DSR 620 Current Topics in Stem Cell Biology and Organogenesis

Fall 2018

Wednesday
Master Session: 3:00-3:50pm
Location: Broad CIRM Center 4th Floor Conference Room

Instructor: Justin Ichida
Office: BCC 307
Office Hours: Wednesday, 1-2 pm
Contact Info: ichida@usc.edu

Course Description
This is a journal club style course that focuses on a different topic each year. The topic for Fall 2018 will be “Understanding Human Development and Disease Using iPSCs and Organoids”. The course consists of the presentation of the primary literature by students in the form of Powerpoint presentations that include dynamic and detailed discussion by participants. The structure of the class will roughly follow an historical trajectory, giving students an in-depth view into the scientific process that developed a field, as well as emerging contemporary research.

Learning Objectives
The primary purpose of this course is to give students an in-depth view into the scientific process that developed an important field within the genres of stem cell biology and human disease biology. Students will learn how to identify important unsolved problems, to devise novel experimental methodology to make breakthroughs, and to critically evaluate interpretation of findings. A parallel learning objective is for students to improve their presentation skills by presenting and synthesizing the results of manuscripts within a small group setting.

Prerequisite(s): None
Co-Requisite/Concurrent Enrollment: none
Recommended Preparation: none

Course Notes
None.

Technological Proficiency and Hardware/Software Required
None.

Required Readings and Supplementary Materials
Manuscripts for discussion each week will be posted on Blackboard for download.

Description and Assessment of Assignments
Students will present a primary manuscript to the class. Grading will be assessed based on clarity and succinctness of presentation, demonstration of background reading and insightful introduction of context.
to paper, and ability to maintain a lively discussion. Students are also expected to read the primary manuscript each week and actively participate in discussions.

Grading Breakdown
How will students be graded overall, including the assignments detailed above. Participation should be no more than 15%, unless justified for a higher amount. All must total 100%.

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<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>% of Grade</th>
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<tbody>
<tr>
<td>Presentation</td>
<td>10</td>
<td>85</td>
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<tr>
<td>Participation</td>
<td>15</td>
<td>15</td>
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<tr>
<td>TOTAL</td>
<td>25</td>
<td>100</td>
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Assignment Submission Policy
Presentations will be assigned at the beginning of the course. The written Mini-Review is due at the last class and must be submitted as a PDF file to the instructor(s).

Additional Policies
Attendance and reading of the assigned manuscript prior to each class is mandatory.
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<tr>
<th>Date</th>
<th>Title</th>
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<tr>
<td>August 22&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>Introduction</td>
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| August 29<sup>th</sup>  | **Cloning I (frog cloning)** Gurdon et al., *Nature*, 1958, PMID: 13566187  
**Cloning II (mammalian cloning)** Wilmut et al., *Nature*, 1997, PMID: 9039911 |
| September 5<sup>th</sup> | **Cell reprogramming (lineage reprogramming)** Davis et al., *Cell*, 1987, PMID: 3690668 |
| September 12<sup>th</sup> | **Pluripotency and iPSC reprogramming**  
Takahashi and Yamanaka, *Cell*, 2006, PMID: 16904174 |
| September 19<sup>th</sup> | **No Class due to Yom Kippur**                                         |
| September 26<sup>th</sup> | **Generating neurons from pluripotent stem cells**  
| October 3<sup>rd</sup>   | **Identifying disease mechanisms and therapeutic targes for ALS using iPSC modeling**  
| October 10<sup>th</sup>  | **Cerebral organoids model human brain development and microcephaly**  
Lancaster et al., *Nature*, 2013, PMID: 23995685 |
| October 17<sup>th</sup>  | **Assembly of functionally integrated forebrain spheroids**  
Birey et al., *Nature*, 2017, PMID: 28445465 |
| October 24<sup>th</sup>  | **No class**                                                          |
| October 31<sup>st</sup>  | **Human iPSC-Derived Cerebral Organoids Model Cellular Features of Lissencephaly and Reveal Prolonged Mitosis of Outer Radial Glia**  
Bershteyn et al., *Cell Stem Cell*, 2017 PMID: 28111201 |
| November 7<sup>th</sup>  | **Patient-derived organoids model treatment response of metastatic gastrointestinal cancers**  
Vlachogiannis et al., *Science*, 2018 PMID: 29472484 |
| November 14<sup>th</sup> | **Kidney organoids from human iPS cells contain multiple lineages and model human nephrogenesis.**  
Takasato et al., *Nature*, 2016, PMID: 27120161 |
| November 21<sup>st</sup> | **No class**                                                          |
| November 28<sup>th</sup> | **Multilineage communication regulates human liver bud development from pluripotency.**  
Camp et al., *Nature*, 2017, PMID: 28614297 |
Instructions for paper presentation
At each meeting a primary paper from the list will be presented and discussed. The primary paper should be introduced and contextualized using 3-4 seminal papers in the field. Presenters should address all figures and supplementary data from the primary paper with critical review and promote class discussion. PhD students will present individually and MS students will present in small groups.

Statement on Academic Conduct and Support Systems

Academic Conduct
Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Section 11, Behavior Violating University Standards. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct/. Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity http://equity.usc.edu/ or to the Department of Public Safety http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems
A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, USC Emergency Information http://emergency.usc.edu/ will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.