New requirements for male fertility

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Two independent groups of researchers have identified distinct roles for two proteins in a family of proteins known as PLA2s as crucial for sperm function and fertility in mice. These data identify proteins that could underlie causes of infertility and provide potential targets for the development of new contraceptive agents and new approaches to treating infertility. In addition, these data provide a caution to those developing drugs that target members of this closely related group of proteins to treat hardening of the arteries (atherosclerosis) and inflammation.

The team of researchers led by Makoto Murakami, at The Tokyo Metropolitan Institute of Medical Science, Japan, found that sPLA2-III was expressed in a region of the testis known as the proximal epididymal epithelium. Mice lacking this protein had substantially decreased fertility because their sperm did not mature properly. Specifically, the defects in maturation meant that the sperm showed decreased motility and decreased ability to fertilize eggs in vitro.

In the second study, Christophe Arnoult and colleagues, at Grenoble Institute of Neuroscience, France, found in mice that group X secreted PLA2 (also known as mGX) was a predominant constituent of a compartment in sperm known as the acrosome. This compartment has a key role in breaking down the coat that surrounds an egg so that the sperm can elicit fertilization. Consistent with this, male mice lacking mGX produced smaller litters than did normal male mice and sperm from the mGX-deficient mice were not efficient at fertilizing eggs in vitro. Further, molecules that inhibited mGX and molecules that more broadly inhibited secreted PLA2s each reduced the efficiency of in vitro fertilization (IVF). By contrast, the presence of additional mGX improved the efficiency of IVF.

More information:
Group III secreted phospholipase A2 regulates epididymal sperm maturation and fertility in mice. View this article at: www.jci.org/articles/view/4049

… 97a554ce7a008712aa57
Group X phospholipase A2 is released during sperm acrosome reaction and controls fertility outcome in mice. View this article at: www.jci.org/articles/view/4049 … ec2760d5fdcfa04f0042

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