

veterinary  
EMBRYOLOGY

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# implantation

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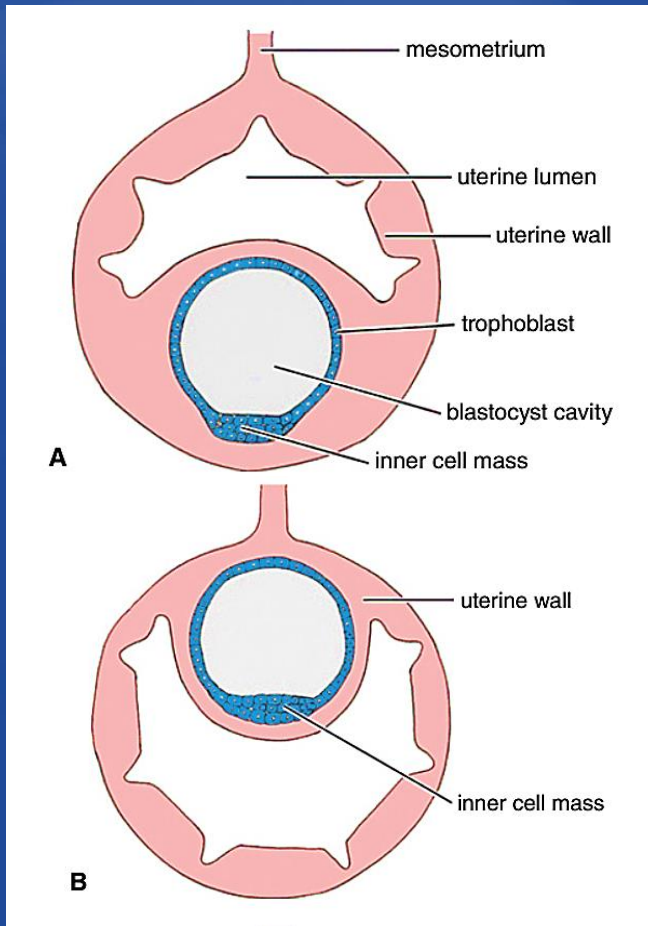


# Implantation/nidation

- Attachment of the developing embryo to the endometrium
- Occurs in three stages in domestic animals:
  - Apposition of the blastocyst or foetal membranes to the uterine epithelium
  - Adhesion
  - Firm attachment or invasion of the endometrium

# FORVSOVPLANTATION

- **INTERSTITIAL/INVASIVE IMPLANTATION**

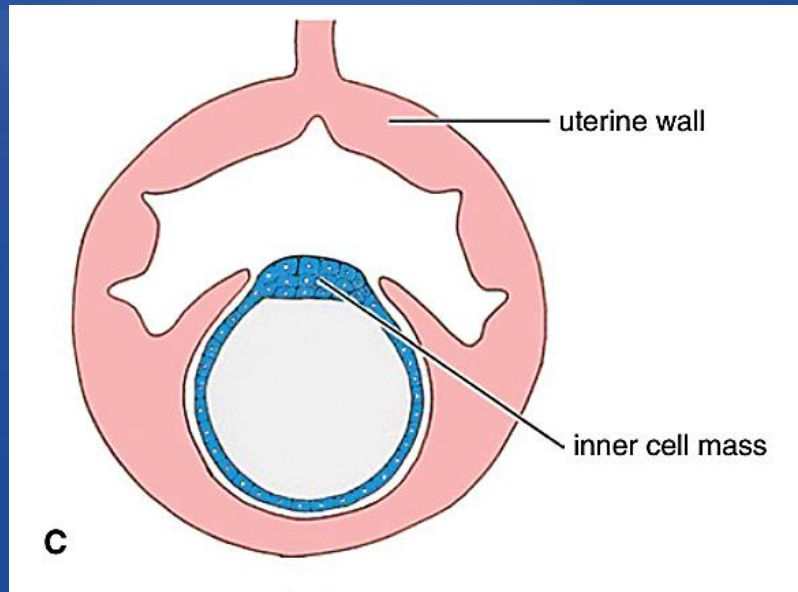


- Primates and guinea pigs
- Blastocyst implants itself interstitially by passing through the uterine epithelium and becoming completely cut off from the uterine lumen.



