

Schedule

Thursday April 17 – Cole Hall

8:00-8:30 **Breakfast**

Session I - Hematopoiesis and The Hematopoietic Niche

Chair: Tippi MacKenzie

8:30-8:40 **Introduction**

8:40-9:40 **Alan Flake:** In utero transplantation – Lessons learned in 30 years
Children's Hospital of Philadelphia

9:40-10:00 **Graca Almeida-Porada:** Ontogeny of the human hematopoietic niche
Wake Forest University

10:00-10:20 **William Peranteau:** Ex vivo modification of donor hematopoietic cells to enhance allogeneic engraftment following *in utero* hematopoietic cell transplantation
Children's Hospital of Philadelphia

10:20-10:30 **Break**

10:30-11:30 **Irv Weissman:** Normal and neoplastic stem cells
Stanford University

11:45-1:00 **Lunch/Display Posters**

Session II - Hematopoietic Diseases

Chair: Robert Montgomery

1:15-1:35 **Jennifer Puck:** Newborn Screening for SCID and T Cell Lymphopenic Disorders
University of California, San Francisco

1:35-1:55 **Elliott Vichinsky:** Alpha thalassemia major: new mutations, intrauterine management, and outcomes
Children's Hospital of Oakland Research Institute

1:55-2:15 **Jerry Chan:** Combined intrauterine and postnatal cell therapy using fetal liver and adult bone marrow cells facilitates sustained donor cell chimerism in a murine thalassemia model
Duke – National University of Singapore

2:15-2:35 **David Archer:** Alterations in specific immune cell subsets in children with sickle cell disease
Emory University

2:35-3:00 **Coffee Break**

Session III – Amniotic Fluid and Mesenchymal Stem Cell Transplantation

Chair: Anna David

- 3:00-3:20 **Cecilia Gotherstrom:** Ten year follow up after prenatal transplantation of fetal mesenchymal stem cells in a patient with severe osteogenesis imperfecta
Karolinska Institutet
- 3:20-3:40 **Pascale V Guillot:** A fetal-to-fetal approach for the treatment of brittle bone disease
University College London
- 3:40-4:00 **Panicos Shangaris:** Haematopoietic engraftment of amniotic fluid stem cells following in utero transplantation
University College London
- 4:00-4:20 **Steven Shaw:**
potential both in vitro and in vivo and engraft after autologous in utero stem cell transplantation
University College London
- 4:20-4:40 **George Christ:** Muscle progenitor cells for tissue engineered muscle repair (TEMR) of volumetric muscle loss (VML) injuries: cleft lip as “first-in-man” target indication
Wake Forest University
- 4:40-5:00 **Aijun Wang:** Engineering biomaterials and stem cells for *in utero* repair of structural birth defects
University of California, Davis
- 5:00-5:20 **Anna David:** Translating a prenatal gene therapy into the clinic: experience with maternal uterine artery VEGF gene therapy for fetal growth restriction.
University College London
- 5:20-6:00 **Group Discussion (Part I)**

Friday April 18 – Cole Hall

8:00-8:30 **Breakfast**

Session I - Transplantation Immunology
Chair: Graca Almeida-Porada

- 8:30-9:30 **Maria Grazia Roncarolo:** Induction of tolerance to allogenic stem cells
San Raffaele Telethon Institute for Gene Therapy
- 9:30-9:50 **Qizhi Tang:** Immune tolerance by design
University of California, San Francisco
- 9:50-10:10 **Tippi MacKenzie:** Mechanisms of tolerance induction after in utero hematopoietic cell transplantation
University of California, San Francisco
- 10:10-10:30 **Break**

Session II - Maternal/Fetal/Neonatal Tolerance

Chair: Nick Fisk

- 10:30-10:50 **Aimen Shaaban: Prenatal NK cell education as the final endorsement of allospecific tolerance**
Cincinnati Children's Hospital
- 10:50-11:10 **Trevor Burt: Using fetal and adult gene expression signatures to predict immunity in the newborn**
University of California, San Francisco
- 11:10-11:30 **Becky Adkins: Dynamic epigenetic events in murine fetal and neonatal T cell ontogeny**
University of Miami
- 11:30-11:50 **Magnus Westgren: Differentiation and functional regulation of human fetal NK cells**
Karolinska Institutet
- 12:00-1:15 **Lunch/Posters**
- 1:30-1:50 **Chris Baker: Analysis of maternal microchimerism in rhesus monkeys (Macaca mulatta) using real-time quantitative PCR amplification of MHC polymorphisms**
University of California, San Francisco
- 1:50-2:10 **Anna Bakardjiev: Host defense mechanisms at the maternal-fetal interface**
University of California, San Francisco
- 2:10-2:30 **Susan Fisher: Maternal decidual macrophages inhibit NK cell killing of invasive cytotrophoblasts during human pregnancy**
University of California, San Francisco
- 2:30-2:50 **Coffee Break**

Session III - Gene Therapy

Session will be held in HSW 300

Chair: Suzy Buckley

- 2:50-3:10 **Mort Cowan: Gene therapy for artemis-deficient severe combined immunodeficiency**
University of California, San Francisco
- 3:10-3:30 **Simon Waddington: Fetal gene and stem cell therapy – a skeptic's perspective**
University College London
- 3:30-3:50 **Ahad Rahim: Perinatal gene therapy rescues acute neonatal lethal neuronopathic Gaucher disease in mice**
University College London

