GENERAL PATHOLOGY

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Definition

1. Pathos – Disease

2. Logos – Study

Role of pathologist ?

The role of pathologist:

- Looking at samples of tissues (biopsies)
- Using the range of special laboratory techniques
- Histology
- Autopsy
- Special stains
- Immunohistochemistry
- Electron microscopy
- Molecular biology techniques

Types

1. General

2. Systemic

General pathology

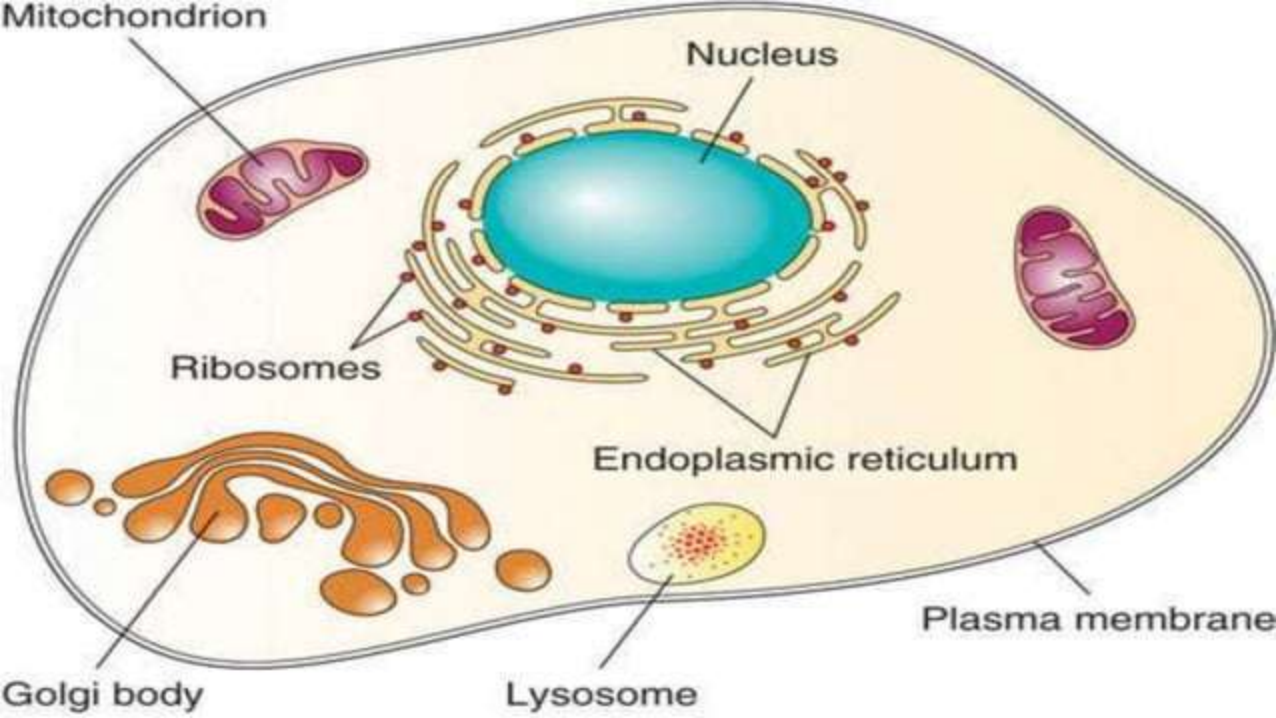
Study of structural , biochemical, and functional changes in cells , tissues, and organs that underlie disease

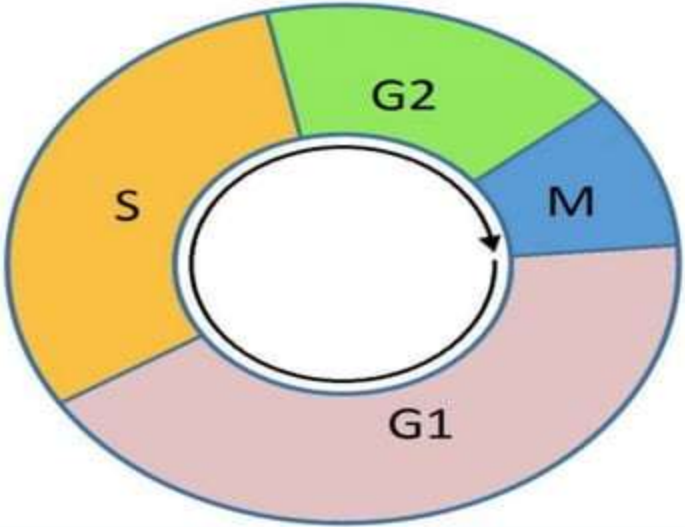
Systemic pathology

- Study of disease that occur with in particular organ
- It involves
  - Etiology
  - Pathogenesis
  - Morphology
  - Clinical features
  - Sequealae

