

NCMM Molecular Medicine Research Course

Course no.: MF9120BTS - Molecular Medicine (national PhD-level course)

Time: November 13-24, 2017

Place: Oslo Science Park, Level 0, Hagen 1+2 ([see daily plan](#))

Organized by: Centre for Molecular Medicine Norway, Nordic EMBL Partnership, University of Oslo and Oslo University Hospital

Topics and Programme

1. **Disease mechanisms and development** (14h)
 - a. Disease mechanisms in cancer
 - Molecular pathogenesis of cancer (1h, Lars Akslen)
 - Tumor angiogenesis (1h, Lars Akslen)
 - Cancer genomics and metabolism (1h, Hege Russnes)
 - Tumor immune evasion mechanisms (1h, Kjetil Taskén)
 - b. Inflammation (2 h, Arne Yndestad/Espen Melum)
 - c. Pathophysiology of excitatory diseases in the brain (2h, Vidar Gundersen)
 - d. Metabolic diseases, diabetes (2h, Pål Njølstad)
 - e. Epigenetics and chromatin structure (1h, Nikolina Sekulic)
 - f. DNA repair mechanisms (1h, Hilde Nilsen)
 - g. Disease mechanism and risk factors of venous thrombosis (2 h, John-Bjarne Hansen)
2. **Animal models of disease** (3h)
 - a. Animal models in cancer (1h, Ludvig Munthe)
 - b. Disease mechanisms and animal models of cardiovascular disease (2h, Andreas Romaine/Ida Lunde)
3. **Biobanks, health registries and biomarker discovery** (8h)
 - a. Use of population biobanks to understand human disease (2h, Kristian Hveem)
 - b. Predictive medicine: Use of health registries and epidemiology (2h, Trude E. Robsahm)
 - c. Cancer biomarkers (2h, Therese Sørliie/Rolf Skotheim)
 - d. Biomarkers for early diagnosis and management of heart diseases (2h, Torbjørn Omland)
4. **Imaging disease** (8h)
 - a. Introduction to imaging modalities (2h, Lars Tore Gyland Mikalsen)
 - b. Imaging cardiovascular diseases in animal models and patients (2h, Bill Louch/Magnus Arnonsen)
 - c. Multiphoton imaging of brain diseases (2h, Erlend Nagelhus)
 - d. Imaging cancer (2h, Siver Moestue)

5. **Drug targeting and pharmacology** (8h)
 - a. Introduction to pharmacology and G-protein-coupled receptors as drug targets (2h, Finn Olav Levy)
 - b. Medicinal Chemistry and Drug Development (2h, Jo Klaveness)
 - c. Basics of Chemical Biology and High throughput screening (2h, Johannes Landskron, Camila Esguerra)
 - d. Introduction to structural biology (2h, Preben Morth)
 - e. Nano-medicine (1h, Irep Gözen)

6. **Tailored and personalized medicine** (5 h)
 - a. Introduction to Personalized Medicine (1h, Kjetil Tasken)
 - b. Drug sensitivity testing and personalized medicine (2h, Krister Wennerberg/ Bjørn Tore Gjertsen)
 - c. Systems medicine approaches in infectious diseases and cancer (2 h, Pia Abel zur Wiesch, Anthony Mathelier)

7. **Advanced cell-based therapies** (6 h)
 - a. Stem cells and inducible pluripotent cells as basis for future therapies (1h, Judith Staerk)
 - b. Introduction to use of gene editing/CRISPR (1 h, Judith Staerk)
 - c. Cell based therapies in medicine – Laboratory work flow and clinical practice in cancer treatment (2h, Else Marit Inderberg Suso)
 - d. T cell receptor engineering and T cell therapies in cancer (1h, Johanna Olweus)
 - e. Regenerative Medicine: Organ and cell transplantation, Tissue Engineering (1h Hanne Scholz)

8. **Organizational**
 - a. Introduction and organization (1h, Kjetil Tasken)
 - b. Student seminars (4h or more, see separate list)

