Shandong University School of Medicine

Graduate Education Program Curriculum

（Edition Year 2014）

Providing Relief to All in Needs

Seeking Truth from Universal Wisdom

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Contents

1. History of Shandong University–School of Medicine

Shandong University School of Medicine, as the main body of former Shandong Medical University, is one of the earliest medical schools in China, with a long history dating back to Medical School of Cheeloo University founded in 1911. In 1952 Medical School of Cheeloo University, Shandong Provincial Medical College and East China Norman Bethune Medical College were united as Shandong Medical College, which was renamed as Shandong Medical University in 1985. In July 2000, with the merge of Shandong University, Shandong Medical University and Shandong University of Technology, the Department of Preclinical Medicine and the Department of Clinical Medicine of former Shandong Medical University were combined into the present School of Medicine.

Over the past 100 years, the School of Medicine has fostered more than 30,000 outstanding talents and assembled a large number of celebrated experts and scholars enjoying both national and international prestige. The school has 28 preclinical and clinical research institutes and 8 affiliated hospitals. There are 1024 preclinical and clinical teaching staff members, among whom are 335 professors, 1 academician of the Chinese Academy of Engineering, 5 specially invited professors by "Cheung Kong Scholar Award Program", 3 winners of National Outstanding Youth Foundation, 3 members of the first and second levels of national "Hundred, Thousand and Million Talents Project", 11 members of "New Century Outstanding Talents Supporting Program", 17 specially invited professors of "Taishan Scholars Construction Project" of Shandong Province, 4 tutors of "100 National Excellent Doctoral Dissertations", 2 national teaching celebrities, 168 PhD tutors and 744 M.S. tutors.

It is equipped with national key disciplines and 6 ministerial and provincial key research labs (Key Laboratory of the Ministry of Education for Experimental Teratology, Key Laboratory of Ministries of Education and Public Health for Cardiovascular Remodeling and Function Research, Key Laboratory of Ministry of Public Health for Otolaryngology and Key Laboratory of National Administrative Bureau of Traditional Chinese Medicine and Shandong Province for Blood Diseases). It also has 13 provincial key disciplines (Human Anatomy and Histology & Embryology, Internal Medicine, Gynecology and Obstetrics). Disciplines in the Medical School, such as Preclinical Medicine, Clinical Medicine, Biology and Biomedical Engineering, recruit PhD candidates and Postdoctoral Research Fellows.

The School of Medicine has long been taking educating and training of medical students as its major task. Clinical medicine is the traditional dominant domain, which was approved as the first characteristic major by the Ministry of Education in 1997. By now, the school enrolls about 400 eight-year, seven-year and five-year undergraduates, 600 graduates and 180 PhD candidates every year. The school not only undertakes the responsibility of preclinical and clinical courses, but the basic medical and clinical teaching for School of Dental Medicine, School of Public Health and School of Nursing and School of Pharmacy, which counts for 67% of the medical teaching.

For the past few years, the School of Medicine has taken on more than 800 research projects of "973" and "863" programs, National Key Scientific and Technological Research Programs, National Outstanding Youth Foundation and National Natural Science Foundation. It has also won 190 scientific and

technological awards at national, ministerial and provincial levels. Nearly 7000 essays have been published in national and international academic periodicals, like *Nature Genetics, Cell and Blood*. The favorable development of scientific research has laid a solid foundation for the school to transform from a teaching-and-research-oriented institution to be research-oriented. In order to strengthen international cooperation and exchange, the School of Medicine has established good relationship with many medical schools like Baylor Medical College of the U.S. in joint-labs; mutual visiting of teaching and research faculty, joint supervision for graduates and undergraduate's mutual visiting. By now, the school enrolls over 300 international students majoring in clinical medicine from countries like Pakistan, India, Bangladesh, South Africa, etc.

Over the past century, the school has developed fine traditions of "Providing Relief to All in Need, Seeking Truth from Universal Wisdom" and "Relentless Pursuit of Perfection, Unselfish Devotion to Patients". In the new century, Shandong University School of Medicine is positioned to pass on the fine traditions and to anchor on the experience of administration, so as to better fulfill the responsibility of training excellent, skilled medical professionals with decent morality, international perspectives and social responsibility. The school is devoted to improving its internationalization and enhancing its international reputation, and to making more contributions to the better livelihood and health of people.

2. Introduction of Graduate Program

School of Medicine provides two major professional graduate programs in Medicine: Master/PhD program in Biomedicine and Master/PhD program in Medical Science. It aims to offer a wide variety of comprehensive scientific and clinical knowledge to prepare students for future professional work and career such as in biomedical research, Pharmaceutical industry or in the health profession. Students will have opportunities to explore their own research and clinical interests through an in-depth study of relevant fields. The program is designed to enable students to integrate medical knowledge for analysis of general medical phenomenon. They are also expected to demonstrate a broad command of knowledge in research methods and experimental insights.

3. Degree Programs

Students are enrolled in the following departments within School of Medicine. After completion of respective program, qualified candidates are conferred with either Masters or PhD Degrees of their specific field, such as Masters/PhD of Internal Medicine (Sub-specialty); for example–Master of Internal Medicine (Gastroenterology) and PhD in Cardiology.

Departments in Biomedicine	**Departments in Clinical Medicine**
Physiology	Internal Medicine
Medical Psychology	Neurology
Neurobiology	General Medicine
Genetics	Surgery
Cell Biology	Pediatrics
Biochemistry and Molecular Biology	Otorhinolaryngology
Human Anatomy, Histology & Embryology	Genecology & Obstetrics
Immunology	Emergency Medicine
Pathogenic Biology	Experimental Nuclear Medicine
Pathology & Pathophysiology	Rehabilitation Medicine & Physiotherapy
Pharmacology	Geriatrics
Biomedical Ethics	Clinical Laboratory Diagnostic
	Anesthesiology
	Opthalmology
	Dermatology & Venerelogy
	Imaging & Nuclear Medicine
	Clinical Discipline of Chinese & Western Integrated Medicine
	Oncology
	Biomedical Engineering
	Diagnostics
	Clinical Epidemiology and Evidence-based Medicine

4. General Regulations for the Master Program for International Students

Program Length: 3 years (Effective Year: 3-4 years)

Section 1 Objectives

For master degree, international students must

1) Show respect for Chinese foreign policy, strictly obey the laws and regulations of the Chinese government and Shandong University, remain positive attitudes and perceptions about learning, achieve academic excellence, and promote the friendly relations and cooperation between China and other countries.
2) Demonstrate general and integrated understanding in their main field of study, including the molecular, cellular and organ biology processes and the relationship with disease in humans.
3) Demonstrate in-depth knowledge of relevant experimental methods within the field of biomedicine and show a good ability to independently carry out research and practice within the field of biomedicine and medicine.
4) Demonstrate a good ability, both orally and in writing, to account for a biomedical problem/project in English.

Section 2 Program Duration

Master program includes two parts, course study (around six months) and Clinical Practice/Scientific Research (two and half years). Generally, program lasts for 3 years. However, in certain instances, schooling length could be extended to 4 years.

Part 1: Courses Study (0.5 years)

☑ Complete at least five basic degree courses (more than 8 credits) and pass the exams at the end of the 1st semester.

☑ Contact the supervisor and make a study plan under the professor's guidance.

☑ Pass the qualified exam.

Note: For the students who pass all exams of basic degree courses but do not pass qualified exam or do not have a tutor in the hospital, only can obtain master course-completion certificate from Shandong University.

Part 2: Scientific Research and Clinical Practice (2.5 years)

International students are required to:

☑ Conduct clinical rotation, study and research under the guidance from supervisors. During the Scientific Research and Clinical Practice period, the students should do the clinical research and practice in hospital (only for students majored in clinical medicine) under the instruction of the Supervisors. The details are listed in following sections.

☑ Complete the dissertation and defense

Note: In certain instances, program duration could be extended for one more year, which means students are allowed to complete postgraduate study within four years.

Section 3 Course Requirements

The total credits for each international student of the master program: a minimum of 15 credits.

1. **Basic degree courses:** Master students are required to take at least 5 basic degree courses (at least 8 credits) in the 1st semester.
2. **Professional Course (3 credits):** offered by supervisor or committee members,

which provides the general conceptions and structures as well as the new progress in the specific fields. Under the guidance of supervisors, students can take the credits by different ways:

- ☑ Classical literature review – Master students submit TWO reports to the supervisor group (1 credit for each report) before deadline.
- ☑ Lecture – The lectures will generally be provided by supervisors or specialists in the field. Taking the exams can be seen as an assessment method.
- ☑ Seminar – Assessment methods also can be selected by supervisors.

3. **Lecture & Presentation (3 credits):** Master students shall attend lectures of their major fields and give presentations at least 3 times, which should be marked by supervisors.

4. Clinical Practice (1 credit) (For students majored in clinical medicine): Clinical rotations enable students to experience and practice within a hospital. The clinical rotations should be arranged under the supervisor of students' tutor. Master students are required to complete at least 6 months' clinical rotation and need to rotate through various departments. Clinical assessment is made by Department directors or supervisor. **Unqualified candidates cannot attend dissertation defense and apply for graduation on time.**

Section 4 Mid-Term Assessment

Usually, the mid-term assessment is arranged in the 3rd semester. Students should report their progress both in the research project and studies. The qualification will be evaluated by supervisors and the specialists in different aspects such as daily performance, research ability, dissertation proposal and preliminary data. Qualified candidates are allowed to continue their studies, while unqualified candidates cannot get their master degree. **The assessment and relevant records should be**

kept for reference.

