CELL THERAPY AND TISSUE ENGINEERING

A variety of diseases and injuries to tissues require restorative therapies. Since groups of cells form discrete and highly specialized tissues, it follows that cell-based therapies have the potential to be engineered to regenerate tissues not able to repair themselves. Initially empirically based, tissue engineering strategies are now being developed on the basis of new scientific principles that employ components of cell, molecular and developmental biology and embryology with aspects of biochemistry, materials science and mechanical and biomedical engineering. Currently, adult stem cells are being used in new therapies based on their capacity to secrete immuno-regulatory and trophic drugs that form the new field of Regenerative Medicine. These new scientific areas including Tissue Engineering and Cell-based Therapies bring together physicians, engineers and basic scientists with the goal of designing and developing new delivery modalities for a broad spectrum of clinical uses.

This course focuses on Cell-based Therapies and Tissue Engineering and the protocols for accomplishing these therapies. The afternoon laboratory session will center on the "how-to" of cell-based therapies as provided by visual insight into the complex, multi-step technologies of today and tomorrow and provide the basis for standardizing cell-based technologies between various laboratories throughout the world.

2015-16 SPONSORS

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FACULTY

Eben Alsberg, PhD - Case Western Reserve University
Kyriakos Athanasiou, PhD - University of California, Davis
Tracey Bonfield, PhD - Case Western Reserve University
Arnold Caplan, PhD - Case Western Reserve University
Diego Correa, MD, PhD - University of Miami
Laura de Giroiamo, Ph.D. - Lipogems International Srl, Italy
Jennifer Elisseeff, PhD - Johns Hopkins University
Chul-Won Ha, MD, PhD - SungKyunKwan University, Japan
Karen Hirschi, PhD - Yale University
Véronique Lefebvre, PhD - Cleveland Clinic
Donald Lennon, DDS - Case Western Reserve University
Keith March, MD, PhD - Indiana University
Ivan Martin, PhD - University Hospital Basel, Switzerland
Antonios Mikos, PhD - Rice University
Bruno Péault, PhD - University of California, Los Angeles
Rocky Tuan, PhD - University of Pittsburgh
Catherine Verfaillie, MD - Stamcel Instituut, Belgium

SPONSORS CONTINUED

Skeletal Research Center

Endorsing Societies:

National Center for Regenerative Medicine
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ICRS Approved Course

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CELL-BASED THERAPIES & TISSUE ENGINEERING
CTTE SHORT COURSE
CWRU 2016

15th ANNUAL CELL-BASED THERAPIES & TISSUE ENGINEERING

May 24-26, 2016

The Skeletal Research Center and the Department of Biology of Case Western Reserve University will offer the 15th Annual short course entitled "Cell-Based Therapies and Tissue Engineering" on May 24 to May 26, 2016 in Cleveland, Ohio. This course, organized by Arnold I. Caplan, will involve morning lectures by eminent scholars and afternoon laboratories and lectures on the "HOW TO" of adult stem cell cultures and cell-scaffold interactions. The course is intended for graduate students, post-graduate students and health science professionals who are interested in Tissue Engineering with emphasis on the principles and detailed protocols used or being modeled for direct clinical use. A syllabus from lectures and labs will be available to all registered participants.

Schedule Of Events CTTE 2016

TUESDAY, MAY 24, 2016

SESSION I: The Cells & Scaffolds of Tissue Engineering

10:00-10:10 a.m.: Course Introduction - *Arnold I. Caplan, Ph.D. - Case Western Reserve University*

10:10-11:00 a.m.: Injectable Hydrogels for Growth Factor and Stem Cell Delivery in Tissue Engineering. *Antonios Mikos, Ph.D. - Rice University*

11:00 a.m.-12:00 p.m.: *In Vitro* and *In Vivo* Characterization of Chondrogenic Differentiation of MSCs. *Chul-Won Ha, M.D., Ph.D. - Sung Kyun Kwan University*

12:00-12:45 p.m.: Lunch

12:45-1:45 p.m.: Building Cartilage: Engineering Friction and the Local Joint Environment. *Jennifer Elisseeff, Ph.D. - Johns Hopkins University*

1:45-2:45 p.m.: Regenerative Repair: Point-of-Care Application of Mesenchymal Stem Cells and Chondrocytes. *Rocky Tuan, Ph.D. - University of Pittsburgh*

2:45-3:00 p.m.: Break

3:00-4:00 p.m.: Assessing Repair Outcomes in Relation to Nondestructive Preimplantation Properties of TE Constructs. *Kyriakos Athanasiou, Ph.D. - University of California, Davis*

4:00-5:00 p.m.: MSCs: Cell-Based Therapies and Tissue Engineering. *Arnold I. Caplan, Ph.D. - Case Western Reserve University*

5:00-6:00 p.m.: KEYNOTE LECTURE: Engineering Developmental Processes for Tissue Regeneration. *Ivan Martin, Ph.D. - University Hospital Basel*