General pathology

1. Cell unit
2. Cellular responses
3. Inflammation & repair
4. Hemodynamic disorders
5. Neoplasia
6. Infectious disease
7. Environmental & nutritional disease


Mitochondrion
Nucleus
Ribosomes
Endoplasmic reticulum
Plasma membrane
Golgi body
Lysosome



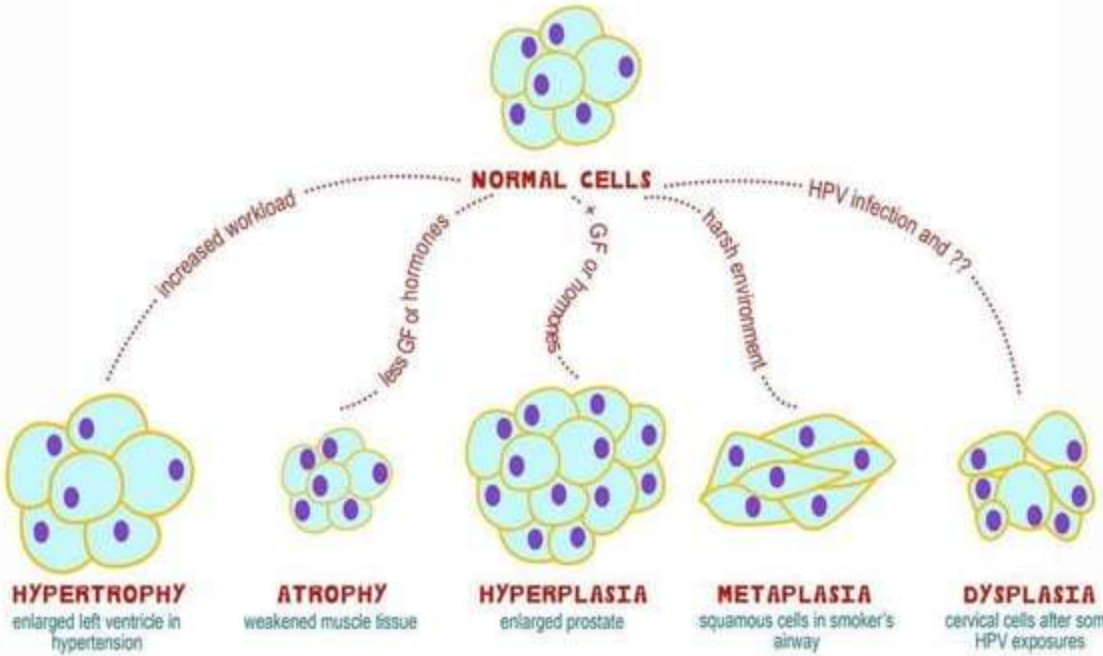
G1 - Growth

S - DNA synthesis

G2 - Growth and preparation for mitosis

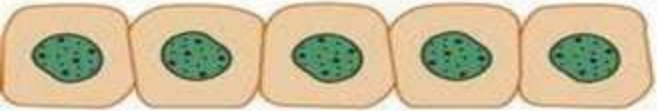
M - Mitosis (cell division)

Regulated by stimulators and inhibitors
Cyclin dependent kinase

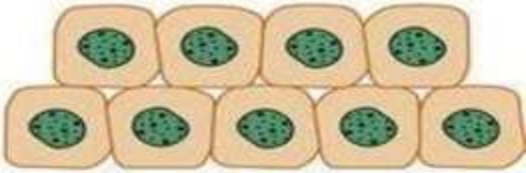

NORMAL CELLS
increased workload
less GF or hormones
* GF or hormones
harsh environment
HPV infection and ??
HYPERTROPHY
enlarged left ventricle in hypertension
ATROPHY
weakened muscle tissue
HYPERPLASIA
enlarged prostate
METAPLASIA
squamous cells in smoker's airway
DYSPLASIA
cervical cells after some HPV exposures

Normal

Atrophy
(decreased cell size)