Section 5 Dissertation Writing and Graduation

Research Duration

In order to complete the dissertation, master students are required to do the research and investigation for at least one and half years.

1. **Topic Selection and Dissertation Proposal**

Before starting the proposal, master students must complete the **literature review** of no less than 30 relevant papers, which will be evaluated, marked and recorded by supervisor group (at least 3 group members). The topic of dissertation proposal has to refer to students' major fields or other related areas. The evaluation group will be established by a director/supervisor and 3 to 5 specialists.

Dissertation proposal should be completed in the second semester. The following contents should be included in dissertation proposal: Objective or aims of the project, Background and preliminary data, Research design & research contents, Methods, Possible problems and solutions, Feasibility & Novelty, Scheduling, budget and so forth. The completed proposal must be fully evaluated and qualified by the evaluation committee before the research topic could be determined. **The dissertation proposal and relevant records should be kept for reference.**

2. **Dissertation Progress Tracking**

In order to ensure that the project keeps going in the right direction, master students are required to report their research process at least 2 times before completing the dissertation. The supervisor and committee members are in charge of providing suggestions and directions about student's work. **These reports need to be recorded and kept for reference.**

3. **Master Pre-defense:**

One month before the submission of dissertation and application for defense, a public pre-defense will be organized by the school degree evaluation committee. The procedure and time requirement are exactly the same with formal defense. Besides, other arrangements about pre-defense are carried out according to relevant provisions of Graduate School.

Notes: **ALL SHOULD BE REPORTED DURING THE WHOLE PROJECT, IF THE PROJECT OR THE TOPIC OF DISSERTATION IS CHANGED, IT SHOULD BE FORMAL DOCUMENTED.**

4. **Dissertation Requirements**

Degree dissertation shall be data reliable, analysis reasonable and appropriate, meet the requirements of writing standards, and have high academic value.

Master students are required to complete their dissertation on the basis of clinical practice and scientific research training.

5. **Academic Requirements**

Publish a paper on a formal journal or the SCI journal *(The published paper **must be** related to your dissertation research). Student **must be** the first unit primary author (Shandong University as primary institution of primary author)*. **The students will not get their degree until they get the formal published paper.**

5. General Regulations for the PhD-Degree Program for International Students

Program Length: 4 years (Effective Year: 4-6 years)

Section 1 Objectives

For PhD-degree, international students must

1) Show respect for Chinese foreign policy, strictly obey the laws and regulations of the Chinese government and Shandong University, remain positive attitudes and perceptions about learning, achieve academic excellence, and promote the friendly relations and cooperation between China and other countries.
2) Demonstrate integrated and systemic understanding in their professional area; be familiar with the latest research progress and development trend of their major fields; make innovative achievements with independent scientific research competence.
3) Show full ability to carry out independent scientific work and the potential in advanced professional qualifications for jobs in research or related areas
4) Demonstrate a good ability, both orally and in writing, to account for a biomedical problem/project in English.

Section 2 Supervision and Doctoral Committee

The main supervisor and doctoral committee are responsible for the planning and implementation of the PhD degree program. The doctoral committee is organized and consists of 3-5 experts of their major fields or related areas who must have the title of associate professor and/or above.

Section 3 Program Duration

Part 1: Courses Study

☑ Students need to choose at least 3 English medical courses as elective courses in the first semester.

☑ Pass 2-3 degree courses which are offered by tutor group during 4 academic years.

☑ Finish the Frontier Science Forum at least 12 times (Detailed information should be recorded on your Assessment Form).

Part 2: Clinical Research and Practice in Hospital

☑ Follow the tutor's instruction to do the clinical research and practice in hospital. The clinical practice will be evaluated by tutor group (pass mark is 70). If student was not qualified in this clinical practice, he/she could not apply for graduation.

☑ Pass the mid-term assessment.

Part 3: Dissertation Writing and Graduation

☑ Finish the dissertation and pass the defense.

Section 4 Course Requirements

The total credits for each international student of the PhD program: at least 17 credits. The detail is listed as following:

1) **Basic degree courses:** choose no less than 3 courses from English medical coursed in the first semester
2) **Professional Course II (3 credits):** issued by supervisor or committee member
3) **Professional English II (2 credits):** issued by supervisor or committee member
4) **Seminar & Presentation II (5 credits):** Students shall attend lectures of their

major fields and give presentations for at least 5 times, which will be graded by supervisors or committee members.

5) **Clinical Practice (1 credit) (Only be required for students majored in Clinical Medicine)**: Graduate students shall take clinical rotation of their major fields, which will be assessed by the clinical department. **Students who fail in the assessment are not allowed to take the final dissertation.**

   PhD students majored in Clinical Medicine need to take at least 6 months' specialty training under the guidance of supervisors. Students are required to demonstrate their understanding of common diseases in their fields, including the causes and pathogenesis. Students are also required to master the clinical manifestations, diagnosis and differential diagnosis and treatment methods of the common diseases. The practice should be arranged by supervisors.

Section 5 Mid-Term Assessment (Qualification)

PhD students have mid-term assessment in the third semester. The evaluation committee composed of 5-7 experts conducts the general evaluation of PhD students on daily performance, course completion, clinical practice capability **(for students majored in Clinical Medicine)**, dissertation design and preparation and so forth. The clinical practice capability assessment implemented by supervisors mainly focuses on the standardization of clinical skills and the ability to independently deal with common diseases of the discipline of graduate students. Qualified candidates will continue their doctoral dissertation research and writing, while unqualified candidates cannot get their PhD degree. **The assessment and relevant records should be kept for reference.**

Section 6 Dissertation Writing and Graduation

1. Topic Selection and Dissertation Proposal

PhD students are required to widely review literature, be familiar with international development frontier of the discipline, clearly understand the main direction, and then determine the dissertation topic under the guidance of supervisors.

Before starting the dissertation proposal, students must complete the **literature review** of no less than 60 relevant papers with over 5000 words, which will be evaluated and kept on records by evaluation committee consisting of at least supervisor and 3 specialists.

PhD students are required to complete the dissertation proposal first, listen to the suggestions of experts, and improve the proposed ideas of dissertation. **Dissertation proposal should be completed in the second semester** and must be open to the public in the discipline or related areas. 3-5 experts of relevant disciplines evaluate the proposal. Following content should be included in dissertation proposal: Objective or aims of the project, Background and preliminary data, Research design & research contents, Methods, Possible problems and solutions, Feasibility & Novelty, Scheduling, budget and so forth. The completed proposal must be fully evaluated and qualified by the evaluation committee before the research topic could be determined. **The dissertation proposal and relevant records should be kept for reference.**

2. Dissertation Progress Tracking

Graduate students must **make mid-term report at least twice** to supervisor or committee members after completing the proposal. The examination committee gives evaluations on the reports and original records, and provides guidance on future work. Graduate students are required to regularly report their dissertation progress to supervisors and committee members. **These reports and evaluations need to be recorded and kept for reference.**

3. PhD Pre-Defense

One month before the submission of dissertation and application for defense, a public pre-defense is required. All the requirements of pre-defense are the same with formal defense. A careful review on doctoral dissertation will be provided by supervisor and committee members. Students must improve their dissertation according to the suggestions. All questions raised by committee members should be addressed before formal defenses.

4. Research Records

The original research data should be recorded using the experimental record sheet. Supervisors and experts review the research records, write comments on the school review sheet during the mid-term report and pre-defense period, and keep them for filing.

***Notes*: ALL SHOULD BE REPORTED DURING THE WHOLE PROJECT, IF THE PROJECT OR THE TOPIC OF DISSERTATION IS CHANGED, IT SHOULD BE FORMAL DOCUMENTED.**

Section 7 Dissertation Requirements

Degree dissertation shall be data reliable, analysis reasonable and appropriate, meet the requirements of writing standards, and have high academic and social value.

Academic Requirements

Publish at least one SCI paper related to their dissertation (excluding conference papers, abstract and supplement issue) as primary author (Shandong University as primary institution of primary author) during the PhD degree period. Only students who fulfill the requirement of course credits, complete the dissertation, succeed in dissertation defense and publish qualified academic paper

will be conferred the academic degree “Doctor of Philosophy” (PhD) .

PhD candidates who fulfill the requirement of course credits, complete their dissertation and succeed in dissertation defense but fail to have qualified publication will be conferred the doctor graduate diploma. PhD candidates who publish their dissertation within the next two years will be conferred the academic degree “Doctor of Philosophy” (PhD).

