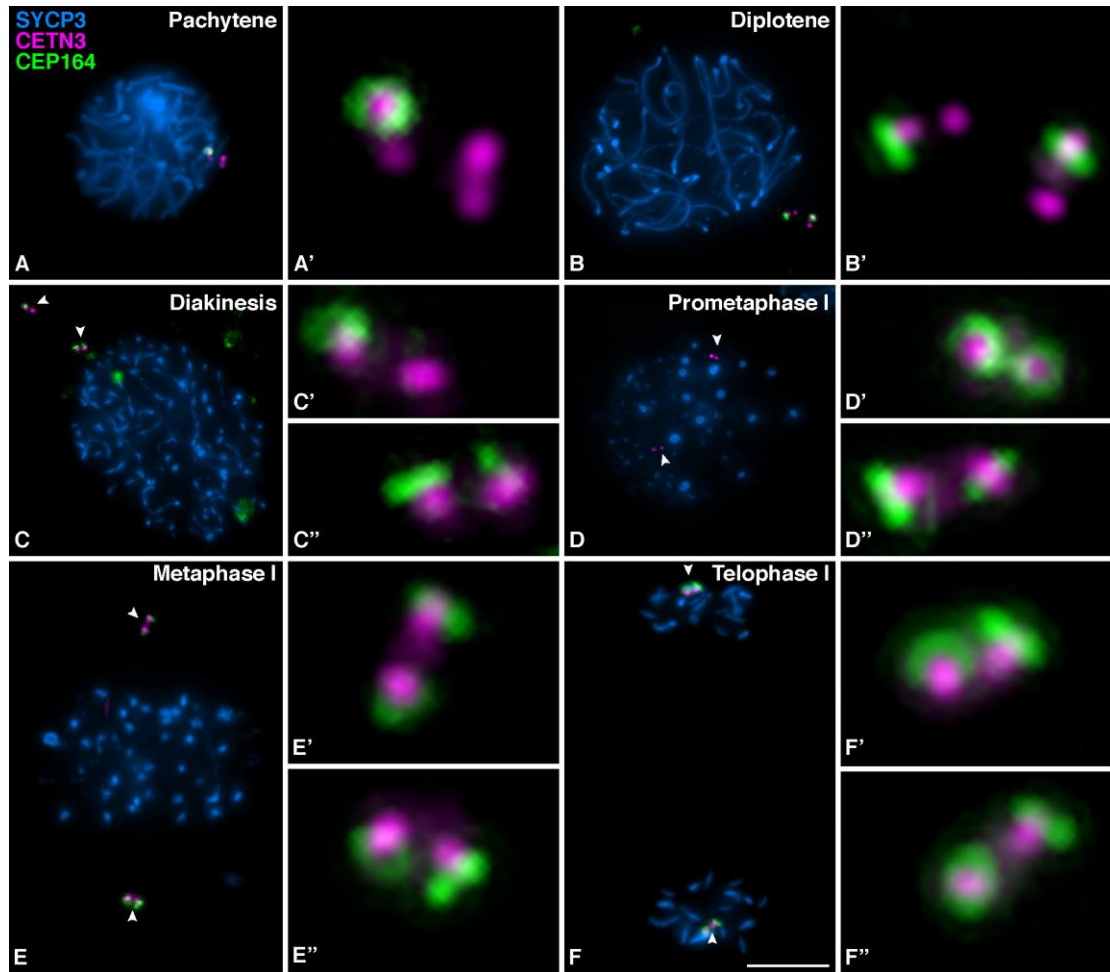
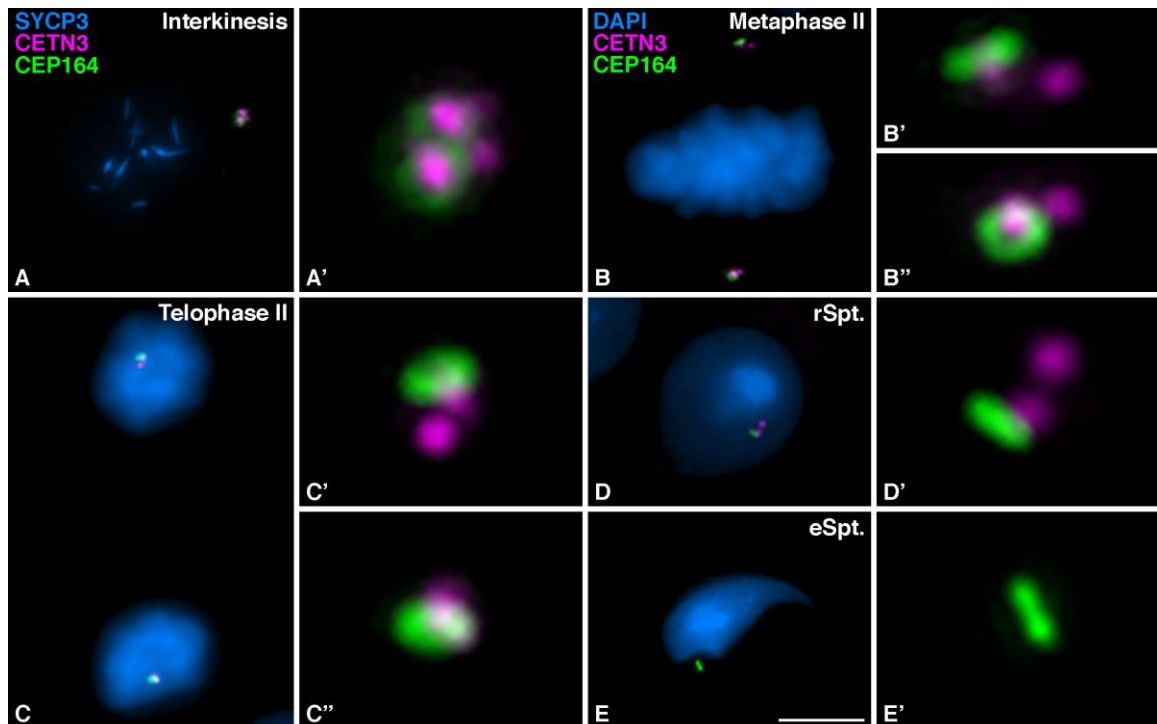


