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New IVF breakthrough

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Researchers at the University of Gothenburg have discovered that a chemical can trigger the maturation of small eggs to healthy, mature eggs, a process that could give more women the chance of successful IVF treatment in the future. The results have been published in the revered journal *PloS ONE*.

Women and girls treated for cancer with radiotherapy and chemotherapy are often unable to have children as their eggs die as a result of the treatment.

Although it is now possible to freeze eggs and even embryos, this is not an option for girls who have yet to reach puberty. A better way of preserving their fertility is to freeze slices of ovarian tissue that contain small immature eggs, and subsequently mature these eggs so that they can be used in IVF treatment. Unfortunately there is, at present, no way of maturing small eggs in an artificial environment outside the body.

A research group led by professor Kui Liu at the University of Gothenburg has recently discovered that a chemical which inhibits the PTEN molecule can trigger the maturation of small eggs to form healthy, mature eggs.

Carrying out a study on mice, the researchers managed to produce five live young mice from eggs matured using this PTEN inhibitor to help the growth and maturation process.

The results have been published in PloS ONE and build on previous

results published in Science, where the group showed that PTEN is a molecule that inhibits an egg's development.

"This discovery demonstrates that there is a realistic chance of being able to use PTEN inhibitors to activate small eggs in a test tube," says Kui Liu, professor at the University of Gothenburg's Department of Chemistry and Molecular Biology.

Professor Kui Liu has led the study and is optimistic about the new method. "This technique is extremely valuable for those women who have only small eggs in their ovaries and cannot be helped by IVF as things stand," says Kui Liu.

Kui Liu's group demonstrated in the study that a short treatment with the PTEN inhibitor can trigger the growth of small eggs, and that this treatment makes it possible to produce plenty of mature eggs.

The results also show that healthy, live young can be born from treated eggs used in IVF. Not only were the young mice born fertile, they also showed no signs or symptoms of chronic disease at the age of 15 months, which equates to 70 human years.

Kui Liu is a professor of molecular biology and his group specialises in the study of molecular mechanisms that affect the development of female reproductive cells. His aim is to be able to use this method to help women.

"We hope to see this method being used clinically within five to ten years," says Kui Liu.

Provided by University of Gothenburg

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