6. Core Subjects of the Courses Study for International Students

Appendix：Course Selection List of Courses for International Students

No.	Course Code	Course Name	Credit Hours	Credits	Teaching Institute
1	C08060078	Clinical Neuroanatomy	36	2	Anatomy Teaching and Research Department
2	C12060008	Brain and Behavior	36	2.0	Institute of Medical Psychology
3	C08060076	Cell Biology	36	2	Institute of Cell Biology
4	C08060080	Molecular Pathology of the Tumor and Translational Research	36	2	Pathology Teaching and Research Department
5	C08060077	Human Disease Gene Identification and Separation	36	2	Institute of Medical Genetics
6	C08060084	Cell Signal Transduction and Disease	36	2	Histology Embryology Teaching and Research Department
7	C08060083	Introduction to Bioinformatics	18	1	Parasitology Teaching and Research Department
8	C08060079	Molecular and Cellular Immunology	36	2	Research Institute of Immunology
9	C12060009	The Foundation and Frontier Development of Medical Molecular Biology	36	2.0	Biochemical and Molecular Biology Research Institute
10	C12060096	SectionalAnatomy	72	3	Human Anatomy Teaching and Research Department
11	C08060075	Molecular Imaging	32	2	Institute of Nuclear Medicine
12	C08060081	Molecular Basis of Metabolic and Endocrine	36	2	Institute of Physiology

		Diseases			
13	C08060082	Biomedical Papers in English Writing	18	1	Parasitology Teaching and Research Department
14	C12060010	Pharmacological Basis of Molecular Targeted Therapy	36	2.0	Institute of Pharmacology
15	C12060004	General Surgery Treatment Tumor	36	2.0	Qilu Hospital
16	C12060005	Laparoscopic Surgery	36	2.0	Qilu Hospital
17	C12060006	Digestive Disease Diagnosis and New Concept	20	1.0	Qilu Hospital
18	C12060007	The Pathogenesis of Blood System of Malignant Disease Diagnosis and Treatment Progress	32	2.0	Qilu Hospital

7. Curriculum of Program in Biomedicine

➢ Physiology

Section 1 Research Direction

1) Digestive physiology-study the motor function of alimentary canal； neuro regulation and humoral regulation of mucosal epithelium in the alimentary canal； intestinal afferent nerve's characteristic of motivation and the relation between it and intestinal immune system.

2) Neurophysiology: study the function of interneuronsand neural network; the neurobiology of epilepsy and melancholia.

3) Endocrine physiology: study the regulation and mechanism of pancreatic island, adrenal gland, intestinal endocrine etc.; molecular basis and target analysis of metabolic and endocrine disease.

Section 2 Curriculum

Advanced Physiology

Neurophysiology

Renal Physiology

Digestive Physiology

Molecular Physiology

Cell Physiology

Clinical Physiology

Bioinformatics

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1. “Essentials of neural science and behavior” Kandel, E.R Science Press,2003

2.“Textbook of Medical Physiology” 12th Guyton A C, 2010

3.“Principles of Neuroscience” 4th Eric R.Kandel, 2000

4.“Neuroscience: Exploring the Brain” 2nd Mark F.Bear, 2006

Journals

1.Nature

2 Cell

3 Science

4.Nature Medicine

5.Nature Neuroscience

6.Proceedings of the National Academy of Sciences of the United States of America (PNAS)

7.Journal of Neuroscience

8. Journal of Physiology

➢ Medical Psychology

Section 1 Research Direction

1）Stress-induced central damage research on the pathogenesis of stress related disease.

2) Psychological therapy and the promotion of health.

Section 2 Curriculum

Professional Issues in Medical Psychology (Ethics)

Diversity in Psychological Science and Practice

Life-Span Developmental Psychology

Behavioral Neuroscience

Cognitive Psychology

Advanced Social Psychology

Psychopathology

Introduction to Psychotherapy

Cognitive Behavior Therapy

Behavioral Neuroanatomy (Neuropsychology&Behavioral Neuroscience)

Behavioral Neurology for Neuropsychologists
(Neuropsychology&Behavioral Neuroscience)

Brain and Behavior: Introduction to Neuropsychology

Child and Adolescent Psychotherapy (Child Emphasis)

Child Psychological Assessment (Child Emphasis)

Child Psychopathology (Child Emphasis)

Cognitive and Behavioral Treatments for Depression
(Psychopathology&Treatment)

Cognitive Models of Psychopathology and Psychotherapy
(Psychopathology&Treatment)

Family Therapy (Child Emphasis)

Forensic Psychology&Neuropsychology (Neuropsychology&Behavioral
Neuroscience; Psychopathology&Treatment)

Health Psychology (Behavioral Medicine)

Introduction to Psychopharmacology (Psychopathology&Treatment)

Marital and Sex Therapy (Psychopathology&Treatment)

Mental Health Services Sequence (Policy)

Mental Health Policy (Policy)

Motivation for Health Behavioral Change (Behavioral Medicine)

Neuropsychological Assessment (Neuropsychology&Behavioral Neuroscience)

Primary Care Psychology (Behavioral Medicine)

Psychodynamic Traditions (Psychopathology&Treatment)

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1. <Psychology>
2. <Abnormal psychology>
3. <Clinical psychology>

Journals

1. Neuroscience
2. Brain Research
3. Brain, Behavior and Immunity
4. The Journal of clinical investigation
5. Journal of applied physiology
6. Stress
7. Stress and health
8. Neuropsychobiology
9. Behavioral brain research
10. Psychoneuroendocrinology

➢ Neurobiology

Section 1 Research Direction

1）Biological function research of neurotrophic factors: From molecular and cellular to the overall level, biological function of neurotrophic factors is researched by molecular biology, cell biology ethology and etc., especially in the role of neural plasticity and nervous system diseases.

2）The molecular mechanisms of learning and memory, and emotional disorders transgenic animals are used as the main research object, the molecular mechanisms of learning and memory, and emotional disorders are further studied by pharmacology, molecular biology and etc.

3）Nerve-target tissue regulation mainly by using the method of joint cultivation in vitro, which is based on innervations of the target tissue cells in vitro, the neurons regulating mechanism for various target tissue is researched.

Section 2 Curriculum

Brain and Behavior

Cellular Neuroscience

System Neuroscience

Sensation and Perception

Behavioral Endocrinology

Brain and Language

General Endocrinology

Neurobiology of learning and memory

Neurobiology of disease

Development of Neurobiology

Molecular Neurobiology

Cognitive Neuroscience

Advanced molecular Neurobiology

Biological Psychology

Psychopharmacology

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1. < Principles of Neural Science> 5th edition, Eric R. Kande, J. Schwartz and T. Jessell

2. < From Neuron To Brain> 4th edition, J. Nicholls, et al

3. < Neuroscience：Exploring in Brain> M. Bear, et al

Journals

1. Science

2. Nature Neuroscience

3. Proceedings of the National Academy of Sciences of the United States of America (PNAS)

4. Trends in Neuroscience

5. Neuron

6. Progress in Neurobiology

7. Journal of Neuroscience

➢ Genetics

Section 1 Research Direction

1）Molecular genetics of monogenic diseases (by research gene mapping, gene cloning and gene function of monogenic diseases pedigrees to understand the molecular mechanisms of disease occurrence)

2）Molecular genetics mechanisms of tumor genesis (cellular DNA damage response, mutagenesis and carcinogenesis and biological characteristics of cancer stem cells)

3）Molecular genetics of complex diseases (study the molecular mechanisms of complex diseases from the candidate gene cloning, identification, expression regulation and genetic epidemiology)

Section 2 Curriculum

Medical Molecular Genetics

Molecular Genetic Technique

Cellular Biology

Genetic Engineering

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

Gelehrter T D, Collins F S, Ginsburg D. Principles of Medical Genetics. 2nd ed, Baltimore,Williams & Wilkins, 1998

Journals

1. Nature
2. Science
3. Nature Genetics
4. Nature Review Genetics
5. Annual Review of Genetics
6. Cell
7. American Journal of Human Genetics
8. Human Molecular Genetics
9. Genome Research

➢ Cell Biology

Section 1 Research Direction

1）Growth and differentiation of fat cells

2）Study Signaling of fat cells and the Pathogenesis of Type II diabetes and Adiposity

3）Mitotic cell cycle regulatory mechanisms

4）Stem Cell Biology and cell damage and protection

5）Cellular Neurobiology: Using cells cultured in vitro as basic means, we study cell development, differentiation, aging, death and its relation with, ultra structural and molecular. Explore the molecular mechanisms of cell growth and differentiation of preadipocytes and the genes associated with Type II diabetes and Adiposity. Using human tumor cells and normal cells cultured in vitro as experimental models, we study the molecular mechanisms of regulating cell growth, division and death and explore mechanism of tumor genesis and tumor development and potential novel therapies. Differentiation of Neural stem cells and hematopoietic stem cells. Cells damage and protection.

Section 2 Curriculum

Molecular Cell Biology

Advances in Cell Biology

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1. Molecular Biology of the Cell (3th) Alberts B Garland Pub
2. Molecular Cell Biology (3th) Lodish H Scientific American Press
3. Molecular Biology of the Cell (4th) Bruce Alberts Garland Science Publishing

4. Essential Cell Biology(2001) Alberts B Carland Pub

Journals

1. Nature cell biology
2. Journal of neuroscience
3. Cell
4. Neuron
5. Cell research
6. Molecular cell
7. Trends in cell biology
8. The journal of cell biology

➢ Biochemistry&Molecular Biology

Section 1 Research Direction

1) The structure and function of Glycoconjugates
2) Glycophingolipid and signal transduction
3) Molecular Oncology
4) Protein Engineering

Section 2 Curriculum

Advanced Biochemistry and Molecular Biology

Biochemical Literature

Glycoconjugates

Clinical Biochemistry

Molecular Cloning

➢ Human Anatomy, Histology&Embryology

Section 1 Research Direction

1) Experimental Embryology: study the mechanism and appropriate prevention measures of various malformations at the cellular and molecular level; The research direction is mainly dedicated to study the common development of neural tube defects of pathogenic gene localization, cloning and function analysis, and emphatically analyze extracellular signals that play an important role in the process of development; Study regulatory mechanism of neural stem cells proliferation and differentiation.