# Forms of implantation

- **ECCENTRIC IMPLANTATION**

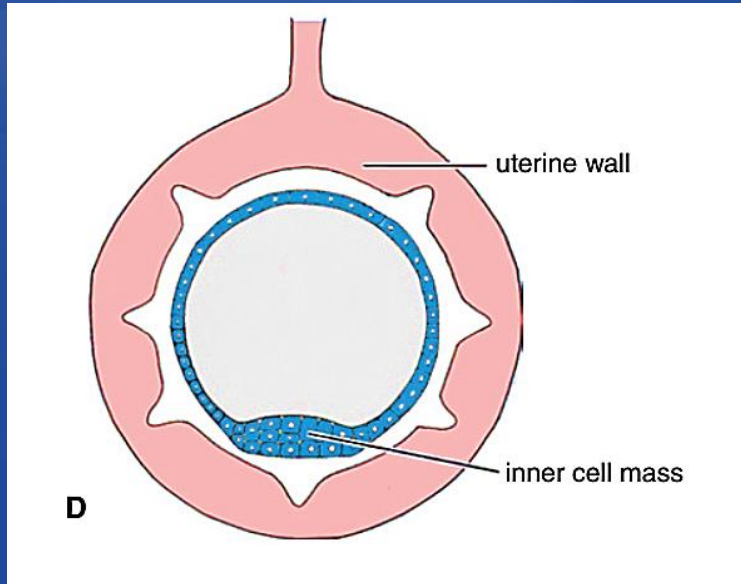


- Rodents
- Blastocyst remains small and becomes lodged in a fold of the uterine lumen, where it implants itself.



# Forms of implantation

- **CENTRIC/SUPERFICIAL IMPLANTATION**

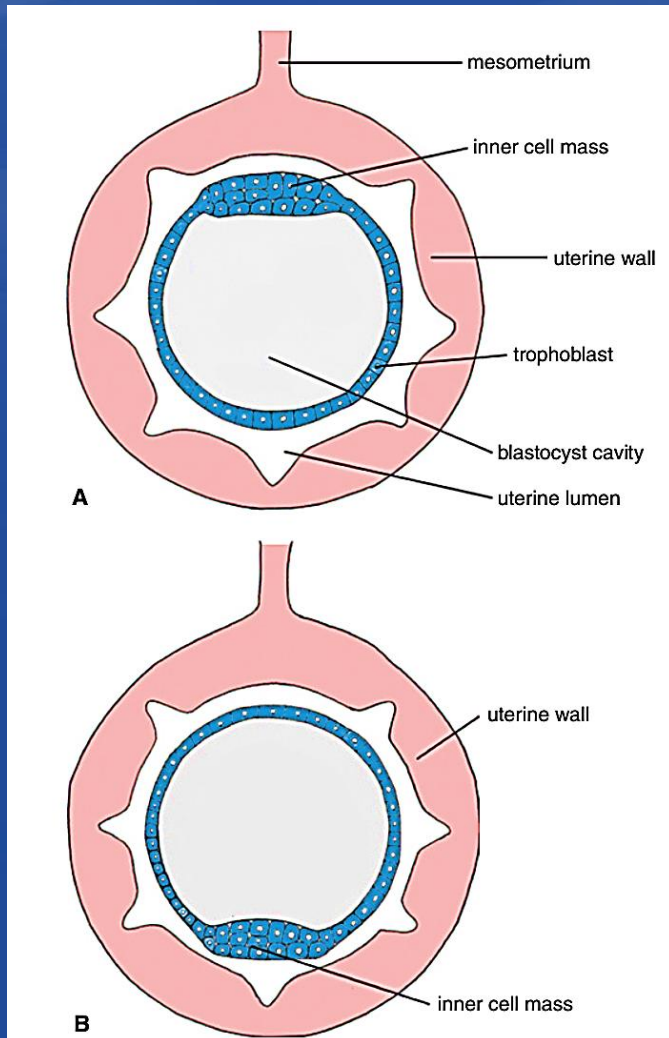


- Ungulates and carnivores
- Blastocyst elongates and enlarges until it fills a good part of the uterine cavity

