

UiT

THE ARCTIC
UNIVERSITY
OF NORWAY

DOCTORAL DEGREES 2018

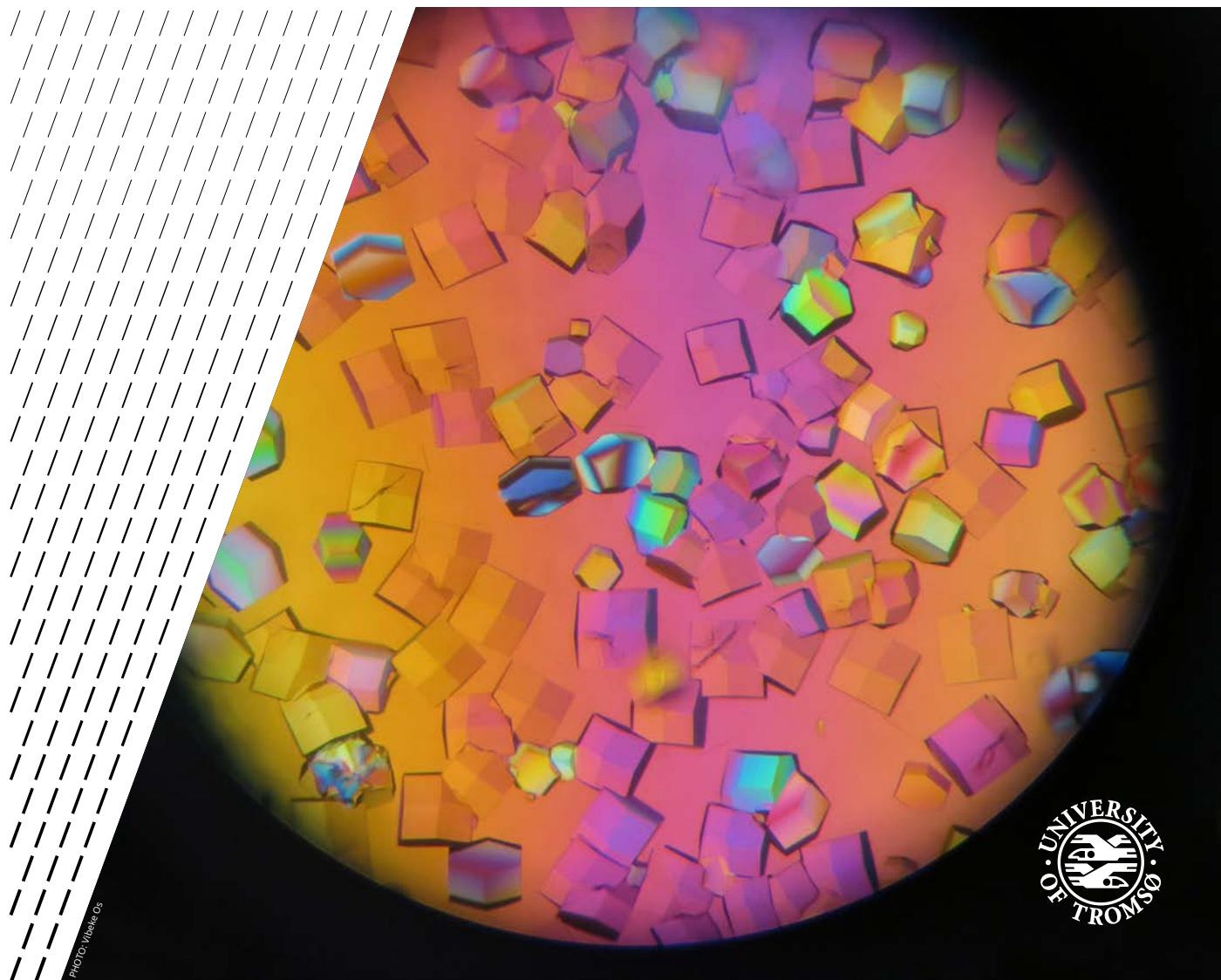


PHOTO: Yusele Os





Contact information

Faculty of Biosciences, Fisheries and Economics

postmottak@bfe.uit.no

+47 77 64 60 00/+47 77 64 60 20

Faculty of Engineering Science and Technology

postmottak@jvt.uit.no

+47 76 96 62 46

Faculty of Health Sciences

postmottak@helsefak.uit.no

+47 77 64 46 01/+47 77 64 46 10

Faculty of Humanities, Social Sciences and Education

postmottak@hsl.uit.no

+47 77 64 43 00

Faculty of Law

postmottak@jus.uit.no

+47 77 64 41 97/+47 77 64 47 75

Faculty of Science and Technology

postmottak@nt.uit.no

+47 77 64 40 01/+47 77 64 47 65

The Arctic University Museum of Norway and Academy of Fine Art

postmottak@kunstfak.uit.no

+47 77 66 03 04/+47 77 61 88 99

118 new doctoral degrees in 2018

A total of 118 doctoral degrees were awarded at UiT The Arctic University of Norway in 2018, the same number as in 2017. Of these, 67 candidates defended their doctoral thesis in the spring semester and 51 in the autumn semester. Sixty one women and 57 men defended their doctorate at UiT, while 51 doctors came from 25 different countries outside Norway.

In 2018, six of the university's seven faculties offered PhD programmes. The number of doctors were distributed as follows (2017 in parentheses):

Faculty of Biosciences, Fisheries and Economics: 13 (20)

Faculty of Engineering Science and Technology: 2 (1)

Faculty of Health Sciences: 65 (55)

Faculty of Humanities, Social Sciences and Education: 13 (17)

Faculty of Law: 3 (3)

Faculty of Science and Technology: 22 (22)

A doctoral degree is the highest academic degree awarded by Norwegian educational institutions. The doctoral degree qualifies for research work of high academic level and for work in the community requiring scientific insight. In order to be admitted to a PhD programme, it is a prerequisite that the student has completed a master's degree or a programme of professional study.