2) Reproductive Biology: study the molecular control in the development process of germ cells. Establishing lines and induced directional differentiation of embryonic stem cell lines Establish lines of embryonic stem cells in mice and study the induction methods of directional differentiation into different cells of different organizations, create a new donor way for organ and tissue transplantation and organ repair. Research the mechanism of early embryogenesis, differentiation, and blastocyst implantation, and explore the methods of anti-early pregnancy and contraception.

3**)** Lymphatic and cancer research**:** utilizing the methods of Morphology, Cell Biology, Molecular biology to study the mechanism and treatment of lymphedema, the relationship between Lymphocyte adhesion and tumor metastasis. Biological significance of Oncogene and tumor suppressor genes in the process of tumor development and transfer, the mechanism of Genetics and Epigenetics, the screening and identification of tumor biological targets, the mechanism of lymphatic regeneration, and the optimization of tumor treatment and so forth(and so on and so forth/and so on).

4) Nerve regeneration, nerve transplantation and diseases of the nervous system: utilizing the methods of immunohistochemistry, molecular hybridization, Electrophysiology and the transplantation of nerve cell after culture to explore the mechanism of the various factors of central and peripheral nerves in the process of repair after injury. Neurodegenerative diseases such as Parkinson's disease pathological mechanism research.

5) The adjustment mechanism of primary afferent and pain: using the measures of Morphology, Cell biology, Molecular biology, and animal behavior to study the regulation mechanism of the primary afferent nerve and pain under the inflammation and other relevant state of disease.

6) CT imaging anatomy and clinical application research: by adopting the methods of countrymen sectional specimen, CT, MRI, PET, SPECT to research the human body structure and change rules of section morphology to provide morphological basis for the disease of modern imaging diagnosis and interventional radiology treatment.

Section 2 Curriculum

Central Nervous System Anatomy

Clinical Anatomy

Neuroanatomy

Sectional Anatomy

Applied anatomy of the abdomen

Applied anatomy of the thorax

Applied anatomy of the pelvis&perineum

Applied anatomy of limbs and vertebral column

Cancer Cell Biology

Nuclear apparatus-Cell reproduction&death

General Embryology

Study of Chordata

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1. Gray's Anatomy. 40th edition.

2. Drake RL, Vogl W, Mitchell AWM. Gray's Anatomy for Students. Beijing: Peking University Medical Press, 2006

3. Moore KL and Dalley AF. Clinically Oriented Anatomy, 5th edition. Philadelphia: Lippincott
Williams & Wilkins, 2006

4. Moore KL and Persaud TVN. The Developing Human: Clinically Oriented Embryology, 8th edition. Philadelphia: Saunders, 2008

5. Haines DE. Fundamental Neuroscience for Basic and Clinical Applications. Philadelphia: Churchill Livingstone, 2006

Journals

1. Nature
2. Science
3. Cell
4. Nat Neurosci
5. Neuron
6. J Neurosci
7. Development
8. Dev Biol
9. Stem Cells

10. Biol Reprod

➢ Immunology

Section 1 Research Direction

1）Tumor immunology

Research on genesis of tumor cells; cellular and molecular mechanisms of their interaction with immune cells. To screen tumor markers and explore innovative therapeutic schedules.

2）Cardiovascular immunology

Research on functions, mechanisms and relevant intervening measures of immune cells (T cell, macrophage)and correlative regulatory molecules in atherosclerosis.

3）Liver immunology

Research on immune molecule mechanisms in hepatic diseases, especially in genesis of HBV infection relevant diseases. To screen novel liver cancer markers and targets of gene therapy and probe innovative therapeutic schedules through studying on expression and regulation mechanisms of hepatic specific genes.

4）Signal transduction and diseases

Research on signal pathways correlative with activation, differentiation and maturation of immune cells and their functions in tumors, atherosclerosis and hepatic diseases. To discover novel targets and conduct intervention therapy.

5）Transplantation immunology

Research on functions and mechanisms of key cells and molecules in transplant rejection in graft survival.

Section 2 Curriculum

Clinical Immunology

Molecular Immunology

Medical Immunology Technique

Molecular Immunology Technique

Gene Engineering

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1.Cellular and molecular Immunology：.Chief editor: Abbas and Litchman

3.Immunology： Chief editor： Roitt

4. Immunobiology : Chief editor: Janeway

Journals

Cell, Nature, Science, Nature Medicine, Nature Immunology, Immunity, J CLIN INVEST, J EXP MED, Hepatology, Gastrointestinal, J. Hepatology, Circulation, Circulation Research, J. Immunology, J BIOL CHEM

➢ Pathogenic Biology

Section 1 Research Direction

1）Infection and Immunology; Oncomolecular biology

2）Oncovirus and Infection Immunology

3）Molecular Virology and Morphology of Virus

4）Microbial pathogenic mechanisms and intervention strategies

5）Parasites of Molecular Biology

6）Parasites of Molecular Immunology

Section 2 Curriculum

Anti virus Immunology

Anti tumor Immunology

Filarial Biology

Parasitic Disease

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1. David Greenwood Medical Microbiology
2. Essentials of Human Parasitology Judith S. Heelan and Frances W. Ingersoll
3. Foundations of parasitology Gerald D. Schmidt, Larry S. Roberts
4. Molecular cloning: A laboratory Manul cold spring Harbor

Journals

1. Journal of Virology
2. Virology
3. Journal of Medical Microbiology
4. Journal of Bacteriology
5. CLIN MICROBIOL REV
6. J IMMUNOL
7. Nature
8. Science
9. Cell
10. Nature Medicine
11. PNAS
12. Cancer Research
13. Vaccine

14. Trends in parasitology
15. Advances in parasitology
16. International Journal for Parasitology
17. Molecular and Biochemical Parasitology

➢ Pathology&Pathophysiology

Section 1 Research Direction

1）Tumor Pathology: Research on Multi-drug resistance mechanisms. The effects of Plant polyphenols in reversing tumor Multi-drug resistance and its mechanism research. The expression of cancer-related genes in tumors and its pathologivcalsignificance.

2）Renal pathology: Research on the hardening mechanism of Glomerular nephritis.

3）Cardiovascular Pathophysiology: research on atherosclerosis pathogenic mechanism, research on Vascularization and Relationship between hyperlipidemia and atherosclerosis pathogenic mechanism.

4）Endocrine pathophysiology：Research on the pathogenesis of diabetes.

5）Liver pathophysiology: Study on pathogenesis, prevention and treatment of viral hepatitis and liver cancer.

Section 2 Curriculum

Cancer Experiment

Tumor Immunity

Tumor Pathology

Advance Pathology

Advance digestive pathophysiology

Advance Cardiovascular Pathophysiology

Advance Endocrine Pathophysiology

Section 3 the catalogue of main classic works and academic journals that need to be read

1.《 Tumor Classification By WHO》

2.Modern Pathology

3.The Journal of American Pathology

4.Atherosclerosis

5.Arteriosclerosis, Thrombosis, and Vascular Biology

➢ Pharmacology

Section 1 Research Direction

1）Cardiovascular Pharmacology: Do research of Cardiovascular drugs which can prevent and cure the cardiovascular disease in cell and molecular level.

2）Cerebrovascular Pharmacology: Discuss the mechanism of Ischemic Cerebrovascular disease in cell and molecular level, do in-depth research in the effect and mechanism of Cerebrovascular drug.

3）Immune and nephropathy pharmacology: Study the pharmacologic action and the mechanism of drugs which can impact the immunological function and diabetes on body.

4）Neural pharmacology: Research drug and endogenic substance's effect on nervous system, focus on the investigation of neural injury, mechanism of drug on protection and prevention of central nervcoursese degenerative disease.

5）Clinical pharmacology: Make use of chromatogram and mass spectrum technology, based on pharmacology and clinical medicine, to do the multiform metabolism and pharmacokinetics research.

Section 2 Curriculum

Drug Metabolism and Pharmacokinetics

Cardiovascular Pharmacology

Biological Agents

Biochemical Pharmacology

Advanced Pharmacology

Renal Pharmacology

Section 3 the catalogue of main classic works and academic journals that need to be read

Book

J．G．Hardman，LELimbird.Goodman&Gilmanassic works and academic journals that neEleventhed,NewYork,TheMcGraw-HillCompanies,2011

Journals

1. Acta Pharmacologica Sinica
2. Chinese Journal of pharmacology and Toxicology
3. Pharmaceutical Journal
4. Progress in Physiological Sciences
5.Pharmacological Review
6.Circulation
7.Stroke
8.Drugs
9.Atherosclerosis

8. Curriculum of Program in Clinical Medicine

➢ Internal Medicine (including sub-specialty)

Section 1 Research Direction

※internal medicine (Infectious diseases)

1) Viral hepatitis

Focus on the etiology, pathogenesis and antiviral therapy etc. of viral hepatitis.

2) Hemorrhagic fever with renal syndrome

Focus on the etiology, pathogenesis, diagnosis and treatment etc. of hemorrhagic fever with renal syndrome.

※internal medicine (Rheumatology)

1) rheumatoid arthritis

Focus on the etiology, pathogenesis, diagnosis and treatment of rheumatoid arthritis.

2) systemic lupus erythematosus

Focus on the pathogenesis, immune pathological changes, and clinical treatment of systemic lupus erythematosus, and improve the survival time and life quality of patients.

