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physiology :- Deals with functions of human body.

pathophysiology,- The study of the disruption of normal bodily functions due to disease. the physiology of disordered function .or is physiology of abnormal health , the disordered physiological processes associated with disease or injury.

Disease :- Inability to maintain Normal function_ A disordered or incorrectly functioning organ, part, structure, or system of the body resulting from the effect of genetic or developmental errors, infection, poisons, nutritional deficiency or imbalance, toxicity, or unfavorable environmental factors; illness; sickness; ailment.

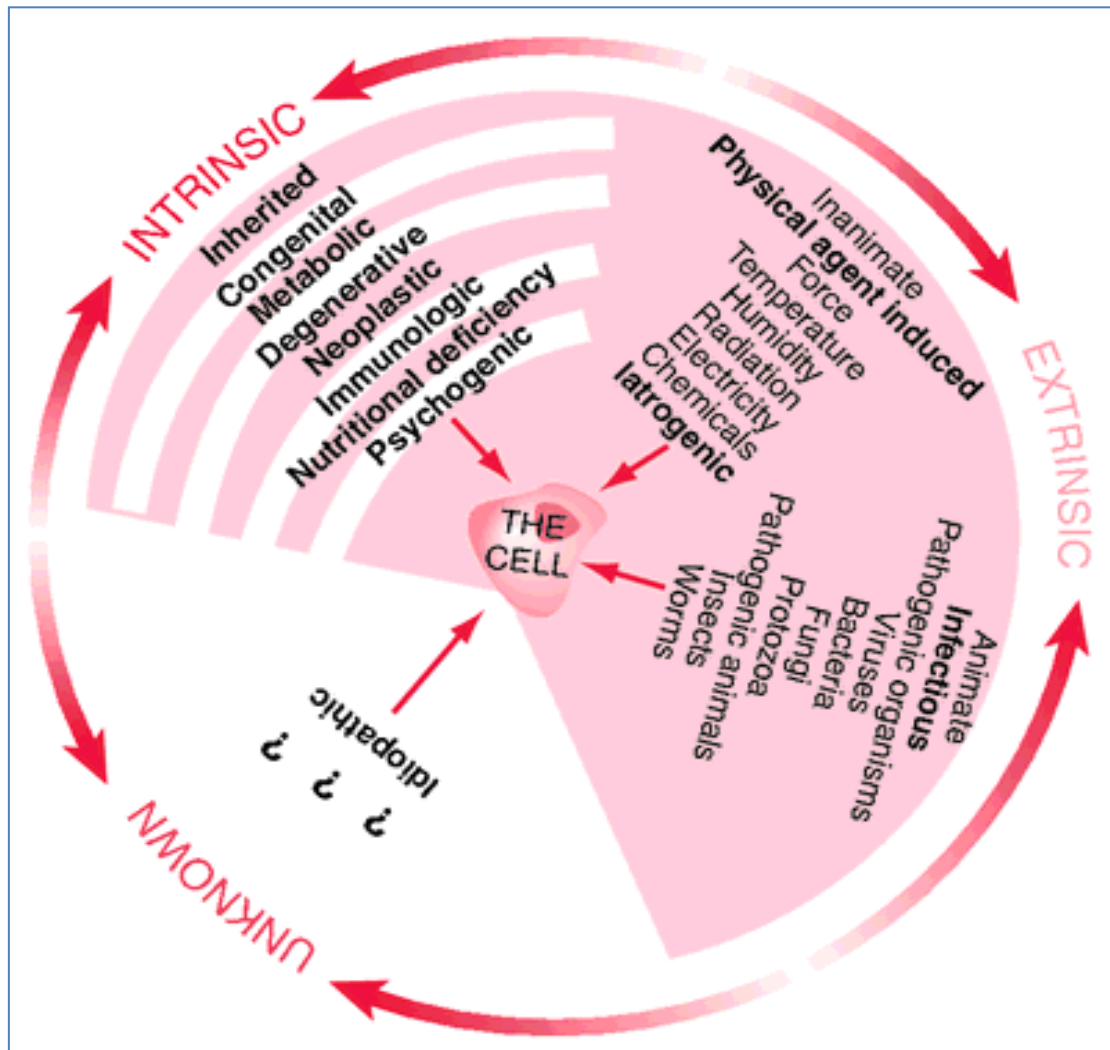
Acute disease.

a disease characterized by a relatively sudden onset of symptoms that are usually severe, illness that develops quickly, is intense or severe and lasts a relatively short period of time. Any condition—e.g., infection, trauma, fracture—with a short (often less than 1 month) clinical course. Acute illnesses usually respond to therapy; a return to a state of complete—pre-morbid—health is the norm. Disorder with sudden onset and short duration of symptoms.

