

### Course description for Postgraduates, School of Basic Medicine

<b>Course Title:</b> Advanced Pharmacology		<b>Course Code:</b> 510.544		
<b>Course category:</b> <input checked="" type="checkbox"/> High-level course <input type="checkbox"/> International course <input type="checkbox"/> Advanced international courses <input type="checkbox"/> Common course				
<b>Course Type:</b> <input type="checkbox"/> 1st-level discipline basic courses <input checked="" type="checkbox"/> 2nd-level discipline basic courses <input type="checkbox"/> Optional professional courses				
<b>The methods of Assessment:</b> Review				
<b>Teaching Method:</b> Lecture		<b>Applicable Educational Level:</b> <input checked="" type="checkbox"/> Master <input checked="" type="checkbox"/> Doctor		
<b>The Beginning of the Term:</b> the 2nd semester	<b>Total Hours/Teaching Hours:</b> 32h		<b>Credits:</b> 2	
<b>Applicable Specialty:</b> Clinic and Basic Medicine				
Name of the Teachers of the Course Group	Professional Title	Major	Age	Academic Direction
Jian-Guo Chen	Professor	Pharmacology	54	Neuropharmacology
Fang Wang	Professor	Pharmacology	43	Neuropharmacology
Zhang-Yin Ming	Professor	Pharmacology	49	Cardiovascular Pharmacology
Hui Liu	Associate professor	Pharmacology	45	Cardiovascular Pharmacology
Qiang Tang	Associate professor	Pharmacology	42	Cardiovascular Pharmacology
Zhuang-Li Hu	Professor	Pharmacology	41	Neuropharmacology
Li-Hong Long	Professor	Pharmacology	41	Neuropharmacology
Rong Xu	Professor	Pharmacology	42	Cancer pharmacology
<b>Course Outline:</b>				
<b>Chapter 1 Opioid Analgesics &amp; Drug Abuse</b>		<b>4 Hours</b>		
Pain signaling				
Opioid analgesics				
Pharmacologic management of pain				

Drug dependence and drug abuse

**Chapter 2 Progress in treatment of major depressive disorders**

Introduction of major depressive disorders (MDD)

Psychotherapy for MDD

Antidepressants

Transcranial magnetic stimulation

Deep brain stimulation

**Chapter 3 Overlapping between energy metabolism and neuropsychological diseases**

Obesity management

Strategies for pharmacological weight loss

FDA approved anti-obesity pharmacotherapies

Agents in development for pharmacological weight loss

Antidepressants

Neuropsychiatric Effects of CNS-Acting Drugs Prescribed for Weight Loss

Links between homeostatic and hedonic food intake

Stress-Regulatory Effects of Metabolic Neuroendocrine Signals

**Chapter 4 Anti-platelet agents**

Platelet biogenesis, structure and function

Receptors on the platelet and their activation mechanism

Mechanism and adverse effects of anti-platelet drugs

Research progress in anti-platelet agents

**Chapter 5 Antiarrhythmic drugs**

Principles of cardiac electrophysiology

Mechanisms of cardiac arrhythmias

Mechanisms of antiarrhythmic drug action

Classification of antiarrhythmic Drugs, pharmacological Effects and clinical uses of the drugs

Progress in antiarrhythmic drugs

- ① Targeting the Ca<sup>2+</sup>-handling machinery
- ② Targeting intercellular coupling mechanism
- ③ Targeting arrhythmogenic remodeling
- ④ Cell and gene therapy

## **Chapter 6 Drugs used in congestive heart failure**

Introduction

Pharmacological Treatment of Heart Failure

- ① Classification of the drugs
- ② Commonly used drugs: characteristics, clinical evaluation and research progress
- ③ New drugs

## **Chapter 7 Antihypertensive drugs**

Classification of drugs used for the treatment of hypertension

Mechanism of action of various classes of anti-hypertensive drugs

Major toxicities and side effects of commonly used drugs

Agents used in specific populations

## **Chapter 8 Anti-cancer drugs: past and future**

Chemotherapy

Molecular targeted therapy

Immunotherapy

Nanomedicine

**Textbooks:**

Self-compiled teaching materials

**Main Reference Books:**

1. Cardiovascular Pharmacology, Xiu Chen
2. Cardiovascular Pharmacology, Ding-Feng Su;
3. Neuroscience, Fifth Edition: Dale Purves, George J. Augustine
4. Molecular Neuropharmacology, 1st Edition: Nestler EJ, Hyman SE, Malenka RC
5. Basic Neuropharmacology, Qing-Zhu Zhang
6. Journals: Circulation, Circulation Research, Neuron