**Supplementary Figure S1. Detection of the cilia in *Ankrd31*<sup>-/-</sup> sterile mice and WT spermatocytes.**

Triple immunolabelling of SYCP3 (magenta), acetylated Tubulin (AcTub) (green) and Centrin 3 (CETN3) (yellow) on mouse spermatocytes of *Ankrd31*<sup>-/-</sup> (A,B) at (A) zygotene, and (B) zygotene presenting cilium. Mouse spermatocytes of WT (C,D) at (C) zygotene, and (D) zygotene presenting cilium, (E) Early round spermatid (rSpt.) and (F) mature elongated spermatid (eSpt.). Scale bar in B, D, E and F represent 5  $\mu$ m.



**Supplementary Figure S2. Distribution of CEP164 in mouse spermatocytes during the first meiotic division.** Triple immunolabelling of SYCP3 (blue), Centrin 3 (CETN3) (magenta) and CEP164 (green) in mouse spermatocytes at (A) Pachytene (B) Diplotene, (C) Diakinesis, (D) Prometaphase I, (E) Metaphase I, (F) Telophase I. For images A'-F' the 300X magnification of the centrosomes is shown (C'-C'', D'-D'', E'-E'' and F'-F'', white arrowheads). Scale bar in F represents 5  $\mu$ m.



**Supplementary Figure S3. Distribution of CEP164 in mouse spermatocytes during the second meiotic division and spermiogenesis.** Triple immunolabelling of SYCP3 (blue), Centrin 3 (CETN3) (magenta) and CEP164 (green) on squashed WT mouse spermatocytes at (A) Interkinesis. And double immunolabelling of Centrin 3 (CETN3) (magenta) and CEP164 (green), with chromatin stained with DAPI (blue) at (B) Metaphase II, (C) Telophase II (D) Early round spermatid (rSpt.) and mature elongated spermatid (eSpt.). For images A'-E' the 300X magnification of the centrosomes is shown. Scale bar in E' represents 5  $\mu$ m.