※internal medicine (Respiratory diseases)

1) the molecular pathogenesis of lung cancer

2) the early diagnosis and treatment of lung cancer

3) pleural disease

4) the pathogenesis and early intervention of chronic obstructive pulmonary disease

5) the pathogenesis and anti-inflammatory therapy of bronchial asthma

6) the pathogenesis and early diagnosis of sleep apnea hypopnea syndrome

7) the pathogenesis and early diagnosis of pulmonary thromboembolism

8) the mechanism and strategy of bacterial resistance

9) the pathology of respiratory diseases

10) the pathogenesis and treatment of pulmonary interstitial fibrosis

11) Respiratory physiology and mechanical ventilation(including non-invasive ventilation)

12) Lung function and the diagnosis and treatment of respiratory disease)

13) Pulmonary infection

※internal medicine (Gastroenterology)

1) the diagnosis and treatment of gastrointestinal tumors

2) Study of liver fibrosis

3) gastrointestinal hormone and portal hypertension

4) gastrointestinal motility

※internal medicine (endocrine and metabolic diseases)

1) diabetes

a.Focuses on the study of genetic factors, environmental factors in the pathogenesis of diabetes,and explore the gene diagnosis and therapy for diabetes.

b.the pathogenesis and treatment of the chronic complications

2) the study of Genetic factors, gene polymorphism and combined treatment of Traditional Chinese Medicine and Western Medicine of thyroid diseases

3) the causes, pathogenesis and intervention treatment of obesity

4) genetics research and gene therapy of other endocrine and metabolic diseases

※internal medicine (Nephrology)

1) pathogenesis and intervention of primary glomerular disease

2) the pathogenesis and intervention treatment of secondary renal diseases such as diabetic nephropathy, hypertensive nephropathy and lupus nephritis

3) the pathogenesis and the prevention and treatment of renal tubulointerstitial disease

4) the combined treatment of Traditional Chinese Medicine and Western Medicine of chronic kidney disease

5) basic and clinical research on the pathology of kidney disease

6) study of genetic diseases

7) study of blood purification technology

8) blood purification therapy of multiple organ dysfunction syndrome

9) study of renal transplantation

10) study of immunotherapy for kidney diseases patient

※internal medicine (Cardiovascular disease)

1) the pathogenesis, diagnosis and drug and interventional therapy of coronary heart disease and atherosclerosis

2) the prevention and treatment of hypertensive disease

3) the drug and interventional therapy of arrhythmia

4) treatment methods of heart failure

※internal medicine (Hematology)

1) the diagnosis and treatment of anemia

study on the diagnosis, treatment and prevention strategies of aplastic anemia, refractory anemia, hemolytic anemia and other secondary anemia caused by lack of blood

2) the diagnosis and treatment of hematological malignancies

study on diagnosis and treatment of myelodysplastic syndrome, acute and chronic leukemia, lymphoma, multiple myeloma, malignant histiocytosis etc.

3) diagnosis and treatment of hemostasis and thrombosis disease

research on diagnosis and treatment of includingabnormal platelet count and quality, abnormal coagulation factor, the function of fibrinolysis system disorder and hypercoagulability and thrombophilic tendency etc.

Section 2 Curriculum

※internal medicine (Infectious diseases)

Diagnosis and treatment of Viral Hepatitis

Diagnosis and treatment of Epidemic hemmorhagic Fever

Diagnosis and treatment of Diarrheal Disease

Diagnosis and treatment of CNS infections

Diagnosis and treatment of Typhoid

Diagnosis and treatment of hives

Diagnosis and treatment of Chicken Pox

Diagnosis and treatment of AIDS

Diagnosis and treatment of Taeniasis

Diagnosis and treatment of Cysticercosis

Diagnosis and treatment of septicemia

Diagnosis and treatment of Infectious shock

Diagnosis and treatment of verminosis

Differential Diagnosis of unknown pyrexia

Pleurocentesis

Peritoneocentesis

※internal medicine (Rheumatology)

Musculoskeletel and Immune System

Pharmacology and Rheumatological Practice

Rheumatological Disorders

Pain and soft tissue rheumatism

Osteoarthriris

Crystal associated arthropathies

Rheumatoid arthritis

Spondyloarthropathies

Juvenile Idiopatheic arthopathy

Autoimmune connective tissue disease

Bone Disorder

Infection and arthrirtis

Synovial Fluid Analysis

※internal medicine (Respiratory diseases)

Upper respiratory infection

Acute Bronchitis

Chronic Bronchitis

Emphysema

Pulmonary Heart Disease

Bronchial Asthma

Pneumonia

Pneumonic Infectious Disease

Tuberculosis

Lung Cancer

Pneumothorax

Respiratory Failure

Interstitial Lung Disease

Chest X-Ray

Tuberculin Skin Test

Postural Drainage

Mechanical Ventilation

Bronchoalveolar Lavage

Pleural Biopsy

※internal medicine (Gastroenterology)

Diagnosis and differential diagnosis of acute abdominal pain

Diagnosis and differential diagnosis gastrointestinal bleeding

Diagnosis and differential diagnosis icterus

Hepatitis etiology

Liver Function Examination

Endoscopy

Pancreatitis

Peptic Ulcer Disease

Fatty Liver Disease

Gastric mucosa pathogenesis

Gastric Cancer

Gastrointestinal Endocrinopathy

Clinical application of CA 19-9,CEA,CA-125

Gastrointestinal lymphoma

Gastrointestinal Dynamics

Esophageal Varices

Diagnosis and differential diagnosis ascites

Malabsorption Syndrome

Functional Dyspepsia

Gastrointestinal Motility

Portal Hypertension

Reflux Esophagitis

Irritable Bowel Syndrome

Inflammatory bowel Disease

Liver Abscess

Nasal Feeding

Liver Biopsy

Gastric Juice analysis

Duodenal drainage

※internal medicine (endocrine and metabolic diseases)

Diabetes and its complication

Ketoacidosis

Graves Disease

Hypothyroidism

Aldosteronism

Choromaffin Cell Tumor

Pituitary tumor

Lactic acidosis

Ectopic Endocrine Syndrome

Sex Differentiation

※internal medicine (Nephrology)

Glomerulonephritis

Acute Nephritis

IgA Nephropathy

Lupus Nephritis

Diabetic Nephritis

Hypertensive kidney disease

Polycystic kidney disease

Interstitial Nephritis

Pyelonephritis

Acute&chronic renal failure

Renal Biopsy

Dialysis

※internal medicine (Cardiovascular disease)

Diagnosis of typical&atypical Myocardial infraction

Diagnosis of acute coronary syndrome

Complication and treatment of Myocardial Infarction

Coronary Angiography

Myocarditis and Myocaddiopathy

Hyperlipidemia

Valvular Heart Disease

Arrythmia

Radip Frequency Ablation

Pacemaker

Aortic dissection

Hypertension

Paroxsymal Supraventricular Tachycardia

ECG

Coronoray Interventional Therapy

※internal medicine (Hematology)

Iron-deficiency Anaemia

Megaloblastic Anaemia

Aplastic Anaemia

Hemolytic Anaemia

Hemorrhagic Diseases

DIC

ITP

Myelodysplastic Syndrome

Myeloproliferative Disease

Coagulation disorder

Blood transfusion

Bone marrow aspiration

Section 3 the catalogue of main classic works and academic journals that need to be read

(Rheumatism)

Books

1. RHEUMATOLOGY (John H Klippel 2000)
2. Textbook of Rheumatology (William N Kelley 1997)
3. Oxford Textbook of Rheamatology (Maddison 1997)
4. Immunology of Rheamatic disease (Sudhir Gupta 2000)
5. Textbook of the Autoimmane disease (Robert G Lahita 2000)

Journals

1. Arthritis & Rheumatism
2. Rheamatology
3. Rheamatic Diseases Clinics of North America
4. Archives of internal medicine
5. The Medical Clinics of North America
6. Immunology
7. Molecular Immunology

8. Clinical & Experimental Immunology

9. Science

10. Lancet

(Respiratory System)

Books

Fishmans Pulmonary diseases and disorders, 3rd edition

Journals

1.Science

2.Lancet

3.Nature

4.Chest

5.Thorax

6.Am J Respir Cell Mol Biol

7.Am J Respir Crit Care Med

8.Cancer

(Endocrine and Metabolic Diseases)

Books

Williams Textbook of Endoirinology

Journals

1. Lancet

2. Diabetes

3 Thyroid

4. Diabetiyia

(Nephrosis)

Journals

1、Nephrosis ,edited by Barry M. Brenner

2、Dialysis and Transplantation, edited by Barry M. Brenner

(gastroenterology)

Books

1. Gastrointestinal Emergencies. Mark B. Taylor 2nd edition 1997
2. Gastroenterology.5th edition Bockus. 1995
3. Current Diagnosis and Treatment in Gastroenterology. James H G. 1996
4. Gastrointestional and Liver disease. 6th edition. Sleisenger 2001
5. Viral Hepatitis. 2nd edition. Arie J Z. 2001

➢ Neurology

Section 1 Research Direction

• Epilepsy: To study the pathogenesis of epilepsy, epilepsy and brain electrical physiological pharmacology, to guide the clinical prevention and treatment of epilepsy.

• Cerebrovascular diseases: To study the pathogenesis of cerebrovascular disease pathology, immunology, endocrine, neural and biochemical basis for further study of cerebral blood vessels.

