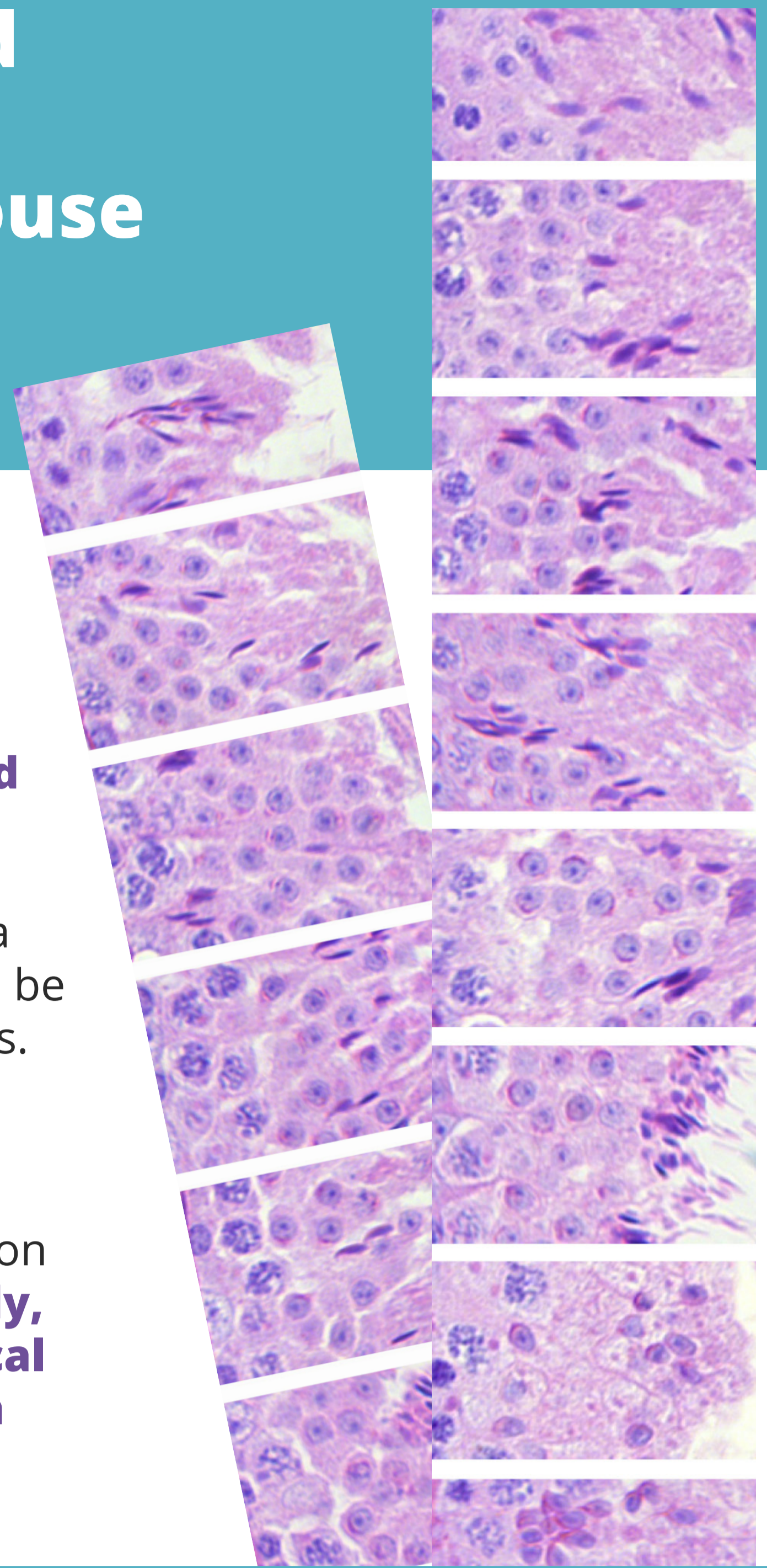


Retinoic Acid Induced Protein 14 (*Rai14*) is dispensable for mouse spermatogenesis

BACKGROUND

Retinoic Acid Induced Protein 14 (*Rai14*) is an evolutionarily conserved gene that is highly expressed in the testis. In human tissues, *Rai14* is predominantly expressed in the placenta and testes, and it has also been found to be predominantly expressed in mouse testis.

However little is known about *Rai14*'s function during spermatogenesis, a complex process of germ cell reproduction and differentiation, in mice. **In this study, we aimed to uncover the physiological role of *Rai14* in mouse testis through CRISPR/Cas9-based gene editing.**



METHODS

Mice were obtained and maintained in a temperature- and humidity-controlled room with food and water provided as often as necessary. Mice were randomly divided into cages.

