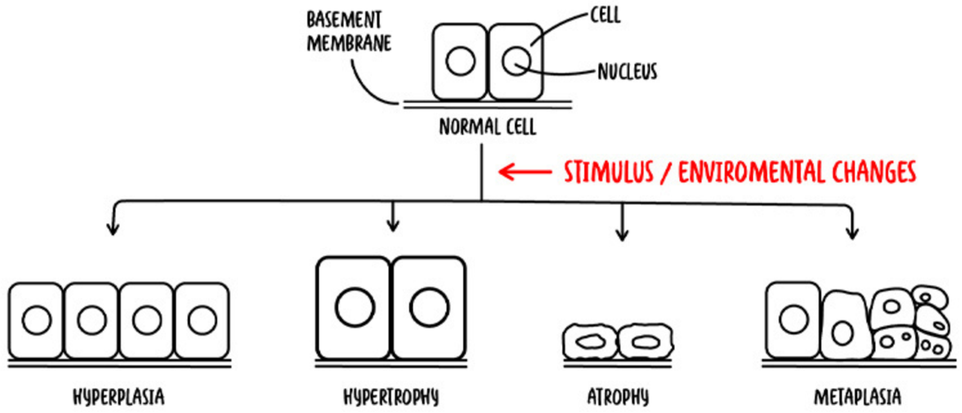
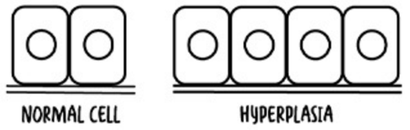
CELLULAR ADAPTATION



THESE ADAPTATIONS CAN BE PHYSIOLOGIC OR PATHOLOGIC

HYPERPLASIA

- IS AN INCREASE IN THE NUMBER OF CELLS



ONLY CELLS THAT CAN DIVIDE WILL UNDERGO HYPERPLASIA
- EPIDERMIS
- INTESTINE
- LIVER HEPATOCYTES
- BONE MARROW CELL
- FIBROBLASTS

HYPERPLASIA DOES NOT OCCUR IN
- MYOCYTES IN THE HEART
- NEURONS IN THE BRAIN

! CELLS DO NOT UNDERGO CELL MITOSIS, OR DIVISION

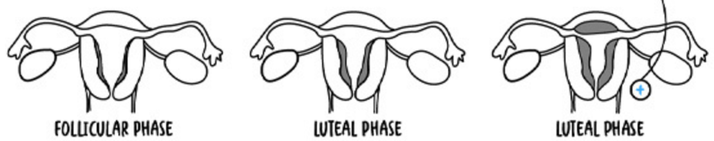
TYPES OF HYPERPLASIA

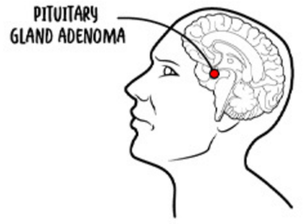
PHYSIOLOGIC:

DUE TO A NORMAL STRESSOR
- MENSTRUAL CYCLE
- PREGNANCY
- LIVER GROWTH AFTER PARTIAL RESECTION

PATHOLOGIC:

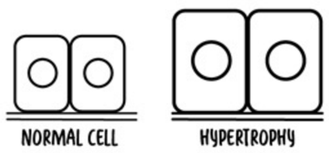
DUE TO AN ABNORMAL STRESSOR
- PITUITARY ADENOMA
- PROLIFERATION OF ENDOMETRIUM DUE TO PROLONGED ESTROGEN STIMULUS





HYPERTROPHY

- IS AN INCREASE IN THE SIZE OF THE CELL



MYOCYTES CAN NOT DIVIDE BUT THEY CAN INCREASE IN SIZE

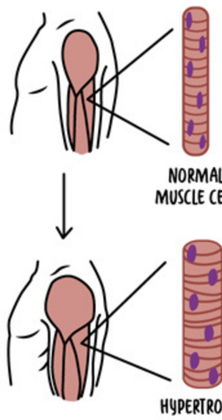
TYPES OF HYPERTROPHY

PHYSIOLOGIC:

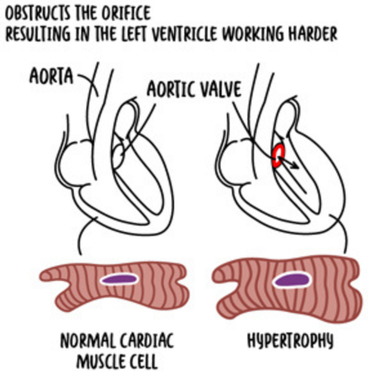
DUE TO A NORMAL STRESSOR
- ENLARGEMENT OF SKELETAL MUSCLE WITH EXERCISE

PATHOLOGIC:

DUE TO AN ABNORMAL STRESSOR
- INCREASE IN THE SIZE OF THE HEART DUE TO AORTIC STENOSIS



AORTIC STENOSIS
- OBSTRUCTS THE ORIFICE
- RESULTING IN THE LEFT VENTRICLE WORKING HARDER



MORPHOLOGY OF HYPERPLASIA AND HYPERTROPHY:
- BOTH RESULT IN AN INCREASE IN ORGAN SIZE;
- BOTH CANNOT ALWAYS BE DISTINGUISHED GROSSLY, MICROSCOPIC EXAMINATION IS REQUIRED TO DISTINGUISH THE TWO

