

COURSE MANUAL

INTRO TO STEM CELLS

6th January – 17th January 2020

For info, please contact Koen Braat. k.braat@umcutrecht.nl

This course will address diverse topics in stem cell biology and aims to bring together basic principles of stem cell biology and developmental biology, current techniques and models, and stem cell applications in regenerative medicine. Topics in the course are embryology, embryonic stem cells, induced pluripotent stem cells, in vivo stem cell models, identification of stem cells, organoids and epithelial stem cells, hematopoietic stem, the stem cell niche, skin and eye stem cells, cancer stem cells, and application of stem cell in regenerative medicine.

Course venue: see day to day programme. Unfortunately the course is not always at the same location and on a few occasions we need to relocate during the day.

Attendance is **mandatory**. Missing lectures will result in failing the course. In case of absence always inform one of the coordinators beforehand. k.braat@umcutrecht.nl and pcoffer@umcutrecht.nl

The exam for the PhD students is optional. You will receive 2.4 ECs when you do not participate and pass the exam. When you do take the exam and pass you will receive 3 ECs. In all cases you need to write a summary of the pre-assigned lecture/masterclass.

The exam for master students is mandatory.

All time besides the scheduled time for lectures/masterclass is for self-study.

Grading:

The grading will be based on participation (30%) and the final exam (70%).

Participation is based on actively participating in the course and making outline notes and two closed exam questions and 1 open answer question of a pre-assigned lecture.

Our goal is to provide PDFs of the lectures. These will be made available on the website of the course after the outline notes have been submitted.

ENJOY THE COURSE!

Koen Braat & Paul Coffey

Monday 6th January

Venue: Yellow lecture hall (Stratenum building, entrance level)

Embryo, signaling and stem cell models

- 10.30-10.45 **Introduction to the course**
Dr. Koen Braat (Center for Molecular Medicine and Regenerative Medicine)
- 10.45-11.45 **From embryo to embryonic stem cells**
Dr. Bernard Roelen (Faculty of Veterinary Medicine UU)
- 12.00-13.00 **Signaling dynamics in stem cell biology**
Dr. Katharina Sonnen (Hubrecht Institute)
- 13.00-13.45 **Lunch**
- 13.45-14.45 **Animal models to study tissue regeneration**
Dr. Kerstin Bartscherer (Hubrecht Institute)

Tuesday 7th January

Venue: Hijmans van den Bergh building 2.70-2.71 or Vondelzaal

Pluripotent Stem Cells

- 10.00-11.00 **Principles of epigenetics in stem cells**
Dr. Susana Chuva De Sousa Lopes (LUMC and U Ghent)
- 11.15-12.15 **De novo formation of gametes from pluripotent stem cells**
Dr. Susana Chuva De Sousa Lopes (LUMC and U Ghent)

Wednesday 8th January

Venue: Yellow lecture hall (Stratenum, entrance level)

Organization and Tissue stem cells

- 10.00-11.00 **Self-organization in the “embryo”**
Prof. Niels Geijsen
- 11.15-12.15 **Stem cells in bone development**
Dr. Debby Gawlitta (UMC Utrecht)
- 12.15-13.00 **Lunch**
- 13.00-14.00 **Muscle stem cells**
Dr. Gerben Schaaf (Erasmus MC, Rotterdam)
- 14.15-15.15 **Stem cells in cartilage and bioprinting tissue models.**
Dr. Riccardo Levato (UMC Utrecht)

Thursday 9th January

Venue: Yellow lecture hall (Stratenum, entrance level)

Reprogramming

- 12.00-15.00 **Masterclass: historical perspective and overview on the topic of reprogramming/induced pluripotency**
Dr. José Silva (Cambridge Stem Cell Institute, UK)
- 15.00-16.00 **Break and walk to Hubrecht (Ted Peek) auditorium**
- 16.00-17.00 **CSnD seminar: Reprogramming and programming cell identity (preliminary title)**
Dr. José Silva (Cambridge Stem Cell Institute, UK)

Friday 10th January

Venue: Hubrecht Institute Ted Peek Auditorium

Organoids, tissue stem cells and mutations

- 9.00-10.00 **(Intestinal) stem cells and Organoids**
Dr. Marc van de Wetering (Prinses Maxima Center)
- 10.15-11.15 **Liver stem cells**
Dr. Bart Spee (UU)
- 11.30-12.30 **Cardiac stem cells**
Prof. Eva van Rooij (Hubrecht Institute)
- 12.30-13.15 **Lunch**
- 13.15-14.15 **Mutations in stem cells**
Dr. Ruben van Boxtel (Prinses Maxima Center)

