

國立清華大學 110 學年第 2 學期新開課程課程大綱

科號		組別		學分	2	人數限制	0
修課年級	<input checked="" type="checkbox"/> 大學部 3 年級以上 <input checked="" type="checkbox"/> 碩士班一年級以上(含博士班) <input checked="" type="checkbox"/> 碩士班二年級以上(含博士班)						
上課時間	T5T6			教室	生科一館 421A		
科目中文名稱	CRISPR-Cas 之基因編輯特論一						
科目英文名稱	Special Topics in gene editing by CRISPR-Cas I						
任課教師	李政昇						
擋修科目				擋修分數			

※下列各欄由任課教師提供※

一、課程說明	This class will introduce the major concepts and methods in CRISPR/Cas field. The students will learn how CRISPR/Cas works and how we can utilize the system for genome editing. Both conceptual background in molecular biology and detailed protocol of multiple different applications will be covered.
二、指定用書	CRISPR-Cas: A Laboratory Manual Edited by Jennifer Doudna & Prashant Mali ISBN 978-1-621821-31-1
三、參考書籍	Selected papers from high profile journals
四、教學方式	All students are required to read all assigned chapters and papers and then participate in classroom discussion.
五、教學進度	1-2. Overview of CRISPR-Cas9 Biology 3-4. Guide RNAs: A Glimpse at the Sequences that Drive CRISPR-Cas Systems 5-6. Characterization of Cas9-Guide RNA Orthologs 7-8. Large-Scale Single Guide RNA Library Construction and Use for CRISPR-Cas9-Based Genetic Screens 9-10. Adeno-Associated Virus-Mediated Delivery of CRISPR-Cas Systems for Genome Engineering in Mammalian Cells 11-12. Detecting Single-Nucleotide Substitutions Induced by Genome Editing

	<p>13-14. CRISPR-Cas9 Genome Engineering in <i>Saccharomyces cerevisiae</i> Cells</p> <p>15-16. Optimization Strategies for the CRISPR-Cas9 Genome-Editing System</p> <p>17-18. An Introduction to CRISPR Technology for Genome Activation and Repression in Mammalian Cells</p>
六、成績考核	Class discussion: 40%. Assigned presentation: 40%. Attendance: 20%.
七、講義位址 http://	