

Identifying the biological clock that governs female fertility

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A recent study at the University of Gothenburg sheds light on the mystery of the biological clock that governs fertility. Credit: University of Gothenburg

Researchers at the University of Gothenburg have identified the biological clock that governs female fertility. The discovery represents a major contribution to research aimed at finding medical approaches to treating infertility in women.

Some women can have successful pregnancies at the age of 50, whereas other are unable to get pregnant when they are 30. Researchers are not yet able to fully explain such differences. One factor is that the onset of



menopause is influenced by the point at which the uterus runs out of <u>eggs</u> to release.

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Just as newborn infants require nurturance in order to survive, eggs in the uterus need nourishment and support from the granulosa cells of the primary follicle. According to the latest discovery by Professor Kui Liu's research team, a signaling pathway in these cells plays a key role in enabling immature eggs to survive.

Pathways that determine the fate of an egg

The mTOR signaling pathway in the granulosa cells is necessary for activating expression of the kit ligand growth factor, which subsequently binds to the c-kit receptors of eggs and determines their fate.

According to Professor Liu, who is affiliated with the Department of Chemistry and Molecular Biology at the University of Gothenburg, "This mechanism permits the granulosa cells to decide when eggs will begin to grow and when they will die. In that sense, they serve as a kind of biological clock that monitors the onset of menopause."

Researchers believe that the discovery will point the way to interventions that stimulate the growth of eggs that have been unable to mature. Their hope is that increased knowledge about the molecular mechanisms that govern development in <u>human eggs</u> can be applied to clinical treatment of <u>female infertility</u> in the years to come. Professor Liu's team is plunging ahead with that goal in mind.

Professor Liu is affiliated with the Department of Chemistry and Molecular Biology at the University of Gothenburg. His team studies



genetic and epigenetic regulation of the development of female gametes (sex <u>cells</u>). For the past few years, their efforts have focused on both basic preclinical research and the application of results generated by studies of mouse models to clinical techniques for the treatment of female infertility.

More information: www.cell.com/current-biology/abstract/S0960-9822%2814%2901144-0

Provided by University of Gothenburg

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