

Synthetic protein could improve diagnoses and treatment of male infertility

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Queen's University researcher Richard Oko and his co-investigators have come up with a promising method of treating male infertility using a synthetic version of the sperm-originated protein known as PAWP.

They found this [protein](#) is sufficient and required to initiate the fertilization process.

Dr. Oko's research promises to diagnose and treat cases of male factor infertility where a patient's [sperm](#) is unable to initiate or induce activation of the egg to form an early embryo.

"PAWP is able to induce embryo development in human eggs in a fashion similar to the natural triggering of embryo development by the [sperm cell](#) during fertilization," explains Dr. Oko (Biomedical and Molecular Sciences). "Based on our findings, we envision that physicians will be able to improve their diagnosis and treatment of infertility, a problem that affects 10 to 15 per cent of couples worldwide."

The results of this study highlight the potential clinical applications of sperm PAWP as a predictor of [infertility treatment](#). Since most human infertility treatments are now done by injecting a single sperm directly into an egg, supplementation of human sperm with PAWP protein may potentially be used to improve the success rate of infertility treatments in the future.

According to the Centers for Disease Control and Prevention's 2013

Annual Report on Assisted Reproductive Technologies, only about 37 per cent of treatment cycles lead to successful pregnancy. This low success rate may be due to a variety of factors in the male and female including the inability of sperm cell to initiate fertilization and trigger [embryo development](#) upon egg entry.

"The results of our study set the stage for further investigation of PAWP protein as a molecular marker for diagnosis and as a factor for improvement of infertility treatments," says Dr. Oko.

Dr. Oko worked with his former PhD student Mahmoud Aarabi and Clifford Librach and Hanna Balakier at the CReATe Fertility Centre in Toronto on this latest research, which was published in the *FASEB Journal*.

More information: Sperm-derived WW domain-binding protein, PAWP, elicits calcium oscillations and oocyte activation in humans and mice, Published online before print June 26, 2014, [DOI: 10.1096/fj.14-256495](#)

Provided by Queen's University

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