Chronic disease,

A disease that persists over a long period. Disease of long durationThe symptoms of chronic disease are sometimes less severe than those of the acute phase of the same disease. Chronic disease may be progressive, result in complete or partial disability, or even lead to death. Examples of chronic disease include diabetes mellitus, emphysema, and arthritis. 6 months clinical course; Alzheimer's disease that has a protracted—usually.

Etiology :- Etiology ,the science dealing with causes of disease. the cause of a disease .



Etiology classification of disease. Illustrated here are the contributions of intrinsic, extrinsic, and unknown factors to disease causation. From Copstead and Banasik, 2000.

Pathogenesis:- The origination and development of a disease , the development of morbid conditions or of disease; more specifically the cellular events and reactions and other pathological mechanisms occurring in the development of disease. Includes the study of the relationship between the cause and the lesions, and that between the lesion and the clinical signs.

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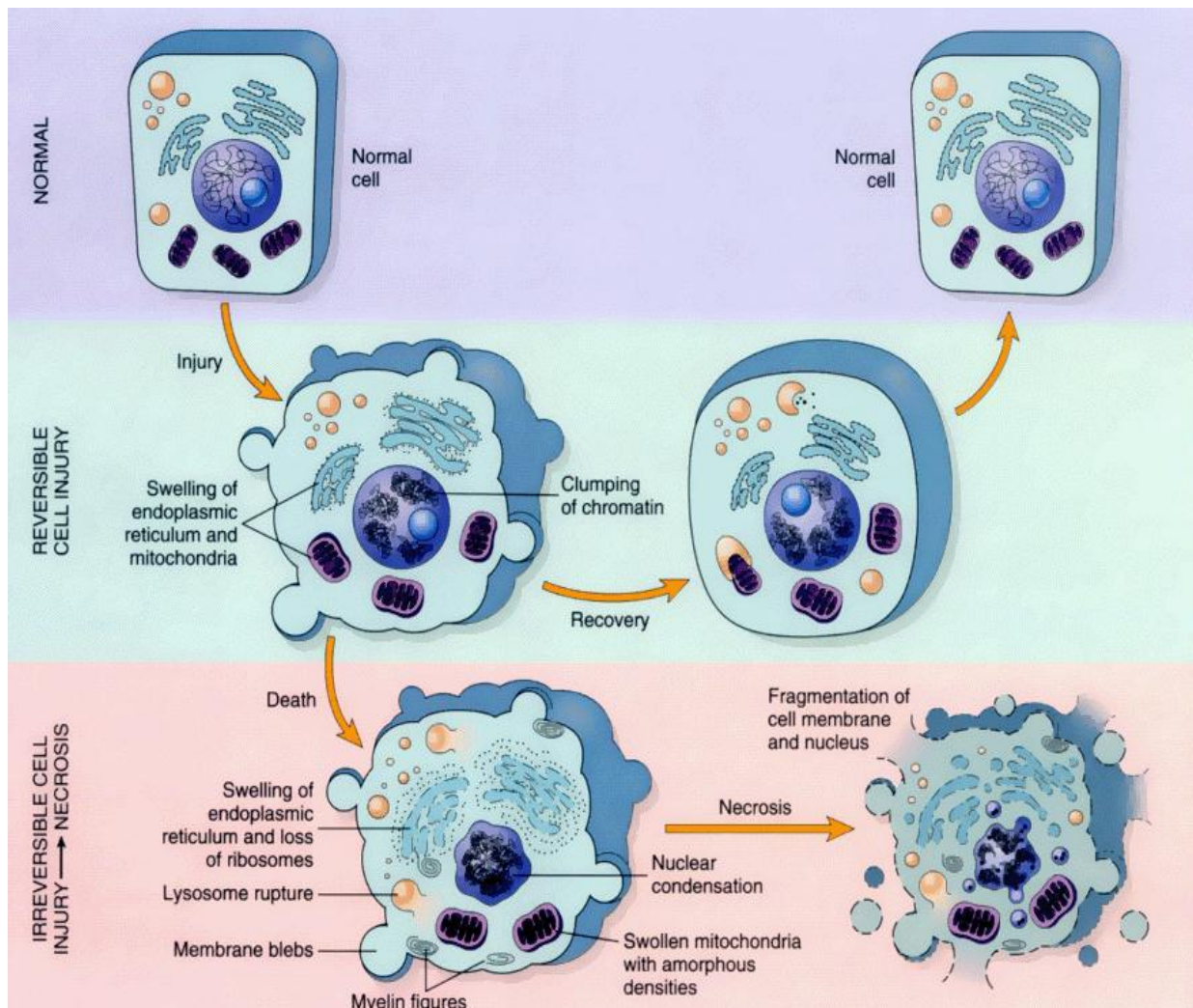
Morphologic changes :- The branch of biology that deals with the form and structure of organisms without consideration of function. The form and structure of an organism or one of its parts: the morphology of a cell; the morphology of vertebrates. This includes aspects of the outward appearance (shape, structure, colour, pattern)as well as the form and structure of the internal parts like bones and organs. Refers to structure or form of the cells or tissues . Are concerned with both the gross anatomic and microscopic changes that are characteristic of a disease detected by histological examination of tissue ,radiographic ,ultrasonic and other imaging techniques .

