	causes	pathologic	physiologic
hypertrophy ↑ cell size	- hormone stimulation - ↑ functional demand - growth factor stimulation	- cardiac muscle in hypertension and aortic stenosis	- uterine smooth muscle in pregnancy - skeletal muscle in athletes
hyperplasia ↑ number of cells	of pathologic: - excessive hormonal stimulation - viral infections of physiologic - hormone stimulation - compensatory	- endometrial hyperplasia, estrogen induced - benign prostatic hyperplasia, androgen induced - warts HPV	- breast in puberty and pregnancy - liver after partial resection
trophy ↓ cell size	- ↓ workload - loss of innervations - diminished blood supply - inadequate nutrition - loss of endocrine stimulation - aging	- denervation injury - chronic ischemia	- loss of hormone stimulation in menopause (endometrial atrophy)
metaplasia	- smoking - vitamine A deficiency - GERD (الارتجاع المريئي)	Vitamin A is needed for normal epithelial differentiation, deficiency leads to squamous metaplasia of the bronchi)	