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Science of Pharmacology and Toxicology

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EDITORIAL NOTE

Pharmacology is basically defined as the study of drugs. It consist of inspecting the interactions of certain chemical substances with the living systems, with the goal of better understanding pharmacological characteristics and activities, including as drug-molecule interactions with drug receptors and how these interactions have an impact. The numerous groups of medications, how they are used therapeutically, their methods of action, how they are managed by the human body, and their function in society are all covered in our pharmacology courses. Pharmacology provides the scientific foundation and principles for a wide range of particular applications, including the study of drug activities in the health sciences, the use of medications as therapeutic agents in medicine or as research instruments, and pharmaceutical development and regulation. Clinical pharmacology, cardiovascular pharmacology, behavioural pharmacology, Neuropsychopharmacology, pharmacogenetics, and Pharmaco-economics are only a handful of the many subspecialties within pharmacology. Toxicology is the study of the harmful effects of chemicals (including medications) on living organisms, as well as the methods for preventing or alleviating these effects. Toxicologists look at a variety of environmental agents and chemical compounds that are either created by humans or come from nature, in addition to medicinal treatments. Individual species or entire ecosystems may experience a variety of harmful effects, including changes in growth patterns, pain, sickness, or death as a result of these chemicals. Clinical toxicology, regulatory toxicology (both of which are present in the pharmaceutical and toxicology industries), forensic toxicology, occupational toxicology, and risk assessment are some of the subspecialties of toxicology. A recent online Science article outlines the present need for toxicologists. Toxicology and pharmacology are two fields that require a fundamental understanding of chemical characteristics and activities. Pharmacology, on the other hand, is more concerned with the therapeutic effects of chemicals (especially pharmaceuticals), whereas toxicology is more concerned with the detrimental effects of chemicals and risk assessment. Pharmacy programmes are not the same as pharmacology programmes. The Faculty of Arts and Science and the Faculty of Medicine collaborate on pharmacology programmes at the undergraduate level. A Bachelor of Science degree is awarded to students who complete an undergraduate specialist or major programme in pharmacology. The Faculty of Pharmacy offers a professional degree programme in pharmacy that educates students to become licenced pharmacists.

Types of pharmacology

Pharmacokinetics

Pharmacokinetics refers to the absorption, distribution, metabolism, and excretion of medications.

Pharmacodynamics

Pharmacodynamics includes pharmacological mechanism of action, refers to the molecular, biochemical, and physiological impacts of medications.

Types of toxicology

Analytical toxicology

Analytical toxicology is concerned with the detection and assessment of harmful substances.

Applied toxicology

Applied toxicology is concerned with the early detection of toxicants using modern technology.