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Understanding the Meaning of Molecular Pharmacology and its Role in Pharmacy or Clinical Care

Zongwei Cai*

Department of Environmental and Biological Analysis, Hong Kong Baptist University, China

INTRODUCTION

The curriculum focuses on the scientific investigation of drug biochemical and biophysical properties at the molecular level, as well as biopolymer interactions and impacts on cell structures and activities. Includes molecular biology and biophysics classes. Signal transduction, transmitters, and protein synthesis and release pharmacology. Drug discovery and recognition, molecular toxicology, drug design, pharmacodynamics, developmental genetics, and treatment methods are all topics covered in this course. Biochemistry, cell biology, physiology, chemical biology, and biomedicine are all topics of study in molecular pharmacology. The emphasis is on the drug's impact on the target molecule. It can be paired with system pharmacology studies, which look at a drug's positive or negative effects on the body's systems, or toxicology studies, which look at the hazardous effects of medications and other chemicals on the body. Although most people study molecular pharmacology at the PhD level, there are bachelor's and master's degree programmes in related fields.

ABOUT THE STUDY

Pharmacology is the branch of medicine or biology concerned with a drug or its impact, where the drug is any manufactured, natural, or endogenous (body) substance, including biochemical or physiological. A molecule can be characterised. Cells, tissues, organs, and organisms take actions (the term drug may be used to include these endogenous and extrinsic bioactive species). It is the study of interactions between organisms and chemicals that alter normal or aberrant biochemical function. Therapeutic products are defined as substances that have medicinal characteristics.

The study of pharmacology is essential for the discovery of new medications and therapies for human disease. Any chemical that impacts biological processes can be classified as a medication. Plant extracts such as morphine from the opium poppy, quinine from the bark of the cinchona tree, and digitalis from Foxglove were explored by early pharmacologists. Later in the nineteenth century, pharmacology emerged as a biological science that used scientific research ideas to therapeutic situations. Today, the University of Arizona's Molelcular and Biochemical Pharmacology group uses biochemistry, molecular biology, structural biology, cell biology, and cell physiology to define drug action mechanisms and how drugs affect the organism through studies on intact animals, organs, cells, subcellular compartments, and tissues.

Drug discovery bottlenecks are mainly studies of the mechanism of action of compounds found during drug target identification and phenotypic screening. Another major issue in natural product drug development is the scarcity of molecules for property research, especially when the structure is complicated. Timely chemical synthesis should be eliminated. In our lab, we use genome and proteome profiling techniques that only require tiny amounts of natural products to provide insights about how chemicals work worldwide at the molecular and cellular levels. Transfer genome-wide studies used to predict bioactive chemical sites in yeast to more relevant mammalian systems and study more sophisticated signalling networks.

CONCLUSION

Signals are identified via chemogenomic profiling in yeast and RNAi-based drug susceptibility screening in mammalian cells. Pharmacology, a life science , is involved within the study, discovery, and characterization of chemicals that exhibit biological effects, and therefore the elucidation of cellular and biological functions related to those chemicals. In contrast, pharmacies,

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Corresponding author Zongwei C, Department of Environmental and Biological Analysis, Hong Kong Baptist University, China; Email : zwcai@hkbu.edu.hk

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as specialists in medical services, have an interest in applying the principles learned from pharmacology to their clinical environment. In both areas, the most difference between the 2 is the difference in science-oriented research areas driven by direct patient care, pharmaceutical operations, and pharmacology.