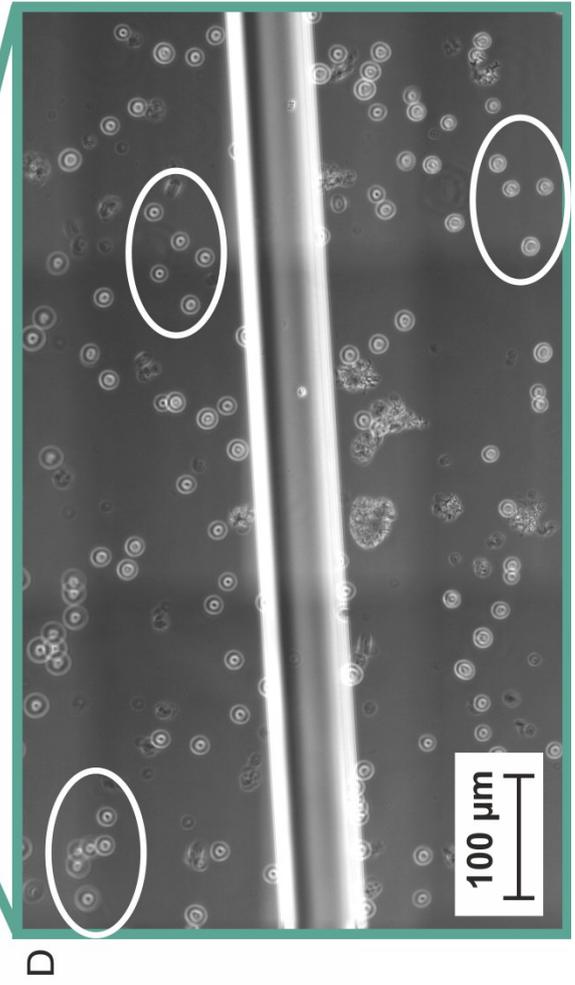
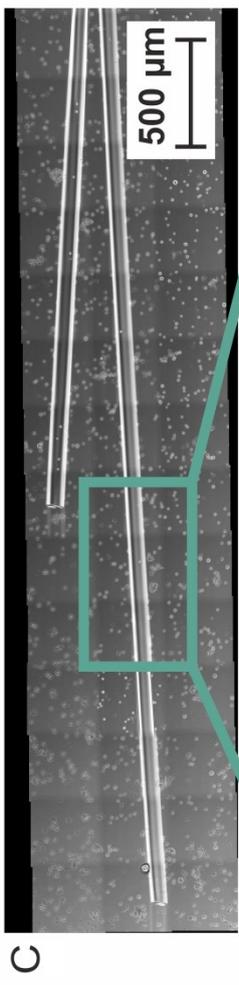
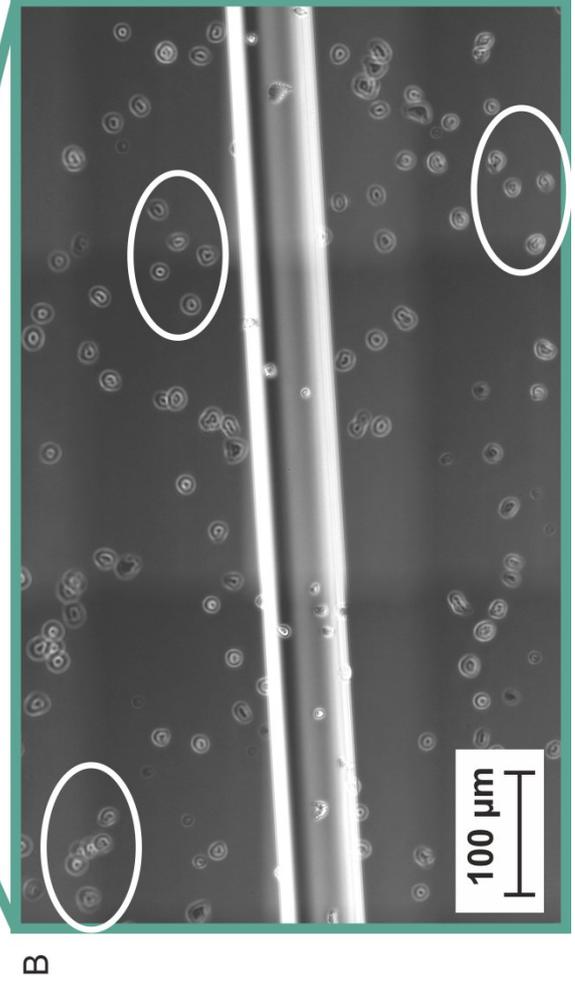
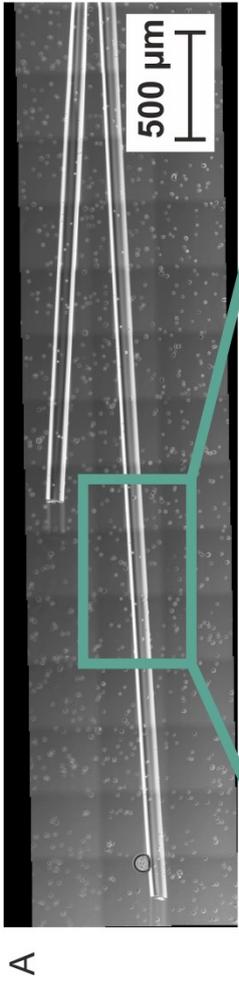