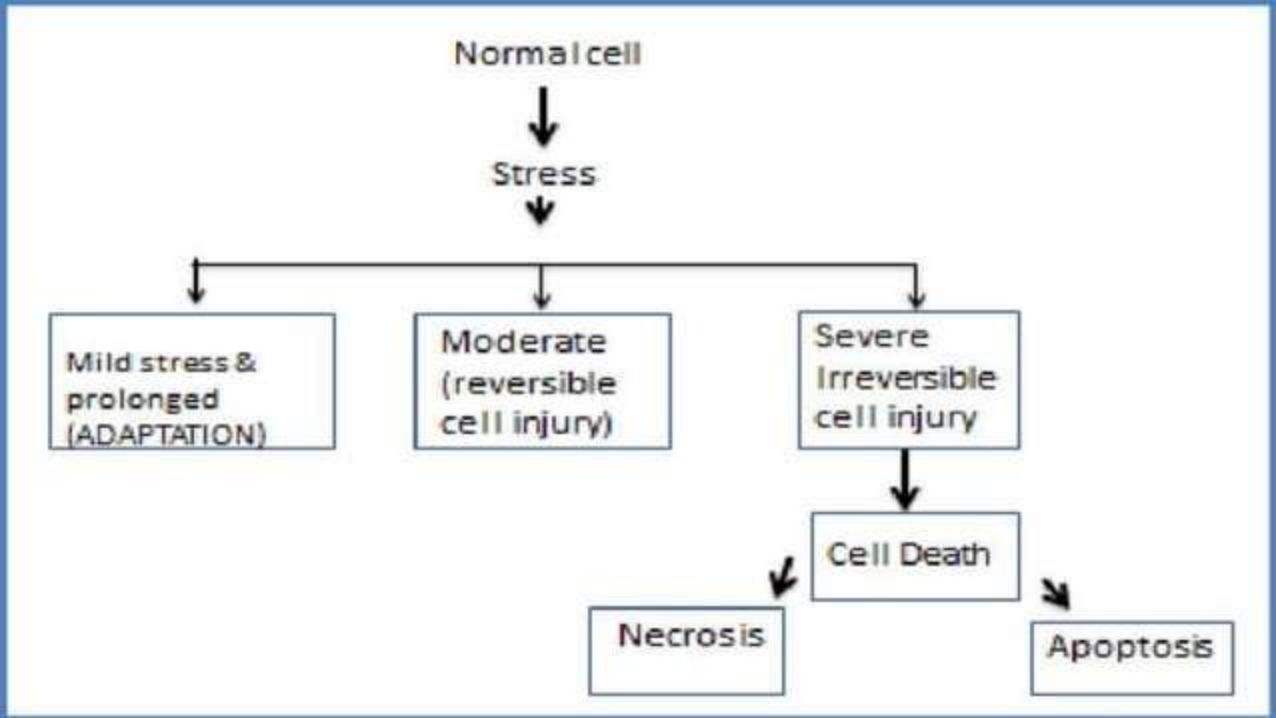
Hypertrophy
(increased cell size)

