Supporting Information

Paper Title:

The interplay between cell wall mechanical properties and the cell cycle in *Staphylococcus aureus*

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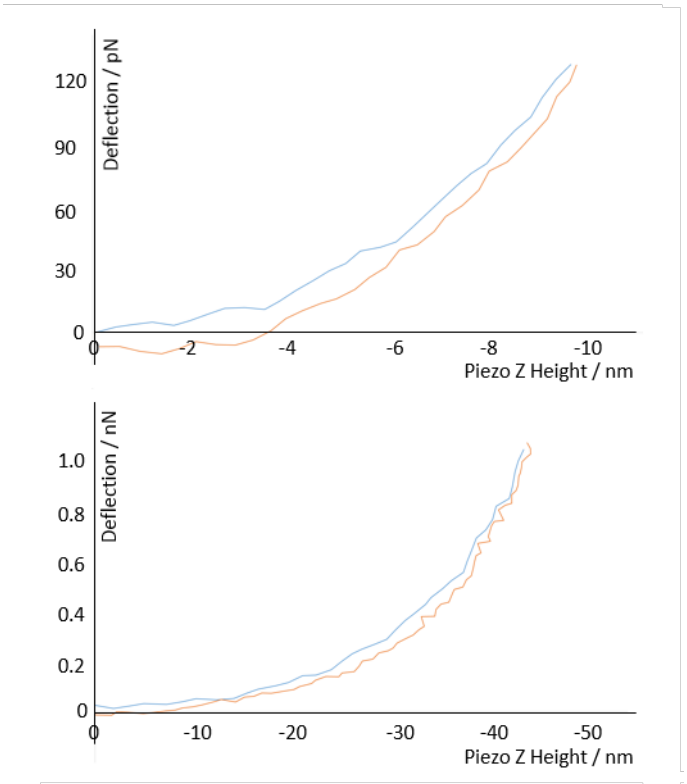

Figure S1: Example force curves on cell wall (a) and whole cell (b) showing approach (blue) and retract (orange).

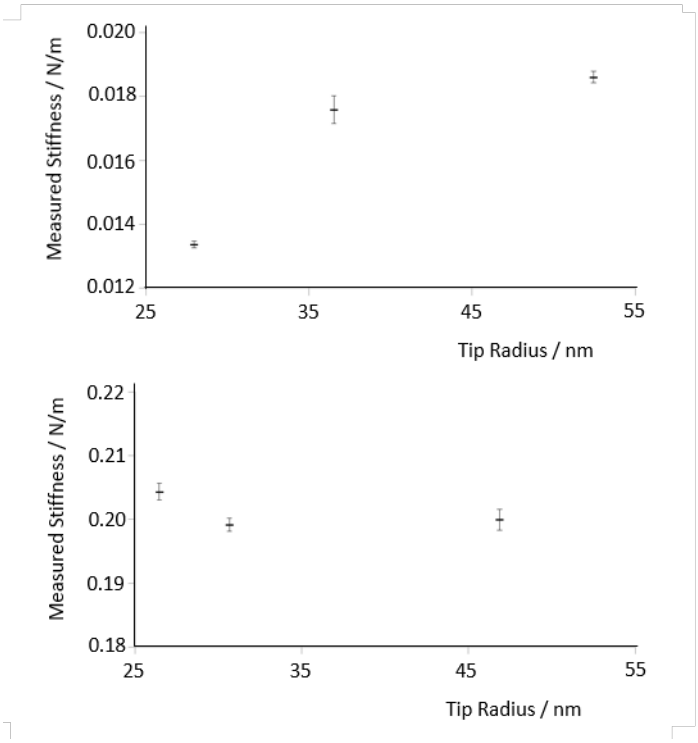

Figure S2: Measured stiffness of the low force regime (a) and the high force regime (b) taken with cantilevers with increasing tip diameter. The increase in measured stiffness in (a) further suggests an indentation where the stiffness increases as the effective contact area increases, and the lack of a measureable change in (b) further suggests a whole cell compression where an increased surface area would not alter the measurement regime.

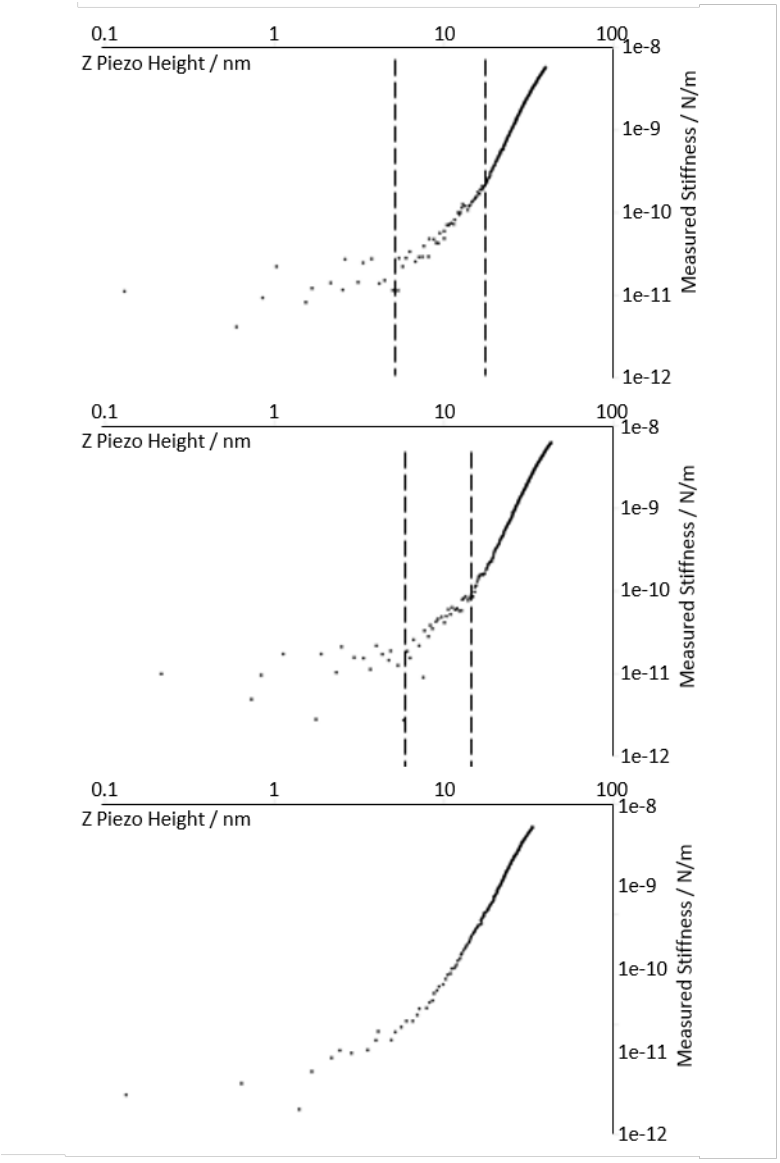

Figure S3: Force curves taken to measure the high force regime using tips of increasing bluntness, as used in Fig. S2, displayed on a logarithmic scale, as described for Fig. 2b. The axes are tip position in z for the x axis and force on the y. These curves show that as the bluntness of the cantilever is increased, the depth of region 1 decreases to the point where it is not clearly recognisable in the noise around the non-contact area on the third plot, for the bluntest tip used. This suggests that an increased tip size (and therefore larger contact area) moves from regime 1 to regime 2 at a shallower indentation, in agreement with our theory that regime one is an indentation and regime 2 is due to a compression.