

## Discovery may pave way for new approaches to prevent infections in the womb

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Researchers funded by the Biotechnology and Biological Sciences Research Council (BBSRC) have established in mice the mechanism that detects and responds to the presence of bacteria in the womb - a discovery that opens up the possibility of new preventative treatments for diseases like pelvic inflammatory disease and Chlamydia.

The work, led by Professor Martin Sheldon from Swansea University's School of Medicine, is published today (22 September) in <u>PLoS ONE</u>.

Professor Sheldon said: "Infections of the womb are common and can lead to infertility and early labour, but we don't have any vaccines or other ways of preventing these problems.

"The womb is a unique environment and responds to infection in different ways to other parts of the body. What we've established is that in mice the womb relies on cells not normally involved in immunity to detect and respond to bacteria. This is crucial information as it will hopefully provide us with new targets for preventing disease."

Unlike in other parts of the body which are exposed to infection the normal immune system is less well developed in the womb. This is thought to be linked to the fact that, unlike the mouth or the gut for example which have resident populations of mostly benign bacteria, the womb is usually sterile.

Because it lacks developed immune tissues, the womb relies on a



simpler, more general form of immunity called the innate system. In most tissues, an innate response is quickly followed by the more sophisticated adaptive response which allows people to develop long lasting and specific immunity and is normally the target for vaccination. Because the adaptive system is underdeveloped in the womb, scientists must look for alternative targets to prevent infection.

The Swansea team found that the cells which line the walls of the womb - epithelial and stromal cells - have a key role in detecting infection and generating an <u>innate immune response</u>. The study established that a protein present on the outside of these cells was responsible for detecting the presence of bacterial cells.

Professor Sheldon continued: "Infections of the womb are sometimes overlooked as a serious health problem because they are seen as a bit embarrassing, but they can cause women considerable physical and emotional suffering and in the US alone, around 1 million women seek treatment for such infections each year.

"The <u>womb</u> presents particular challenges for drug development as it is so unique so research into its basic biology is a crucial first step on the road to new treatments."

Professor Sheldon's team has now attracted industrial collaborators in the hope of drawing on this research to develop new strategies to prevent infection.

Professor Douglas Kell, BBSRC Chief Executive said: "We can only find therapies and treatments for devastating diseases if we can understand the basic biological mechanisms that underpin the normal working of the body. BBSRC support for research such as this allows scientists to explore basic biology and then work with industrial partners to take it forward to develop applications for us in the clinic."



## Provided by Biotechnology and Biological Sciences Research Council

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