课程大纲
COURSE SYLLABUS

1.	**课程代码/名称** **Course Code/Title**	**BIO5005 表观遗传学 / Epigenetics**
2.	**课程性质** **Compulsory/Elective**	选修 / Elective Courses
3.	**开课单位** **Offering Dept.**	生物系 / Department of Biology
4.	**课程学分/学时** **Course Credit/Hours**	3 / 48
5.	**授课语言** **Teaching Language**	英文 / English
6.	**授课教师** **Instructor(s)**	周稳 / Wen Zhou
7.	**开课学期** **Semester**	春季 / Spring
8.	**是否面向本科生开放** **Open to undergraduates or not**	是 / Yes
9.	**先修要求** **Pre-requisites**	遗传学，生物化学 / Genetics, Biochemistry

10. 教学目标
Course Objectives

表观遗传学（epigenetics）是指非基因序列改变的其他因素导致基因表达水平变化的研究内容，如 DNA 甲基化和染色质构象变化等等。本课程面向研究生和本科高年级同学系统地讲述表观遗传学的概念、问题、研究方法，以及技术和应用方面的实践探索。

Epigenetics are stable heritable traits that cannot be explained by changes in the DNA sequence. Instead, DNA methylation, histone modifications, chromatin remodelling and so on are found to be responsible for the changes in the expression level of genes regulated. Course objectives include: 1) to master the fundamental concepts in epigenetics; 2) to know the processes of epigenetic modifications; and 3) to develop interest in addressing elusive questions in the fast developing epigenetic fields.

11. 教学方法
Teaching Methods

本课程主要以英文讲授，采用课堂讲授基本理论概念，学生分组讨论前沿进展和问题这两种形式，全面培养学生对表观遗传学在基础概念、研究方法、前沿问题各方面的认识。

Teaching mainly in English, primary concepts, theories and facts are delivered through teaching. Students work in groups to study latest progress and important questions.

12. 教学内容
Course Contents
（如面向本科生开放，请注明区分内容。 If the course is open to undergraduates, please indicate the difference.）

Section 1	历史和总介/History and Overview/3 hours
Section 2	组蛋白修饰/Histone Modifications (Writers, Readers and Erasers)/3 hours
Section 3	组蛋白变体/Histone Variants/3 hours
Section 4	DNA 甲基化/DNA Methylation/3 hours
Section 5	转录沉默机制/Transcriptional Silencing/3 hours
Section 6	基因组印记/Genomic Imprinting/3 hours
Section 7	剂量补偿/Dosage Compensation/3 hours
Section 8	核小体重塑/Nucleosome Remodelling/3 hours
Section 9	长程染色质相互作用/Long-Range Chromatin Interactions/3 hours
Section 10	RNA 和染色质状态/RNA and Chromatin State/3 hours
Section 11	植物中的表观调控/Epigenetic Regulation in Plant/3 hours
Section 12	模式生物中的表观遗传/Epigenetics in Model Systems/3 hours
Section 13	表观遗传和细胞诱导多能性/Epigenetics and Induced Pluripotency/3 hours
Section 14	表观遗传和免疫/Epigenetics and Immunity/3 hours
Section 15	表观遗传和人类疾病/Epigenetics and Human Disease/3 hours
Section 16	表观遗传新进展/Advances in Epigenetics/3 hours

13. 课程考核
Course Assessment

出勤/Attendance/20%

文献报告/Literature Research/40%

口头报告/Presentation/40%

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

教材主要参考“Epigenetics, second edition”，由 C. David Allis 等人主编，同时选择最新相关各领域的重要研究论文为教学讨论材料。

Epigenetics, 2nd edition. Latest research articles et al.