

### Supplementary information

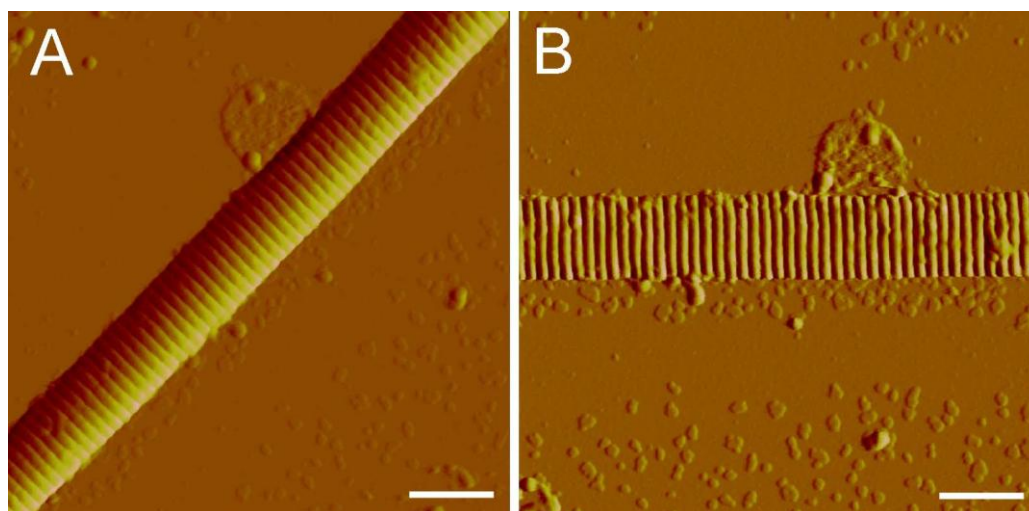


Figure S1. AFM images of collagen fibril from mice tail tendon with different angles with respect to horizontal scanning axis. The width of this collagen fibril is about 470 nm. D-spacing value was calculated to be 70 nm (A) and 67 nm (B). Scale bar: 0.5 μm. The tendon specimen was taken from the tail of mice with C57BL/6 background from other experiments. The skin of the tail was removed with scalpel and the exposed tendons were collected with scalpel and scissors. Tendon sample was rinsed with ultra-pure water for 10 min before use. Single collagen fibril was selected for imaging.

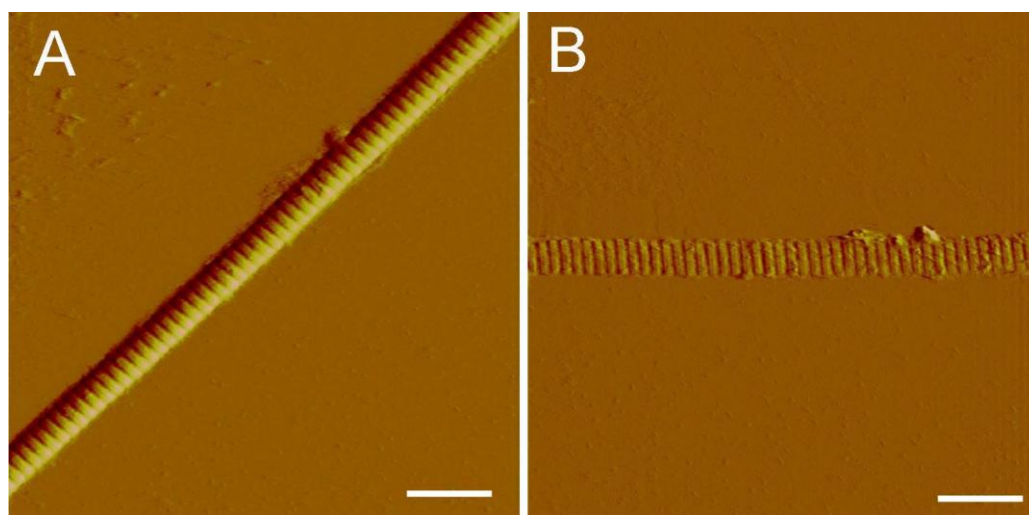


Figure S2. AFM images of collagen fibril from porcine skin with different angles with respect to horizontal scanning axis. The width of this collagen fibril is about 210 nm. D-spacing value was calculated to be 70.5 nm (A) and 67.5 nm (B). Scale bar: 0.5 μm. Porcine dermis specimen was taken from the neck skin of a single pig provided by local abattoir. Dermis was rinsed with ultra-pure water for 10 min before use. Single collagen fibril at the edge of the tissue was selected for imaging.