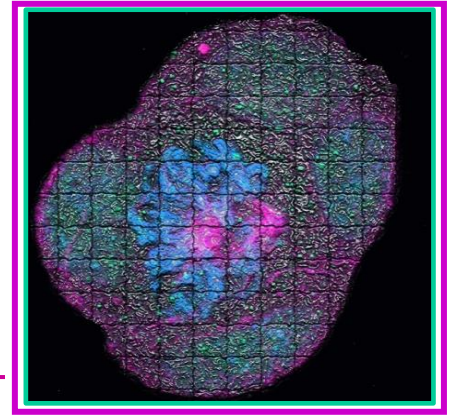


Frontiers in Stem Cells in Cancer
Magee-Womens Research Institute
Pittsburgh, PA
July 18-24, 2021



All lectures and afternoon laboratory sessions from July 18-24, 2021 will be held at Magee-Womens Research Institute, 204 Craft Avenue, Pittsburgh, PA, First Floor Conference Room.

Sunday, July 18, 2021

- 4:00 Student Registration
- 4:15 Welcome, Opening Remarks, and Introductions
- 4:30 Dinner
- 5:00 **Lecture:** *Challenges in Stem Cells and Cancer Research*
Gerald Schatten, PhD-University of Pittsburgh, Pittsburgh, PA
- 5:45 **Virtual Lecture:** *Research Ethics in the Life Sciences: Stem Cells*
Mike Kuhar, PhD-Emory University, Atlanta, GA
- 6:30 **Lecture:** *Cancer research needs a better map*
Jesse Boehme, PhD-Broad Institute of Harvard and MIT, Cambridge, MA
- 7:15 Biosafety and Regulatory Restrictions
Calvin Simerly, PhD-University of Pittsburgh, Pittsburgh, PA

Monday, July 19, 2021

Theme: The 'Cancer Stem Cell' Hypothesis

- 8:00- 8:30 **Welcome to MWRI and Pitt**
Yoel Sadvovsky, MD, Scientific Director – MWRI
Judy Yanowitz, PhD, MWRI Education Director
- 8:30-9:15 **Lecture:** *An evolving paradigm of cancer stem cell hierarchies: therapeutic implications OR Revisiting the Cancer Stem Cell Model: Therapeutic Implications*
Rob Buckanovich, MD, PhD-University of Pittsburgh/Magee-Womens Hospital, Pittsburgh, PA
- 9:15-10:00 **Lecture:** *Liver Progenitors, Liver Cancers and Adult Cell Plasticity: Knowns and Unknowns*
Sattarshan (Paul) Singh Monga, MD-University of Pittsburgh, Pittsburgh, PA
- 10:00-10:30 Break
- 10:30-11:15 **Lecture:** *Melanoma Stem Cells: Biology and Implications for Immune Checkpoint Therapy?*
Tobias Schatton, PhD, PharmD-Harvard Medical School, Boston, MA

- 11:15-11:45 Trainee Presentations
- 11:45-12:45 Lunch (provided)
- 12:45-1:15 **Lab Introduction:** *Isolation and Characterization of Cancer Stem Cells*
Tobias Schatton, PhD, PharmD-Harvard Medical School, Boston, MA
- 1:15-5:00 **Lab Session:** *Isolation and Characterization of Cancer Stem Cells*
Tobias Schatton, PhD
- Students will learn how to isolate cancer stem-like cells [CSCs] from unsegregated tumor cell cultures and/or primary tumor material, various methodologies to determine purity and viability of CSC isolates, and discuss techniques for the characterization of CSC biological functions.
- Flow Cytometry and Cell Sorting Demonstration:** Aaron Seigel
- 5:00 Dinner (on own)
- 6:30 **Group Activity/Discussion:** *Creating Effective Individual Development Plans*
Caroline Appleyard, PhD-Ponce Health Sciences University, Ponce, PR

Tuesday, July 20, 2021

Theme: Women's Cancers

- 8:30-9:15 **Lecture:** *Uterine sarcomas*
Alexander Olawaiye, MD-Magee-Womens Hospital, Pittsburgh, PA
- 9:15-10:00 **Lecture:** *Ovarian Carcinoma-Associated Mesenchymal Stem Cells Arise from Tissue-Specific Normal Stroma*
Lan Coffman, MD, PhD-University of Pittsburgh/Magee-Womens Research Institute, Pittsburgh, PA
- 10:00-10:30 Break
- 10:30-11:15 **Lecture:** *Biomarker-Driven Immunotherapy for Breast Cancer*
Leisha Emens, MD, PhD-University of Pittsburgh, Pittsburgh, PA
- 11:15-11:45 Trainee Presentations
- 11:45-12:45 Lunch (provided)
- 12:45-1:15 **Lab Introduction:** *Derivation and Culture of Induced Pluripotent Stem Cells*
Calvin Simerly, PhD
- 1:15-5:00 **Lab Session:** *Deriving Mouse Embryonic Stem Cells by Immunosurgery*
Calvin Simerly & Carrie Hartnett-Magee-Womens Research Institute, Pittsburgh, PA

Students will learn how to isolate the inner cell mouse cells (ICM) from expanded blastocysts using the antibody: complement technique and transfer isolated ICMs for deriving mouse embryonic stem cells.