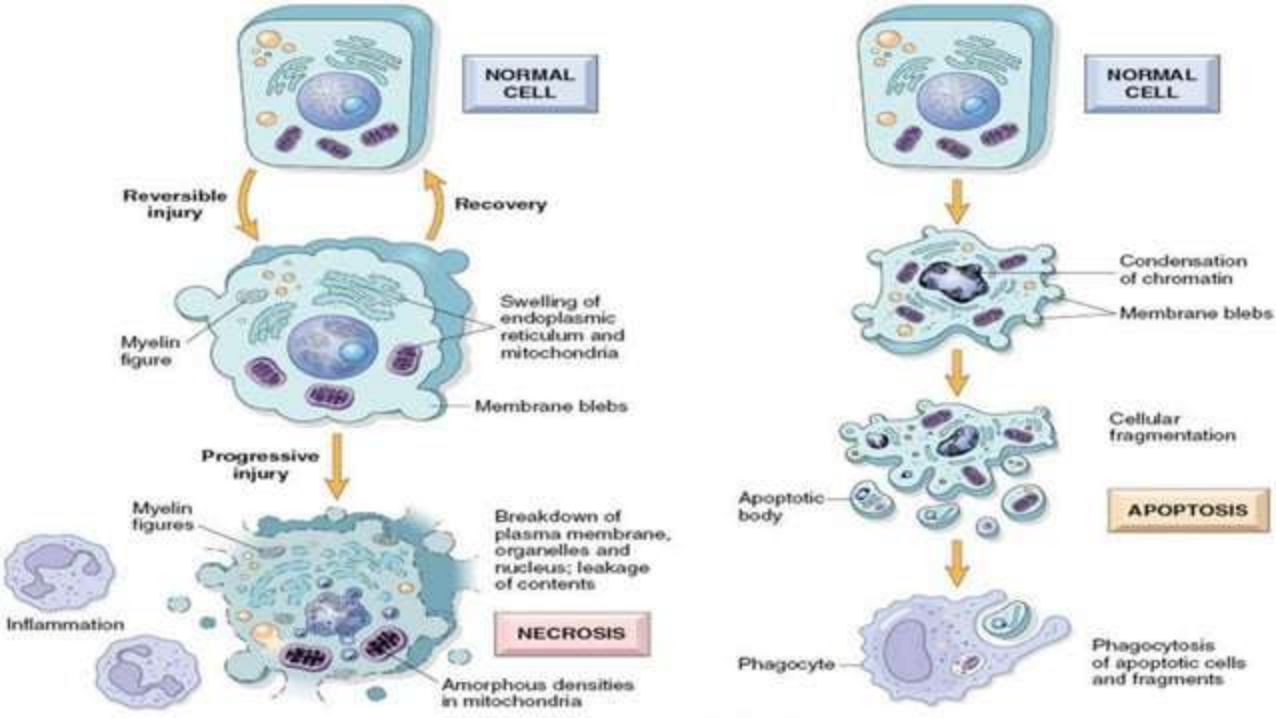


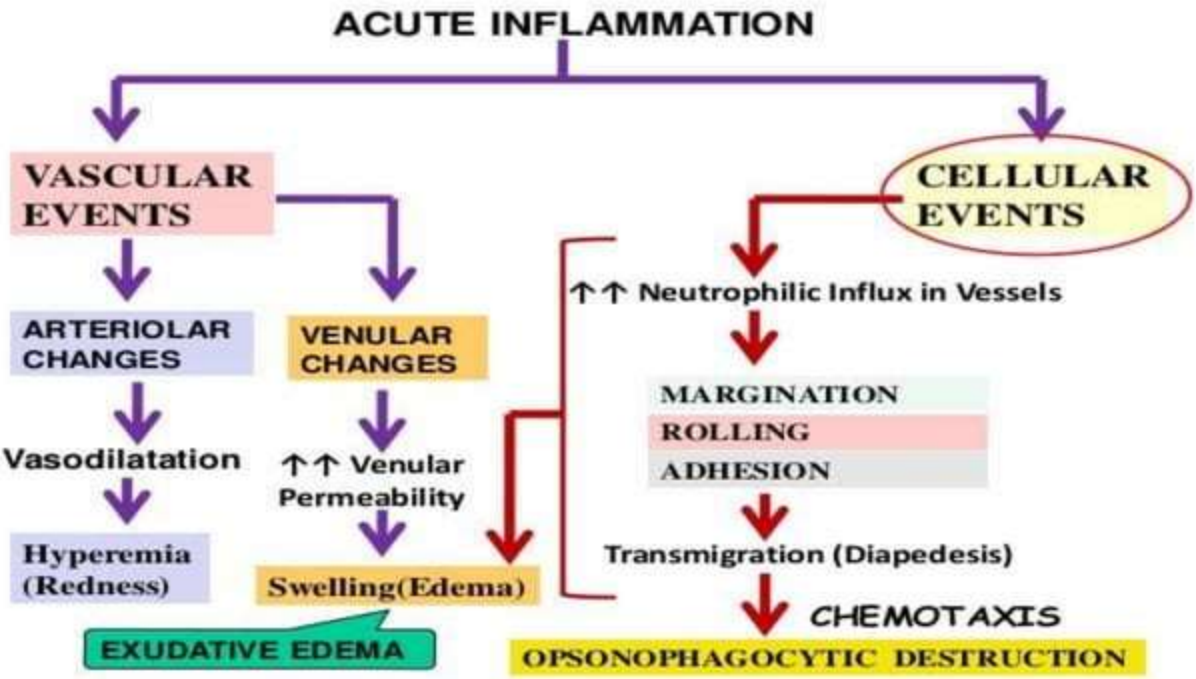
Hyperplasia
(increased cell number)

