Rodin’s “The Kiss” was inspired by an ancient Greek sculpture.

FEMALE REPRODUCTIVE SYSTEM

WE NEED FEMALES, BUT WHY?

Prepared for Clermont County Jail Pupil/Inmates

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Females: the crucial link in the reproductive process

- Both males and females produce gametes.
- Gametes from both sexes join in fertilization.
- BUT FEMALES...
  - Provide a protected environment for fertilization.
  - Nurture and protect the developing embryo.
  - Provide a placenta which takes nutrients from the mother to nurture the developing fetus.
  - Deliver the “at term” fetus to produce an infant.
  - Nurture the infant’s continued sustenance.
GAMETES:  
“Sex Cells”: Sperm and egg

- Human diploid adult, possesses two sets of chromosomes = 46
- Human gamete, haploid, carries one set of chromosomes = 23
- Gamete (gam-: to marry) are haploid sex cells which carry only half of the adult number of chromosomes
- Diploid parents, by the process of meiosis (meio- = “reduce”) produce haploid sex cells.

- Gametogenesis: Haploid sex cells are produced only in the gonads (gono = “sex organ”), i.e., testes and ovaries.

- Fertilization: Joining of haploid sperm with haploid egg, produces a diploid zygote (zygo- = union)
MRI of a Human Female

How many features can you identify?
Internal female reproductive organs
More detailed image of female internal reproductive organs
Female infant is born with 400,000 “eggs”

Pressure inside the mature follicle causes it to burst.
Ovulation of a secondary oocyte
Fimbria capture the ovulated egg.

Sperm meets egg in distal fallopian tube = fertilization
Sperm are attracted to the egg.

This is a scanning electron micrograph show sperm attached to an egg. Only a single sperm can penetrate the barrier around the egg (vitelline membrane).
Fertilization

The vitelline membrane prevents “polyspermy” by swelling to exclude late comers...
Events during the monthly cycle.

- As the follicle matures, the endometrial lining of the uterus proliferates.
- It prepares to receive an embryo, should one arrive.
AFTER FERTILIZATION...

- Development:
  Zygote divides in the Fallopian Tube (7 days).

- Implantation:
  64 cell Morula (“mulberry”) burrows into the enriched wall of the uterus

- Development:
  Embryo grows.

- a Placenta form after three months. It nourishes the growing fetus.

The zygote undergoes mitosis (cleavage).
Ovulation to Implantation

Cleavage

- Zygote
  - 2-celled stage (30 hours)
  - 4-celled stage
  - 8-celled stage

- Morula (72 hours)
- Blastocyst

Egg pronucleus
- Second polar body
- Sperm pronucleus
- Sperm cells
- Fertilization (0 hours)
- Secondary oocyte
- First polar body
- Ovary
- Maturing follicle
- Corpus luteum
- Ovulation
- Implanted blastocyst (6 days)
implantation
Implantation

After about four days, the morula has developed a fluid-filled area and is called a blastocyst.

Fertilised egg divides rapidly forming a morula and moves down fallopian tube.

Egg fertilised

Fimbriae

Ripe egg released and gathered into fallopian tube by fimbriae

Endometrium

Blastocyst implants itself in endometrium (wall of uterus)
Implantation
Implantation can cause “spotting”.

Ironically, this could be confused with a light period, and presumably not pregnant. In fact, implantation is the point that one is technically pregnant...
The implanted embryo and the uterine wall cooperate to produce a hormone which sustains the pregnancy, called human chorionic gonadotropin (HCG). Tests for this hormone form the so-called "Pregnancy Test".
The Human Embryo is nearly identical to many other vertebrate embryos.
The Placenta sustains the fetus, formed at the end of the First trimester.

As the embryo grows, it can no longer absorb adequate nutrition by diffusion, and requires an organ to extract nutrients from the mother’s blood stream. After the first three months, it is no longer considered an embryo, but instead referred to as a fetus. The placenta also cleanses the blood of the developing fetus.
The growing fetus crowds an expectant mother’s abdominal organs.