Total 60 hours

Week 1 Schedule; NCMM Molecular Medicine Research Course

Date	Day/Room	Time	Topic	Title	Lecturer
13.11.2017	Mon Hagen 1+2	09.00 – 10.45	Organizational Disease mechanisms	- Information and organization - DNA repair mechanisms	- Kjetil Taskén - Hilde Nilsen
13.11.2017	Mon Hagen 1+2	11.00 – 12.45	Drug targeting & pharmacology	Basics of chemical biology and high-throughput screening	Johannes Landskron/ Camila Esguerra
13.11.2017	Mon Hagen 1+2	14.00 – 15.45	Drug targeting & pharmacology	Introduction to pharmacology G-protein-coupled receptors as drug targets	Finn Olav Levy
14.11.2017	Tue Hagen 1+2	09.00 – 10.45	Tailored and personalized medicine	- Introduction to Personalized Medicine - Tumor immune evasion mechanisms	Kjetil Taskén Kjetil Taskén
14.11.2017	Tue Hagen 1+2	11.00 – 12.45	Disease mechanisms	- Molecular pathogenesis of cancer - Tumor angiogenesis	Lars Akssen Lars Akssen
14.11.2017	Tue Hagen 1+2	14.00 – 15.45	- Disease mechanisms - Animal disease models	- Cancer genomics - Animal models in cancer. The dog, the mouse and humanized mice	- Hege Russnes - Ludvig Munthe
15.11.2017	Wed Hagen 1+2	09.00 – 10.45	Imaging disease	Introduction to imaging modalities	Lars Tore Gyland Mikalsen
15.11.2017	Wed Hagen 1+2	11.00 – 12.45	Imaging disease	Imaging cancer	Siver Moestue
15.11.2017	Wed Hagen 1+2	14.00 – 15.45	Imaging disease	Imaging cardiovascular diseases in animal models and patients	Bill Louch/ Magnus Arosen
16.11.2017	Thu Hagen 1+2	09.00 – 10.45	- Drug targeting & pharmacology - Disease mechanisms	- Nano-medicine - Epigenetics and chromatin structure	- Irep Gözen - Nikolina Sekulic
16.11.2017	Thu Hagen 1+2	11.00 – 12.45	- Advanced cell-based therapies	- Stem cells and inducible pluripotent cells as basis for future therapies - Introduction to use of gene editing/CRISPR	- Judith Staerk - Judith Staerk
16.11.2017	Thu Hagen 1+2	14.00 – 15.45	Advanced cell-based therapies	Cell based therapies – Laboratory work flow and clinical practice	Else Marit Inderberg Suso (2h)
17.11.2017	Fri Hagen 1+2	09.00 – 10.45	Biobanks, health registries and biomarker discovery	Biomarkers for early diagnosis and management of heart diseases	Torbjørn Omland
17.11.2017	Fri Hagen 1+2	11.00 – 12.45	Biobanks, health registries and biomarker discovery	Predictive medicine: Use of health registries and epidemiology	Trude Eid Robsahm
17.11.2017	Fri Hagen 1+2	13.15 – 15.45	Organizational	Student seminars	All students

Week 2 Schedule; NCMM Molecular Medicine Research Course

Date	Day/Room	Time	Topic	Title	Lecturer
20.11.2017	Mon Hagen 1+2	09.00 – 10.45	Structure-based understanding of disease	Introduction to structural biology	J. Preben Morth
20.11.2017	Mon Hagen 1+2	11.00 – 12.45	Disease mechanisms	Metabolic diseases, diabetes	Pål Njølstad
20.11.2017	Mon Hagen 1+2	14.00 – 15.45	Tailored and personalized medicine	Drug sensitivity testing and personalized medicine in leukemia	Krister Wennerberg/ Bjørn Tore Gjertsen
21.11.2017	Tue Hagen 1+2	09.00 – 10.45	Drug targeting & pharmacology	Medicinal chemistry and drug development	Jo Klaveness
21.11.2017	Tue Hagen 1+2	11.00 – 12.45	Disease mechanisms	Patophysiology of excitatory diseases in the brain	Vidar Gundersen
21.11.2017	Tue Hagen 1+2	14.00 – 15.45	Disease mechanisms	Disease mechanism and risk factors of venous thrombosis	John-Bjarne Hansen
22.11.2017	Wed Hagen 1+2	09.00 – 10.45	- Biobanks, health registries and biomarker discovery - Advanced cell-based therapies	- Cancer biomarkers - T cell-based immunotherapy in cancer	- Rolf Skotheim - Johanna Olweus
22.11.2017	Wed Hagen 2	11.00 – 12.45	Biobanks, health registries and biomarker discovery	Use of population biobanks to understand human disease	Kristian Hveem
22.11.2017	Wed Hagen 2	14.00 – 15.45	Animal disease models	Disease mechanisms and animal models of cardiovascular disease	Andreas Romaine/Ida Lunde
23.11.2017	Thu Hagen 1+2	09.00 – 10.45	Disease mechanisms	- Inflammation - Gut and liver inflammation	- Arne Yndestad - Espen Melum
23.11.2017	Thu Hagen 1+2	11.00 – 12.45	Imaging disease	Multiphoton imaging of brain diseases	Erlend A. Nagelhus
23.11.2017	Thu Hagen 1+2	14.00 – 15.45	- Advanced cell-based therapies - Disease mechanisms	Stem cell treatment in diabetes - Student seminars	- Hanne Scholz - All students
24.11.2017	Fri Hagen 1+2	09.00 – 10.45	Biobanks, health registries and biomarker discovery	- Cancer biomarkers: from discovery to clinical practice - Student seminars	- Therese Sørliie - All students
24.11.2017	Fri Hagen 1+2	11.00 – 12.45	Tailored and personalized medicine	- Systems medicine approaches in infectious diseases - Systems medicine approaches in cancer	- Pia Abel zur Wiesch - Anthony Mathelier
24.11.2017	Fri Hagen 1+2	13.15 – 15.45	Organizational	Student seminars	All students

Contacts:

Course responsible: Kjetil Taskén and NCMM Group Leaders

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Contact for Programme and Student Seminars: see distribution on days below

Week 1

13.11.2017: Camila Esguerra

14.11.2017: Anthony Mathelier

15.11.2017: Irep Gözen

16.11.2017: Judith Staerk

17.11.2017: Nikolina Sekulic

Week 2

20.11.2017: Preben Morth

21.11.2017: Judith Staerk

22.11.2017: Elisa Bjørgo

23.11.2017: Preben Morth

24.11.2017: Anthony Mathelier