

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 Instructor/ Associate Professor Dr.	Division of Vascular Surgery, Department of Surgery	Nuttawut.ser@mahidol.ac.th
Nuttapol Chruewkamlow	Researcher	Division of Vascular Surgery, Department of Surgery	nuttapol.chr@mahidol.edu

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.
Describe various types of stem cells in the human body and their
2. potential applications in regenerative medicine.
Understand the clinical, ethical and regulatory aspects of the
3. 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	Thu 07-01-2021	13.00-16.00	Introduction to Laboratory	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
2	Fri 08-01-2021	13.00-16.00	Basic Lab Instruments and Equipments	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
3	Thu 14-01-2021	13.00-16.00	Basic Lab Instruments and Equipments	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
4	Fri 15-01-2021	13.00-16.00	Basic Lab Instruments and Equipments	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
5	Thu 21-01-2021	13.00-16.00	Basic Lab Instruments and Equipments	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
6	Fri 22-01-2021	13.00-16.00	Good Lab Practice	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
7	Thu 28-01-2021	13.00-16.00	Blood Perfusion and Laser Doppler	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
8	Fri 29-01-2021	13.00-16.00	Blood Perfusion and Laser Doppler	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
9	Thu 04-02-2021	13.00-16.00	Basic Cell Culture	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi

10	Fri 05-02-2021	13.00-16.00	Basic Cell Culture	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
11	Thu 11-02-2021	13.00-16.00	Basic Flow Cytometry	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
12	Fri 12-02-2021	13.00-16.00	Basic Flow Cytometry	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
13	Thu 18-02-2021	13.00-16.00	Hand on operation Flow Cytometer	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
			Midterm Examination Presentation	
14	Fri 19-02-2021	13.00-16.00	QQMNC cultivation	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
15	Thu 25-02-2021	13.00-16.00	Phenotypic and characterization of Cells	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
16	Fri 26-02-2021	13.00-16.00	Apoptosis test by Flowcytometry	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
17	Thu 04-03-2021	13.00-16.00	Colony forming assay	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
18	Fri 05-03-2021	13.00-16.00	Tube formation	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
19	Thu 11-03-2021	13.00-16.00	Insight of Confocal Microscopy	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
20	Fri 12-03-2021	13.00-16.00	IPS Derived EPC	Dr.Nuttapol Chruewkamlow,
21	Thu 18-03-2021	13.00-16.00	IPS Derived EPC	Dr.Nuttapol Chruewkamlow,
22	Fri 19-03-2021	13.00-16.00	IPS Derived EPC	Dr.Nuttapol Chruewkamlow,
23	Thu 25-03-2021	13.00-16.00	IPS Derived EPC	Dr.Nuttapol Chruewkamlow,

24	Fri 26-03-2021	13.00-16.00	Lab Discussion	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
25	Thu 01-04-2021	13.00-16.00	Lab Discussion	Dr.Nuttapol Chruewkamlow, Assoc.Prof.Dr. Nuttawut Sermsathanasawadi
26	Fri 02-04-2021	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.