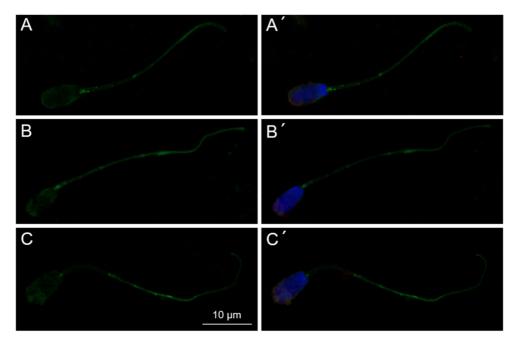
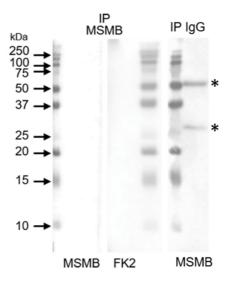
## **Supplementary Materials**



**Figure S1.** Localization of porcine MSMB in IVC proteasomally-inhibited (A, A'), and E1-inhibited (B, B') spermatozoa, and IVC spermatozoa with vehicle control (C, C') with a specific polyclonal anti-MSMB antibody (green) by indirect immunofluorescent microscopy. Nucleus was counterstained with DAPI (blue) and acrosome with PNA (red).



**Figure S2.** Negative control of MSMB immunoprecipitation (IP MSMB) without antibody and with rabbit immunoglobulins (IP IgG). Ejaculated sperm extract was incubated with agarose-protein A/G beads only; neither MSMB nor polyubiquitinated proteins with FK2 antibody was detected. Asterisks indicate heavy and light chains of immunoglobulins.