课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	**课程名称 Course Title**	医学表观遗传学 Medical Epigenetics
2.	**授课院系 Originating Department**	医学院 School of Medicine
3.	**课程编号 Course Code**	MED218
4.	**课程学分 Credit Value**	3
5.	**课程类别 Course Type**	专业选修课/ Major Elective Courses
6.	**授课学期 Semester**	春季/ Spring
7.	**授课语言 Teaching Language**	英语 English
8.	**授课教师、所属学系、联系方式（如属团队授课，请列明其他授课教师） Instructor(s), Affiliation& Contact （For team teaching, please list all instructors）**	陈浩，医学院，chenh7@sustech.edu.cn; Hao Chen, School of Medicine, chenh7@sustech.edu.cn
9.	**实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact**	
10.	**选课人数限额(可不填) Maximum Enrolment （Optional）**	

11.	授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other（Please specify）	总学时 Total
	学时数 Credit Hours	48				48

12.	先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	无/NA
13.	后续课程、其它学习规划 Courses for which this course is a pre-requisite	待定/To be determined
14.	其它要求修读本课程的学系 Cross-listing Dept.	待定/To be determined

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

这门课旨在向生命科学研究相关的学生全面介绍表观遗传学研究对于健康管理的重要意义，为学生理解及利用医学表观遗传学打下坚实基础。当中涉及的概念几乎涵盖了当今医学表观遗传学研究进展中的各个方面，课程还将介绍各种疾病发生的表观遗传学机制。完成此课程后，学生将对表观遗传学在医学实践中的作用及表观遗传学方法在疾病诊疗中的应用有一个深入的认识。同时课程将自始至终着重培养学生的逻辑思辨，科学阅读及写作能力。

Our objective is to provide a comprehensive analysis of the importance of epigenetics to health management and give students a firm and rigorous foundation in the principles of medical epigenetics. These concepts form almost all the basis for the great advances now being made in medical epigenetics. The course will also introduce and explain epigenetic effects towards the onset of various diseases from many perspectives. By completion of this course, students will acquire in depth understanding and advanced knowledge of a range of general and specialized areas in medical epigenetics. They will develop insight into the role of epigenetics in medical practices well as diagnostic and prognostic epigenetic approaches to applied medicine. The development of critical thinking processes and proficiency in scientific reading and writing will be emphasized throughout the course.

16. 预达学习成果 Learning Outcomes

本实验课程完成后，学生应了解的基本概念及理论包括：细胞如何建立及维持基因组的表观遗传学状态、各种表观遗传学修饰在基因表达调控中的作用、表观遗传学在疾病发生中的作用及医学表观遗传学的最新研究进展，本课程也将使学生理解表观遗传学变化与各种疾病（包括肿瘤）的关系和临床中使用化学小分子调节表观遗传学修饰治疗疾病的机制。此外，提高学生的批判性思维和独立解决问题的能力，激发学生对医学表观遗传学进一步学习和探索的热情。

After completing the course of Medical Epigenetics, the students should be familiar with how the epigenetic status of the genome forms and maintains, role of epigenetic processes in gene regulation, its involvement in disease development, therapies and recent advances in medical epigenetics. The students will understand the connection between epigenetic changes and various disorders including cancer and the clinical use of chemicals that modulates epigenetic processes. The course also provides the students with an opportunity to improve and enhance their abilities of critical thinking and troubleshooting, and inspires them to further study and explore epigenetics.

17. **课程内容及教学日历（如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）**
Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

Module 1: Basic Principles of Epigenetics

Lecture 1. An Overview of Medical Epigenetics

Lecture 2. DNA Methylation and Its Biological Roles

Lecture 3. Various Functions of Histone Modifications

Lecture 4. Basic Principles of Noncoding RNAs and RNA Modifications in Epigenetics

Module 2: General Medical Aspects of Epigenetics

Lecture 5. Epidemiological Epigenetics in Medicine

Lecture 6. Behavioral Medical Epigenetics

Lecture 7. Prognostic Epigenetics

Module 3: Epigenetics of System Disorders

Lecture 8. Immune System Disorders and Epigenetics

Lecture 9. Epigenetic Alterations in Endocrine-Dependent Cancers: Implications of Endocrine Dysfunctions

Lecture 10. Reproductive Disease and Epigenetics

Module 4: Multi-system Medical Epigenetics

Lecture 11. Pediatric Diseases and Epigenetics

Lecture 12. Epigenetics of Infectious Diseases

Lecture 13. Epigenetics in Cancer

Module 5: Therapeutic Epigenetics

Lecture 14. Therapeutics and Novel Epigenetic Drugs

Lecture 15. Epigenetics and Regenerative Medicine

Lecture 16. Medical Epigenetics: Future Prospects

Section	Topic	Hours
1	An Overview of Medical Epigenetics	3
2	DNA Methylation and Its Biological Roles	3
3	Various Functions of Histone Modifications	3

4	Basic Principles of Noncoding RNAs and RNA Modifications in Epigenetics	3
5	Epidemiological Epigenetics in Medicine	3
6	Behavioral Medical Epigenetics	3
7	Prognostic Epigenetics	3
8	Immune System Disorders and Epigenetics	3
9	Epigenetic Alterations in Endocrine-Dependent Cancers: Implications of Endocrine Dysfunctions	3
10	Reproductive Disease and Epigenetics	3
11	Pediatric Diseases and Epigenetics	3
12	Epigenetics of Infectious Diseases	3
13	Epigenetics in Cancer	3
14	Therapeutics and Novel Epigenetic Drugs	3
15	Epigenetics and Regenerative Medicine	3
16	Medical Epigenetics: Future Prospects	3

教材及其它参考资料 Textbook and Supplementary Readings

教材：

1. *Medical Epigenetics*. T.O. Tollefsbol, Academic Press, 2016

2. *Handbook of Epigenetics:The New Molecular and Medical Genetics*. T.O. Tollefsbol, Academic Press, 2017

3. 《表观遗传学》孙方霖、朱冰译， 科学出版社，2009 年

课程评估 ASSESSMENT

19.

评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance				
课堂表现 Class Performance		10		
小测验 Quiz				
课程项目 Projects		30		
平时作业 Assignments		30		
期中考试 Mid-Term Test				
期末考试				

Final Exam				
期末报告 Final Presentation		30		Oral Presentation
其它（可根据需要改写以上评估方式） Others (The above may be modified as necessary)				

20. **记分方式 GRADING SYSTEM**

☐A. **十三级等级制 Letter Grading**
☑ B. **二级记分制（通过/不通过） Pass/Fail Grading**

课程审批 REVIEW AND APPROVAL

21. **本课程设置已经过以下责任人/委员会审议通过**
This Course has been approved by the following person or committee of authority

本课程已经医学院教学副院长张文勇教授审核通过。