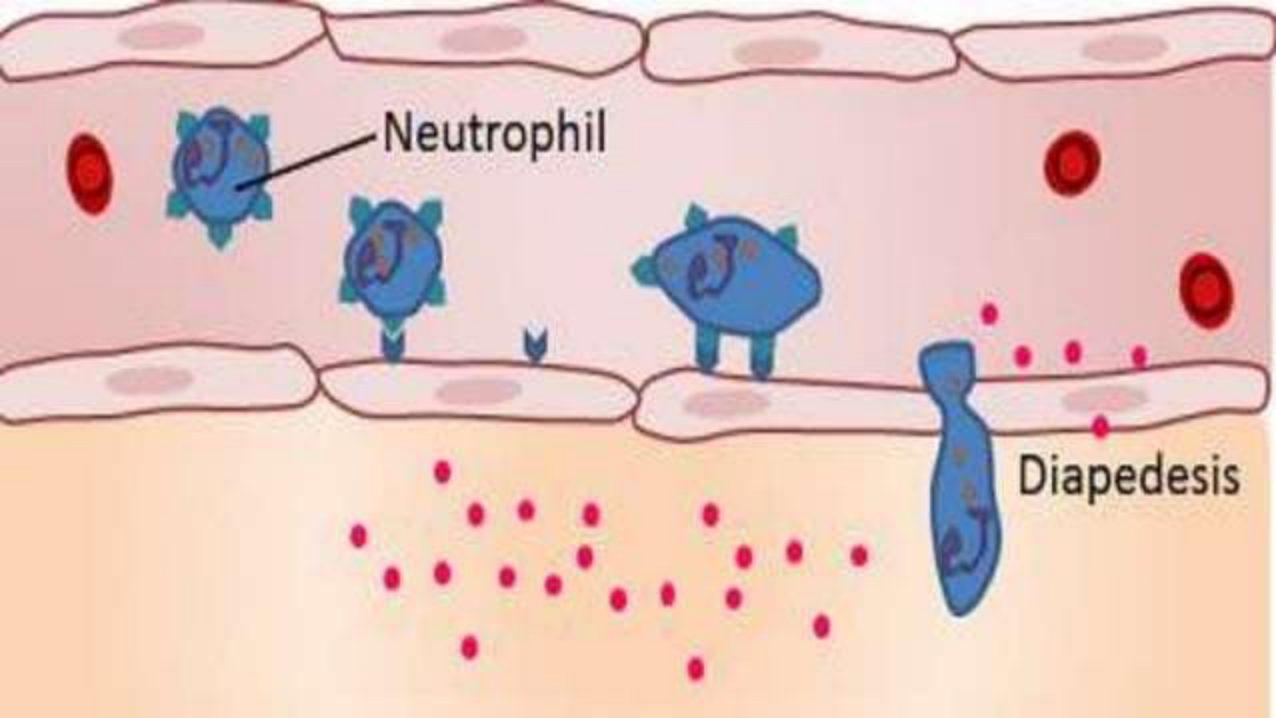
Metaplasia
(conversion of one cell
type to another)

Dysplasia
(disorderly growth)

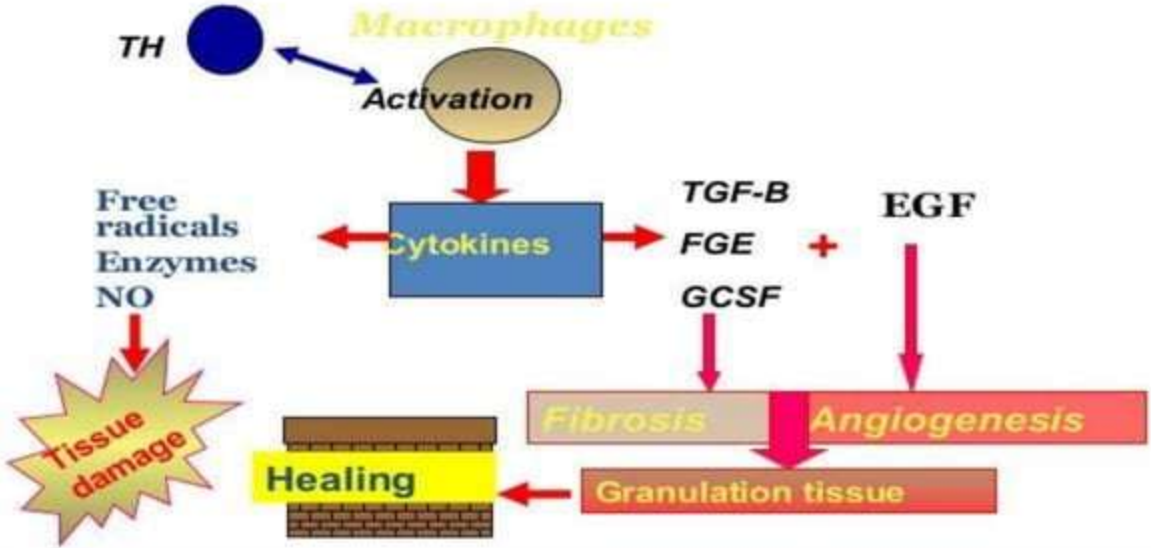

Normal cell
Stress
Mild stress & prolonged (ADAPTATION)
Moderate (reversible cell injury)
Severe Irreversible cell injury
Cell Death
Necrosis
Apoptosis

