

Artificial womb



**ASSIGN
BUSTER**

Imagine, the next time you want to have a child there might not be a need for a mother, at least her womb. Science is coming up with a way to eliminate the need for a mothers' womb or a surrogate mother, in what they are calling "the new fashioned way": growing the embryo in an artificial womb. Doctors are developing artificial wombs in which embryos can grow outside woman's body. The work has been hailed as a breakthrough in treating the childless. Scientists have created prototypes made out of cells extracted from women's bodies.

Embryos successfully attached themselves to the walls of these laboratory wombs and began to grow. However, experiments had to be terminated after a few days to comply with in-vitro fertilization (IVF) regulations. "We hope to create complete artificial wombs using these techniques in a few years," said Dr Hung-Ching Liu of Cornell University's Centre for Reproductive Medicine and Infertility. "Women with damaged uteruses and wombs will be able to have babies for the first time." The pace of progress in the field has startled experts.

Artificial wombs could end many women's childbirth problems - but they also raise major ethical headaches, which will be debated at a major international conference. "There are going to be real problems," said organizer Dr Scott Gelfand, of Oklahoma State University, where these conferences are to be held. Dr. Gelfand goes on to say, "Some feminists even say artificial wombs mean men could eliminate women from the planet and still perpetuate our species. That's a bit alarmist. Nevertheless, this subject clearly raises strong feelings. Liu's work entails removing cells from the endometrium, the lining of the womb." We have learnt how to grow these cells in the laboratory using

hormones and growth factors,' she said. After this, Liu and her fellow researchers grew layers of these cells on scaffolds of biodegradable material, which had been modeled into shapes imitating the inside of the uterus. The cells grew into tissue and the scaffold dissolved. Then nutrients and hormones such as estrogen were added to the tissue. " Finally, we took embryos left over from IVF programmes and put these into our laboratory engineered tissue.

The embryos attached themselves to the walls of our prototype wombs and began to settle there. "(Dr. Liu, 2008) The experiments were cut short after six days. However, Liu now plans to continue with this research and allow embryos to grow in the artificial wombs for 14 days, the maximum permitted by IVF legislation. " We will then see if the embryos put down roots and veins into our artificial wombs' walls, and see if their cells differentiate into primitive organs and develop a primitive placenta. "(Dr. Liu, 2008) The pressing aim of this work is to help women whose damaged wombs stop them from conceiving.

An artificial womb would be made from their own endometrium cells, an embryo placed inside it, and allowed to settle and grow before the whole package is placed back in her body. " The new womb would be made of the woman's own cells, so there would be no danger of organ rejection," (Dr. Liu 2008) Yet, her research is presently limited by IVF legislation. " The next stage will involve experiments with mice or dogs. If that works, we shall ask to take our work beyond the 14-day limit now imposed on such research. " (Dr. Liu, 2008) Yoshinori

Kuwabara, at Juntendo University in Tokyo is trying out a different method. His team amniotic fluid stabilized at body temperature. In this way,

Kuwabara has kept goat fetuses alive and growing for up to 10 days by connecting their umbilical cords to machines that pump in nutrients and dispose of waste. While Liu's work is intended at helping those having difficulty conceiving, Kuwabara's is intended to help women who suffer miscarriages or very premature births. In this way Liu is extending the time an embryo can exist in a laboratory before being placed in a woman's body;

Kuwabara is trying to give a fetus a safe home if delivered too early from its natural womb. Significantly, both believe artificial wombs capable of supporting a child for nine months will become reality in a few years. "

Essentially research is moving towards the same goal but from opposite directions," I-JK fertility expert Dr Simon Fishel, of Park Hospital, Nottingham, said. " Getting them to meet in the middle will not be easy, however. There are so many critical stages of pregnancy, and so many factors to get right. Nevertheless, this work is very exciting. " Dr.

Gelfand has pointed out that this is cause of concern of some serious ethical issues: " For a start, there is the issue of abortion. A woman is usually allowed to have one on the grounds she wants to get rid of something alien inside her own body. At present, this means killing the fetus. But if artificial wombs are developed, the fetus could be placed in one, and the woman told she has to look after it once it has developed into a child. " I don't know about you, but me, I think science is turning into it's own worst enemy!

Resources Harvard. Edu/artificialwomb, fall 2008 Nwotruth. com- September, 2008

<https://assignbuster.com/artificial-womb/>