• Neuromuscular disease pathology and molecular pathological mechanism, diseases of the nervous system of the biopsy pathology and molecular pathological diagnosis technology, especially the study of diagnosis and pathogenesis of diseases of the nervous system.

• Neurodegenerative disease and movement disorders, mainly includes the research on Alzheimer's disease and Parkinson's disease risks, causes and main factors of the disease from the molecular and protein level.

• Infections of the central nervous system.

Section 2 Curriculum

Cerebral Vascular Disease

Epileptic Disease

Demyelinating Disease

Extrapyramidal Disease

Muscle Disease

Peripheral Nerve Disease

Neurological degenerative disease

Neurological space-occupied disease

Section 3 the catalogue of main classic works and academic journals that need to be read

1. Principles of Neurology Edited by Maurice Victor, Allan H. Ropper
2. Clinical Neurology Edited by Roger P. Simon

➢ Surgery (including sub-specialty)

Section 1 Research Direction

※Surgery (Orthopedics)

1. Bone wound

New type development of fracture internal fixation, Spinal cord injuries, Multiple trauma, Development and application of medical biological materials.

2. Spine surgery

Fundamental research, Spinal biomechanics, The biochemical and ultrastructural study of the cervical intervertebral disc, Etiology and treatment of cervical spondylosis, The research of spinal ligament ossification disease, The

research of new type of internal fixation apparatus in the spine, spinal endoscope and intraoperative spinal cord monitoring.

3.Joint surgery

Related factors discussion of Osteoarthritis pathogenesis, Research on etiology diagnosis and treatment of the aseptic necrosis of the femoral head, Research and ial joints.

4.Bone tumors

Research on causes, early diagnosis, limb salvage treatment, gene therapy of bone tumors.

5.Related issues study of microsurgery

6.Related issues of microtechnique repair

※Surgery (Urology)

1.Urology phymatology

Major project study of urology phymatology， to discuss the causes, gene basis, biological behaviour, prevention, treatment of urinary system tumors.

2.Andrology

The emphasis was (is based) on the pathogenesis, diagnosis and treatment strategies of male diseases.

3.Blood purification and Kidney transplant

Research on the possible applications of hemodialysis and its various influences on the organism. To explore kidney transplant rejection mechanism and countermeasures.

4.Prostate disease

5.Emphatically study the pathogenesis of prostate disease from the molecular level and explore the possible prevention and treatment of prostate disease.

6.Renal cystic disease

Study the pathogenesis, genetic basis and treatment of renal cystic disease.

7.Urinary calculi

Study the formation mechanism, recent advances in diagnosis and treatment methods (conservative treatment and lumen gravel operation) of urinary calculi.

※Surgery (General surgery)

1.Basic and clinical research on breast disease

Research on biological characteristics of breast cancer, research and discussion about the surgical operation and rational comprehensive therapy of breast cancer, analysis of prognostic factors in breast cancer and its prevention strategies, etcetera.

2.Basic and clinical research on gastrointestinal disease

Focus on biological characteristics of gastric carcinoma and colorectal carcinoma, mechanism of lymphatic metastasis and peritoneal cavity implantation metastasis, discussion about the methods and techniques for early diagnosis of tumor, judgment on surgical methods and therapeutic effect of rational comprehensive therapy, etcetera.

3.Basic and clinical research on hepatobiliary disease

Focus on gallstone formation, analysis of stone composition and prevention, cholelithiasis treatment options and judgment on its therapeutic effect, discussion about the relationship between cholelithiasis and biliary tree tumor, etcetera; preoperative diagnosis and treatment of gallbladder polyps properties. Genetic testing of hepatobiliary tumor and discussion about experimental gene therapy, tumor cell culture and experimental research, application and therapeutic effect of surgical operation and comprehensive therapy in treating hepatobiliary tumor, etcetera.

4.Basic and clinical research on pancreas and thyroid disease

Genetic testing of thyroid and Pancreatic tumor, discussion about experimental gene therapy, tumor cell culture and experimental research, application and therapeutic effect of surgical operation and comprehensive therapy in treating thyroid and Pancreatic tumor, etc

5.Basic and clinical research on organ transplantation by general surgery

Experimental research and clinical application of liver transplantation; bowel transplantation; pancreas transplantation; parathyroid transplantation, discussion about preservation and protection of transplanted organ and its immunomodulatory; preoperative preparation; treatment of postoperative complications; selection of surgical indications; improvement of surgical methods.

6.Basic and clinical research on portal hypertension and vascular disease

Research on pathophysiological mechanism of portal hypertension. Discussion about surgical methods of devascularization; shunts; joint surgery, pathogenesis and surgical methods of peripheral vascular and macrovascular disease.

※Surgery (Cardiac Surgery)

1.Surgical therapy and basic research of acquried heart disease

2.Surgical therapy and basic research of congenital heart disease

3.Gene therapy

4.Heart transplantation and basic research

5.The research of myocardial protection

※Surgery (Aesthetic and Plastic Surgery)

(1)Plastic and Aesthetic Surgery

Conduct Basic and clinic(clinical)research on common and frequently-occurring diseases of aesthetic and plastic surgery which include wound healing, cicatrix, keloid, superficial mass, pigmentary diseases, obesity, female and male breast lesions, facial senility etc. by taking research techniques of plastic

surgery or other associated subjects in order to healing (heal) diseases,reconstructing (reconstruct) shape and improving (improve) appearance.

(2)Burns surgery

1.Burn wound management

Basic and clinical researches on determination of depth of burns, burn wound management and skin wound covering.

2.The burn pathophysiology

Basic and clinical researches on burn shock, infection and immunity of burn, metabolism and nutrition in burn.

3.Burn complications

Mainly conduct the basic and clinical research on apathogenesis and prevention of multiple organ dysfunction syndrome(MODS)and burn scars.

※Surgery (Neurosurgery）

1.Basic and clinical research on brain trauma.

2.Tumorigenesis and comprehensive therapy study for(of)brain tumor.

3.Basic and clinical research on cerebrovascular disease.

4.Basic and clinical research on myeleterosis

Section 2 Curriculum

※Surgery (Orthopedics)

Conventional inspection and treatment technique of orthopaedics

Diagnosis and treatment of common orthopaedic disease

Operative technique of wound,fracture and dislocation.

Cervical Spondylosis

Fracture and dislocation

Prolapse of intervertebral disc

Arthritis

Bone tumor

Debridement principle

※Surgery (Urology)

Concretion,obstruction,wound and tumor of male urogenital system

Renal colic

Acute urinary retention

Injury of urogenital system

Cather use

Urogenital System inflammation

Hyperplasia of prostrate

Cryptochidism

Congenital hypospadias

Nephrotuberculosis

Bladder cancer

Renal Neoplasm

Prostrate cancer

Ureterolithotomy

Partial cystectomy

※Surgery (General surgery)

Suture

Ligation

Appendectomy

Inguinal Hernia

Femoral Herniorrhaphy

Carbuncle

Acute mastitis

Lymphadenitis

Anal fistula

Phelebitis

Hemorrhoid

Abscess

Superficial tumor

Thyroidectomy

Breast carcinoma

Cholecystectomy

Sub total gastroectomy

Intestinal obstruction and resection

※Surgery (Cardiac Surgery)

Esophageal Cancer

Lung Cancer

Chest Injury

Hemothorax

Pneumothorax

Closed thoracic drainage

Thoracotomy

Lobectomy

※Surgery (Aesthetic and Plastic Surgery)

Basic principles,the common techniques and the instrumentation of suction lipectomy including tumescence,standard and ultrasonic liposuctionvarious techniques for tissue expansion and be familiar with the differing expansion devices.

physiologic and pathologic principles of dermabrasion,chemical peel and laser resurfacing;recognize the differences between the techniques and the indications for choice between the techniques.

biophysical properties of commonly used lasers,and choose different lasers for different types of problems.

※Surgery (Neurosurgery）

Cerebrovascular Surgery

Neurosurgical Oncology

Neurotrauma and Neurosurgical Critical Care

Pain Management

Pediatric Neurosurgery

Surgery of the Peripheral Nervous System

Spinal Surgery

Stereotactic and Functional Neurosurgery

Section 3 the catalogue of main classic works and academic journals that need to be read

Journals

1.”American Journal of Surgery” , “Surgery”

2.”British Journal of Surgery”, “Hepatology”

3.. “Surgical Clinics of North America”

4. ”Journal of Pediatric Surgery”

5. ”Plastic and Reconstructive Surgery”

6. “Journal of Neurosurgery”

7. “Journal of Urology”

8. “British Journal of Urology”

9. “ Annals of Thoracic Surgery”
10. “The Journal of Thoracic and Cardiovascular Surgery”

➢ Pediatrics

Section 1 Research Direction

Pediatrics（internal medicine）

1）Pediatric cardiovascular professional

Research on the interventional therapy of pediatric myocarditis, cardiomyopathy, congenital heart disease, and study of arrhythmia echocardiography, radiofrequency ablation and pacemaker placement surgery, Non-invasive detection of cardiac function、genetic and molecular biological basis of cardiomyopathy.

2）Neonate

Study of neonatal hypoxic-ischemic encephalopathy, proper nutrition of very low birth weight children, neonatal hyperbilirubinemia, hemolytic disease of the newborn, neonatal hepatitis syndrome, neonatal sepsis, congenital heart disease, genetic diagnosis and therapy of hereditary diseases.

