

Course: Principles of Stem Cell Biology **GS04 1072**
2018 Fall Semester **Monday and Wednesday**
2:45 PM - 3:45 PM
BSRB S3.8367

Date	Topic	Lecture	Lecturer
Aug. 27	Overview	Course Overview	E. Zsigmond
Aug. 29 Sept. 3 Sept. 5 Sept. 10 Sept. 12 Sept. 17	Core Principles	Stem cells: definition, types, clinical uses Labor Day – No Class Stem cell system in the blood Origination/development of hematopoietic stem cells Gene expression and regulation in stem cells Stem cell niche	E. Zsigmond M. Yoshimoto M. Yoshimoto J. Wu N. Nakayama
Sept. 19 Sept. 24 Sept. 26 Oct. 1 Oct. 3 Oct. 8	Pluripotential Stem Cells	ES cells: developmental origin in mouse and human Extrinsic regulators and signaling pathways in ES cells Derivation of m/hES cells; research applications of mES cells Somatic cell nuclear transfer/reprogramming to iPS iPS cells: disease modeling, drug testing, therapeutics Directed differentiation of ES/iPS to organ/tissue-specific cell types	R. Behringer, MDA N. Nakayama E. Zsigmond B. Davis B. Davis N. Nakayama
Oct. 10	Exam	Mid-term Exam	Davis/ Zsigmond
Oct. 15 Oct. 17 Oct. 22 Oct. 24	Pluripotential Stem Cells	Genetic modification of ES/iPS cells Differentiation of ES/iPS cells to lung cells Differentiation of ES/iPS cells to muscle cells ES/iPS cells for modeling of cancer origination and development	Y. Liu S. Huang R. Darabi D-F. Lee
Oct. 29 Oct. 31 Nov. 5	Somatic Stem Cells	Mesenchymal stem cells Neural stem cells Epithelial cells	M. Kolonin Q. Cao W. Xian
Nov. 7 Nov. 12 Nov. 14 Nov. 19 Nov. 21 Nov. 26 Nov. 28 Dec. 3	Applications	Stem cell gene therapy Tumor initiating cells, CSCs Stem cells for neurological disorders (TBI, stroke) Bioengineering for SC transplantation/organ regeneration Thanksgiving- No Class Organ regeneration using de-cellularized scaffolds Cardiovascular regeneration Regeneration of musculoskeletal system	B. Davis N. McCarty C. Cox L. Smith Callahan L. Smith Callahan J. Cooke, Methodist J. Huard
Dec. 5 Dec. 10	Exam	Review/study day Final Exam	Davis/ Zsigmond