

Figure S1. Induced Atm mediates DNA damage response in *Atm^{TgERT2-LBD} Atm^{-/-}* cells.

a) Western blot analyses of pSMC1, pKAP1 and p-p53 in *Atm^{TgERT2-LBD} Atm^{-/-}* and *Atm^{+/-}* thymocytes treated with NCS 500ng/ml for 1h. **b)** Western blot analyses of EFs isolated from *Atm^{TgERT2-LBD} Atm^{-/-}* mice and treated with different doses of 4-OHT and 5nM bleomycin. 1 μ M 4-OHT is the minimum dose found to induce the maximal DNA damage response as evaluated by H2AX phosphorylation. **c)** Atm-dependent DNA damage response was evaluated by phospho-Kap1, -p53 and -H2AX detection in *Atm^{TgERT2-LBD} Atm^{-/-}* EFs after 1 μ M 4-OHT and 5nM bleomycin treatment in the presence or absence of the Atm inhibitor, KU55933. **d)** MEFs from *Atm^{TgERT2-LBD} Atm^{-/-}* embryos in which Atm was reactivated with 1 μ M 4-OHT and from *Atm^{TgERT2-LBD} Atm^{+/-}* embryos were treated or not with 10Gy IR. Extracts were prepared 1h after-irradiation and revealed for pSMC1 and pKAP1 antibodies. MEFs were pre-incubated for 1h with Atm (KU55933) and DNA-PK (NU7026) inhibitors.

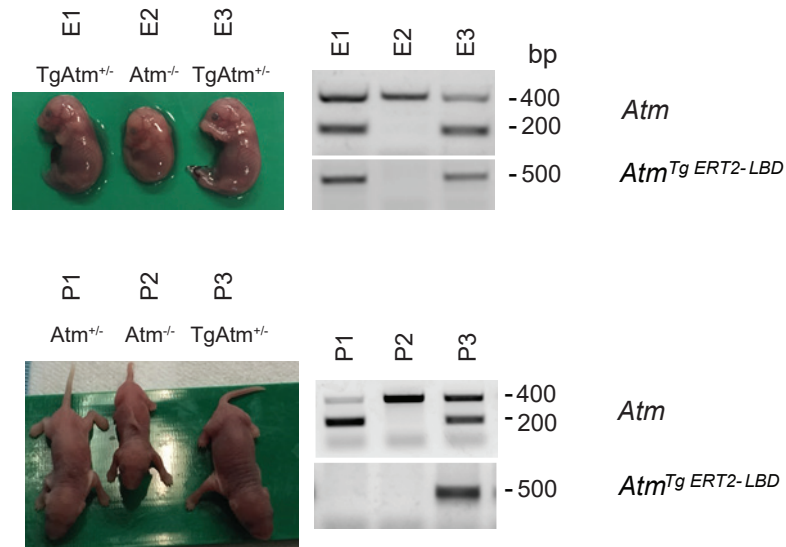


Figure S2. *Atm* reactivation restores fertility in *Atm*^{TgERT2-LBD}*Atm*^{-/-} mice.

Picture of embryos (E17.5 days post coitum; upper panel) and pups (P1-2 days post-partum, lower panel) born from *Atm*^{TgERT2-LBD}*Atm*^{-/-} males injected with tamoxifen crossed with CD1 and *Atm*^{+/-} females. On the right side representative PCRs for genotyping are shown: *Atm* wild-type allele (400bp), *Atm* knockout allele (200bp) and transgene allele (500bp)

