

Supplemental Materials

Motor rotation is essential for the formation of the periplasmic flagellar ribbon, cellular morphology, and *Borrelia burgdorferi* persistence within *Ixodes* tick and murine hosts

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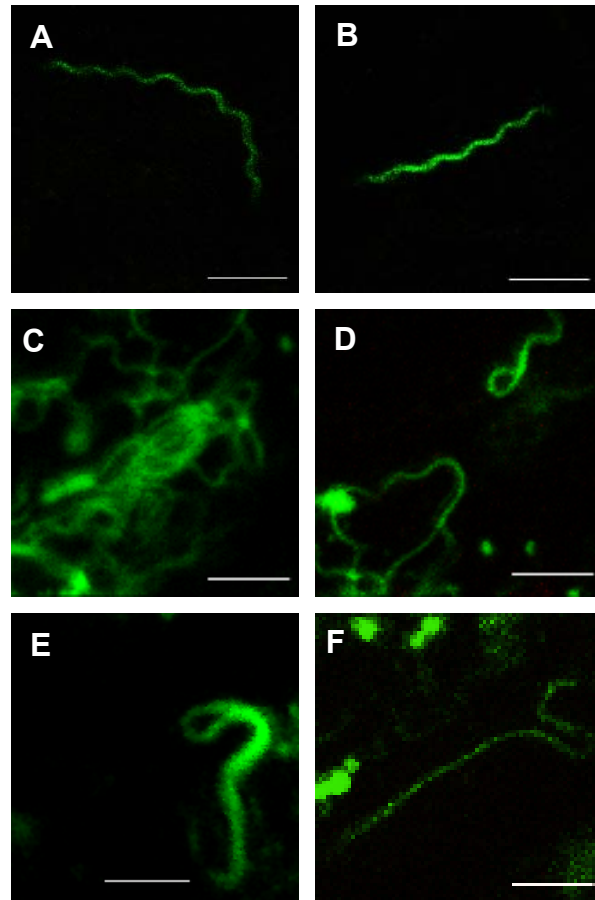


Figure S1. Morphology of WT and $\Delta motB$ spirochetes within mouse skin tissue. 10^6 B31-A3-GFP (WT) or $\Delta motB$ -GFP (mutant) bacteria were injected intradermally into murine ear skin and imaged within 6 h post-injection. At least 10 infected mouse ears were imaged for each *B. burgdorferi* strain. Representative images of WT (A-B) and $\Delta motB$ (C-F) *B. burgdorferi* collected near the injection site at 20-25 μm deep from the ear surface. Scale bar, 5 μm .

