

Discovery of molecule responsible for birth timing could lead to preterm labour prevention

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Researchers at the University of Adelaide have identified that the activation of the TLR4 molecule is key in controlling the timing of birth, acting as a trigger common to both preterm and on-time labour.

Professor Sarah Robertson, Director of the Robinson Research Institute and lead author of the study published this week in *Endocrinology*, said the research was likely to lead to new therapies in preventing preterm labour.

"Preterm labour, [birth](#) at less than 37 weeks gestation, affects 5-13% of

pregnancies worldwide. It accounts for 28% of all neonatal deaths and can result in major health consequences for surviving children," says Professor Robertson.

"In order to prevent [preterm birth](#), we need to understand the physiological responses which lead to normal on-time birth, and our new research pinpoints a 'master switch' that influences the timing of birth.

"We know that several agents can bind and trigger the molecule TLR4 after release from fetal and maternal tissues in late gestation, including proteins that are released from a baby's lungs just before birth.

"Other molecules that activate TLR4 are produced in the mother's tissues due to uterine stretch, or when the placenta begins to reach the end of its life."

Professor Robertson says that there are other factors that lead to a surge in TLR4 and [premature birth](#), including local bacteria infections, damage to the placenta due to inflammation, or even multiple pregnancy.

"This is a surprising finding because TLR4 is generally thought to be involved in the immune response to infection, and had not previously been linked with normal processes in pregnancy," says Professor Robertson.

"Now that we know how critical TLR4 is in regulating the [timing](#) of birth, we can commence testing drugs that target the TLR4 pathway.

"While this is yet to be looked at in a clinical setting, we believe this finding will ultimately lead to methods to effectively protect women at risk of going into labour early," she says.

More information: "Toll-like receptor 4 is an essential upstream

regulator of on-time parturition and perinatal viability in mice."
Endocrinology [DOI: 10.1210/EN.2015-1089](https://doi.org/10.1210/EN.2015-1089)

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