

NCMM Molecular Medicine Research Course

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

Time: November 14-25, 2016

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** (15h)
 - a. Disease mechanisms in cancer
 - Molecular pathogenesis of cancer (1h, Lars Akslen)
 - Tumor angiogenesis (1h, Lars Akslen)
 - Cancer genomics: from risk loci to gene networks and cancer phenotypes (1h, Toni Hurtado)
 - Cancer metabolism and possibilities for targeting (1h, Ian Mills)
 - Tumor immune evasion mechanisms (1h, Kjetil Taskén)
 - b. Inflammation (2 h, Guttorm Haraldsen/Espen Melum)
 - c. Patophysiology of excitatory diseases in the brain (2h, Vidar Gundersen)
 - d. Metabolic diseases, diabetes (2h, Pål R. Njølstad)
 - e. Epigenetics and genome organization (1h, Ragnhild Eskeland)
 - 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** (4h)
 - a. Introduction to use of animal disease models (1h, Judith Staerk)
 - b. Animal models in cancer (1h, Ludvig Munthe)
 - c. Disease mechanisms and animal models of cardiovascular disease (2h, Geir Christensen/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, TBA)
 - c. Cancer biomarkers (2h, Guro Lind)
 - 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, Paul R. Berg, Camila Esguerra)
 - d. Introduction to structural biology (2h, Preben Morth)
6. **Tailored and personalized medicine** (6 h)
- a. Introduction to Personalized Medicine (1h, Kjetil Tasken)
 - b. How may molecular information direct therapy choices in multidisciplinary cancer treatment (1h)
 - c. Drug sensitivity testing and personalized medicine (2h, Krister Wennerberg/ Bjørn Tore Gjertsen)
 - d. 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. Cell based therapies in medicine – Laboratory work flow and clinical practice in cancer treatment (2h, Gunnar Kvalheim)
 - c. T cell receptor engineering and T cell therapies in cancer (1h, Johanna Olweus)
 - d. Regenerative Medicine: Organ and cell transplantation, Tissue Engineering (2h Hanne Scholz/TBA)
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
14.11.2016	Mon Hagen 1+2	09.00 – 10.45	Organizational Animal disease models	- Information and organization - Introduction to use of animal models	Kjetil Taskén Judith Staerk
14.11.2016	Mon Hagen 1+2	11.00 – 12.45	Drug targeting & pharmacology	Basics of chemical biology and high-throughput screening	Paul R. Berg/ Camila Esguerra
14.11.2016	Mon Hagen 1+2	14.00 – 15.45	Drug targeting & pharmacology	Introduction to pharmacology G-protein-coupled receptors as drug targets	Finn Olav Levy
15.11.2016	Tue Hagen 1+2	09.00 – 10.45	Disease mechanisms Advanced cell-based therapies	- Inflammation - Stem cells and inducible pluripotent cells as basis for future therapies	- Guttorm Haraldsen - Judith Staerk
15.11.2016	Tue Hagen 1+2	11.00 – 12.45	Disease mechanisms	- Molecular pathogenesis of cancer - Tumor angiogenesis	Lars Akslén Lars Akslén
15.11.2016	Tue Hagen 1+2	14.00 – 15.45	- Disease mechanisms	- Cancer genomics: from risk loci to gene networks and cancer phenotypes - TBA	-Toni Hurtado - TBA
16.11.2016	Wed Hagen 1+2	09.00 – 10.45	Imaging disease	Introduction to imaging modalities	Lars Tore Gyland Mikalsen
16.11.2016	Wed Hagen 1+2	11.00 – 12.45	Biobanks, health registries and biomarker discovery	- TBA	TBA
16.11.2016	Wed Hagen 1+2	14.00 – 15.45	Disease mechanisms	Patophysiology of excitatory diseases in the brain	Vidar Gundersen
17.11.2016	Thu Hagen 1+2	09.00 – 10.45	Imaging disease	Imaging cardiovascular diseases in animal models and patients	Bill Louch/ Magnus Aronsen
17.11.2016	Thu Hagen 1+2	11.00 – 12.45	Disease mechanisms Animal disease models	- Inflammation: TBA - Animal models in cancer. The dog, the mouse and humanized mice	- Espen Melum - Ludvig Munthe
17.11.2016	Thu Hagen 1+2	14.00 – 15.45	Disease mechanisms	Metabolic diseases, diabetes	Pål Njølstad
18.11.2016	Fri Hagen 1+2	09.00 – 10.45	Biobanks, health registries and biomarker discovery	Use of population biobanks to understand human disease	Kristian Hveem
18.11.2016	Fri Hagen 1+2	11.00 – 12.45	Imaging disease	Imaging cancer	Siver Moestue
18.11.2016	Fri Hagen 1+2	14.00 – 15.45	Organizational	Student seminars	All students