6:00 p.m.: Dinner Reception, Hovorka Atrium

WEDNESDAY, MAY 25, 2016

SESSION II: MSCs are Cell-Based Therapies

8:00-9:00 a.m.: TBA - SPONSOR LECTURE

9:00-10:00 a.m.: Mesenchymal Stem Cells (MSC) during Tumor Formation and Distant Dissemination. *Diego Correa, M.D., Ph.D. - University of Miami*

10:00-10:15 a.m.: Break

10:15-11:15 a.m.: Nature or Nurture: Do MSCs Exist Outside Culture Flasks? *Bruno Péault, Ph.D. - University of California*

11:15 a.m.-12:15 p.m.: TBA - SPONSOR LECTURE

12:15-1:15 p.m.: Lunch

1:15-2:15 p.m.: Adipose Stem Cells in Angiogenesis, Vasculogenesis and Multi-Organ Tissue Rescue. *Keith L. March, M.D., Ph.D. - Indiana University.*

2:15-2:45p.m.: Micro-fragmented Adipose Tissue with Lipogems Device for the Treatment of Tendon-Related Disorders. *Laura de Giroiamo, Ph.D. - Lipogems International Srl - Sponsor Lecture*

2:45-3:30 p.m.: Marrow-Derived Mesenchymal Stem Cells. *Donald Lennon, D.D.S. - Case Western Reserve University*

3:30-3:45 p.m.: Break

3:45-4:45 p.m.: Differentiation of MSCs and Selection of Fetal Bovine Serum. *Donald Lennon, D.D.S. - Case Western Reserve University*

4:45-6:00 p.m.: MSC Laboratory - *Donald Lennon, D.D.S. - Case Western Reserve University*

Lipogems Demonstration - *Laura de Giroiamo, Ph.D. - Lipogems International Srl*

THURSDAY, MAY 26, 2016

SESSION III: Biologics and Stem Cells

***9:00-10:00 a.m.:* Milieu Sensitive Mesenchymal Stem Cells: Innovations in Treating Pulmonary Diseases.** *Tracey Bonfield, Ph.D. - Case Western Reserve University*

10:00-10:15 a.m.: Break

***10:15-11:15 a.m.:* Endothelial Cell Differentiation and Specialization.** *Karen K. Hirschi, Ph.D. - Yale University*

***11:15 a.m.-12:15 p.m.:* Using Pluripotent Stem Cells as Models for Drug Testing and Disease Models.** *Catherine Verfaillie, M.D. - Stamcel Institute, Leuven, Belgium*

12:15-1:00 p.m.: Lunch

***1:00-2:00 p.m.:* Epigenetic and Transcriptional Regulation of Skeletal Cell Type Specification and Differentiation.** *Véronique Lefebvre, Ph.D. - Cleveland Clinic Lerner College of Medicine*

***2:00-3:00 p.m.:* Spatiotemporally Controlled Signal Presentation Strategies to Regulate Cell Behavior for Tissue Engineering.** *Eben Alsberg, Ph.D. - Case Western Reserve University*

3:00-4:00 p.m.: TBA - SPONSOR LECTURE

–Meeting Adjourned–

ACCOMMODATIONS

The preferred local hotels offer special room rates and are located on the Case campus:

Courtyard by Marriott University Circle
2021 Cornell Road; Cleveland, Ohio 44106
216-791-5678 ☎ 800-228-9290

Group Rate for CWRU CTTE 16

❖

Glidden House Inn
1901 Ford Drive; Cleveland, OH 44106
216-231-8900 ☎ 866-812-4537

www.gliddenhouse.com/accommodations

Registrants are responsible for their own arrangements. Book by April 30, 2016 to receive the special rate. Contact the hotel directly and ask for the CWRU-CTTE16 rate when making your reservation. On campus **Summer Conference Housing** is also available and provides a convenient and low-cost alternative to hotels: https://students.case.edu/housing/housing/conference/

COURSE FEES

All fees include: access to all lectures, lecture notebook, labs, all coffee breaks, lunches and dinner reception.
Standard Fee: $1100.
Early Registration Fee (by April 15): $800.
For members of the Endorsing Societies: $950.
For graduate students and post-doctoral fellows $495.

WHO SHOULD ATTEND

Cell-Based Therapies and Tissue Engineering is designed for graduate students, postgraduate students and health science professionals who are interested in tissue engineering and stem cells.

REGISTRATION

You may register by completing the attached registration form and returning it by regular mail, fax, e-mail or if you prefer register by phone.

Fax: 216-368-4077 **Phone:** 216-368-3562
E-mail: tammie.lee@case.edu

Checks should be made payable to Case Western Reserve University/CTTE16 and mailed to:

Tammie Lee
Biology Department SRC
Case Western Reserve University
10900 Euclid Avenue
Cleveland, OH 44106-7080

Course Website: http://cwru.edu/cttecourse
***Skeletal Research Center* Website: http://www.case.edu/artsci/biol/skeletal/**

REGISTRATION FORM

Name/Degree_____

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REFUND POLICY: All refund requests must be made in writing. Full refunds will be given for cancellations received by May 8, 2016. Cancellations received May 9, 2016 through May 15, 2016 will be subject to a $200 cancellation fee. No refunds will be given after May 15, 2016.