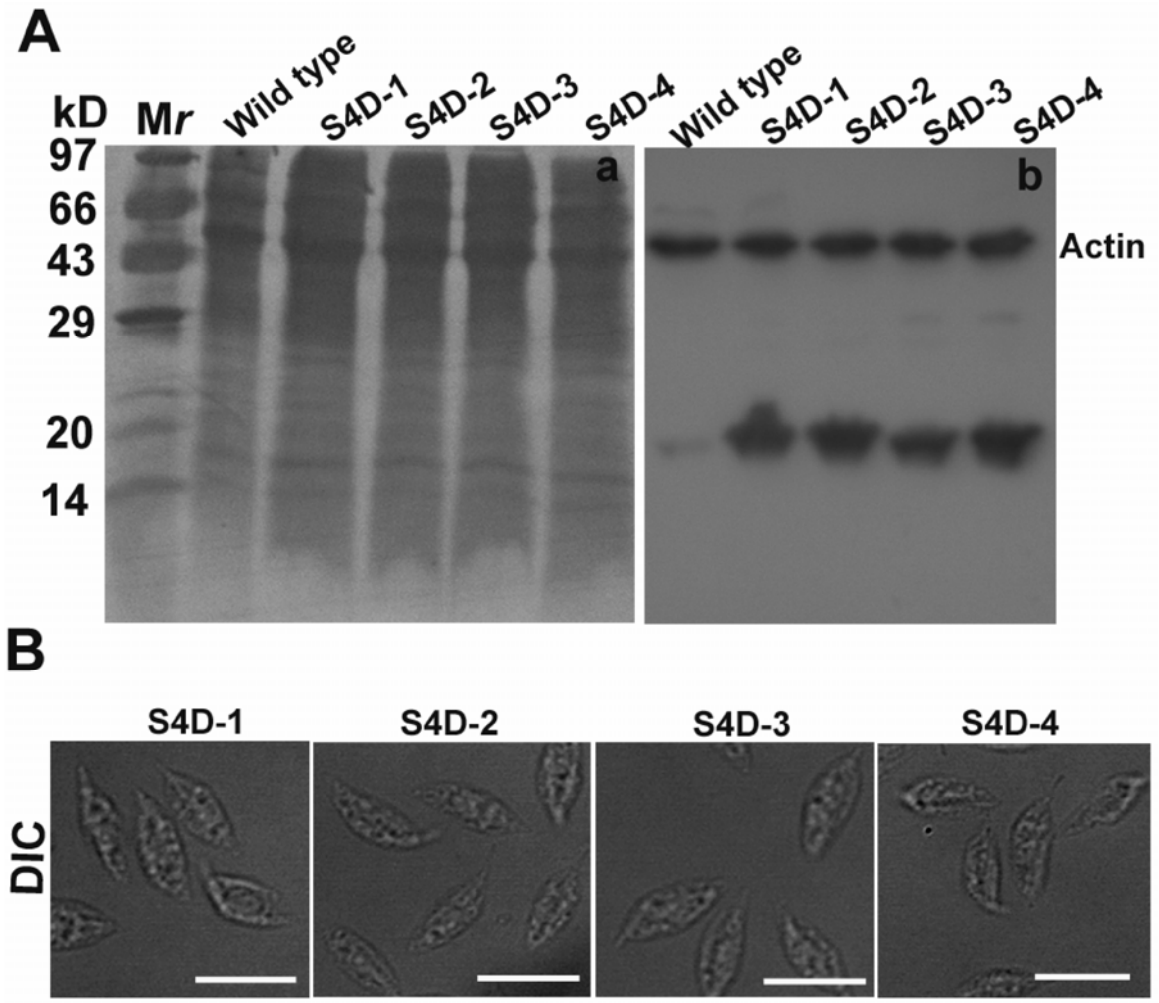

Fig. S2. Microscopic analysis of intracellular trafficking by assessing the endocytic internalization of FM4-64 dye. Fluorescence microscopic images of live wild type cell (a), LdCof protein over-expressing cell (b), S4D protein over-expressing cell (c), S4A protein over-expressing cell (d) along with the LdCof $^{+/-}$ mutant (e) with the endocytosed FM4-64 dye at 2 hour (red) trafficked beyond the nucleus region. Kinetoplast (K) and nucleus (N) were stained with Hoechst 33342 (cyan) as intracellular markers. Result shows that the vesicular trafficking remains unaffected in the S4D protein over-expressing cells, as compared to the wild type cells. Bar: 5µm.

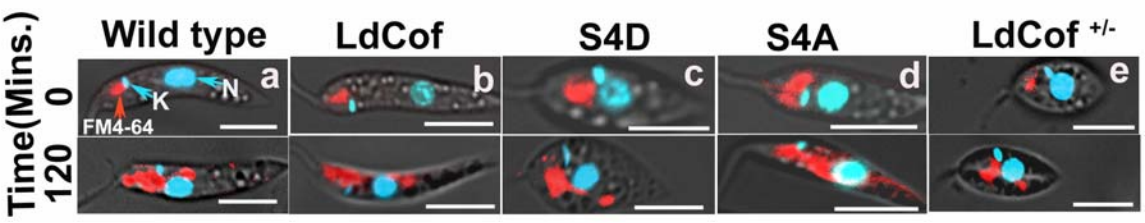

Fig. S3. Generation time during log phase of the cell growth. Cells were seeded at 10^5 cells/ ml and grown for 7 days at 26°C. Cells were counted using hemocytometer at 24h intervals and increment in the cell numbers after each 24h interval from day 1 to day 5 were taken to determine generation time using the Website (http://www.doubling-time.com/compute.php). P-values: Wt vs LdCof >0.05; LdCof vs S4D >0.05; LdCof vs S4A >0.05; Wt vs LdCof$^{+/-}$ <0.05. Wt, wild type; S4D, S4D over-expressing cells; S4A, S4A over-expressing cells.