MCELLBI N184 IGI CRISPR Undergraduate Summer Lecture Series

Course Description: This 3 week course will address topics in genome editing and CRISPR-Cas9 research, including basic and enhanced CRISPR methods, cellular repair mechanisms, regulation of gene expression, bioinformatics, applications to various organisms, and bioethics. Students will learn from a collection of local experts about ongoing campus research, and gain the background knowledge to understand current publications and applications of genome editing.

Class Format: 1 hour of lecture per day. 4 days/wk for 3 weeks; MTuWTh 1-2 pm

Prerequisites: MCELLBI 104, 140, 143 or 110, or equivalent background in genetics and cell biology

Grading Option: P/NP

There is no final exam or paper, but your grade will be determined by daily quizzes (40%) and three weekly tests (60%). To obtain a passing grade for the class, your overall grade should be 70% or above.

The final weekly test (course is only 3 weeks long) will be cumulative, but does not require a separate period of timeslot outside of the 3 week course. Tests will rely on synthesis and critical understanding of materials presented in the course, using short answer questions rather than fact or memorization based assessments.

Units: 1

Co Instructors:
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Office Hours: by appointment

Lab TAs: TBD

Guest Lecturers: TBD

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<th>Week</th>
<th>Day</th>
<th>Date</th>
<th>Topics</th>
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<td>Week 1: CRISPR basics</td>
<td>Monday</td>
<td>July 29</td>
<td>Course introduction, overview of topics</td>
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<td>Tuesday</td>
<td>July 30</td>
<td>CRISPR immunity</td>
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<td>Wednesday</td>
<td>July 31</td>
<td>Structure and Function of Cas9</td>
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<td>Thursday</td>
<td>August 1</td>
<td>Genome Editing and DNA repair</td>
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<td>Week 2: Genome Editing</td>
<td>Monday</td>
<td>August 5</td>
<td>gRNA Design</td>
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<td>in practice</td>
<td>Tuesday</td>
<td>August 6</td>
<td>Reducing Off-Target Effects</td>
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<td>Wednesday</td>
<td>August 7</td>
<td>CRISPR Applications: Plants</td>
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<td>Thursday</td>
<td>August 8</td>
<td>CRISPR Applications: Human Therapeutics</td>
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<td>Week 3: Genome Editing</td>
<td>Monday</td>
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<td>CRISPR Applications: The CRISPR Toolbox</td>
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<td>Tuesday</td>
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<td>CRISPR Applications: Model Systems</td>
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<td>Ethics/Policy</td>
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<td>August 14</td>
<td>CRISPR Ethics</td>
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<td>Thursday</td>
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<td>CRISPR Policy</td>
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Resources and Readings:


Absences
If you are ill or have an unplanned absence, please review the slides posted online and speak with a GSI or another student to make sure you understand the material that you missed.

**Safe, Supportive, and Inclusive Environment**

Whenever a faculty member, staff member, post-doc, or GSI is responsible for the supervision of a student, a personal relationship between them of a romantic or sexual nature, even if consensual, is against university policy. Any such relationship jeopardizes the integrity of the educational process. Although faculty and staff can act as excellent resources for students, you should be aware that they are required to report any violations of this campus policy. If you wish to have a confidential discussion on matters related to this policy, you may contact the Confidential Care Advocates on campus for support related to counseling or sensitive issues. Appointments can be made by calling (510) 642-1988. The classroom, lab, and work place should be safe and inclusive environments for everyone. The Office for the Prevention of Harassment and Discrimination (OPHD) is responsible for ensuring the University provides an environment for faculty, staff and students that is free from discrimination and harassment on the basis of categories including race, color, national origin, age, sex, gender, gender identity, and sexual orientation. Questions or concerns? Call (510) 643-7985, email ask_ophd@berkeley.edu, or go to http://survivorsupport.berkeley.edu/.