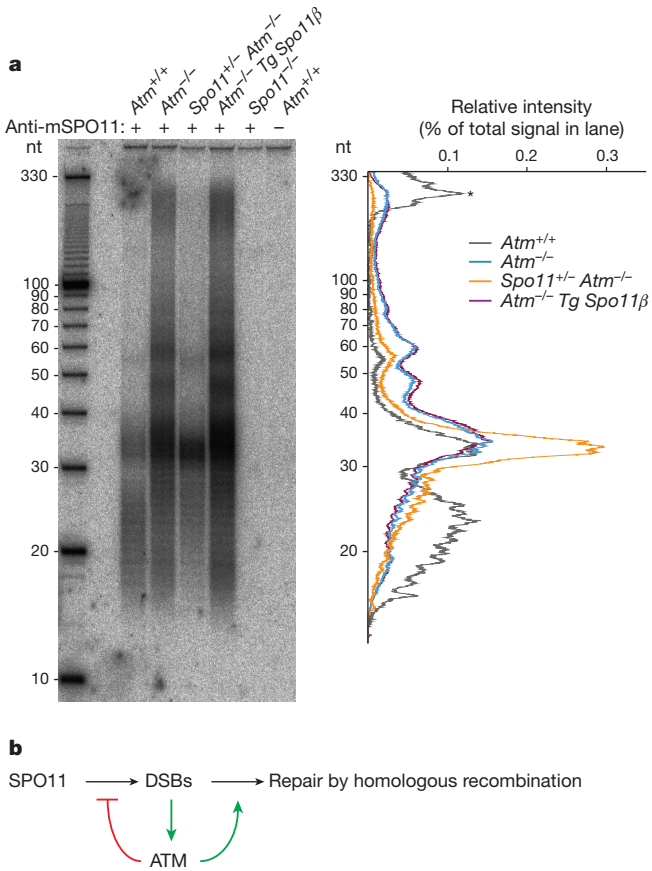

Figure 4 | Roles of ATM in DSB formation and processing. **a**, SPO11–oligonucleotide length distribution is altered in $Atm^{-/-}$ spermatocytes. End-labelled SPO11–oligonucleotide complexes were treated with protease to digest the bound protein before electrophoresis on denaturing PAGE. Left, autoradiograph. Right, background-subtracted lane traces normalized to total signal within each lane. Asterisk, autoradiograph background. Each lane contains SPO11–oligonucleotides from the equivalent of different numbers of mice in order to better compare sizes: $Atm^{+/+}$, 15 mice; $Atm^{-/-}$, 2 mice; $Spo11^{+/-}$ $Atm^{-/-}$, 4 mice; $Atm^{-/-}$ plus transgene, 2 mice; $Spo11^{-/-}$, 2 mice; mock, 15 wild-type mice. nt, nucleotides. **b**, Negative feedback loop by which ATM regulates meiotic DSB levels. DSBs generated by SPO11 activate the ATM kinase, inhibiting further DSB formation. ATM may also have roles in repair of DSBs by homologous recombination; for example, by promoting DSB end resection.