3:50-4:10	<p>Citra Mattar: Fetal gene transfer in early gestation promotes stable expression with minimal immune toxicity and facilitates improved expression after postnatal challenge <i>National University of Singapore</i></p>
4:10-4:30	<p>Alice Tarantal: Translational nonhuman primate models for regenerative medicine and gene therapy: focus on the fetus and infant <i>University of California, Davis</i></p>
5:00-6:00	<p>Group Discussion (Part II) Reception- Stem Cell Board Room</p>
6:00-7:30	<p>Reception – Stem Cell Board Room</p>

Development and Functional Competence of Fetal Dendritic Cells and Macrophages in Human Early-Mid Gestation

Chan JKY^{1,2}, Shin A³, Low D¹, Wasan PS³, Poidinger M³, Larbi A³, Collin M⁴, Choolani M², Haniffa M^{3,4} and Ginhoux F³

¹Reproductive Medicine, KK Women's and Children's Hospital, Singapore ²Yong Loo Lin School of Medicine, National University of Singapore, Singapore ³Singapore Immunology Network, Agency for Science, Technology and Research (A*STAR), Singapore ⁴Institute of Cellular Medicine, Newcastle University, UK

In Utero Depletion of Fetal Host Hematopoietic Stem Cells Improves Engraftment Following Neonatal Transplantation in Mice

Derderian SC^{1,2}, Togarrati PP^{1,2}, King C^{1,2}, Moradi PW^{1,2}, Czechowicz A³, Reynaud D¹, Weissman I⁴, MacKenzie TC^{1,2}.

¹Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research, ²Department of Surgery, UCSF, San Francisco, CA, USA ³The Department of Pediatrics, Boston Children's Hospital, Harvard Medical School, Boston, MA, USA. ⁴Stem Cell Biology and Regenerative Medicine, Departments of Pathology and Developmental Biology, Stanford University School of Medicine, Palo Alto, CA

Maternal and Fetal T Cell Responses During Normal Pregnancy and Preterm Labor

Frascoli M^{1,2}, Coniglio L^{1,2}, Tang Q², Gomez-Lopez N³, Romero R³, and MacKenzie TC^{1,2}

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Optimization of Vascular Niches to Increase Hematopoietic Engraftment

Mokhatari S, Colletti E, Porada C, Almeida-Porada G

Wake Forest Institute for Regenerative Medicine, NC, USA

Human Stem Cells from Early Chorion Differentiate into Podocytes and Improve Renal Glomerulopathy in Alport Mice

Moschidou D^{1,3}, Patsia M¹, Bou-Gharios G¹, Pusey CD¹, Fisk NM², Cook HT¹, David A³, De Coppi P³ and Guillot PV^{1,3}

¹Imperial College London, London, UK. ²University of Queensland, Brisbane, Australia. ³University College London, London, UK.

Cell Fusion Phenomena Detected after in Utero Transplantation of Ds-red-Harboring Porcine Amniotic Fluid Stem Cells into EGFP Transgenic Mice

Peng SY¹, Chen YS^{1,2}, Wang YH³, Lee HM^{1,2}, Cheng WT^{4,5}, Wu SC⁴, **Shaw S**^{6,7}

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University, Taiwan ⁵Department of Animal Science and Biotechnology, Tunghai University, Taiwan
⁶Department of Obstetrics and Gynaecology, Chang Gung Memorial Hospital at Linkou and
Chang Gung University, College of Medicine, Taiwan ⁷Prenatal Cell and Gene Therapy Group,
Institute for Women's Health, University College London, London, UK

Innate immune response to *Listeria monocytogenes* infection at the maternal-fetal interface

Rizzuto G, Bakardjiev A

¹Departments and Pathology and Pediatrics, Microbial Pathogenesis & Host Defense Program
University of California, San Francisco

**Second and Third Trimester Human Amniotic Fluid Stem Cells Engraft After in Utero
Transplantation in Immunocompetent Mice**

Shaw SWS^{1,2}, **Shangaris P**^{1,2}, Pozzobon M³, Piccoli M³, Pipino C², Lee KH², Schiavo A³,
Maghsoudlou P², Lin J², De Coppi P² and David A¹

¹ Institute for Women's Health, University College London, London, London, United Kingdom;

² Insitute of Child Health, University College London, London, London, United Kingdom; and

³ Research Institute, Citta' della Speranza, Padua, Italy.

Uterine integrity is required to maintain human fetal immunologic naiveté

Snead A, Nguyen T, Yesayan M, Kahn DA

Department of Obstetrics & Gynecology, UCLA, Los Angeles, CA, USA

Tregs Prevent Production of Maternal Antibodies to Fetal Alloantigens

Marta Wegorzewska^{1,2,*}, **Catherine Tsai**^{1,2,*}, Patriss Moradi^{1,2}, Philip Norris³, Rachel Jackman³,
Qizhi Tang², and Tippi C. MacKenzie^{1,2}

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