

**Interinstitutional Core Course in Stem Cell Biology, Medicine, and Ethics**

January 6-March 12, 2009

Syllabus date 01-05-2008

UCSD course number CMM 250: winter 2009 section id 646104

TUESDAYS AND THURSDAYS FROM 8 A.M.-11A.M.

COURSE COMMITTEE: GOLDSTEIN, MERCOLA, BELMONTE, DING, DEVEREAUX (ETHICS)

Location: The Burnham Institute for Medical Research, Fishman Auditorium  
 10901 North Torrey Pines Road  
 La Jolla, CA 92037 Tel 858.646.3100 info@burnham.org

DATE	8-9 A.M. LECTURE TOPIC/LECTURER	9-10 A.M. SCIENCE PAPER DISCUSSION TOPIC/DISCUSSION LEADER	10-11 A.M. ETHICS DISCUSSION TOPIC/DEVEREAUX
JANUARY 6 Tuesday Confirmed by Goldstein	INTRODUCTION TO STEM CELL RESEARCH - Biology, Medicine, Engineering, Physical Sciences and Ethics - Goldstein  What are stem cells and why do we care?	Goldstein	INTRODUCTION TO STEM CELL ETHICS <ul style="list-style-type: none"> <li>History of national debate</li> <li>What are the ethical issues?</li> <li>How different really is stem cell research?</li> </ul>
JANUARY 8 Thursday Confirmed with Mercola	PLURIPOTENT/MERCOLA  lineage segregation from pluripotent stem cells	9:30 am <b>Burnham Colloquium Speaker:</b> Peter Dirks Cancer SC's	10:30 - 11 am summary and discussion - Mercola
JANUARY 13 Tuesday LG confirmed with Grompe	LIVER/GROMPE	Grompe/Brenner discussion  Stem Cell Journal Club presentation by Student	ESCRO REVIEW <ul style="list-style-type: none"> <li>Existing federal policy and CIRM guidelines</li> <li>ESCRO Committee procedures</li> <li>Areas of special ethical/legal concern</li> </ul> Jeff Chang, Co-Chair, UCSD ESCRO Committee
JANUARY 15 Thursday	PLURIPOTENT/BELMONTE  Identification and characterization of pluripotent stem cells in animal and humans; sources of pluripotent cells - blastocysts, parthenogenesis, nuclear transfer, iPS, derivation of embryonic stem cells. The reprogramming problem; studies of clones animals; pluripotent stem cells in animal models of disease; in vitro differentiation of pluripotent stem cells	BELMONTE  Stem Cell Journal Club presentation by Student	Stem Cell Journal Club presentation by Student
JANUARY 20 Tuesday Confirmed with Goldstein	USING STEM CELLS TO MODEL NEUROLOGICAL DISEASES/GOLDSTEIN  Stem cell transplants in animal models of Lou Gehrig's Disease, Alzheimer's Disease, Parkinson's Disease, Spinal Cord Injury; fetal cell	GOLDSTEIN  Stem Cell Journal Club presentation by Student	SCIENCE AND THE PUBLIC <ul style="list-style-type: none"> <li>Objectivity and evidence</li> <li>Faith and non-evidence-based belief systems</li> <li>Tampering with nature</li> <li>The history of unintended consequences</li> <li>Images of science/scientists</li> <li>The decline of reason?</li> </ul>

