



Figure 19.18 **a** The two-cell pathway for synthesis of steroid hormones in growing follicles. In the theca cells, LH stimulates synthesis of the androgens, androstenedione and testosterone (Fig. 19.20). The androgens diffuse through the basal lamina of the follicle and into the granulosa cells, which, when stimulated by FSH, convert testosterone to estradiol. Some estradiol diffuses into the follicular fluid and 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 rising concentration of plasma estrogen increases GnRH secretion through positive feedback. The dramatic increase in LH (the LH surge) induces ovulation, and the continued negative feedback effect of inhibin causes FSH to remain low.

secretion of LH and ovulation of many follicles, as well as synchronization of ovulation and the presence of spermatozoa. In cats, this mating pattern allows several males to father offspring in the same litter.

Ovulation results in formation of corpus luteum (see below) and it thus represents the transition from the follicular phase (proestrus + estrus) to the luteal phase (metestrus + diestrus) (Fig 19.15). Because the signs of estrus are weak-