5:00 Dinner (on own)

6:30 **Virtual Lecture:** *Cancer Health Disparities*
Susan Vadaparampil, PhD, MPH-Moffit Cancer Center, Tampa, FL

Wednesday, July 21, 2021

Theme: Cancer Mechanisms and Checkpoint Control

8:30-9:15 **Lecture:** *Drug Discovery Targeting Src-family Tyrosine Kinases for Acute Myeloid Leukemia*
Tom Smithgall, PhD-University of Pittsburgh, Pittsburgh, PA

9:15-10:00 **Lecture:** *Reprogramming the host immunity against solid tumors*
Robert Edwards, MD-University of Pittsburgh/Magee-Womens Hospital, Pittsburgh, PA

10:00-10:30 Break

10:30-11:15 **Lecture:** *Discovery and Characterization of New Human Cancer Viruses*
Patrick Moore, PhD-University of Pittsburgh, Pittsburgh, PA

11:15-11:45 Trainee Presentations

11:45-12:45 Lunch (provided)

12:45-1:15 **Lab Introductions** *Derivation, Culture, and Characterization of Induced Pluripotent Stem Cells (iPSCs)*
Charles Easley, PhD-University of Georgia, Athens, GA

1:15-4:00 **Lab Session:** *Derivation, Culture & Characterization of iPSCs*

Students will learn how to derive induced pluripotent stem cells, distinguish between human pluripotent and differentiated stem cells, culturing techniques to maintain pluripotent cells in vitro, various methods to passage stem cells, and discuss mechanisms for characterization of iPSCs.

4:00 Dinner (on own)

Thursday, July 22, 2021

Theme: Imaging & Profiling – machine learning

8:30-9:15 **Lecture:** *Single-Cell Transcriptomic Analysis of Tumor Heterogeneity*
Peter Sims, PhD-Columbia University, New York, NY

9:15-10:00 **Lecture:** *MultiPLIER: A Transfer Learning Framework for Transcriptomics Reveals Systemic Features of Rare Disease*
Jaclyn Taroni, PhD-Childhood Cancer Data Lab, Philadelphia, PA

- 10:00-10:30 Break
- 10:30-11:15 **Lecture:** *Discovering the anti-cancer potential of non-oncology drugs by systematic viability profiling*
Steven Corsello, MD-Harvard Medical School, Boston, MA
- 11:15-11:45 Trainee Presentations
- 11:45-12:45 Lunch (provided)
- 12:45-1:30 **Virtual Lecture:** *Imposter Syndrome*
Jennifer Villwock, MD-University of Kansas Medical Center, Kansas City, KS
- 1:30-2:30 **Group Activity/Discussion:** *Mentoring Mentors: Improving the Skills of Research and What Matters in Mentoring*
Winston Thompson, PhD-Morehouse School of Medicine, Atlanta, GA
- 2:30-2:45 Break
- 2:45-4:15 **Lecture/Activity:** *Rigor and Transparency: Grant guidelines and your funding*
Anita Bandrowski, PhD-University of California, San Diego, La Jolla, CA
- 4:15 Dinner (on own)
-

Friday, July 23, 2021

Day 5 Theme: Oncofertility

- 8:30-9:15 **Pre-recorded Lecture:** *Fertility preservation options in pediatric and adolescent patients with cancer*
Karen Burns, MD-Cincinnati Children's Hospital Medical Center, Cincinnati, OH
- 9:15-10:00 **Virtual Lecture:** *Fertility issues in gynecologic cancers*
Nathalie McKenzie, MD, MSPH, FACOG-AdventHealth Cancer Institute, Orlando, FL
- 10:00-10:30 Break
- 10:30-11:15 **Lecture:** *Direct Differentiation of Human Pluripotent Stem Cells into Haploid Spermatogenic Cells*
Charles Easley, PhD-University of Georgia, Athens GA
- 11:15-12:00 **Lecture:** *Fertility Preservation in Boys with Cancer*
Kyle Orwig, PhD-University of Pittsburgh, Pittsburgh, PA
- 12:00-1:00 Lunch (provided)
- 1:00-1:30 **Lab Introduction:** *Spermatogonial Stem Cells: Experimental Toolbox*
Kyle Orwig, PhD-University of Pittsburgh, Pittsburgh, PA

1:30-5:00 **Lab Session: Spermatogonial Stem Cell Transplantation**
Meena Sukhwani, PhD-Magee-Womens Research Institute, Pittsburgh, PA

Students will learn germ cell transplantation using micromanipulation and how to analyze the xenotransplant assay in primate to mouse transplant testes.

5:00 Dinner (on own)

Saturday, July 24, 2021

Theme: Precision Medicine, Big Data and Genomics in Cancer Research

8:30-9:15 **Virtual Lecture: Phosphoproteomics in Cancer**
Justin Drake, PhD-Rutgers Cancer Institute of New Jersey, New Brunswick, NJ

9:15-10:00 **Virtual Lecture: Transforming Big Data into Cancer-Relevant Insight**
Carlos Moreno, PhD-Winship Cancer Institute, Emory University, Atlanta, GA

10:00-10:30 Break

10:30-11:15 **Lecture: Massively parallel sequencing in precision cancer genomic medicine**
Franziska Blaeschke, PhD-University of California San Francisco, San Francisco, CA

11:15-12:00 **Lecture: DNA Damage Signaling to Dormant Origins of Replication**
Christopher Bakkenist, PhD-University of Pittsburgh, Pittsburgh, PA

12:00-5:00 Free Afternoon

Closing Banquet

5:00 Dinner

5:45 **Presentation of Participant Certificates**
Gerald Schatten and Faculty

6:30 Social Gathering

Sunday, July 25, 2021

12:00 Check out of hotel