

NCMM Molecular Medicine Research Course

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

Time: November 16-27, 2015

Place: Oslo Research 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: 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 (1 h, Guttorm Haraldsen)
 - c. Pathophysiology of excitatory diseases in the brain (2h, Vidar Gundersen)
 - d. Disease mechanisms and animal models of cardiovascular disease (2h, Geir Christensen/Ida Lunde)
 - e. Metabolic diseases, diabetes (2h, Pål R. Njølstad)
 - f. Epigenetics and genome organization (1h, Ragnhild Eskeland)
 - g. DNA repair mechanisms (1h, Hilde Nilsen)
2. **Animal models of disease** (4h)
 - a. Introduction to use of animal disease models (1h, Judith Staerk)
 - b. Autoimmune diseases and animal models (2h, Ole Petter Rekvig)
 - c. Animal models in cancer (1h, Ludvig Munthe)
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, Steinar Tretli)
 - c. Cancer biomarkers (2h, Guro Lind, Anita Sveen)
 - d. Biomarkers for early diagnosis and management of heart diseases (2h, Torbjørn Omland)
4. **Imaging disease** (8h)
 - a. Introduction to imaging modalities (2h, Caroline Stokke)

- b. Imaging cardiovascular diseases in animal models and patients (2h, Bill Louch/Magnus Aronsen)
 - c. Brain MR imaging in schizophrenia and bipolar disorder – the link between risk genes and behavioral phenotypes? (2h, Ole Andreassen)
 - d. Multiphoton imaging of brain diseases (2h, Erlend Nagelhus)
5. **Drug targeting and pharmacology** (6h)
- 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, Anne Jorunn Stokka)
6. **Structure-based understanding of disease and drug targeting** (2 h)
- a. Introduction to structural biology (2h, Preben Morth)
7. **Tailored and personalized medicine** (4 h)
- a. Introduction to Personalized Medicine (1h, Kjetil Tasken)
 - b. How may molecular information direct therapy choices in multidisciplinary cancer treatment (1h, Anne Hansen Ree)
 - c. Drug sensitivity testing and personalized medicine (2h, Krister Wennerberg/ Bjørn Tore Gjertsen)
8. **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, Einar Martin Aandahl, Hanne Scholz)
9. **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 |
|------------|------------------|---------------|---|---|--|
| 16.11.2015 | 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 |
| 16.11.2015 | 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 |
| 16.11.2015 | Mon Hagen 1+2 | 14.00 – 15.45 | Imaging disease | Introduction to imaging modalities | Lars Tore Gyland Mikalsen |
| 17.11.2015 | Tue Hagen 1+2 | 9.00 – 10.45 | Drug targeting & pharmacology | Introduction to pharmacology G-protein-coupled receptors as drug targets | Finn Olav Levy |
| 17.11.2015 | Tue Hagen 1+2 | 11.00 – 12.45 | Disease mechanisms | - Molecular pathogenesis of cancer - Tumor angiogenesis | Lars Akslen Lars Akslen |
| 17.11.2015 | Tue Hagen 1+2 | 14.00 – 15.45 | Disease mechanisms | - Cancer metabolism and possibilities for targeting - Cancer genomics: from risk loci to gene networks and cancer phenotypes | Ian Mills Toni Hurtado |
| 18.11.2015 | Wed Hagen 1+2 | 09.00 – 10.45 | Drug targeting & pharmacology | Medicinal chemistry and drug development | Jo Klaveness |
| 18.11.2015 | Wed Hagen 1+2 | 11.00 – 12.45 | Drug targeting & pharmacology | Basics of chemical biology and high-throughput screening | Anne J. Stokka/Camila Esguerra |
| 18.11.2015 | Wed Hagen 1+2 | 14.00 – 15.45 | Biobanks, health registries and biomarker discovery | Use of population biobanks to understand human disease | Kristian Hveem |
| 19.11.2015 | Thu Hagen 1+2 | 09.00 – 10.45 | Disease mechanisms Animal disease models | - Epigenetics and genome organization - Animal models in cancer. The dog, the mouse and humanized mice | - Ragnhild Eskeland - Ludvig Munthe |
| 19.11.2015 | Thu Hagen 1+2 | 11.00 – 12.45 | Animal disease models | Autoimmune diseases and animal models | Ole Petter Rekvik |
| 19.11.2015 | Thu Hagen 1+2 | 14.00 – 15.45 | Imaging disease | Imaging cardiovascular diseases in animal models and patients | - Bill Louch - Magnus Aronsen |
| 20.11.2015 | Fri Hagen 1+2 | 09.00 – 10.45 | Tailored and personalized medicine | - Introduction to Personalized Medicine - Tumor immune evasion mechanisms | Kjetil Taskén Kjetil Taskén |
| 20.11.2015 | Fri Hagen 1+2 | 11.00 – 12.45 | Disease mechanisms | Metabolic diseases, diabetes | Pål Njølstad |
| 20.11.2015 | 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 |
|------------|------------------|---------------|---|---|---|
| 23.11.2015 | Mon Hagen 1+2 | 09.00 – 10.45 | Imaging disease | Multiphoton imaging of brain diseases | Erlend A. Nagelhus |
| 23.11.2015 | Mon Hagen 1+2 | 11.00 – 12.45 | Imaging disease | Brain MR imaging in schizophrenia and bipolar disorder – the link between risk genes and behavioral phenotypes? | Ole A. Andreassen |
| 23.11.2015 | Mon Hagen 1+2 | 14.00 – 15.45 | Disease mechanisms | Patophysiology of excitatory diseases in the brain | Vidar Gundersen |
| 24.11.2015 | Tue Hagen 1+2 | 09.00 – 10.45 | Biobanks, health registries and biomarker discovery | - Predictive medicine: Use of health registries and epidemiology | Steinar Tretli |
| 24.11.2015 | Tue Hagen 1+2 | 11.00 – 12.45 | Biobanks, health registries and biomarker discovery | Biomarkers for early diagnosis and management of heart diseases | Torbjørn Omland |
| 24.11.2015 | Tue Hagen 1+2 | 14.00 – 15.45 | Biobanks, health registries and biomarker discovery | Cancer biomarker discovery - with focus on colorectal cancer | Guro Lind Anita Sveen |
| 25.11.2015 | Wed Hagen 1+2 | 09.00 – 10.45 | Disease mechanisms | Disease mechanisms and animal models of cardiovascular disease | Geir Christensen/Ida Lunde |
| 25.11.2015 | Wed Hagen 2 | 11.00 – 12.45 | Disease mechanisms Advanced cell-based therapies | - Inflammation - T cell-based immunotherapy in cancer | - Guttorm Haraldsen - Johanna Olweus |
| 25.11.2015 | Wed Hagen 2 | 14.00 – 15.45 | | TBA/ Student seminars | TBA/All students |
| 26.11.2015 | Thu Hagen 1+2 | 09.00 – 10.45 | Structure-based understanding of disease | Introduction to structural biology | J. Preben Morth |
| 26.11.2015 | Thu Hagen 1+2 | 11.00 – 12.45 | Advanced cell-based therapies | Cell based therapies – Laboratory work flow and clinical practice | Gunnar Kvalheim |
| 26.11.2015 | Thu Hagen 1+2 | 14.00 – 15.45 | Disease mechanisms Advanced cell-based therapies | - DNA repair mechanisms - Stem cells and inducible pluripotent cells as basis for future therapies | Hilde Nilsen Judith Staerk |
| 27.11.2015 | Fri Hagen 1+2 | 09.00 – 10.45 | Advanced cell-based therapies – Regenerative medicine: | - Transplantation - introduction; - Langerhans islet cell transplantation - Tissue Engineering | Einar Martin Aandahl / Hanne Scholz |
| 27.11.2015 | Fri Hagen 1+2 | 11.00 – 11.45 | Tailored and personalized medicine | How may molecular information direct therapy choices in multi-disciplinary cancer treatment | Anne Hansen Ree |
| 27.11.2015 | Fri Hagen 1+2 | 12.30 – 15.45 | Organizational | Student seminars | All students |