Clinical manifestation :- Means the features of the disease. ie.. symptoms and signs.

Symptoms : the complaints of the patient about the disease..eg headache, vomiting, fever, dizziness.

Cell injury and tissue responses:-

If the cells fail to adapt under stress, they undergo certain changes called cell injury. The affected cells may recover from the injury (reversible) or may die (irreversible).



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Cellular adaptations: excessive stresses (physiologic or pathologic) a new altered state (atrophy, hypertrophy, hyperplasia, metaplasia)

• **Cell injury:**

1- Reversible injury

2-Irreversible injury (cell death)

Cells adapt to the stress within the body by one of the ways :-

Atrophy:- Is the shrinkage in cell size by loss of cellular substance .With the involvement of a sufficient number of cells, as a result of

1-decreased workload, pressure.

2- diminished blood supply or nutrition.

3- loss of endocrine stimulation.

4- aging.

Hypertrophy :- represents an increase in cell size and with it an increase in the amount of functioning tissue mass. For example, as muscle cells hypertrophy, additional actin and myosin filaments, cell enzymes, and adenosine triphosphate (ATP) are synthesized normal physiologic or abnormal pathologic conditions.

3- Hyperplasia:-Refers to an increase in the number of cells in an organ or tissue. It occurs in tissues with cells that are capable of mitotic division, such as the epidermis, intestinal epithelium, and glandular tissue , For example, the pregnant uterus or nonphysiologic Excessive estrogen production can cause endometrial hyperplasia and abnormal menstrual bleeding .

4-Metaplasia:- Represents a reversible change in which one adult cell type (epithelial or mesenchymal) is replaced by another adult cell type. An example of metaplasia is the adaptive substitution of stratified squamous epithelial cells

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for the ciliated columnar epithelial cells in the trachea and large airways of a habitual cigarette smoker.

5-Dysplasia:- Dysplasia is characterized by deranged cell growth of a specific tissue that results in cells that vary in size, shape, and organization. Minor degrees of dysplasia are associated with chronic irritation or inflammation. The pattern is most frequently encountered in areas of metaplastic squamous epithelium of the respiratory tract and uterine cervix.

Cell/Tissue adaptive changes	
Change in size of cells	
Hypertrophy	Increase in the size of cells
Atrophy	Decrease in the number of cells
Change in number of cells	
Hyperplasia	Increase in the number of cells
Change in differentiation of cells	
Metaplasia	Stable change to another cell type

Examples of metaplasia relevant to human diseases

Original tissue	Stimulus	Metaplasia
Ciliated columnar epithelium of bronchial tree	Cigarette Smoke	Squamous epithelium
Transitional epithelium of bladder	Bladder calculus	Squamous epithelium
Columnar epithelium in gland ducts (bile ducts, salivary, etc.)	Calculus	Squamous epithelium
Connective tissue	Chronic trauma	Bone (osseous) tissue
Esophageal squamous epithelium	Gastric acid	Columnar epithelium (Barrett's esophagus)