

UCLA

**Eli and Edythe Broad Center of Regenerative
Medicine and Stem Cell Research**

18th Annual Stem Cell Symposium
**Organoids: Modeling Development, Disease
and Therapies**

FRIDAY, JANUARY 28, 2022

8:30 AM - 4:00 PM

Amander Clark, PhD

UCLA

Alice Soragni, PhD

UCLA

Hans Clevers, MD, PhD

Hubrecht Institute

Jeremy Sugarman, MD

Johns Hopkins University

Donald E. Ingber, MD, PhD

Harvard University

Mark C. Walters, MD

UCSF

Madeline Lancaster, PhD

Cambridge Biomedical Campus

Magdalena Zernicka-Goetz, PhD

Caltech and University of Cambridge

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18th Annual Stem Cell Symposium
Organoids: Modeling Development, Disease and Therapies

Stem cell-derived organoids can replicate the structure and function of organs ranging from the brain to the kidney. These increasingly sophisticated models are yielding unprecedented insights into how human organs develop, age and respond to disease – and opening up new avenues for personalized medicine and drug discovery. The 2022 symposium convenes leading scientists and clinicians to present how the use of organoids is profoundly changing the study of disease and development of novel therapies.

PROGRAM

Friday, January 28, 2022

8:30 - 8:45 am	Thomas Rando, MD, PhD, Director, UCLA Broad Stem Cell Research Center <i>Welcome</i>
8:45 - 9:25 am	Donald E. Ingber, MD, PhD (Harvard University) <i>Human organ chips: Clinical mimicry in preclinical models</i> Moderator: Andrew Goldstein, PhD
9:25 - 10:05 am	Madeline Lancaster, PhD (Cambridge Biomedical Campus) <i>Unraveling mechanisms of human brain size determination using neural organoids</i> Moderator: Samantha Butler, PhD
10:05 - 10:45 am	Mark C. Walters, MD (UCSF) <i>Curative therapies for hemoglobin disorders</i> Moderator: Donald Kohn, MD
10:45 - 10:55 am	Break
10:55 - 11:35 am	Magdalena Zernicka-Goetz, PhD (Caltech and University of Cambridge) <i>Principles of self-organization of stem cells into embryos in vitro and in vivo</i> Moderator: Utpal Banerjee, PhD
11:35 - 12:15 pm	Amander Clark, PhD (UCLA) <i>Ancient retroviruses and their control of human reproduction</i> Moderator: April Pyle, PhD
12:15 - 12:30 pm	Honoring Owen Witte, MD, Founding Director, UCLA Broad Stem Cell Research Center
12:30 - 1:00 pm	Lunch
1:00 - 1:40 pm	Jeremy Sugarman, MD (Johns Hopkins University) <i>Ethics considerations for organoid research and clinical translation</i> Moderator: Stanley Nelson, MD
1:40 - 2:20 pm	Alice Soragni, PhD (UCLA) <i>Patient-derived tumor organoids to model rare cancers for precision medicine</i> Moderator: Joseph Crompton, MD, PhD
2:20 - 3:00 pm	Hans Clevers, MD, PhD (Hubrecht Institute) <i>Organoids to model human diseases</i> Moderator: Brigitte Gomperts, MD
3:00 - 4:00 pm	Poster Session

Conference Committee

Samantha Butler, PhD, Professor, Neurobiology

Joseph Crompton, MD, PhD, Assistant Professor, Surgery

Andrew Goldstein, PhD, Associate Professor, Molecular, Cell and Developmental Biology; Urology

Brigitte Gomperts, MD, Professor, Pediatrics; Pulmonary Medicine

Speaker Biographies



AMANDER CLARK, PhD

UCLA

Dr. Clark and her team developed the first genomics-based method to map the critical stages of human germline cell development. Expanding the understanding of this process could lead to new methods to identify and treat infertility and shed light on how congenital abnormalities and germ cell tumors develop. Her research serves as the basis for translational projects related to pluripotent stem cells, human embryo development, in vitro gametogenesis, germ cell tumors and contraception discovery. Dr. Clark is a Professor and Chair of Molecular, Cell and Developmental Biology at UCLA and the Vice President of the International Society for Stem Cell Research.



HANS CLEVERS, MD, PhD

Hubrecht Institute

Dr. Clevers discovered how a disruption of normal cell production in the intestine results in the formation of polyps, which can develop into cancer. Building on this discovery, he and his research group were the first to identify living stem cells in the intestine and the first to develop methods to grow these stem cells into “mini intestine” organoids in the lab. He is a Professor of Molecular Genetics at Utrecht University and is also a Principal Investigator at the Hubrecht Institute for Developmental Biology and Stem Cell Research and the Princess Máxima Center for Pediatric Oncology. Dr. Clevers is an elected member of the National Academy of Sciences, the American Academy of Arts and Sciences and the Royal Netherlands Academy of Arts and Sciences.



