Fig. S1. Autometallographic (AMG) staining for zinc in sperm cells. (A) Conventional transmission electron microscopy of spermatids. The boxed region was a typical membranous organelle (MO), which was separated by a collar region into a head and body. (B) AMG staining for zinc in spermatids. The distinct pattern of black, granular precipitates indicated the presence of chelatable zinc ions. The AMG grains were predominantly distributed in MOs (arrows) and mitochondria (arrowheads). (C) High magnification of the stained MO. Timm’s silver precipitates were enriched in the MOs, especially the head of MOs and the tubular network in the MOs (arrows). (D) Zinc AMG staining of monensin-activated spermatozoa. AMG grains were densely attached with the plasma membrane of the cell, whereas the density of AMG grains in mitochondria were decreased compared with that of the spermatids. Arrow points to the fused MO. Scale bars: 200 nm.
Movie 1. Zn efficiently triggered the transformation of spermatids into spermatozoa. Symmetric spermatids were perfused with 1 mM ZnCl₂ at 00:32.063. After the perfusion, spermatids gradually extended the spike-like structures, which coalesced into a pseudopod with rapid MSP-based cytoskeletal dynamics. The process of transformation from round spermatids into asymmetric spermatozoa took about 5-10 minutes. DIC images were collected every 6 seconds for 12 minutes. Scale bar: 5 µm.