	transplants for Parkinson's disease in humans		
JANUARY 22 Thursday Confirmed with Varghese	MESENCHYMAL & EPITHELIAL STEM CELLS/ VARGHESE What else is in bone marrow?	Varghese and Goldstein Stem Cell Journal Club presentation by Student	Stem Cell Journal Club presentation by Student
JANUARY 27 Tuesday Confirmed with Jones. Adler symposium talk	GERM LINE/JONES  Determination of the Germ Line; Identification, Characterization and Purification of Germ Line Stem Cells; The Germ Line Stem cell Niche; generating Germ Line cells in vitro	JONES  Stem Cell Journal Club presentation by Student	CELLS, CELL LINES, TISSUE BANKNG <ul style="list-style-type: none"> <li>• Acquiring and tracking human derived materials</li> <li>• Establishing and maintaining repositories and institutional registries</li> <li>• Privacy and health insurance concerns</li> <li>• The ethics of recontacting donors</li> </ul>
JANUARY 29 Thursday	EGG DONATION Guest: David Smotrich, MD, La Jolla IVF	EXTRACELLULAR MATRIX <b>Adam Engler, PhD</b>	GOLDSTEIN  Stem Cell Journal Club presentation by Student
FEBRUARY 3 Tuesday Kaushansky confirmed.	KAUSHANSKY Identification, characterization, and purification of hematopoietic stem cells; the hematopoietic niche; the debate about the plasticity of hematopoietics stem cells; properties of hematopoietic engraftment in animal models; hematopoietics cell transplants of leukemia and other cancers in humans	KAUSHANSKY and GOLDSTEIN  Stem Cell Journal Club presentation by Student	HUMAN SUBJECTS RESEARCH <ul style="list-style-type: none"> <li>• History of human experimentation</li> <li>• Ethical principles</li> <li>• Endpoints and adverse event reporting</li> <li>• Conflicts of interest</li> </ul> <p><b>Case Study:</b> Bone marrow transplants (Peter Curtin, possible guest)</p>
FEBRUARY 5 Thursday Confirmed with Jamieson	CANCER STEM CELLS/JAMIESON	JAMIESON AND GOLDSTEIN  Stem Cell Journal Club presentation by Student	Stem Cell Journal Club presentation by Student
FEBRUARY 10 Tuesday	SPINAL CORD and MOTOR NEURONS Marsala/Pfaff	Marsala/Pfaff and Goldstein  Stem Cell Journal Club presentation by Student	OOCYTE DONATION: COMMODIFICATION AND COMPENSATION <ul style="list-style-type: none"> <li>• Cultural attitudes towards the body/reproduction</li> <li>• The body as property</li> <li>• Gametes vs. other human tissues</li> <li>• Exploitation of women and the poor</li> </ul> <p><b>Discussion:</b> Should oocyte donors be paid?</p>
FEBRUARY 12 Thursday Gage Confirmed	NERVOUS SYSTEM/GAGE  Identification, characterization,	9:30 am <b>Burnham</b> <b>Colloquium Speaker:</b>	Discussion of seminar-Mercola

