

*Branches and scope of  
pharmacology*

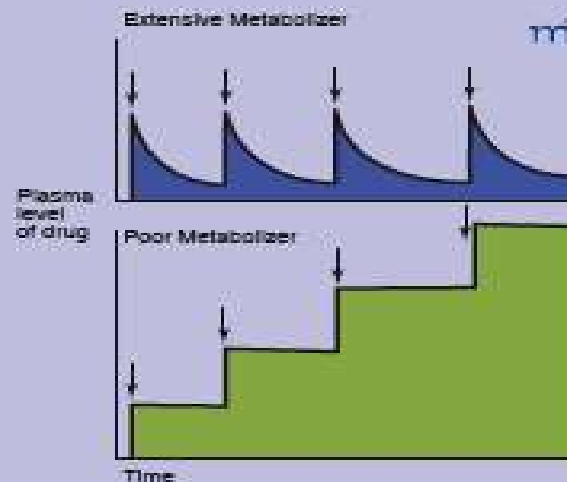
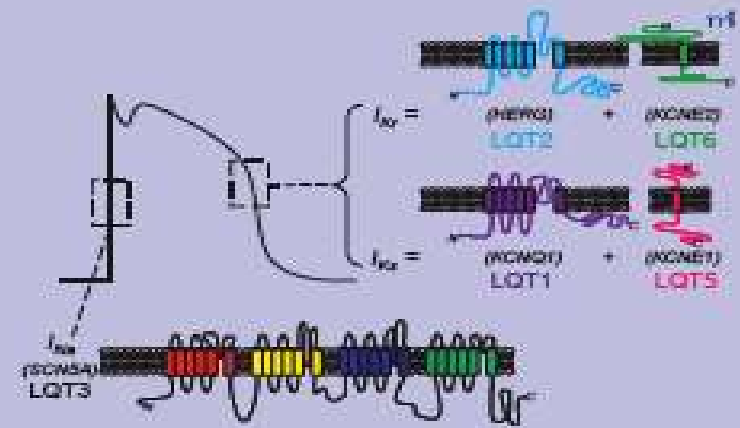
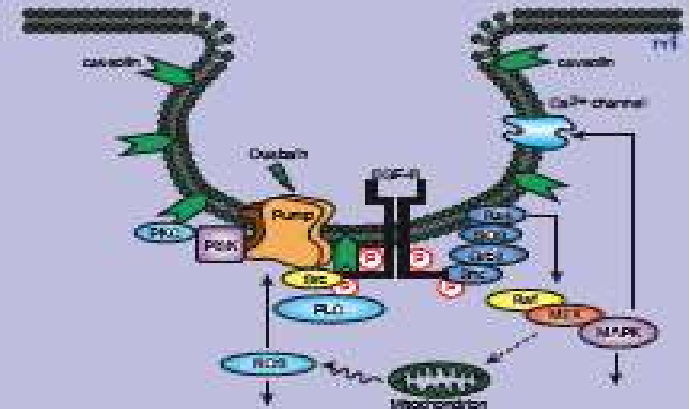
# What is Pharmacology?

*In general terms, pharmacology is the science of drug action on biological systems.*

Pharmacology embraces knowledge of the sources, chemical properties, biological effects and therapeutic uses of drugs.

# THE NEW CENTURY OF PHARMACOLOGICAL STUDIES

Adverse Drug Reactions  
 Anticancer & Antiviral Agents  
 Behavioral Pharmacology  
 Cancer Chemotherapy  
 Cellular Pharmacology  
 Combinatorial Chemistry  
 Developmental Pharmacology  
 Drug Policy & Regulation  
 Environmental Pharmacology  
 Gastrointestinal Pharmacology  
 Gene Therapies  
 Immunopharmacology  
 New Drug Design and Development  
 Pharmacogenetics  
 Pharmacology of Aging  
 Pulmonary Pharmacology  
 Recombinant-DNA Derived  
 Drugs  
 Traditional and Herbal  
 Medicines



# What is Pharmacology?

*The term **pharmacology** comes from the Greek words:*

- **Pharmacon** - drug or medicine or active principles

- **logos** – science

*Birth of Experimental Pharmacology is associated with Francois Magendie in the early 19th century. He discovered how Strychnine and Curare worked.*

# *Branches of Pharmacology, terms*

- ***Pharmacology** : The science which deals with study of drugs with respect to its source, properties (physical and chemical), actions on living system, fate in body, effects (physiological and biochemical), uses in treatment of disease conditions and toxicity.*
- ***Veterinary Pharmacology** : it deals with the use of pharmacology knowledge in the animal treatment.*

