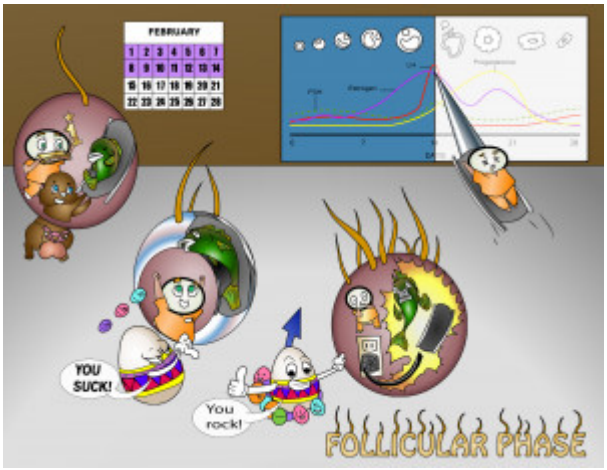
Ovulatory Hormones I - Follicular Phase

The 28-day menstrual cycle can be described by the ovulatory hormones in two phases: the follicular (proliferative) phase and the luteal (secretory) phase. The follicular phase describes balance between FSH, estrogen, LH and ovulation.



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Characteristics

0-14 Days
Days 0-14 on February Calendar
Though roughly 14 days on average, the follicular phase can vary in length. The follicular phase ends at ovulation. After day 14 (or ovulation), the luteal cycle begins.

GnRH Stimulates FSH and LH
Gonad-gopher stimulating Fish and Luge
The follicular phase begins with hypothalamic secretion of GnRH, stimulating the secretion of FSH and LH.

Follicle Secretes Estrogen
Follicle releasing Easter-eggs
As FSH increases, it induces follicle recruitment and folliculogenesis and growth of granulosa cells. Soon, these cells begin to grow and express LH receptors which then secrete Estrogen.

Negative Feedback from Estrogen
Negative feedback from Easter-egg
Initially, when Estrogen is first secreted, its levels are low. During this time in the follicular phase, low (but still rising) levels of Estrogen work via negative feedback to inhibit hypothalamic GnRH, and subsequently FSH and LH release from the anterior pituitary.

Increased Estrogen Leads to Positive Feedback
Up-arrow Easter-egg giving Positive Feedback
Though Estrogen is inhibiting production of FSH and LH, the growing size of the primary follicle (and internal theca/granulosa cells) leads to steadily increasing Estrogen levels. At high enough Estrogen levels, the negative feedback is turned off, and switched to positive feedback. This causes a sudden increase in FSH and LH production.

FSH and LH Surge
Fish and Luge Surging
Due to positive feedback from Estrogen, FSH and LH levels increase dramatically, leading to a "surge" of LH.

LH Spike Leads to Ovulation
Luge spike causing Ovulation
The event leading to ovulation is the LH spike. Under positive feedback from Estrogen, LH is secreted even more. This ensuing "spike" of LH is responsible for ovulation.

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