3）Respiration

Study in children with bronchial asthma, respiratory pathogen detection.

4）Nerve Professional

Research in Guillain-Barre syndrome, epilepsy of childhood, intracranial infection pathogen detection, hepatolenticular degeneration

5）Blood Professional

Research cord blood transplantation, pediatric anemia, leukemia, solid tumors, bleeding disorders

6）Endocrine Professional

Studies in children with diabetes, short stature, hyperthyroidism, gonadal abnormalities, congenital adrenal hyperplasia.

7）Nephrology

Study of primary kidney disease, secondary nephropathy infants and young children peritoneal dialysis, relationship between renal pathology and clinical

8）Child health

Early prediction and prevention and cure of adult diseases in childhood, child nutrition and development, child psychology and development, child psychology and mental health, intellectual development of children.

Pediatrics（surgery）

1）Occurrence, clinical characteristics and treatment research of congenital malformation of abdominal and thoracic of children.

2）Clinical diagnosis and treatment progress of pediatric urology

3）Study of treatment and prognosis-related factors of common pediatric malignant tumor

4）Research on treatment and functional restoration of pediatric orthopedic surgery

Section 2 Curriculum

Infantile Pneumonia

Infantile asthma

Infantile tuberculosis

Congestive heart failure

Infantile toxic disease

Child Psychology

Neonatal Jaundice

Infantile epilepsy

Congenital diseases

Section 3 the catalogue of main classic works and academic journals that need to be read

Pediatrics (Surgery) journals

1. “American Journal of Surgery” , “Surgery”
2. “British Journal of Surgery”, “Hepatology”
3. “Surgical Clinics of North America”
4. “Journal of Pediatric Surgery”
5. “Plasti Plastic and Reconstructive Surgery”
6. “Journal of Neurosurgery”
7. “Journal of Urology”
8. “British Journal of Urology”
9. “Annals of Thoracic Surgery”
10. “The Journal of Thoracic and Cardiovascular Surgery”

➢ Otorhinolaryngology

Section 1 Research Direction

- Basic and clinical study of head and neck tumor and laryngotracheal stenosis: Basic and clinical study of Laryngeal cancer resection and reconstruction of laryngeal function; Basic and clinical study of hypopharyngeal cancer operation under the preservation of laryngeal function;

Basic and clinical study of Advanced Thyroid Carcinoma; Basic and clinical study of Cervical esophageal carcinoma; Research on Application of midfacialdeglove operation on nasal tumors; Basic and clinical study of operation treatment of laryngotracheal stenosis.

- Basic and clinical study of obstructive sleep apnea syndrome: Study on the etiology and pathogenesis of obstructive sleep apnea syndrome (OSAS); Study on diagnosis and obstructive location of OSAS patient; Study on influence among OSAS and systemic diseases; Treatment of operation and non-operation treatment of OSAS patients.
- Basic study of smell: At the molecular level study of olfactory sensory system and transmission mechanism; The study of cytochrome P450 and olfactory chemosensory; Relationship between cytochrome P450 and head and neck cancer.
- Basic and clinical study of otoneurosurgery and skull base surgey: Clinical study of the anatomy of the skull base; Study of operation in lateral skull base; Operation treatment of facial paralysis and spasm; Endoscopic cerebellopontine angle operation.
- Auditory rehabilitation: Operation treatment of conductive hearing loss; Sensorineural deafness operation and comprehensive treatment.
- Basic and clinical study of nasal endoscope: Clinical application of endoscopic sinus anatomy; Clinical study of endoscopic treatment of chronic sinusitis and nasal polyp operation; Clinical study on the relationship of nose and eyes under nasal endoscope surgery.

Section 2 Curriculum

Amygdale

Nasal Polyp

Nasal septum

Maxillary sinus

Tracheotomy

Nasal allergic disease

Laryngeal and hypopharangeal carcinoma

General head and neck surgery

Audiology

Middle ear and mastoid surgery

Hearing reconstruction

➢ Gynecology and Obstetrics

Section 1 Research Direction

1）Gynecology：Pathogenesis and clinical research of gynecological tumors, endometriosis, female genital system infection, pelvic organ prolapse and stress urinary incontinence.

2）Obstetrics：research technology of antenatal diagnosis, Pathogenesis and clinical research of high-risk pregnancy

3）Assisted reproductive: research reproductive endocrine both in Clinical and basic, genetic diagnosis of gamete and embryo, research the mechanism of fertilization and implantation of embryo.

4）Family planning: research technical development of contraception, sterilization and eugenics.

Section 2 Curriculum

Reproductive Endocrinology

Malignant ovarian tumor

Leiomyoma

Endometriosis

Family Planning

Genital tract infection

Vaginal microflora

Vaginal Examination

Abortion

Cervical Cancer

Adnexal tumor excision

Hormone replacement therapy

Perineum lateral cutting and suture

Placental pathology

Obstetric infections

Pregnancy related diseases

Induced labor

Fetus aspiration

Forcep Delivery

Cesarean Delivery

Prenatal and postnatal care

Treatment of normal labor

Gestational diabetes mellitus

Gestational Hypertension

Section 3 the catalogue of main classic works and academic journals that need to be read

Books and Journals

1.Berek & Novak's Gynecology

2.Jone Hopkin's Handbook of Obstetrics & Gynecology

3.Williams Obstetrics

4.Current Obsetric & Gynecologic Diagnosis & Treatment

5.AM J OBSTET GYNECOL

6.CURR OPIN OBSTET

7.FERTIL STERIL

8.GYNECOL ONCOL

9.HUM REPROD

10.OBSTET GYNECOL

➢ Emergency Medicine

Section 1 Research Direction

• Acute cardiovascular disease researching all kinds of acute cardiovascular diseases' diagnostic methods and treatment, our focus is the acute coronary syndrome's pathogenesis, diagnosis, treatment, prevention and prognosis. Study of various acute cardiovascular disease diagnosis and treatment, our focus is the pathogenesis, diagnosis, treatment of acute coronary syndrome, prevention and prognosis judgment.

• Sudden death and recovery: Research etiology, pathogenesis, prevention and treatment of sudden death, and research overall relevant issues of sudden death. Critical illness salvage: Focus on acute respiratory distress syndrome and multiple organ failure etiology, pathogenesis, diagnosis and prevention.

• Acute poisoning: Focus on the epidemiology of acute poisoning, new diagnosis and prevention of acute poisoning from medicines and poisons.

• Trauma emergency: Discuss critically ill trauma and multiple complications and recovery after ischemia-reperfusion injury mechanism and method of prevention and cure.

Section 2 Curriculum

ICU

Multiple organ failure

Acute poisoning

Cardopulmonary-cerebral resuscitation

➢ Psychiatry and Mental Health

Section 1 Research Direction

• Psychopharmacology (basic, Leading discipline)：Research on new psychiatric drugs commonly used in clinical pharmacokinetics, pharmacodynamics, clinical role of features to deal with the disease and adverse reactions

• Diagnostic criteria and Rating Scale (basic, leading disciplines): Validation, revise the existing psychiatric Rating Scale; establishment, introduction of the new rating scale, clinical should be provided for mental health and employment With; study on the evolution of the standard for diagnosis and classification of mental disorders in China and trends, foreign experience for reference to the nation's standards developed to provide a basis for the subject.

• Social Psychiatry (basic, leading discipline)：Study on epidemiological characteristics of mental illness to explore ways and methods of community

prevention and treatment of mental disorders, provide the basis for the relevant government departments to develop a relevant policy

• Mental health of children and adolescents (basic, leading discipline)：Study on the characteristics of psychological development of children and adolescents to explore child and youth mental health care, research on Characteristics and Control Countermeasures of mental disorders in children and adolescents.

• Sleep and sleep disorders (directions): Study on the characteristics of the population epidemiology of sleep disorders in China to explore the mechanism of Chinese behavioral characteristics of sleep and sleep disorders, seeking and establishing preventive measures and treatment of sleep disorders effective programs.

• Psychiatric genetics (directions)： Study on the characteristics of various types of population genetics of mental disorders, conduct research on molecular genetics of mental illness to explore the genetic causes of mental illness, mental patient study on heredity and eugenics.

• Mental and Behavioral Disorders due to psychoactive substances (directions): Study on the occurrence of mental and behavioral disorders due to psychoactive substances mechanism and influential factors, treatment and prevention strategies.

• Psychopathology (directions): Associated with mental illness onset of life events, social functioning, quality of life, family relationships, and so on.

• Psychosomatic disease (directions)： Study on pathophysiological changes caused by socio-psychological factors or physical changes, psychosomatic, psychosomatic relationship between characteristics of clinical manifestations of disease, treatment, prevention measures

Section 2 Curriculum

Clinical Mental Health

Medical Psychology

Developmental Psychology

Social Psychology

Modern Psychology

➢ Rehabilitation medicine and Physiotherapy

Section 1 Research Direction

1）The plasticity of central nerve injury

2）Molecular biology of the pain produced by nerve injury

Section 2 Curriculum

Manipulative Procedures

Movement Studies

Electrophysical Modalities

Orthopaedics & Rheumatology

Soft Tissue Injuries

Patient Safety & Quality in Healthcare

Professional Development and Methods of Enquiry.

