

COEUR Course Molecular Biology in Cardiovascular Research

Course organizers: Dr H.J. Duckers and Dr. A.J.M. Verhoeven

Aims of the program

The program will enhance the PhD student's knowledge on:

- ✓ Techniques of DNA and RNA analysis
- ✓ Generation of transgenic animals
- ✓ Gene transfer analysis
- ✓ MicroRNA and RNA silencing
- ✓ Immunofluorescence
- ✓ Fluorescence assisted cell sorting
- ✓ Genomics
- ✓ Proteomics
- ✓ Bio informatics
- ✓ Chromatin structure and epigenetics
- ✓ The application of stem cells

In addition, the PhD student will learn where in the building expertise on these subjects is available.

Lectures will be given on Thursday and Friday. Research papers for self-study are included in the course material and should be studied in advance (estimated study load: 16 hours).

All participants are expected to present their research project in an ~ 5 min talk with 2-3 slides. In particular, they are asked to indicate how they intend to incorporate molecular biological techniques in their research project, or what they hope to learn in this course. In addition, they are expected to actively participate in discussion about each other's project.

Introduction

Basics molecular biological techniques

Thursday Morning,

- 09:00-09:05 Setup of the course
Dr. H.J. Duckers
- 09:05-09:20 Introduction to molecular biology: a little bit of history...
Dr. R.A. Haasdijk
- 09:20-10:00 Basic molecular biological techniques
Dr. .N. Jaspers
- 10:00-10:30 Cell culture and recombinant virus technology
Dr. C. Cheng
- 10:45-11:15 Transgenic animals for the study of atherosclerosis
Dr. R. de Crom
- 11:15-11:45 Immunofluorescence and immunohistochemistry
Dr. E.J. Mientjes
- 11:45-12:15 Fluorescence activated cell sorting (FACS analysis)
Drs. D. Tempel

Omics and Bio-informatics

Thursday Afternoon

- 13:15-14:00 Stem cell technology
Prof. E. Dzierzak
- 14:00-14:30 Genomics/Microarrays
Prof. dr. J.N.J. Philipsen
- 14:45 -15:15 Proteomics in cardiovascular disease
Dr. D.P. de Kleijn
- 15:15-15:45 Bioinformatics, the missing link
Prof. A.P. Stubbs
- 16:00-17:00 Study presentations
Participants

Advanced molecular biological techniques

Friday Morning

- 09:00-09:30 Transcriptional regulation and chromatin
Dr. A.J.M. Verhoeven
- 09:30-10:00 The use of RNA interference (RNAi) in the functional analysis of gene function
Dr. T.B. van Dijk
- 10:00-10:30 Analysis of vasculogenesis through reverse genetics in Zebrafish
Dr. F.L. Bos (Cardiology Erasmus MC and Hubrecht Lab, Utrecht)
- 10:50-11:20 Genetic background of CMP and cardiogenetics outpatient clinic
Dr. M. Michels
- 11:20-12:00 Study presentations
Participants

Friday Afternoon

Application in state-of-the-art cardiovascular research

- 13:00-13:30 Genome wide transcriptomics and transspecies approaches
Dr. H.J. Duckers
- 13:30-13:45 concluding remarks
Dr. H.J. Duckers
- 14:00-14:50 **Keynote Lecture 1**
Genetic dysregulation in heart failure
Prof. dr.Y.M. Pinto, AMC-UvA, Amsterdam
- 15:10 -16:00 **Keynote Lecture 2**
Can novel insights into cardiac development improve our understanding of congenital cardiac malformations?
Prof. dr. A.F.M. Moorman, Anatomy & Embryology, AMC, Amsterdam