



# PATHOLOGY

## CELL INJURY

## Cellular Adaptation

Adaptation Mechanism	Cause	Due to	Example	
Hypertrophy (Increase in cell size)	Pathologic	Increase workload	Cardiac muscles	
	Physiologic	Increase demand	Skeletal Muscles in athletes	
		Hormonal Stimulation	Uterine smooth muscles in pregnancy	
Hyperplasia (Increase in number of cells)	Pathologic <small>(Constitutes a fertile soil for cancer arising)</small>	Hormonal stimulation	Endometrial (estrogen) – can develop into cancer Benign Prostatic hyperplasia (androgen) – no cancer	
		Viral infections	Warts (HPV) – Contagious	
	Physiologic	Hormonal Stimulation	Uterus in pregnancy Breast during puberty/lactation	
		Compensatory	Liver after resection	
		Pathologic	Denervation injury	Lower limb in diabetic neuropathy patients Multiple Sclerosis (MS)
Diminished blood supply	Ischemia			
Atrophy (Decrease in cell size)	Physiologic	Loss of hormone stimulation	Endometrial atrophy – decreased estrogen	
	Decrease workload (Immobilization after fracture)			
	Inadequate nutrition (Protein allergy malnutrition)			
	Aging (Senile atrophy)			
	Metaplasia (Change into another type of cell)	Smoking		
		Vitamin A deficiency		
GERD - Gastrointestinal reflux disease				