Two groups of mice were then distinguished: a group of **knockout** mice genetically engineered not to have the *Rai14* gene using CRISPR/Cas9 technology, and a group of **wild-type** mice, with unedited genes.

Western blot and immunofluorescence analyses were carried out **to evaluate the absence of *Rai14* at the protein level**, and sperm concentration and motility were assessed using a computer-assisted sperm analysis (CASA) system.



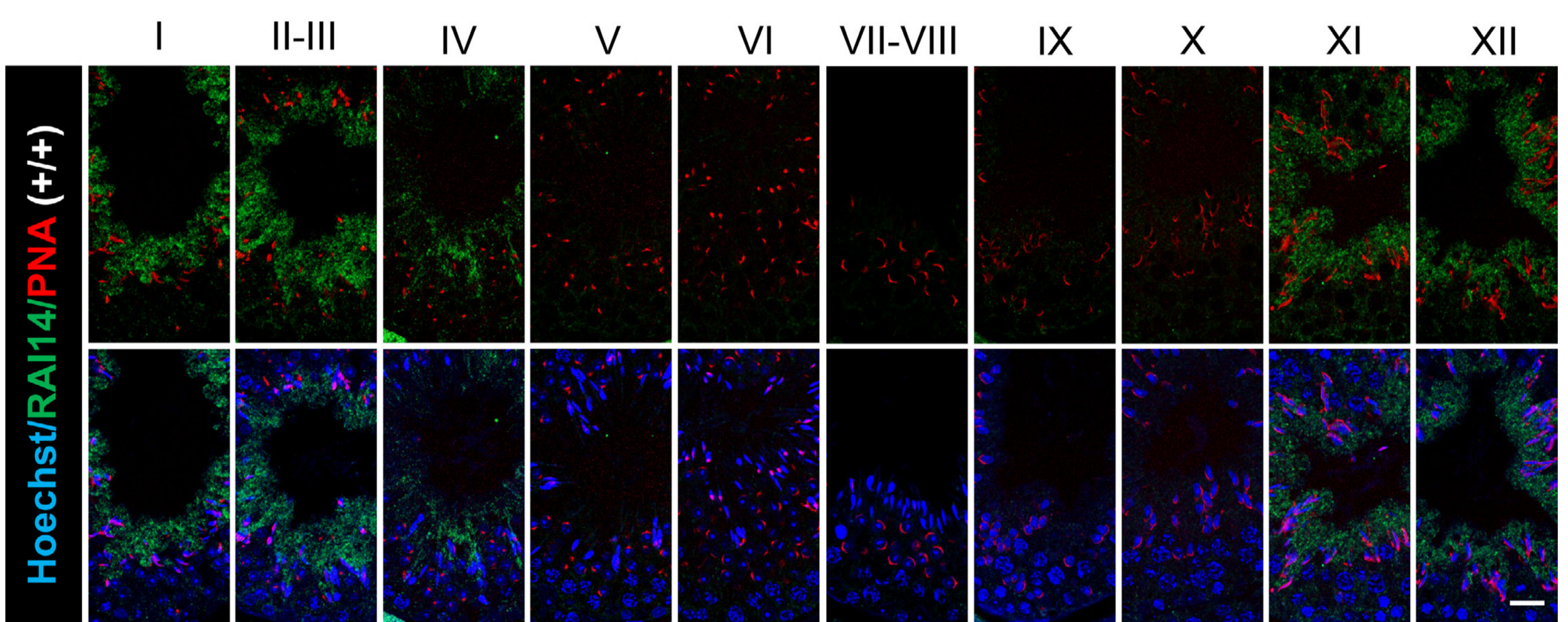
GROUP 1: WILD-TYPE



GROUP 2: KNOCKOUT

RESULTS

Immunofluorescence staining showed the specific distribution of *Rai14* in wild-type mice testis; **in *Rai14*-absent (knockout) mice, this was not clearly observed.**



Thus, mice lacking the *Rai14* gene demonstrated normal fertility and complete spermatogenesis, which is in sharp contrast with the results reported in a previous study on rats. Additionally, sperm parameters and cell death did not appear to differ between the two groups of mice.

CONCLUSION

In summary, **our study demonstrates that *Rai14* is dispensable for mouse spermatogenesis and fertility.** Although the results of this study were negative, the information obtained provides an enhanced understanding of the role of *Rai14* in the testis, and researchers may refer to these results to avoid conducting redundant experiments.