Week 2 Schedule; NCMM Molecular Medicine Research Course

Date	Day/Room	Time	Topic	Title	Lecturer
21.11.2016	Mon Hagen 1+2	09.00 – 10.45	Tailored and personalized medicine	- Introduction to Personalized Medicine - Tumor immune evasion mechanisms	Kjetil Taskén Kjetil Taskén
21.11.2016	Mon Hagen 1+2	11.00 – 12.45	Tailored and personalized medicine	Drug sensitivity testing and personalized medicine in leukemia	Krister Wennerberg/ Bjørn Tore Gjertsen
21.11.2016	Mon Hagen 1+2	14.00 – 15.45	- Advanced cell-based therapies - Disease mechanisms	- T cell-based immunotherapy in cancer - Cancer metabolism and possibilities for targeting	- Johanna Olweus - Ian Mills
22.11.2016	Tue Hagen 1+2	09.00 – 10.45	Advanced cell-based therapies	Cell based therapies – Laboratory work flow and clinical practice	Gunnar Kvalheim
22.11.2016	Tue Hagen 1+2	11.00 – 12.45	Imaging disease	Multiphoton imaging of brain diseases	Erlend A. Nagelhus
22.11.2016	Tue Hagen 1+2	14.00 – 15.45	Drug targeting & pharmacology	Medicinal chemistry and drug development	Jo Klaveness
23.11.2016	Wed Hagen 1+2	09.00 – 10.45	Disease mechanisms	Disease mechanism and risk factors of venous thrombosis	John-Bjarne Hansen
23.11.2016	Wed Hagen 2	11.00 – 12.45	Disease mechanisms	- DNA repair mechanisms - Epigenetics and genome organization	- Hilde Nilsen - Ragnhild Eskeland
23.11.2016	Wed Hagen 2	14.00 – 15.45	Animal disease models	Disease mechanisms and animal models of cardiovascular disease	Andreas Romaine/Ida Lunde
24.11.2016	Thu Hagen 1+2	09.00 – 10.45	Structure-based understanding of disease	Introduction to structural biology	J. Preben Morth
24.11.2016	Thu Hagen 1+2	11.00 – 12.45	Biobanks, health registries and biomarker discovery	Cancer biomarker discovery - with focus on colorectal cancer	Guro Lind Anita Sveen
24.11.2016	Thu Hagen 1+2	14.00 – 15.45	Biobanks, health registries and biomarker discovery	Biomarkers for early diagnosis and management of heart diseases	Torbjørn Omland
25.11.2016	Fri Hagen 1+2	09.00 – 10.45	Advanced cell-based therapies TBA	- Pancreatic Beta Cell Replacement Therapy: Islet Transplantation - TBA	- Hanne Scholz - TBA
25.11.2016	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
25.11.2016	Fri Hagen 1+2	14.00 – 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

14.11.2015: Camila Esguerra

15.11.2015: Judith Staerk

16.11.2015: Toni Hurtado

17.11.2015: Toni Hurtado

18.11.2015: Judith Staerk

Week 2

21.11.2015: Anthony Mathelier

22.11.2015: Preben Morth

23.11.2015: Elisa Bjørgo

24.11.2015: Preben Morth

25.11.2015: Anthony Mathelier