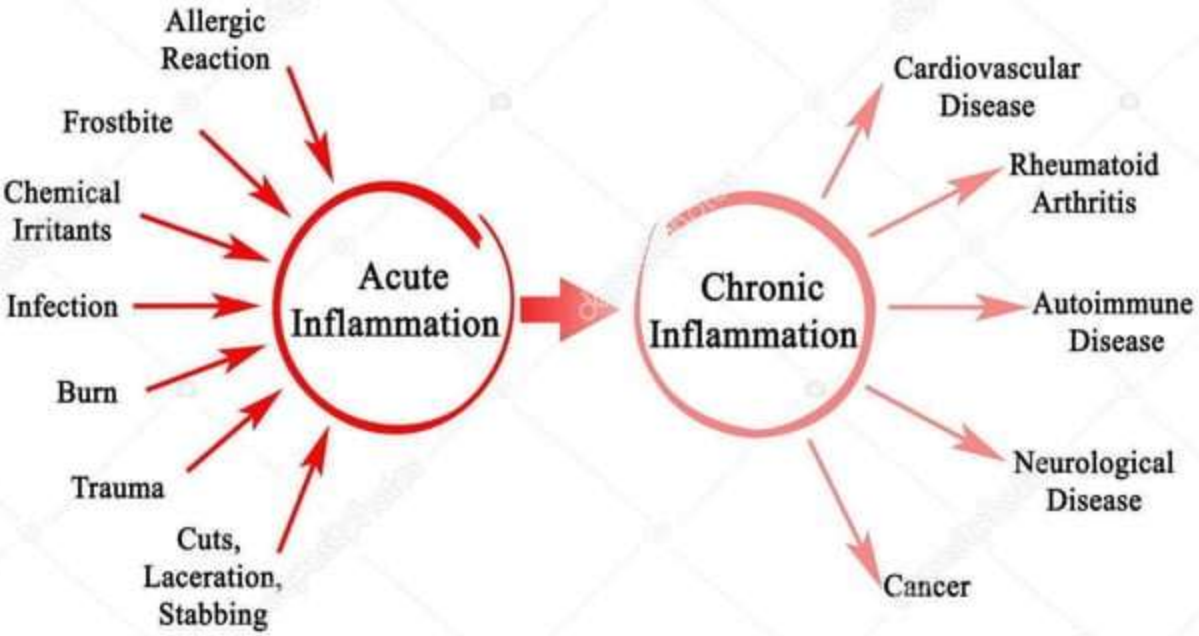

NORMAL CELL
Reversible injury
Recovery
Swelling of endoplasmic reticulum and mitochondria
Myelin figure
Membrane blebs
Progressive injury
Myelin figures
Breakdown of plasma membrane, organelles and nucleus; leakage of contents
Inflammation
NECROSIS
Amorphous densities in mitochondria
NORMAL CELL
Condensation of chromatin
Membrane blebs
Cellular fragmentation
Apoptotic body
APOPTOSIS
Phagocyte
Phagocytosis of apoptotic cells and fragments


ACUTE INFLAMMATION
VASCULAR EVENTS
CELLULAR EVENTS
ARTERIOLAR CHANGES
VENULAR CHANGES
↑↑ Neutrophilic Influx in Vessels
Vasodilatation
↑↑ Venular Permeability
MARGINATION
ROLLING
ADHESION
Hyperemia (Redness)
Swelling(Edema)
Transmigration (Diapedesis)
CHEMOTAXIS
EXUDATIVE EDEMA
OPSONOPHAGOCYTIC DESTRUCTION