# Therapeutics

- it describe the treatment of disease in general and include use of drugs, surgery, radiation, behavioral modifications and other modalities.
- Rational : Nature of disease and action of drugs is well known.
- Empirical : Both are unknown
- Specific therapeutics / chemotherapy: Systemic infection / malignancy
- General / accessory : treatment without drugs
- Mechanical therapeutics : Massage, exercise. Pressure
- Physical therapeutics : heat and air
- Dietetic therapeutics: in obesity and diabetics
- Psychotherapeutics : Advise and hypnotism
- Hydrotherapy : water in treatment
- Helitherapy : sunlight
- Placebo :

- ***Pharmacotherapy*** : use of drugs in the treatment of diseases.
- ***Pharmacokinetics*** : The study of absorption, distribution, metabolism and excretion of drugs in body with respect to time. How the animal body affects the drugs.
- ***Pharmacodynamics***: How the drug affect the animal body. It is the study of physiological and biochemical effects and mechanism of action of drugs. Action and fate in body in the absence of disease.

- **Vety. Clinical pharmacology** : Clinical evaluation of a drug for use in animal by actual observation and treatment of patient as distinguished from theoretical or experimental study.
- **Chemotherapy** : It is the branch of pharmacology dealing with drugs that selectively inhibit or destroy specific agents of disease such as bacteria, virus, fungi and other parasites also neoplastic disease.
- **Toxicology** : the science that defines limits of safety of chemical agents to human and animal population.  
The science dealing with study of poisons effect of therapeutic agents in excess and substances having only toxic effects.



- ***Experimental pharmacology*** : it is the study to determine the effect of drugs on different systems of body and their mechanism using the laboratory animals.
- ***Applied pharmacology*** : the study of relative effect of drugs in normal and diseased animals.
- ***Neuropharmacology***: the branch of pharmacology which deals with the study of actions and effects of drugs on nerve functions.

- ***Immunopharmacology*** : branch of pharmacology which deals with the study of drug induced immunomodulation.
- ***Molecular pharmacology***: it is the study of chemical interaction between drug molecule and chemical groups in cell in explaining the mechanism of drug action and the effect observed. Drug molecules must react with biomolecules (receptors) in cells in exerting their effects.
- ***Pharmaco epidemiology***: it is the study of drugs effect at population level in order to identify the variation in drug response between individuals in a population and /or groups of population.

- ***Pharmacoeconomics***: it deals with quantification of therapeutic use of drugs in relation to the cost of treatment. It helps at arriving at the economics of drug use and the derived benefits.
- ***Pharmacogenetics*** : it is the study of genetic influences on drug responses study of genetically mediated variations in drug responses.
- ***Pharmacogenomics*** : it is the study of prediction of drug responses between individuals based on their genetic makeup.

- ***Metrology*** : It is the study of weights and measures as applied to preparation and administration of drugs.
- ***Pharmacometrics*** : The study quantitative aspect of drug effects.
- ***Pharmacy*** : it is the science and art of collection, preparation, standardization and dispensing of drugs so as to make them fit for administration.
- ***Official Pharmacy***: Compounding and Dispensing drugs according to pharmacopoeia.
- ***Extemporaneous pharmacy*** : compounding of prescriptions of a qualified practitioners.

- ***Comparative pharmacology*** : It is the study of relative effect of drug in different species of animals.
- ***Pharmacognosy*** : it is the study of source and identification of drugs of vegetable and animal origin.
- ***Posology*** : it is the study of medicine dosage, which varies with the species of animals, intended effect of drugs and individual tolerance / susceptibility

- ***Dose*** : the amount of drug to be administered at one time which is necessary to elicit the desired therapeutic response in patients and expressed as quantity per unit body weight.
- ***Doses*** : pleural of dose.
- ***Dosage*** : it refers to determination and regulation of doses.
- ***Materia medica*** : it is derived from a Latin word “signifying medical material” it treats about the name, source, distribution, physical and chemical characteristics, action, doses, test of purity etc. Regarding drugs.

- **Drug** : it is the substance of physical, chemical or biological origin used in prevention, treatment and diagnosis of disease in man or animals.
- **WHO (1966)** : **Drug** is any substance or product that is used or intended to be used to modify or explore physiological system or pathological states for the benefit of the recipient.
- **Prodrug** : it is a drug which after the metabolic activation in the living body produces the therapeutic effects, where the parent drug molecule is ineffective or inert but its metabolite is pharmacologically active.
- **Placebo** : it is a Latin word meaning ‘ I may please you ’. it refers to an agent / substance/ preparation consisting of an inert pharmacological agent (dummy drug) to simulate real drug therapy in exerting psychological impact of medication in human subject.