DONALD E. INGBER, MD, PhD

Harvard University

Dr. Ingber is a leader in the field of biologically inspired engineering. His work has led to major advances in mechanobiology, cell structure, tumor angiogenesis, tissue engineering, systems biology, nanobiotechnology and translational medicine. Dr. Ingber’s most recent scientific contributions include the development of human organ-on-chips as replacements for animal testing and multiplexed electrochemical sensors for medical diagnostics. He is the Founding Director of the Wyss Institute for Biologically Inspired Engineering and a Professor of Bioengineering at Harvard University and also serves as the Judah Folkman Professor of Vascular Biology at Harvard Medical School and the Vascular Biology Program at Boston Children’s Hospital. Dr. Ingber is an elected member of the National Academy of Medicine, National Academy of Engineering and the National Academy of Inventors.



MADELINE LANCASTER, PhD

Cambridge Biomedical Campus

Dr. Lancaster was the first researcher to generate cerebral organoids, which have enabled the modeling of human brain development in vitro. The aim of her research is to understand the mechanisms underlying human brain expansion. Her lab studies the most fundamental differences between human brain development and that of other mammals, as well as the cellular mechanisms underlying neurodevelopmental disorders such as autism and intellectual disability. Dr. Lancaster is a Group Leader in the Cell Biology Division of Cambridge Biomedical Campus’ Medical Research Council Laboratory of Molecular Biology.



ALICE SORAGNI, PhD

UCLA

Dr. Soragni's lab develops tumor organoid models to evaluate drugs and investigate the biology of rare tumors with a focus on sarcoma, ovarian cancer, neuroendocrine tumors and neurofibromas. She seeks to create personalized treatments by developing fast, reliable and inexpensive methods to test a combination of chemotherapies or targeted therapies directly on primary tumors from patients' biopsies or surgical samples. She is an Assistant Professor of Orthopaedic Surgery at the David Geffen School of Medicine at UCLA.



JEREMY SUGARMAN, MD

Johns Hopkins University

Dr. Sugarman is an internationally recognized leader in bioethics with particular expertise in applying empirical methods and evidence-based standards to evaluate and analyze bioethical issues. His contributions to bioethics and policy include his work on the ethics of informed consent, umbilical cord blood banking, stem cell research, international HIV prevention research, global health and research oversight. He is the Harvey M. Meyerhoff Professor of Bioethics and Medicine, Professor of Medicine, Professor of Health Policy and Management and Deputy Director for Medicine of the Berman Institute of Bioethics at the Johns Hopkins University. Dr. Sugarman is an elected member of the National Academy of Medicine, American Society of Clinical Investigation and the Association of American Physicians.



MARK C. WALTERS, MD

UCSF

Dr. Walters' research seeks to develop and expand curative therapies for hemoglobin disorders in particular and non-malignant hematopoietic disorders more broadly. He has led several NIH-supported investigations of hematopoietic cell transplantation for sickle cell anemia and thalassemia. His current research focuses on genomic editing and gene addition therapies as methods to extend curative therapies to all patients who inherit clinically significant hemoglobinopathies. Dr. Walters is the Jordan Family Director of the Blood and Marrow Transplantation Program at UCSF Benioff Children's Hospital Oakland, Professor and Interim Chief of the Hematology Division in the Department of Pediatrics at UCSF School of Medicine and Program Director of the Alpha Stem Cell Clinic at UCSF.



MAGDALENA ZERNICKA-GOETZ, PhD

Caltech and University of Cambridge

Dr. Zernicka-Goetz discovered how embryos self-organize and self-repair. She applied this knowledge to create complete stem cell-derived embryos from embryonic and extra-embryonic stem cells – providing critical insights into the developmental stages during which the majority of human pregnancies fail. Her interest in cell plasticity and cell fate specification guides her work. Dr. Zernicka-Goetz is the Bren Professor of Biology and Biological Engineering at Caltech and a Professor of Mammalian Development and Stem Cell Biology at the University of Cambridge. She is a Fellow of the British Academy of Medical Science and a recipient of an NIH Director's Pioneer Award.

About the Center

The Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research is committed to a multi-disciplinary, integrated collaboration of scientific, academic and medical disciplines for the purpose of understanding and realizing the potential of stem cells. Launched in 2005, the Center supports innovation, excellence and the highest ethical standards focused on driving basic stem cell research from the laboratory to the clinic to treat disease. To learn more about the Center, visit our website at www.stemcell.ucla.edu.