Implantation

Implantation is a process in which a developing embryo, moving as a blastocyst through a uterus, makes contact with the uterine wall and remains attached to it until birth. The lining of the uterus (endometrium) prepares for the developing blastocyst to attach to it via many internal changes. Without these changes implantation will not occur, and the embryo sloughs off during menstruation.
Before embryogenesis begins, the ovary releases an unfertilized egg cell, called an oocyte, which then travels down the fallopian tube. Sperm can fertilize the egg in the zona pellucida, which prevents the fertilized egg, called a zygote, from adhering to the wall of the fallopian tube. If the zygote implants in any area besides the uterus, the result is an ectopic pregnancy. This condition prevents the complete development of the embryo, and it can cause fatal hemorrhaging in the pregnant female.
A blastocyst successfully implants in the uterus when, as the ZP exits the fallopian tube, the blastocyst leaves the

fallopian tube, the blastocyst leaves the ZP and binds to the endometrium. The endometrium is one of the few uterine surfaces to which a blastocyst cannot always implant. The properties of the endometrium change, and only in a brief window can the blastocyst implant on the tissue. Just prior to ovulation, the endometrium begins to thicken and to expand in response to the release of estrogen from the ovaries. As the embryo moves through the fallopian tubes, the endometrium proliferates, changes in shape, becomes receptive to implantation, and produces a hospitable environment for the embryo. Successful implantation depends on the blastocyst binding to the endometrium.

Despite the contact between the blastocyst and the endometrium, implantation can fail. There are many potential causes of errors. If implantation does not occur, the endometrium breaks down and sheds, along with the blastocyst, as part of the menstrual cycle. However, if a blastocyst does implant, then the endometrium remains in the uterus, and together with uterine tissue, becomes

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