Physiology & The Menstrual Cycle

David A. Grainger, MD, MPH

July 8, 2015
Disclosures

• I have no disclosures.
Learning Objective

• To understand the menstrual cycle
Jokes about menstrual cycles are not funny.

Period.
What is the purpose of a menstrual cycle?
cycle length

menarche

monophasic

28

12

51
Men and women are different!

- 6-7 million oocytes at birth
- 1-2 million oocytes at menarche
- 500,000 oocytes at menopause
- 0 oocytes at menopause

Fig. 1. Origin of primordial germ cells.
Medial Basal Hypothalamus

Pituitary

Ovary
Follicular Phase
Proliferative Phase
LH Surge
Luteal Phase
Secretory Phase
LH
FSH
Theca
Granulosa
Oocyte
Cumulus
Medial Basal Hypothalamus

Pituitary

Ovary

GnRH

Arcuate nucleus

Median eminence

TSH
PRL
ACTH
GH
FSH
LH

Oxytocin
Vasopressin

Sex steroids (progesterone, androgens, estrogens)
Inhibin

Median eminence

Sex steroids (progesterone, androgens, estrogens)
Inhibin
LH Surge:

1. Induces Ovulation
   1. PG production
   2. Proteolytic Enzyme induction
2. Shift from Estrogen to Progesterone production
3. Resumption of Meiosis
Follicular Phase
Proliferative Phase
LH Surge
Luteal Phase
Secretory Phase
Women

Half the population! All the brains!