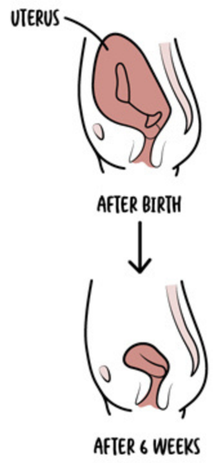
ATROPHY

- IS THE DECREASE IN THE SIZE OF A CELL THAT HAS AT ONE TIME BEEN OF NORMAL SIZE

TYPES OF ATROPHY

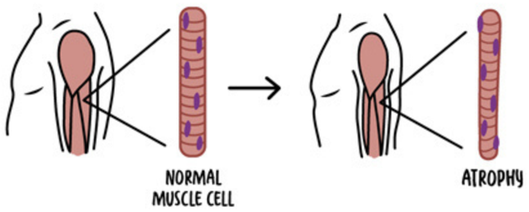
PHYSIOLOGIC

DUE TO A NORMAL STRESSOR
- DECREASE IN THE SIZE OF THE UTERUS AFTER PREGNANCY



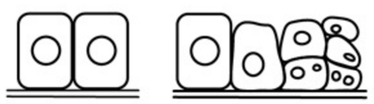
PATHOLOGIC

DUE TO AN ABNORMAL STRESSOR
- LOSS OF BLOOD SUPPLY OR INNERVATION
- LOSS OF ENDOCRINE STIMULUS
- DISUSE
- MECHANICAL COMPRESSION
- DECREASED WORKLOAD
- AGING



METAPLASIA

- IS THE CHANGE OF EPITHELIUM AT A SITE, OR LOCATION, FROM ONE TYPE OF EPITHELIUM TO ANOTHER TYPE



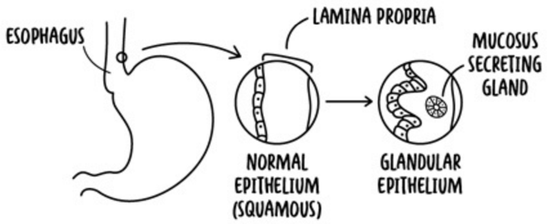
- THE EPITHELIUM IS NORMAL IN APPEARANCE BUT IN AN ABNORMAL LOCATION

MECHANISM OF METAPLASIA:
- MOST FORMS ARE REVERSIBLE
- A FEW TEND TO BE PERMANENT ONCE THEY ARE ESTABLISHED

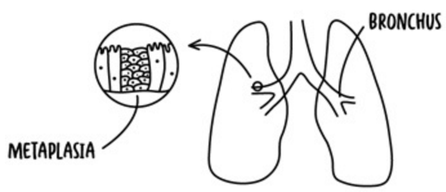
CAN PROGRESS TO DYSPLASIA AND CANCER

PATHOLOGIC METAPLASIA:
- BARRETT ESOPHAGUS
- METAPLASIA IN THE LUNGS

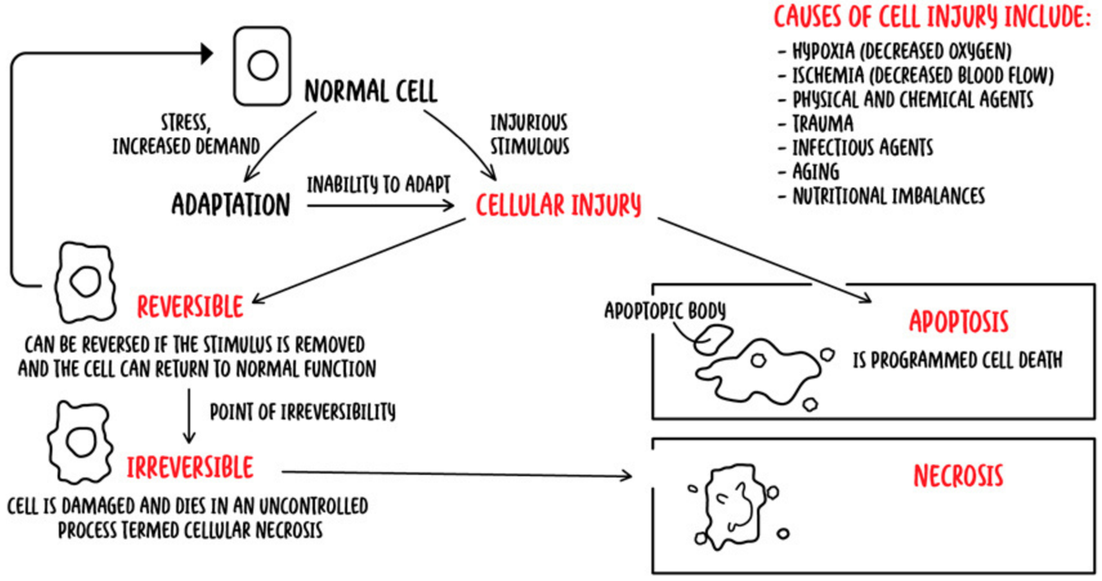
BARRETT'S ESOPHAGUS - EPITHELIUM TYPE CONVERTS FROM SQUAMOUS TO GLANDULAR



SQUAMOS METAPLASIA OF LUNGS



CELL INJURY



CAUSES OF CELL INJURY INCLUDE:
- HYPOXIA (DECREASED OXYGEN)
- ISCHEMIA (DECREASED BLOOD FLOW)
- PHYSICAL AND CHEMICAL AGENTS
- TRAUMA
- INFECTIOUS AGENTS
- AGING
- NUTRITIONAL IMBALANCES