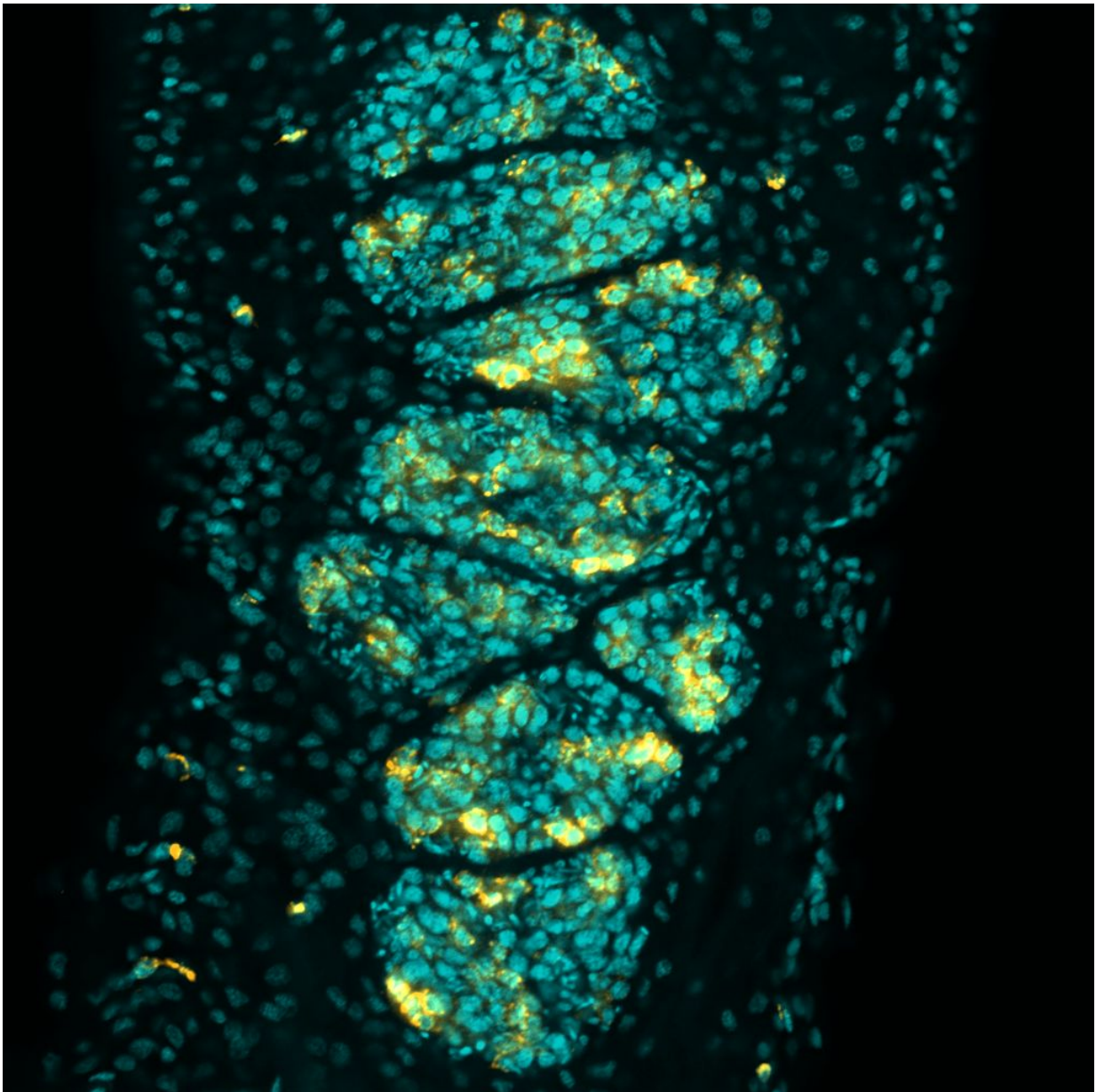


Researchers identify gene required for sperm production in blood flukes

June 15 2016



Schistosome testes labeled to detect DNA (turquoise) and expression of germinal histone H4 mRNAs (orange). Credit: Harini Iyer

Scientists can interfere with sperm production in the parasitic blood fluke *Schistosoma mansoni* by blocking expression of the Nuclear Factor Y-B gene (NF-YB). The new study by Harini Iyer and Phillip A. Newmark of the Howard Hughes Medical Institute and University of Illinois and James Collins (now at UT Southwestern) appears on June 15 in *PLOS Genetics*.

The population of stem cells that develop into [sperm](#), called spermatogonial stem cells (SSCs), must continually renew themselves, while also differentiating into mature sperm. Too much self-renewal can create tumors and defects in differentiation can lead to infertility through malformed sperm. To better understand how SSCs maintain this balance, the scientists investigated the role of the NF-YB gene in stem cell production in the freshwater planarian, *Schmidtea mediterranea*. Previously, the NF-Y family of transcription factor had been shown to play a role in germ cell development in the planarian. Using RNA interference, the researchers lowered the expression of the gene and showed that it is necessary for SSC proliferation. They repeated the experiment in the planarian's parasitic cousin, *S. mansoni*, which is the cause of the neglected tropical disease schistosomiasis. Suppressing NF-YB created the same effect and ultimately reduced SSC numbers in the testes.

"We are excited to see that basic research on planarian germ cell development can also lead to better understanding of the reproductive biology of their parasitic cousins. Ultimately, reproduction enables the continued propagation of these parasites, and the more we know about how they reproduce, the better chance we have of controlling them

someday," says Dr. Newmark. Additionally, the identification of factors involved in SSC maintenance may have other biomedical applications, such as discerning the cause of testicular tumors and improving fertility treatments.

More information: Iyer H, Collins JJ III, Newmark PA (2016) NF-YB Regulates Spermatogonial Stem Cell Self-Renewal and Proliferation in the Planarian *Schmidtea mediterranea*. PLoS Genet 12(6): e1006109. [DOI: 10.1371/journal.pgen.1006109](https://doi.org/10.1371/journal.pgen.1006109)

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