SISR 618 (4867) Stem cell science

(Code: 4867, 1st~2nd year, 4 units)

(Course ID: GS — c4867 — S)

1. Instructors

Name	Position	Department	Contact Information
Nuttawut Sermsathanasawadi	Chief Instrctor/ Associate Professor Dr.	Division of Vascular Surgery, Department of Surgery	Nuttawut.ser@mahidol.ac.th

2. Classroom/Lab Lecture

Laboratory Room, SiMR 5th Floor and Laboratory Room Srisavarindhira 10th Floor, Faculty of Medicine Siriraj hospital, Mahidol University

3. Course Purpose and Outline

Comprehensive view of the stem cell biology, the potential uses of stem cell in clinical practices, stem cell biology of both embryonic and adult stem cells including characteristics at cellular and molecular levels, signaling transduction, stem cell interactions with their microenvironment and their role in tissue homeostasis, basic technology involving in stem cell research, hematopoietic stem cell transplantation as a standard treatment for hematological disorders, potential uses and limitations of stem cells for the treatment of diseases other than hematological disorders, ethics in animal care and use for research and ethical issues of stem cell applications

4. Course objectives

By the end of the course, participants will be able to:

1. Scientific principles which underlie stem cell biology and regulation of stem cells and human diseases connected to stem cell biology.
2. Describe various types of stem cells in the human body and their potential applications in regenerative medicine.
3. Understand the clinical, ethical and regulatory aspects of the applications of stem cell therapy.
4. Learn laboratory techniques that could be used in stem cell research.
5. Demonstrate a group working and responsibility for work assigned.
6. Demonstrate effective communication skills for scientific presentation.
7. Identify and critically address a scientific question in regenerative medicine.

5. Format

Lectures, group discussion, report presentation

All programs will be conducted in English.

All class activities will be provided in an online format via Moodle platform

6. Course Details

No.	Date	Time	Topic/Details	Instructors
1	Tue 02-10-2023	13.00-16.00	Introduction to Laboratory	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
2	Tue 9-10-2023	13.00-16.00	Basic Lab Instruments and	Dr.Nuttapol Chruewkamlow,

			Equipments	Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
3	Tue 16-10-2023	13.00-16.00	Basic Lab Instruments and Equipments	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
4	Tue 23-10-2023	13.00-16.00	Basic Lab Instruments and Equipments	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
5	Tue 30-10-2023	13.00-16.00	Basic Lab Instruments and Equipments	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
6	Tue 7-11-2023	13.00-16.00	Good Lab Practice	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
7	Tue 14-11-2023	13.00-16.00	Blood Perfusion and Laser Doppler	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
8	Tue 21-11-2023	13.00-16.00	Blood Perfusion and Laser Doppler	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
9	Tue 28-11-2023	13.00-16.00	Basic Cell Culture	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
10	Tue 05-12-2023	13.00-16.00	Basic Cell Culture	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
11	Tue 12-12-2023	13.00-16.00	Basic Flow Cytometrty	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi

12	Tue 19-12-2023	13.00-16.00	Basic Flow Cytometrty	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
13	Tue 26-12-2023	13.00-16.00	Hand on operation Flow Cytometer	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
			Midterm Examination Presentation	
14	Tue 02-01-2024	13.00-16.00	QQMNC cultivation	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
15	Tue 09-01-2024	13.00-16.00	Phenotypic and characterization of Cells	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
16	Tue 16-01-2024	13.00-16.00	Apoptosis test by Flowcytometry	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
17	Tue 23-01-2024	13.00-16.00	Colony forming assay	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
18	Tue 30-01-2024	13.00-16.00	Tube formation	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
19	Tue 05-02-2024	13.00-16.00	Insight of Confocal Microscopy	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
20	Tue 12-02-2024	13.00-16.00	IPS Derived EPC	Dr.Nuttapol Chruewkamlow,

21	Tue 26-02-2024	13.00-16.00	IPS Derived EPC	Dr.Nuttapol Chruewkamlow,
22	Tue 04-03-2024	13.00-16.00	IPS Derived EPC	Dr.Nuttapol Chruewkamlow,
23	Tue 11-03-2024	13.00-16.00	IPS Derived EPC	Dr.Nuttapol Chruewkamlow,
24	Tue 18-03-2024	13.00-16.00	Lab Discussion	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
25	Tue 25-03-2024	13.00-16.00	Lab Discussion	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
26	Tue 02-04-2024	13.00-16.00	Lab Discussion	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
			Final Examination	

7. **Assessment**

Scoring

Direct observation	60%
Case Presentation	40%

8. **Prerequisite Reading**

When reading materials are given or specified in advance, participants are expected to study those materials before attending the class.

9. **Reference Materials**

To be announced before individual classes

10. **Language used**

All classes are conducted in English.

11. **Office Hours**

Mon – Fri: 9:00 AM – 17:00 PM

Contact: Associate Professor Dr.Nuttawut Sermsathanasawadi, Division of Vascular Surgery, Department of Surgery

Email: Nuttawut.ser@mahidol.ac.th Tel +662-4198021

Please contact the instructor regarding questions or consultations.

12. **Note(s) to Students**

None.