Figure S1: Cell migration analysis of *D.discoideum* myosin II null mutant cells. (A) Experimental setup for cell migration assay on silica fibers vs. on plain glass. (B/C) Probability density function (PDF) of the instantaneous migration velocities (red = directed migration velocities, blue = quasi-random migration velocities, black = all values) with corresponding mean value (black dotted line). (D/E) PDF of the cells' diffusion coefficients with corresponding mean value (black dotted line). (F/ G) PDF of the LMSD alpha coefficient (red = directed states, blue = quasi-random states, black = all values) with corresponding mean value (black dotted line). (H/I) PDF of the directed state durations with corresponding mean value (black dotted line). (J/K) PDF of the quasi-random state durations with corresponding mean value (black dotted line).



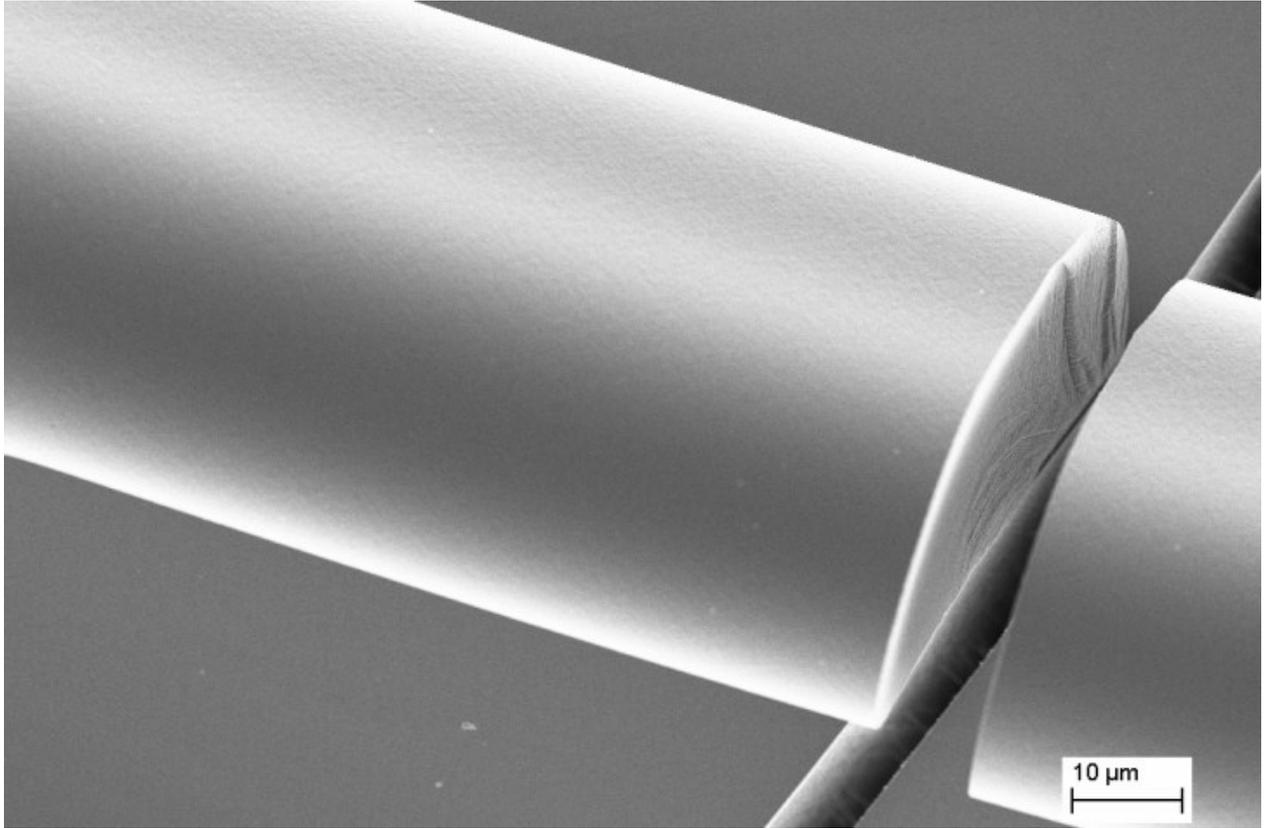


Figure S3: High-resolution SEM micrograph of silica fiber spun onto microscopy cover glass as used in the migration experiments (glass broken for visualization of fiber cross section). The surface roughness of the cover glass is observed to be smaller than that of the biodegradable fiber surface.