



Figure 19.18 a The two-cell pathway for synthesis of steroid hormones in growing follicles. LH stimulates synthesis of androgens in the theca cells. The androgens diffuse through the basal lamina of the follicle and into the granulosa cells, which, when stimulated by FSH, convert androgens to estradiol. Some of the estradiol diffuses into the follicular fluid, while some diffuses into the blood. In the early and mid-follicular phase, estrogen inhibits both GnRH secretion from the

hypothalamus and secretion of LH and FSH from the anterior pituitary. **b** In the late follicular phase, the maturing follicles produce increasing amounts of estrogen. The rapidly increasing plasma concentration of estrogen increases GnRH secretion through positive feedback. The dramatic increase in LH (the LH-surge) induces ovulation, whereas the continued negative feedback effect of inhibin causes FSH to remain low.

hibitory effect of inhibin, the increase in FSH is smaller.

Ovulation

The preovulatory LH surge has pronounced effects on the ovary, ultimately leading to ovulation through:

- increased ovarian blood flow and accumulation of fluid in the tissue surrounding the mature follicles
- accumulation of fluid increasing the hydrostatic pressure in maturing follicles
- release of the enzyme collagenase by the follicle, weakening its wall