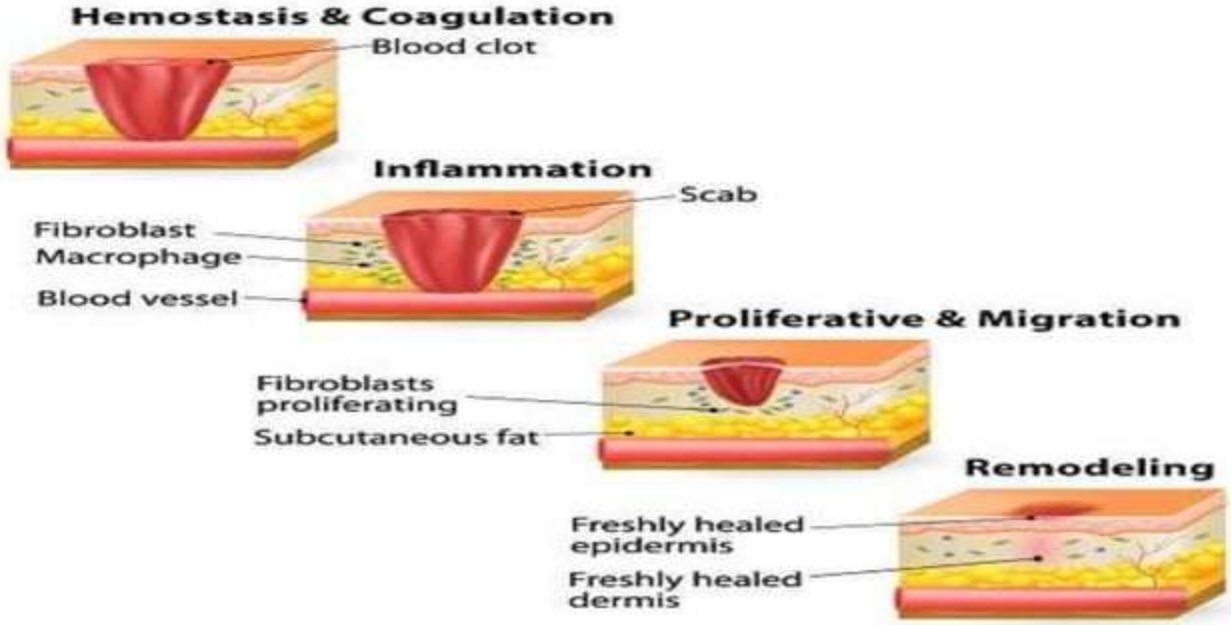

Neutrophil
Diapedesis

Mechanism of chronic inf

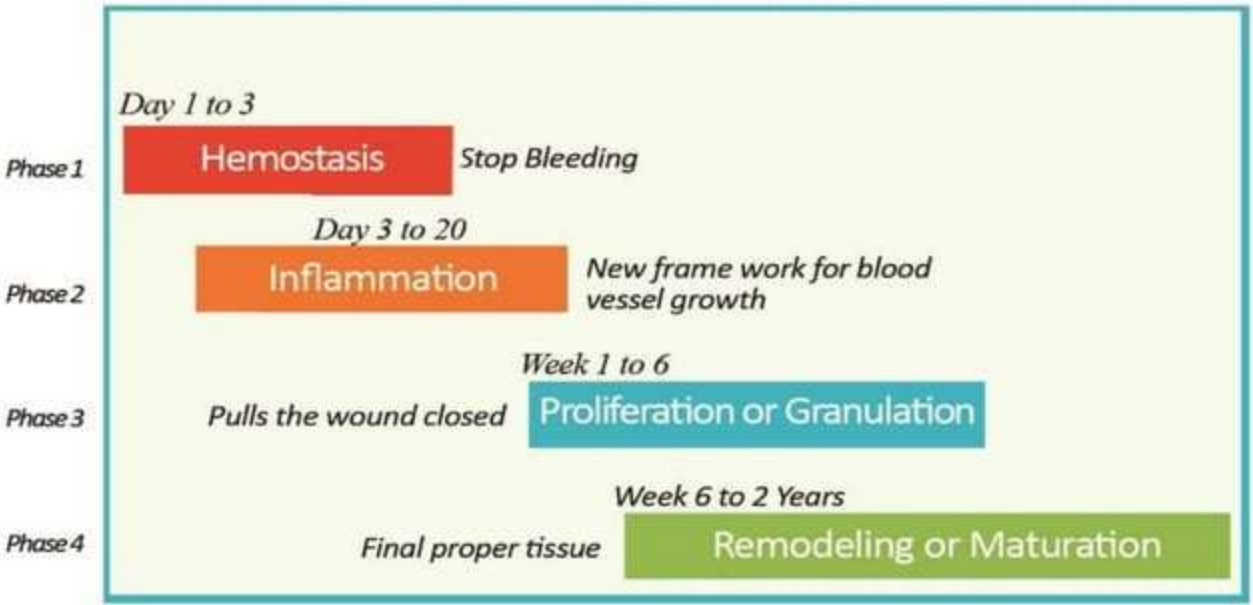



Allergic Reaction
Frostbite
Chemical Irritants
Infection
Burn
Trauma
Cuts, Laceration, Stabbing
Acute Inflammation
Chronic Inflammation
Cardiovascular Disease
Rheumatoid Arthritis
Autoimmune Disease
Neurological Disease
Cancer

