

Description of Additional Supplementary Files:

Supplementary Data 1: Crosslinking mass spectrometry analysis of purified filaments from *Leptospira biflexa*. (XLSX)

Supplementary Data 2: Label-free comparative proteomics of *Leptospira biflexa* filaments from wt vs *flaA2*⁻ or *fcpA*⁻ mutant strains. (XLSX)

Supplementary Data 3: FlaB isoform quantification in flagellar filaments from *Leptospira biflexa* and *L. interrogans* by label-free proteomics. (XLSX)

Supplementary Movie 1: *L. interrogans flaB1*⁻ mutant displays wild-type swimming behaviour in liquid medium. (MP4)

Supplementary Software 1: Home-made bash script to obtain filament coordinates from RELION star files (processed cryo-EM micrograph data).

Supplementary Software 2: Home-made bash script to apply the Crenshaw method to calculate filament curvature (kappa) and torsion (tau) from micrograph coordinates.

Supplementary Software 3: Home-made bash script to download AlphaFold-predicted proteins from entire proteomes of selected spirochete representative species.

The three scripts are also archived, together with the three raw curvature data files, at Zenodo (<https://doi.org/10.5281/zenodo.21104577>).