Monday 13th January

Venue: MVG - Descartes - Zaal 2+3 (100) or Vondelzaal

HSCs, the niche and pancreatic stem cells

- 10.30-11.30 **Hematopoietic stem cells**
Dr. Catharine Robin (Hubrecht Institute)
- 11.45-12.45 **Masterclass: The stem cell niche.**
Dr. Tiago C. Luis (Imperial College London, UK)
- 12.45-13.45 **Lunch and walk to Hubrecht Institute**
- 13.45-14.45 **Seminar: The HSC niche (Hubrecht Institute, open to all)**
Dr. Tiago C. Luis (Imperial College London, UK)
- 15.00-16.00 **Stem cells in the pancreas**
Prof. Eelco de Koning (Hubrecht Institute and LUMC)

Tuesday 14th January

Venue: Yellow lecture hall (Stratenum)

- 12.30-13.30 **Aging in stem cells**
Prof. Gerald de Haan (ERIBA, UMCG)
- 13.45-14.45 **Neural Stem Cells**
Dr. Onur Basak (UMCU)
- 15.00-16.00 **From Transcription to stem Cell identification**
Prof. Alexander van Oudenaarden (Hubrecht Institute)
- 16.15-17.15 **Marketing of unproven stem cell based therapies**
Dr. Esther van Zimmeren (University of Antwerp, Belgium)

Wednesday 15th January

Venue: Yellow lecture hall (Stratenum) 10.00 – 15.00

Cancer stem cells and tissue stem cells

- 9.30-10.30 **Cancer stem cells**
Dr. Vaishali Kakkar (AMC)
- 10.45-11.45 **Leukemic Stem Cells**
Dr. Mirjam Belderbos (Prinses Maxima Center)
- 11.45-12.45 **Lunch**
- 14.15-15.15 **Q and A masterclass: Tissue stem cells.**
Prof. Graziella Pellegrini (Center for Regenerative Medicine “Stefano Ferrari”, Italy)
- 15.30-16.30 **Seminar: Stem cells in the eye (open to all)**
Prof. Graziella Pellegrini (Center for Regenerative Medicine “Stefano Ferrari”, Italy)
Location: Hubrecht???

Thursday 16th January

Self study

Friday 17th January

Exam AZU – CLZ-3 MBU 13.15 -15.00

List of speakers

Dr. Kerstin Bartscherer	Hubrecht Institute	k.bartscherer@hubrecht.eu
Dr. Onur Basak	UMC Utrecht	O.Basak@umcutrecht.nl
Dr. Mirjam Belderbos	Prinses Maxima Center	M.E.Belderbos@prinsesmaximacentrum.nl
Dr. Ruben van Boxtel	Prinses Maxima Center	R.vanBoxtel@prinsesmaximacentrum.nl
Dr. Debby Gawlitta	UMC Utrecht	d.gawlitta@umcutrecht.nl
Prof. Niels Geijsen	Hubrecht Institute	n.geijsen@hubrecht.eu
Prof. Gerald de Haan	ERIBA, UMC Groningen	g.de.haan@umcg.nl
Dr. Vaishali Kakkar	Amsterdam UMC	v.kakkar@amsterdamumc.nl
Prof. Eelco de Koning	Leiden UMC	E.J.P.de_Koning@lumc.nl
Dr. Riccardo Levato	UMC Utrecht	R.Levato-2@umcutrecht.nl
Dr. Susana C. De Sousa Lopes	Leiden UMC	S.M.Chuva_de_Sousa_Lopes@lumc.nl
Prof. A van Oudenaarden	Hubrecht Institute	a.vanoudenaarden@hubrecht.eu
Prof. Graziella Pellegrini	Center for Regenerative Medicine “Stefano Ferrari”, Italy	graziella.pellegrini@unimore.it
Dr. Tiago Cunha Luis	Imperial College London, UK	t.luis@imperial.ac.uk
Dr. Catherine Robin	Hubrecht Institute	c.robin@hubrecht.eu
Dr. Bernard Roelen	Fac of Veterinary Medicine, Utrecht University	B.A.J.Roelen@uu.nl
Prof. Eva van Rooij	Hubrecht Institute	e.vanrooij@hubrecht.eu
Dr. Gerben Schaaf	Erasmus MC, Rotterdam	g.schaaf@erasmusmc.nl
Dr. José Silva	Cambridge Stem Cell Institute, UK	jcs64@cam.ac.uk
Dr. Karharina Sonnen	Hubrecht Institute	k.sonnen@hubrecht.eu
Dr. Bart Spee	Fac of Veterinary Medicine, Utrecht University	b.spee@uu.nl
Dr. Marc vd Wetering	Prinses Maxima Center	M.L.vandeWetering@prinsesmaximacentrum.nl
Dr. Esther van Zimmeren	University of Antwerp, Belgium	esther.vanzimmeren@uantwerpen.be