WOUND HEALING



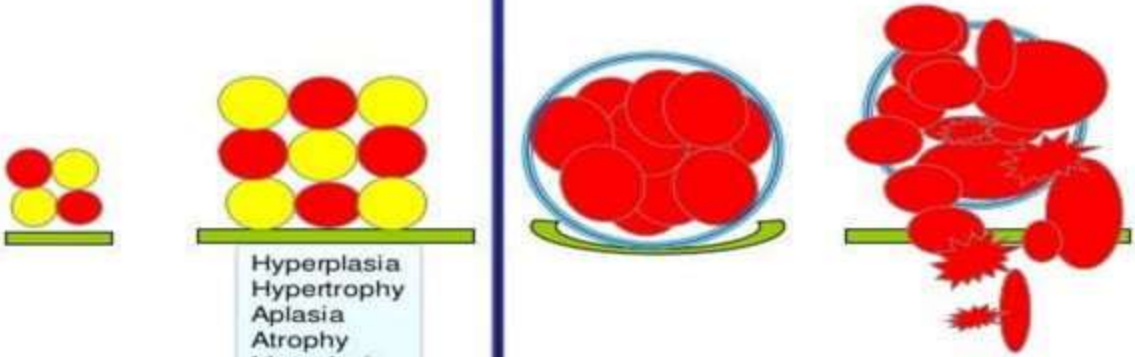
4 Phases of wound healing



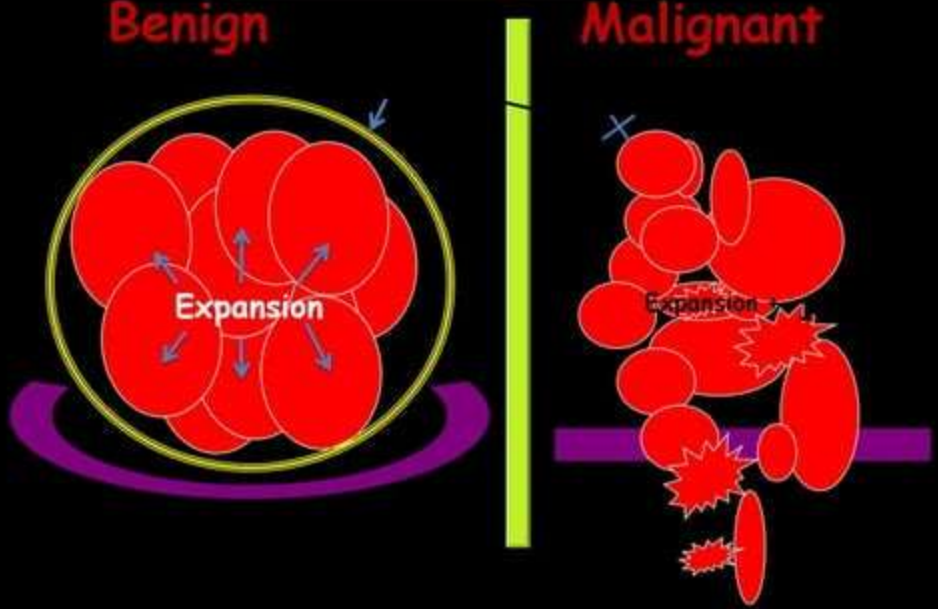
Growth Disorders:

Non neoplastic
(Polyclonal)

Neoplastic
(Monoclonal)



Mode of growth



FEATURES	BENIGN	MALIGNANT
Structure	Resemblance to normal cells (well differentiated)	Abnormal; less similarity to normal cells (anaplastic)
Growth rate	Slow	Rapid
Mitoses	Few	Relatively common
Growth	Usually expansive	Invasive
Growth duration	May stop growing	Rarely stop growing
Encapsulation	Usually	Rarely
Metastasis	None	Frequent
Effect on host	Slight harm, due to location or complication	Significant harm, due to invasion & metastasis