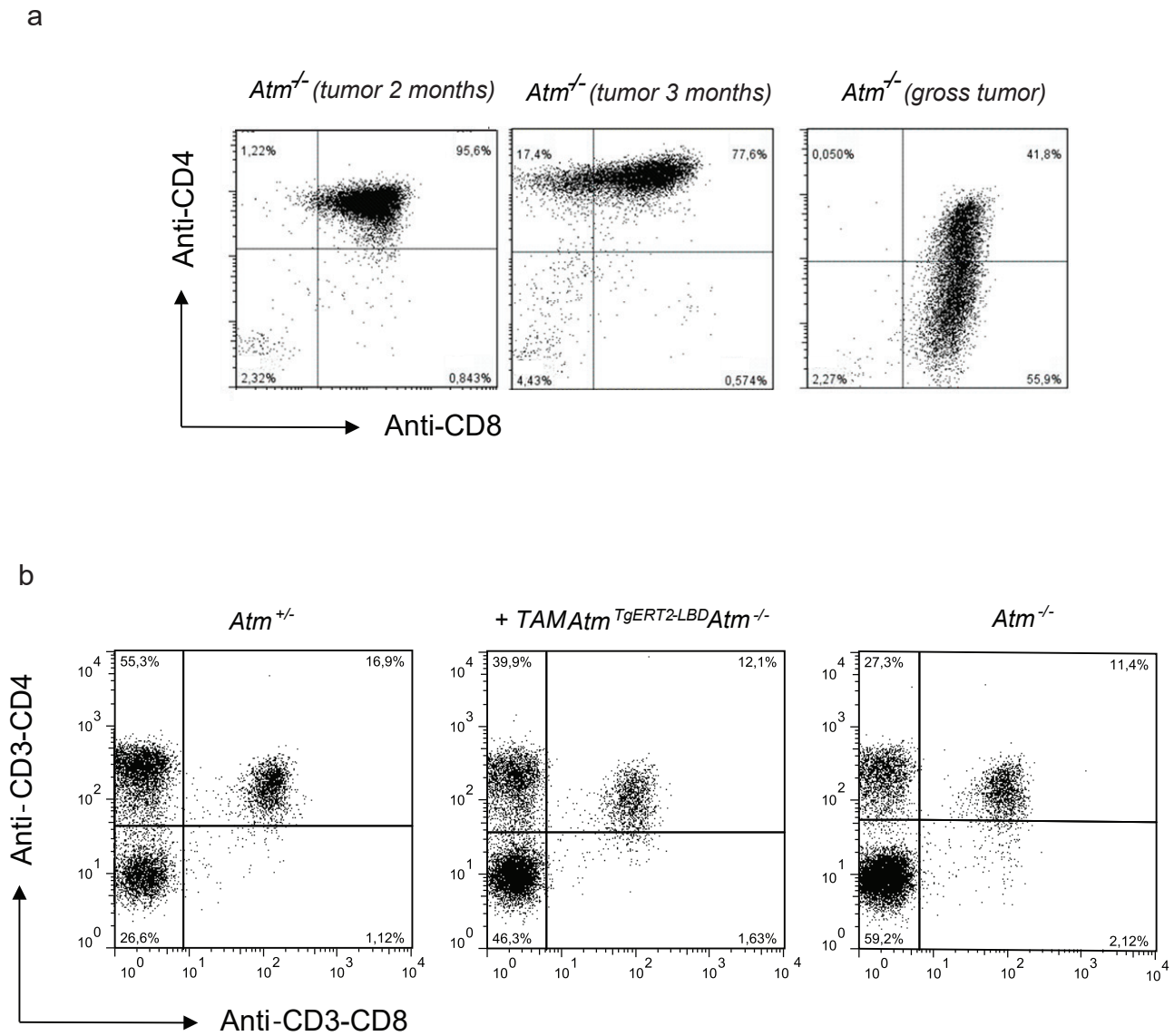


Figure S3. T cell maturation is achieved and maintained in *Atm*^{TgERT2-LBD}*Atm*^{-/-} mice after tamoxifen treatment.

a) Flow cytometry analysis of *Atm*^{-/-} thymocytes collected at different ages and stained for CD4 and CD8 markers. Different stage of thymoma are shown. **b)** Flow cytometry analysis on peripheral blood cells collected from 9 months *Atm*^{TgERT2-LBD}*Atm*^{-/-} and *Atm*^{+/-} old mice after tamoxifen treatment. For *Atm*^{-/-} mice, blood cells were collected at 2 months of age. Representative CD3-CD4 and CD3-CD8 expression patterns are shown. Data were obtained from independent experiments performed on n=3 mice of each genotype.

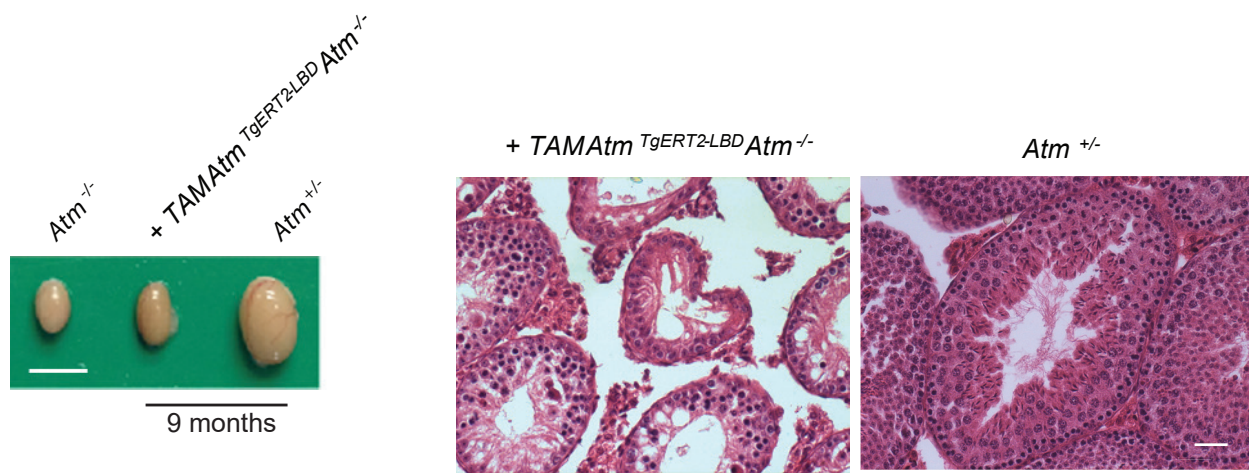


Figure S4. Spermatogenesis is reversible in tamoxifen-treated $Atm^{TgERT2-LBD}Atm^{-/-}$ mice .

Testes picture and relative H&E section staining of $Atm^{+/-}$ and $Atm^{TgERT2-LBD}Atm^{-/-}$ males 9 months after tamoxifen treatment. $Atm^{-/-}$ testis is shown for comparison. Scale bar=50 μ m.