Contacts:**Course responsible: Kjetil Taskén and NCMM Group Leaders**

Kjetil Tasken, mobile: 90860759, email: kjetil.tasken@ncmm.uio.no

Ian Mills, mobile: 91865854, email: i.g.mills@ncmm.uio.no

J. Preben Morth, mobile: 41295885, email: j.p-morth@ncmm.uio.no

Toni Hurtado, mobile: 97613994, email: a.h.rodriguez@ncmm.uio.no

Judith Staerk, mobile: 94235011, email: judith.staerk@ncmm.uio.no

Admin: Berit Barkley, tel 22 84 05 49, mobile: 99 35 56 41, email: berit.barkley@biotek.uio.no

Elisa Bjørgo, tel 22 84 06 08, mobile ; 91 35 93 67, email : elisa.bjorgo@ncmm.uio.no

IT: Cheng Gang, mob 46262945; Melaku Tadesse: mob 91773924

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

Week 1

16.11.2015: Judith Staerk

17.11.2015: Ian Mills

18.11.2015: Toni Hurtado

19.11.2015: Ian Mills

20.11.2015: Nikolai Engedal

Week 2

23.11.2015: Elisa Bjørgo

24.11.2015: Judith Staerk

25.11.2015: Toni Hurtado

26.11.2015: Preben Morth

27.11.2015: Preben Morth