Stem Cell Therapeutics (XGEN204)

Course Syllabus

Course Description
Stem cells provide enormous potential for the field of regenerative medicine. Their ability to become any type of cell—blood, heart, brain, bones, skin, muscles, etc.—offers hope for effective treatments, or perhaps even reversal of, a disease.

This course will advance your understanding of cell-based therapies and show you what it is being done today to develop and deliver them. Discover new ways to restore organ and tissue function for the treatment of chronic diseases, genetic disorders and serious injuries. Get a glimpse inside the laboratory of medical researchers who are pioneering stem cell therapeutics.

This course is an elective course in the Stanford Genetics and Genomics Certificate.

Course Topics
Module 1: Class Introduction
Michele Calos

Module 2: Fundamentals of Stem Cells
Michele Calos

Module 3: Genome Editing
Matt Porteus
Module Exercises-
  • Reading
  • Activity: Designing CRISPR Vectors

Module 4: “Disease in a Dish”
Joe Wu

Module 5: iPS Cells and Muscular Diseases
Michele Calos

Module 6: Stem Cell Therapies to Treat Genetic Diseases
Michele Calos, Soeren Turan, Chris Bjornson
Module Exercises-
  • Reading
  • Activity: Designing CRISPR Vectors

Module 7: Stem Cells and Spinal Cord Injuries
Jane Lebkowski
Instructors
Michele Calos
Professor of Genetics, Stanford University

Matt Porteus
Associate Professor of Pediatrics (Cancer Biology), Stanford University

Joseph Wu
Professor of Medicine (Cardiovascular) and of Radiology, Stanford University

Soeren Turan
Instructor, Stanford University

Chris Bjornson
Research Associate, Stanford University

Jane Lebkowski
President of Research and Development, Asterias

Course Requirements
Please watch all course videos and complete all course assignments. Successful completion of the assignments, final examination and course evaluation are required to complete this course. The exam consists of multiple choice questions and is done online. A link will unlock within the “Final Steps” section of the learning platform after you have completed all of the other course activities.

You may attempt the final examination multiple times. A score of 90% is required to successfully pass the exam. Once you have passed the examination and completed the evaluation, a digital record of completion will be emailed to you.

Exercises
Each exercise will be submitted via the course assignment submission area within the course learning platform. To successfully complete each exercise, you will need to follow all instructions. You will be receiving instructor feedback on some of your submitted assignments. Feedback on those exercises will be given within the learning platform within 3-5 business days. Please continue to progress through the course while awaiting instructor feedback.

Your responses to the exercises will be kept within the learning platform. However, you will not have access to the responses you submitted after 90-day course access has expired. If you would like to keep a copy for your records, please do so separately.

Please note that some assignments may contain Macromedia Flash movies or Java applets. Notes about these requirements will be included in the assignment instructions.
Course Materials
All course materials are provided within the course learning platform. These include the course videos, course handouts and all assignment instructions.

The course learning platform is available to you for 90-days after date of enrollment via your mystanford connection account. For more information regarding how to use the course learning platform, please visit http://player.vimeo.com/external/99190590.hd.mp4?s=02b5cdd84bc1d9e48f2320ce1d15b25b

Questions
Please contact SCPD Student Services at stanford-genetics@stanford.edu or 650-263-4700. Available 8:30am- 4:30pm Pacific Time, Monday- Friday.