	and purification of different types of stem cells from the brain and peripheral nervous system; the niche; the debate about the plasticity of neural stem cells	TBA	
FEBRUARY 17 Tuesday Confirmed with Yu	SKIN/Yu  Identification, characterization, and purification of skin stem cells; the debate about the plasticity of skin stem cells; the niche; skin cell engraftment in animal models; skin cell transplants of burns; other uses of skin stem cells	Yu and Mercola  Stem Cell Journal Club presentation by Student	NOVEL THERAPIES & INFORMED CONSENT <ul style="list-style-type: none"> <li>• What constitutes full disclosure?</li> <li>• The therapeutic misconception</li> <li>• When things go wrong</li> </ul> <ul style="list-style-type: none"> <li>• <b>Case study:</b> Alzheimer's patients and iPSC cells</li> </ul>
FEBRUARY 19 Thursday Confirmed with Evans	HEART/EVANS  Identification, characterization, and purification of cardiac stem cells; using different types of stem cells to test treatments in animal models of heart disease; clinical trials using diverse types of stem cells in acute heart and other diseases in humans	Evans and MERCOLA  Stem Cell Journal Club presentation by Student	Stem Cell Journal Club presentation by Student
FEBRUARY 24 Tuesday Confirmed with Sander	PANCREAS/SANDER  Identification of pancreatic stem cells – do they or don't they exist?	Sander & Goldstein  Stem Cell Journal Club presentation by Student <b>Brandon Taylor</b>	THE STEM CELL PROMISE <ul style="list-style-type: none"> <li>• Hype and hope</li> <li>• The pace of research</li> <li>• Public expectations</li> </ul> <p><b>Discussion:</b> How fast can we go without compromising good science?</p>
FEBRUARY 26 Thursday Confirmed with Kronick	HEALTH CARE COSTS/KRONICK health care cost growth in the public and private sectors, how to equilibrate cost and value, dilemmas created by (and for) 47 million uninsured	Kronick and Goldstein	Stem Cell Journal Club presentation by Student
MARCH 3 Tuesday Confirmed with Chien	ENGINEERING APPROACHES/CHIEN  Design and utilization of novel surfaces; advanced in vivo imaging methods	CHIEN AND GOLDSTEIN	GLOBAL STEM CELL RESEARCH <ul style="list-style-type: none"> <li>• International collaborations</li> <li>• Challenges of medical tourism</li> <li>• Unproven and unapproved treatments</li> </ul> <ul style="list-style-type: none"> <li>• <b>Case study:</b> Stem cell research and regulation in Taiwan</li> </ul> <p>Guest: Jennifer Liu, CIRM fellow Berkeley</p>
MARCH 5 Thursday	CHEMICAL DESIGN AND SCREENING APPROACHES/PELLECCHIA  Issues of Optimization and SAR; Screening kinetics and development bottlenecks	PELLECCHIA and Mercola	Stem Cell Journal Club presentation by Student <b>Erik Willems</b>
MARCH 10 Tuesday	BIOINFORMATICS & COMPUTATIONAL APPROACHES/SUBRAMANI	Subramaniam and Mercola	DISTRIBUTIVE JUSTICE: WHO GETS WHAT? <ul style="list-style-type: none"> <li>• CIRM "shared results" requirements</li> </ul>

	AM  Handling large data sets; statistical issues in analysis of large data sets		and intellectual property rights <ul style="list-style-type: none"> <li>• Access to therapy: dying patients and others without options</li> <li>• Deciding among competing medical priorities/ managing political pressures</li> <li>• Obligations beyond the US</li> </ul> Guest: Hilliary Creeley, UC Berkeley School of Law (confirmed)
MARCH 12 Thursday Confirmed with Kalichman	Part I Mock ESCRO session Guest, Mike Kalichman, Co- Chair, UCSD ESCRO  Part II Ethics wrap up	9:30 am <b>Burnham Colloquium Speaker: Robert Wechsler- Reya from Duke U</b> Neural system and brain tumors, shh	Class will conclude without summary

This course provides the latest information in human stem cell biology, medicine, and ethics. The course relies on the multidisciplinary faculty at UCSD and collaborating institutions (The Burnham Institute, The Salk Institute, and The Scripps Research Institute) who are experts in specific systems, approaches to stem cell biology, possible uses in clinical medicine, and ethical, economic, social, and legal issues for stem cell research and clinical application.

The course consists of scientific lectures, discussions of scientific and ethics papers, and ethics discussions.

Scientific lectures and discussion of papers: Each unit of the course will present the basic, translational, and clinical elements of stem cells in a human system or research program. Topics will include what is known about possible presence of stem cells; the identification, purification and properties of stem cells; possible and actual uses of stem cells in animal models of relevant diseases; possible and actual uses in clinical application to an organ system or disease state.

Ethics component: Accompanying each unit of the course is a guided discussion of ethical, economic, and social issues related to stem cell research and to the development of new therapies covered in lectures and scientific paper discussions. The ethics component runs contemporaneously with the stem cell core biology lectures and discussions so that ethical issues raised in the stem cell biology course can be treated as "case studies" in the ethics component. Ethics topics will include access to novel therapies, management of donated stem cells (e.g., cord blood), how to know when novel therapies are ready for human trials, ethics of human experimentation, issues of ethnic diversity that affect trials, chimeras in animal models, ethics of risk-benefit analyses affecting decisions whether to initiate human trials, and legal and bio-economic issues. Order of topics subject to change.

Ver. 01/05/2009