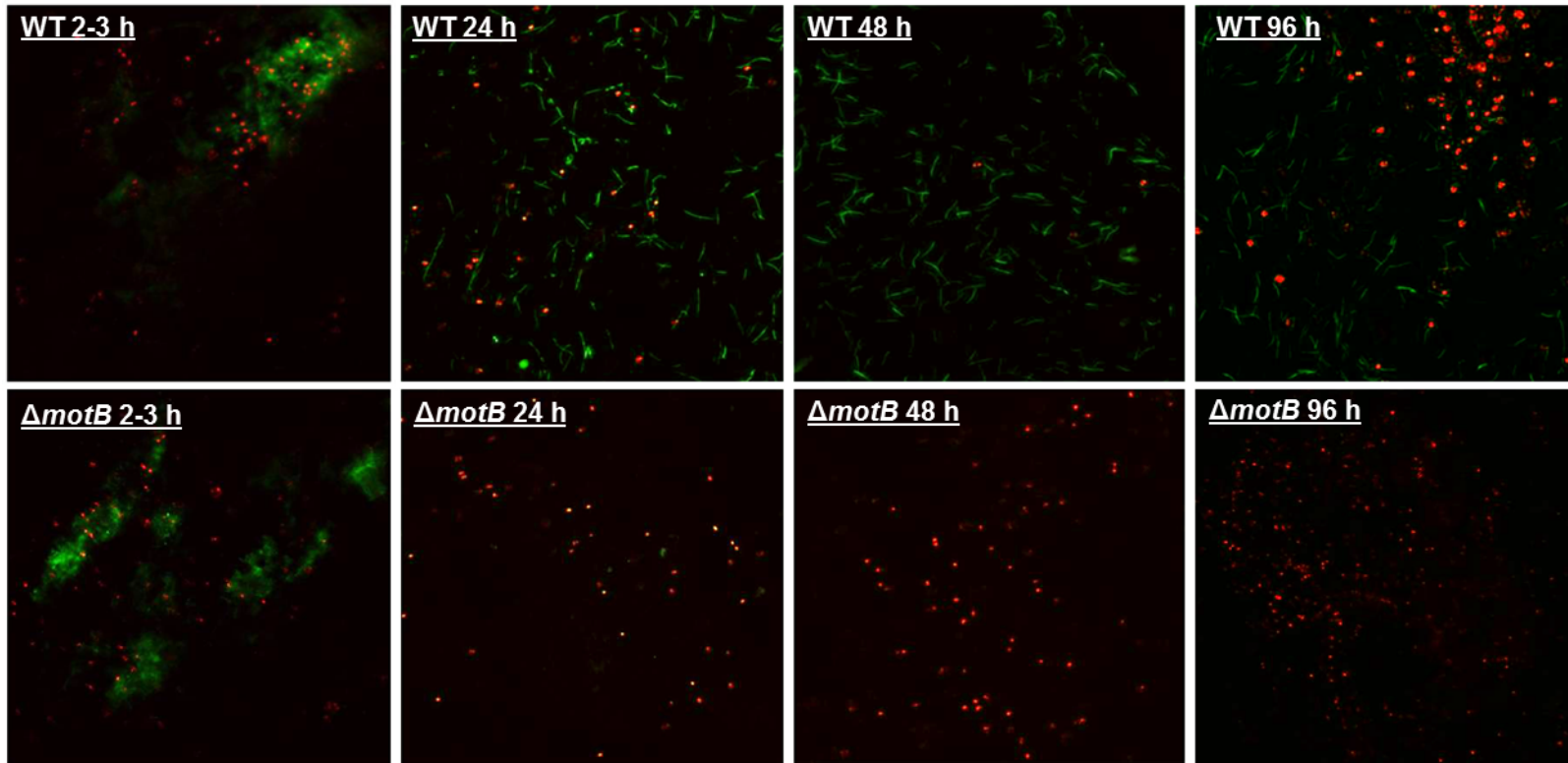


Figure S2. Intravital confocal microscopy of WT and Δ *motB* clearance kinetics in ear skin. 10^6 B31-A3-GFP (WT-GFP) or Δ *motB*-GFP bacteria were injected intradermally into murine ear skin along with 10^5 red-fluorescent latex beads and imaged at 3, 24, 48, and 96 h post-injection. Images were collected at 40x magnification and 20-25 μ m deep from the ear surface. At least four infected ears were imaged at each time-point for these representative pictures.

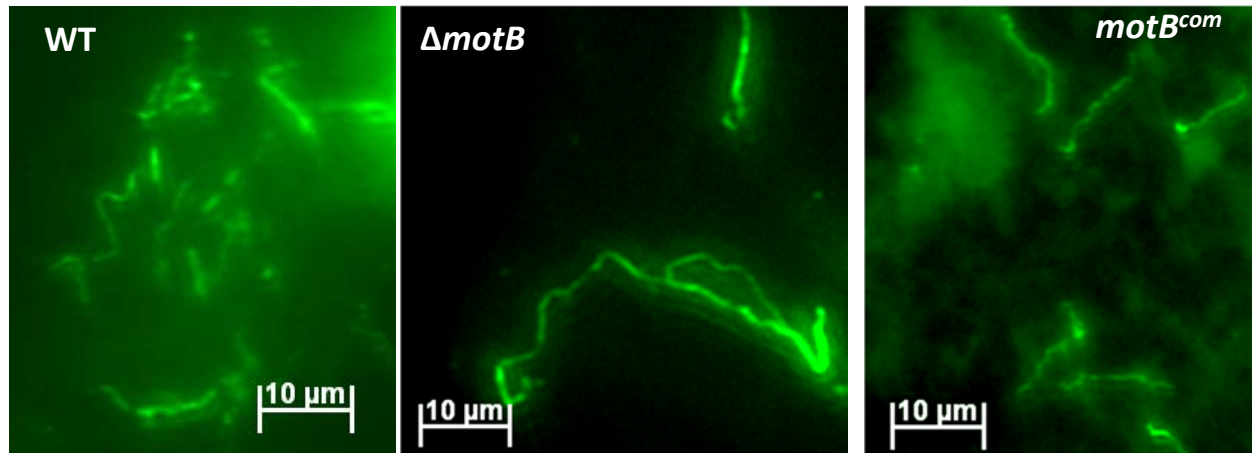


Figure S3. Morphology of WT, Δ *motB*, and the complemented *motB^{com}* within larval tick mid-guts. Tick larvae were infected with the indicated *B. burgdorferi* strain via immersion and subsequently allowed to feed to repletion on naive mice. Seven days post-feeding, ticks were squashed individually and midguts examined for spirochetes by staining with FITC-labeled *B. burgdorferi*-specific antibodies and fluorescence microscopy. These images are representative of those acquired for at least 5 larvae for each *B. burgdorferi* strain.