# Forms of implantation

- **MESOMETRIAL IMPLANTATION**

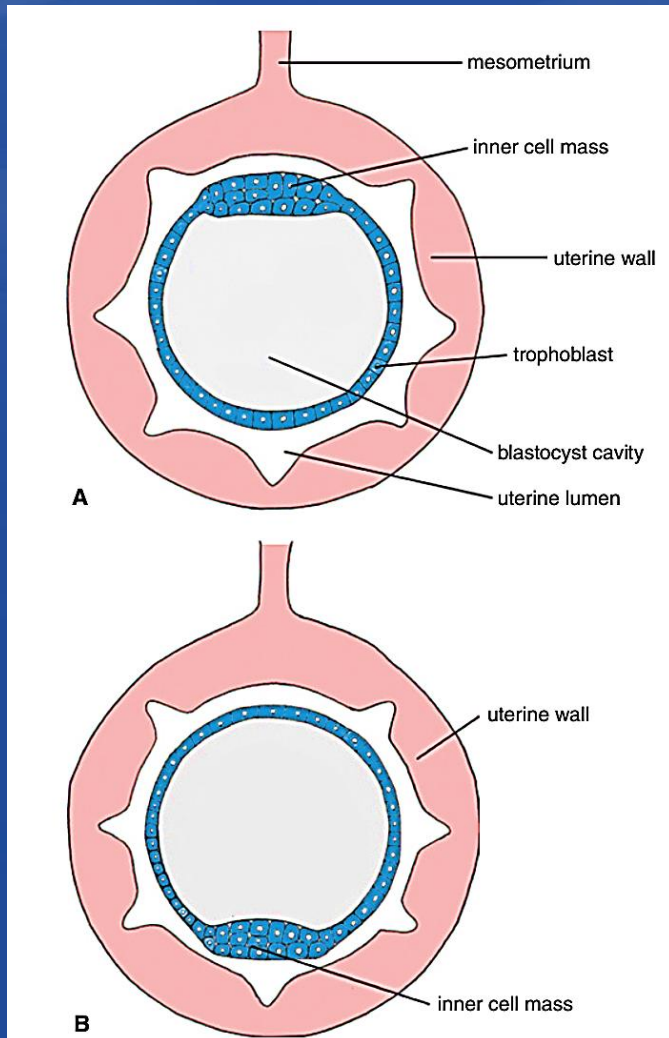
- Blastocyst implants in the endometrium on the same side as the attachment of the mesometrium



# Forms of implantation

- **ANTI-MESOMETRIAL IMPLANTATION**

- Implantation occurs at a site opposite to the attachment of the mesometrium



# In utero spacing

- **CATTLE AND SHEEP**

- When single oocyte is fertilized, the blastocyst attaches to the middle or upper third of the uterine horn adjacent to the ovulating ovary.