Section 3 the catalogue of main classic works and academic journals that need to be read

Journals

Spine

➢ Geriatrics

Section 1 Research Direction

• Aging and anti-aging research**:** Focus on the mechanisms of aging and anti-aging measures

• Elderly cardiovascular disease research: Focus on the clinical characteristic and prevention of sensile coronary heart disease, hypertension

• Elderly endocrine diseases research: Focus on the mechanisms and integrated prevention of sensilediabetes, metabolic syndrome, lipid metabolic syndrome, gout and osteoporosis.

• Elderly neurological disease research: Focus on the mechanisms and prevention of sensile cerebrovascular disease, Alzheimer's disease

Section 2 Curriculum

Biology and Physiology of Aging

Socio-cultural And Psychologicial Aspects of Aging

Planning Transfers of Care and Ongoing Care Outside Hospita

Ethical and Legal Issues

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1、Current Geriatric Diagnosis Treatment C.Seth Londefeld

2、Handbook of Geriatric Nursing Care Lippincott.Williams&Wilkins

3、Oxford Textbook of Geriatric Medicine J.Grimley Evans et al.

4、Principles of Geriatric medicine & Gerontology William.R. Hazzard et al.

5、Heart Diesease 6th edition Eugen Braunwald

6、The Merck Manual of Geriatrics 3th edition Mark H. Beers

7、Molecular Basis of Cardiovascular Disease Kenneth R.Chien

8、GENESⅦ Lewin.B et al.

Journals

Ageing Research Reviews

American Heart Journal

American Journal of Cardiovascular Drugs

Arteriosclerosis, Thrombosis & Vascular Biology

Biochimica et Biophysica Acta

Blood

Cardiovascular Drugs & Therapy

Cell

Circulation

Circulation Research

Current Opinion in Lipidology

Diabetes

Diabetes Care

European Heart Journal

Geriatric Nursing

Geriatric &Gerontology International

Heart & Lung:Journal of Acute & Critical Care

Heart Disease

Heart Failure Reviews

Heart,Lung & Circulation

Hypertension

Journal of Aging & Identity

Journal of Cardiovascular Risk

Journal of Experimental Ageing Research (electronic resource)

Journal of Human Hypertension

Journal of Hypertension

Journal of Hypertension-Supplement

Lancet

Mechanisms of Ageing and Development.

Mol Cell Proteomics

Nature

Science

Shock

The New England Journal of Medicine

➢ Clinical laboratory Diagnostics

Section 1 Research Direction

1）Clinical Immunology Diagnosis: Tumor Immunology Research. Do researches on the relationship between MHC, Tumor Co-stimulators and the occurrence, development and metastasis of tumors.

2）Molecular Biology Diagnosis: Make a good use of the technology of Molecular Biology to conduct researches on the relationship between related genes, growth factors, specific proteins and occurrence as well as development of angiocarpy and put the research results into practical diagnosis.

3）Laboratory Diagnosis for Virus Infection and Mechanism Research of Pathogenesis: Make a good use of the technology of Molecular Biology to conduct researches on the molecular mechanism and laboratory diagnosis of pathogenesis, oncogenic viruses included.

4）Laboratory Diagnosis for Autoimmune Disease and Mechanism Research of Pathogenesis: Conduct researches on the molecular mechanism and laboratory diagnosis of autoimmune disease.

Section 2 Curriculum

Viral Immunization

Tumor Immunity

Cancer MarkersPhysical chemistry

Biological Techniques

Clinical Biochemistry

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1. cellular and molecular immunology
2. cancer

Journals

1. clinical chemistry
2. cancer letters
3. Biochemical and Biophysical Research Communications
4. cancer research

➢ Anesthesiology

Section 1 Research Direction

- Clinical anesthesia.
- Pain

- Anesthesia pharmacological research and anesthesia monitor(monitoring)
- Physiological manipulation in perioperative period.
- Cardiopulmonary-cerebral resuscitation.

Section 2 Curriculum

Selection and preparation of anesthesia

Anesthesia complication

Postoperative analgesia

Clinical anesthesia

Non-invasive monitoring technology

CCU

ICU

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

《Anesthesia》6th edition (edited by Miller)

Journals

1、《Anesthesiology》

2、《Anesthesia and Analgesia》

3、《British Journal of Anesthesia》

4、《Canadian Journal of Anesthesia》

5、《Acta Anesthesiologica Scandinovica》

➢ Ophthalmology

Section 1 Research Direction

- Visual optics: Pathogeny, pathology and control methods of ametropia
- Cataract: Pathogeny, pathology and control methods of cataract. Pathogeny, pathology and control methods of after-cataract.
- Keratonosus：Pathogeny, pathogenesis and pathology of keratonosus, Explore surgical and non-surgical treatments and the latest treatment methods. Explore control methods of complications, the mechanism of immunoreaction of corneal transplantation, and research and application of keratoprosthesis.
- Glaucoma：Pathogeny, pathogenesis, pathology and early diagnosis of glaucoma. Explore surgical and non-surgical treatments and control methods of operative complications.
- Ocular muscle： Pathogeny, pathology clinical manifestations and treatment of strabismus. Pathogenesis, pathogeny, treatment and new development of amblyopia. Early detection and diagnosis of amblyopia.
- Fundus disease：Pathogeny, clinical manifestations and treatment of fundus diseases.

Section 2 Curriculum

Eyesight Examination

Intraocular pressure

Lacrimal washing

Bandaging and dressing

Washing for chemical injury

Wound stitching

Etinoscopy optometry

Glaucoma

Anterior segment disease

Posterior segment disease

Section 3 the catalogue of main classic works and academic journals that need to be read

IOVS（Ingestigative Ophthalmology and Visual Science）

➢ Dermatology & Venerelogy

Section 1 Research Direction

- Medical Mycology：Research on mycosis and its pathogens, Taxonomy of medical Fungi, Infection and prevention of hospital fungi 2.Basic and clinical research on skin tumors.
- Autoimmune skin diseases.
- Clinic and epidemiology of sexually transmitted disease (STD).
- Pigmented skin diseases.

Basic theory and clinical application of skin medical cosmetology

Section 2 Curriculum

General pathology of skin

Immunology of skin

Diagnosis and treatment of Skin Epiphyte diseases

Application of molecular biotechnology in skin diseases

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1. 《Atology》 Rook, Wikinson, 1992
2. 《Andrew's Diseases of the Skin》Odom RB, 2000
3. 《Sexually Transmitted Diseases》 Holms K K, 1999

Journals

1. International Journal of Molecular Biology Volume
2. Br J Dermatol
3. J Invest Dermatol
4. JAAD
5. International J.of Dermatology
6. Immunology
7. Molecular Immunology
8. Clinical & Experimental Immunology
9. Science

➢ Imaging and Nuclear Medicine

Section 1 Research Direction

1) Diagnostic Imaging Methodology

2) Interventional Radiology

3) Neuro imaging

4) Body Imaging

5) Clinical Nuclear Medicine

6) Experimental Nuclear Medicine

Section 2 Curriculum

X-ray diagnosis

CT diagnosis

MRI diagnosis

Interventional diagnosis

Ultrasound

Nuclear Medicine

Section 3 the catalogue of main classic works and academic journals that need to be read

Journals

1、Radiology

2、JCAT

3、AJR

4、J NUCL MED

➢ Intergraded Traditional Chinese&Western Medicine

Section 1 Research Direction

1）Integrated Traditional Chinese and Western Medicine on cardiovascnlar and cerebrovascular Diseases Research

2）Integrated Traditional Chinese and Western Medicine on Aged Diseases Research

3）Integrated Traditional Chinese and Western Medicine on Pediatric Diseases Research

4）Integrated Traditional Chinese and Western Medicine on Gynecological Diseases Research

5）Integrated Traditional Chinese and Western Medicine on Urinary System Diseases Research

6）Integrated Traditional Chinese and Western Medicine on Respiratory System Diseases Research

➢ Oncology

Section 1 Research Direction

1) Biological therapy of cancer: the major research directions include Gene Therapy, Immunotherapy, Cancer Vaccines, stem cell transplantation etc.

2) Research on Anti-cancer Agents: Increase dose intensity to enhance the efficacy of chemotherapy; protective agents to hasten immune recovery; Reduce the side effects of anti-tumor drugs; Clinical and basic medical research on pathways to reverse drug resistance etc.

3) The research and clinical utility of tumor markers: to develop new and more accurate tumor markers combined with modern molecular biology techniques; Rational combination of available tumor markers to improve its accuracy and sensitivity; to enable detection of tumor markers to play an important role in clinical practice.

4) Radiation therapy of cancer: stereotactic radiotherapy of the tumor, conformal therapy and intensity-modulated radiation therapy; dose fraction scheme of radiotherapy; research of radiotherapy sensitization effect on cancer.

5) Radiation physics and radiation biology of cancer: the modification of radiotherapy plan; the verification of radiotherapy dose; the protection of radiotherapy injury.

6) Multidisciplinary therapy of tumor.

Section 2 Curriculum

General Oncology

Chest Oncology

Oncological Pathology

Tumor Radiation Treatment

Diagnosis,staging and treatment of cancer

Oncogene and tumor suppressor gene

Cancer Immunology

MRI Study

CT Study

Section 3 the catalogue of main classic works and academic journals that need to be read

Books

1. Cancer: Principles & Practice of Oncology
2. Textbook of Radiation Oncology

Journals

1. Radiation Oncology
2. Cancer Research
3. Clinical Cancer Research
4. International Journal of Radiation Oncology Biology Physics Radiotherapy Oncology
5. Radiotherapy of Oncology