**Molecular Genetics Graduate Topic Course**

**Course Title:** Stem Cells II

**Course Location:** Zoom

**Course Time and Date:** Thursdays, 1 – 3 pm (October 14 – November 18)

**Course Instructor(s):** James Ellis and Tae-Hee Kim

**Limited to 10 students**

**Course Overview:**

Stem cells are capable of self-renewal and differentiation into functionally diverse cell types. As these cells from patients can be phenotyped in comparison to healthy cells, they have been utilized for disease modeling and drug screens. This is an advanced discussion/journal club-oriented course covering both the general concepts and translational aspects of stem cell biology. Students will learn how stem cell biology is applied not only to understand disease mechanisms but also to help develop novel therapies. Students will read and discuss assigned papers; at the end of semester, they will submit a stem cell research plan, and review their proposals in a grant panel format. Course grades will be based on journal club presentations, proposals, and the discussions of both.

**Course Objectives:**

* Review basic concepts of stem cells
* Participate in journal club presentation and discussion
* Learn stem cell activity in injury and disease
* Learn stem cell systems for disease modeling and therapeutics
* Design research proposals and discuss them in a grant panel format

**Marking Scheme:**

* 25% for journal club presentation
* 25% for participation in journal club discussion
* 30% for a 3 page grant proposal
* 20% for participation in peer reviewing and discussion

If you anticipate missing a class you must let the instructor know in advance, given the weight on participation and the fact that there are only six classes. Providing that you had a legitimate reason for missing the class, you will be provided with an assignment based on the reading for that week that you can use to make up for the lost class.

The basic outline for what will be covered in the six weeks is below.  Assigned reading will be sent out the week in advance.

Week 1: Topic 1 reprogramming/direct differentiation (October 14, 2021 at 1:00 PM – 3:00 PM)

Week 2: Topic 2 environmental stem cell interactions (October 21, 2021 at 1:00 PM – 3:00 PM)

Week 3: Topic 3 stem cell response to injury (October 28, 2021 at 1:00 PM – 3:00 PM)

Week 4: Topic 4 stem cell organoids (November 4, 2020 at 1:00 PM – 3:00 PM)

Week 5: Topic 5 disease modelling/drug screening (November 11, 2021 at 1:00 PM – 1:00 PM)

Week 6: Proposal evaluation panel (November 18, 2021 at 1:00 PM – 3:00 PM)