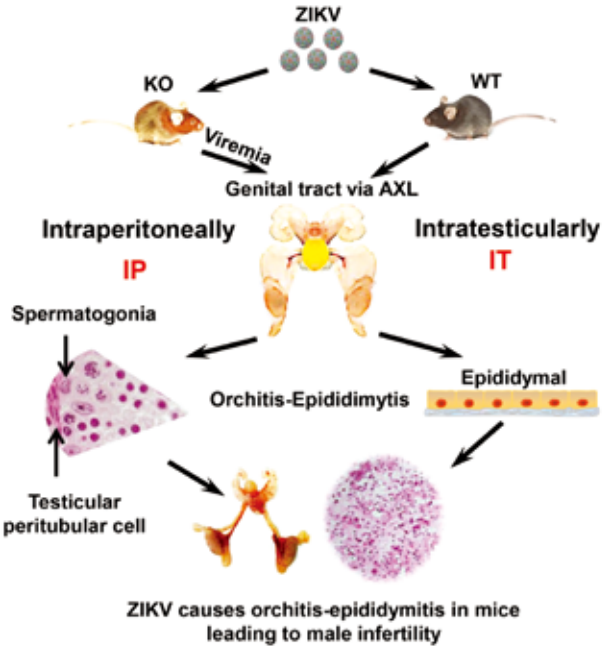
Zika Virus Infections Can Lead to Male Infertility in Mice

Zika virus infections, previously found associated with microcephaly in newborns and Guillain-Barré Syndrome in humans, might also lead to male infertility in mice, as researchers revealed on November 22, 2016, in an article published online in *Cell*, as the result from a joint research by the research groups led by Prof. George Fu Gao from the institute of Microbiology, Chinese Academy of Sciences (IMCAS), and Prof. LI Xiangdong from the China Agricultural University (CAU).

Entitled "Zika Virus Causes Testis Damage and Leads to Male Infertility in Mice", the paper describes how infection with Zika virus in mice incur acute and chronic testicular damage, eventually leading to infertility. Zika virus can cross the blood-testes-barrier under certain conditions (*ie*. immunodeficiency), co-authors say, and subsequently infect the reproductive tract in male mice. In their experiments, researchers observed acute orchitis/epididymitis beginning 8 days after infection, along with decreased levels of testosterone; the symptoms persisted and on the 16th day of infection, numerous degenerating germ cells, vascular congestion within interstitial area and disrupted seminiferous tubules were found; on the 30th day, a breakdown in the morphology of the testes and further disruption of the seminiferous tubules can be observed, resulting in completely atrophied testes and seminal vesicles by the 60th day of infection.

Further studies show that Zika virus can infect the testes and epididymis, but not the prostates or seminal vesicles in the male reproductive tract. Specifically, Sertoli, Leydig, and epididymal epithelia cells secrete large quantities of cytokines/chemokines after Zika virus infection, which may have contributed to the observed damage in the testes/epididymis. In contrast, peritubular cells and spermatogonia did not secrete cytokines/chemokines after Zika virus infection, suggesting that these cells may harbour Zika virus, allowing the virus to persist in the male genital tract.



As showed in a recent research by Gao and LI's groups, Zika virus infection damages testis and potentially results in male infertility in mice. (Image by Prof. Gao's group)

Zika virus is closely related to Dengue virus, Japanese encephalitis virus, and West Nile virus, all of which are transmitted primarily via mosquito bites. However, as supported by the study, the observation that Zika virus can also persist in the semen of convalescent male patients suggests that this pathogen could also be sexually transmitted. To further understand mechanisms of Zika virus pathogenesis, researchers emphasize, more studies are needed.

Contact:

Prof. George Fu Gao
E-mail: gaof@im.ac.cn
CAS Key Laboratory of Pathogenic Microbiology and Immunology, Institute Of Microbiology, Chinese Academy of Sciences