Introduction to Methods in Translational Research and Cardiovascular Medicine

Oslo University Hospital, Ullevål, IEMF, building 7

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THE NORWEGIAN SCHOOL OF HEART RESEARCH

Oslo University Hospital

Day 1 – Monday 23rd of March

08:30-08:45	Introductory remarks
08:45-09:00	Cardiac translational research – from bench to bedside
	CLINICAL RESEARCH AND LARGE ANIMAL MODELS
09:05-09:20	Electrocardiograms in cardiac research
09:25-09:45	Large animals in cardiovascular research
09:50-10:00	**Break**
10:00-10:30	How does MRI really work, and how can we use it in translational research?
10:35-11:05	Imaging modalities – pros and cons
11:10-12:00	**Lunch**
	CARDIAC FUNCTION AND PHENOTYPING IN SMALL ANIMALS
12:00-12:15	The isolated perfused heart: Langendorff preparation
12:20-12:35	Genetically modified mice in heart failure research
12:40-12:55	Exercise-training and testing of small animals
13:00-13:15	**Break**
13:15-13:30	Surgical methods in small animals
	METHODS IN CARDIAC CELLULAR BIOLOGY
13:35-13:50	Investigating effects of mechanical stretch on isolated cardiomyocytes
13:55-14:35	Imaging techniques for assessment of cardiomyocyte structure and function

14:40-14:55	**Break**
14:55-16:00	Student presentations

Day 2 – Tuesday 24th of March

08:30-08:35	Daily introduction and questions
08:35-09:35	**Practical demonstration: Methods in Cardiac Cellular Biology** - Microscopy - Isolation of cardiomyocytes
09:35-10:35	**Practical demonstration: Assessment of Cardiac Function in Large and Small Animals** - Pig model - Echocardiography and MRI in rodents
10:35-10:45	**Break**
10:45-11:30	Student presentations
11:30-12:15	**Lunch**
	METHODS IN MOLECULAR BIOLOGY
12:15-12:30	Cell cultures in cardiac research
12:35-12:50	Gene expression in the heart: Quantitative PCR and RNA sequencing
12:55-13:10	Proteins: Separation, purification and quantification
13:15-13:30	Protein-protein interactions
13:35-13:50	**Break**
13:50-14:05	Protein-localization: Flowcytometry and ELISA
14:10-14:25	Detection of cyclic nucleotides and protein-protein interactions: FRET in cardiac research
14:30-16:00	Student presentation

Day 3 – Wednesday 25th of March

08:30-08:35	Daily introduction and questions
08:35-09:35	**Practical demonstration: Methods in Molecular Biology** - Western Blot - PCR - Cell work
09:35-09:50	**Break**
09:50-11:00	Sum-up & article-workshop
11:00-11:45	**Lunch**
11:45-13:00	Sum-up & article-workshop
13:00-13:20	Innovation starts with scientific discoveries
13:25-13:40	Cardiac translational research – from bedside to bench
13:45-14:00	**Break**
14:00-16:00	Multiple Choice Questionnaire (as a plenary session)