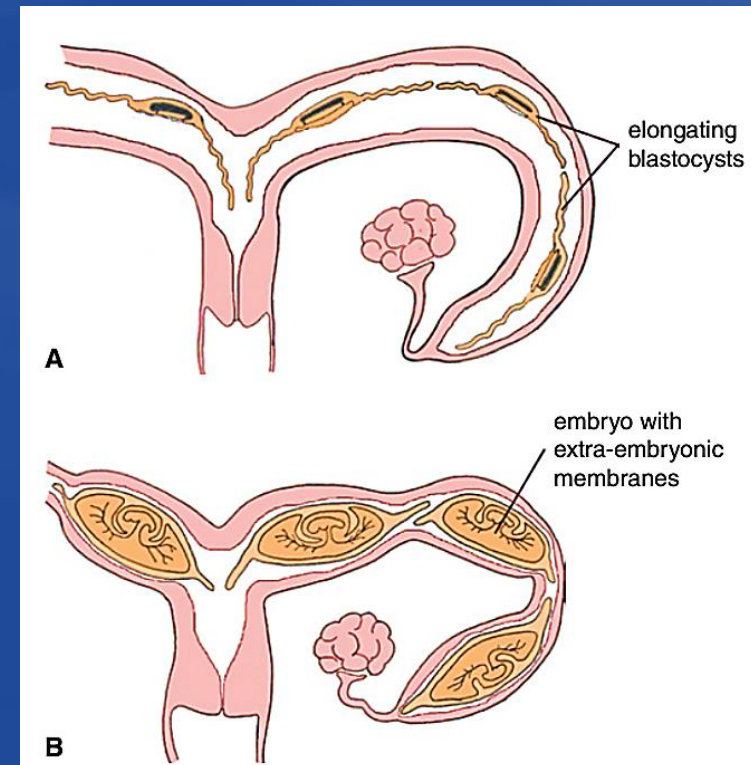
- **HORSE**

- Blastocyst implants in either the left or right horn close to the body of the uterus.

# In utero spacing

- **POLYTOCOUS ANIMALS**

- Blastocysts are evenly spaced within the uterine horns.
- **Oestrogen** produced by the developing blastocyst is considered to have an important role in embryo spacing.



# Delayed implantation

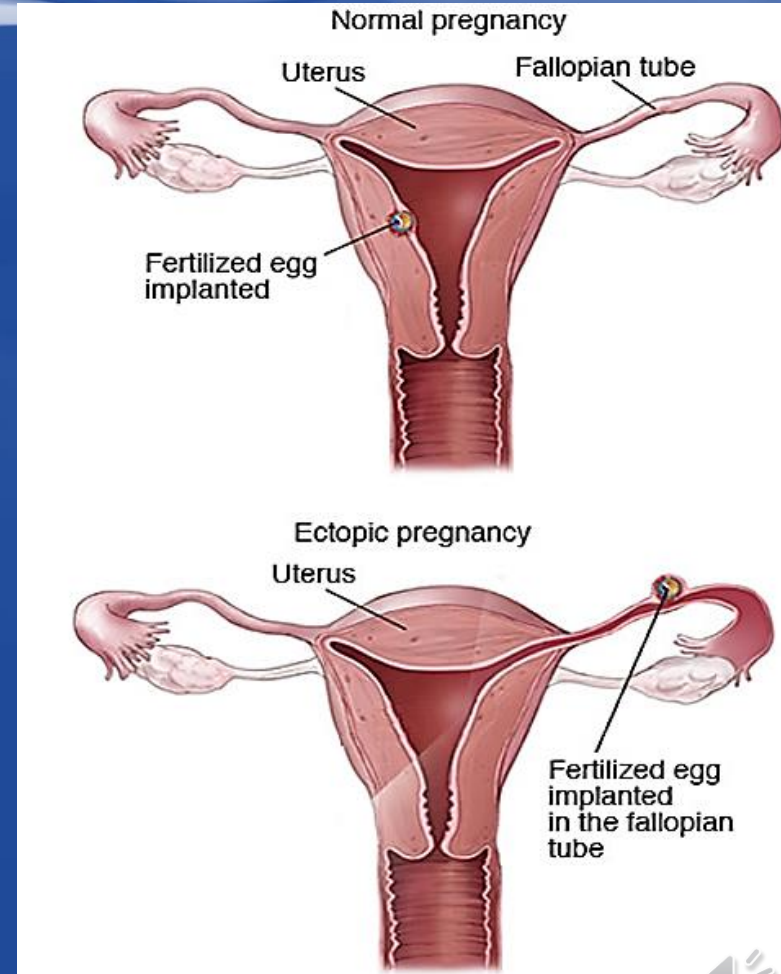
- **SEASONAL OR OBLIGATIVE**
  - Increases the probability that offspring are born at a time of year favourable for survival
  - Mink, ferrets, roe deer, bears, badgers and seals

# Delayed implantation

- **FACULTATIVE OR LACTATIONAL**
  - Ensures that the dam does not have to support two litters contemporaneously
  - Rodents and insectivores

# Ectopic pregnancy

- Implantation and subsequent embryonic development in an extra-uterine location
- **Sites of abnormal implantation**
  - Ovary
  - Uterine tube
  - Peritoneal cavity



end... Thank you!