The PhD programme is a three-year full-time programme. Some scholarships are for four years, where the doctoral study constitutes 75% and other duties such as teaching, etc. amounts to 25%. Many of the PhD students are affiliated with a research school. Doctoral degrees organised in this way are the most common. This leads to the degree of Philosophiae Doctor (PhD). The PhD studies are financed either by grants from UiT or by external funding, e.g. from The Research Council of Norway.

It is also possible to work outside an organised doctoral programme and attain the degree of Doctor Philosophiae (Dr.Philos). The Dr.Philos. degree is an independent degree without supervision and organized training. The degree is achieved after evaluation of a scientific thesis, trial lecture and defence.

In 2018, 117 candidates attained the PhD degree and one attained the Dr.Philos. degree. In addition, one person defended her project work through The Norwegian Artistic Research Programme. The programme is equivalent to a PhD degree.

Most theses are published in Munin, which is UiT's digital knowledge archive. You can search for the candidate's name on <http://munin.uit.no>. Read more about research at UiT on www.uit.no/forskning

Doctoral degrees in 2018 at UiT The Arctic University of Norway

Frode Adolfsen

Philosophiae doctor

Alcohol prevention among adolescents – A study on determinants and parental influence

Many adolescents try alcohol during adolescence. For some of them, it has unfortunate consequences for both themselves and their family. Many schools are working on various alcohol programmes that intend to prevent alcohol use and postpone the debut of alcohol among adolescents. The evaluation of the youth & alcohol program has not shown effects based on the objectives of the program. There are various risk factors associated with adolescents starting to drink alcohol. Such knowledge together with alcohol prevention work for parents has proven to be positive.

Page link to thesis: <http://hdl.handle.net/10037/12289>

Faculty of Health Sciences
Regional Centre for Child and Youth Mental Health and Child Welfare
9 March 2018

Tatiana Nikolaevna Ageeva

Philosophiae doctor

Live-storage of wild mature cod (Gadus morhua L.) without feed supply. Effects on biological and quality properties

The overall aim of this project was to obtain better understanding of how live-storage without feeding affects wild mature Atlantic cod (*Gadus morhua* L.) and quality of products obtained from such cod. Atlantic cod were live-stored without feeding for 82 days. The results showed that the cod were spawning during the first 54 days in captivity, leading to a great loss of total weight. The main changes in gutted weight were detected in the post-spawning period. Females were affected more severely by feed deprivation than males. This sexual dimorphism became more evident towards the termination of the trial, when females had lost more total and gutted weights, liver mass and had

a significantly lower muscle protein concentration than males. Feed deprivation for 23 days reduced “pre-rigor” time from 29 to 17 h while further feed deprivation did not reduce this time significantly. Feed deprivation resulted in just a small reduction in contraction of *pre rigor* made products. The tail products, especially made *pre rigor*, contracted more and had higher drip loss than loins and whole fillets. The sensory profile of fillets changed during the feed deprivation. Most fillets had an unpleasantly soft texture, atypical white colour and less fresh sea odour at day 82. The results in this thesis suggest that the tolerable period of live-storage without feeding of wild mature cod is approximately 54 days.

Page link to thesis: <http://hdl.handle.net/10037/13811>

Faculty of Biosciences, Fisheries and Economics
The Norwegian College of Fishery Science
28 September 2018

Sheikh Mashhood Ahmed

Philosophiae doctor

Childhood disadvantage, and health and well-being in adulthood

Several previous studies from many parts of the world have shown that childhood disadvantages are associated with lower health and well-being in adulthood. However, the life course mechanisms of childhood disadvantages have rarely been investigated in Norway. The aim of this study was to assess the mediating role of education level, perceived social support, and behavioural factors in the association between childhood disadvantages, and health and well-being in adulthood. Self-reported, questionnaire-based data from two waves of the Tromsø Study (IV and VI) was used in this study. We used ordinary least square regression models, and Poisson regression models to assess mediation with the difference-in-coefficients method. Low parental education, low self-rated childhood financial conditions, psychological abuse, and physical abuse in childhood were associated with increased psychological distress, and lower health and well-being in adulthood. Childhood abuse

and education mediated some of the effect of childhood socioeconomic disadvantage on health and well-being in adulthood. Perceived social support and behavioural factors mediated some of the association between childhood abuse and health, and well-being in adulthood.

Faculty of Health Sciences

Department of Community Medicine

11 October 2018

Clement Olufemi Ajayi

Philosophiae doctor

Determinants of Staphylococcus aureus Colonization and Infection. “Exploring the Role of Cell Wall Anchored Proteins in Adhesion and Immune Evasion”

Staphylococcus aureus (*S. aureus*) is responsible for many human infections ranging from mild to life-threatening diseases. Challenges with *S. aureus* have been further worsened by its antibiotic resistance development. One strategy of fighting *S. aureus* disease is to disarm the bacteria, thereby reducing its ability to cause disease. This requires a deep understanding of how the bacterial proteins (“weapon”) works and causes diseases. The study showed that *S. aureus* protein called serine-aspartate containing protein D (SdrD) can act as “glow” and increase the bacteria’s ability to bind to human skin cells. However, there are some variations within the sequences of *S. aureus* SdrD, which might influence this function, suggesting that not all strains have the same ability to bind to the same skin cell type. Another bacterial “weapon” called *S. aureus* surface protein G can also help the bacteria to bind to skin cells. The findings of this study will contribute to understanding *S. aureus* interaction with humans and help in the development of alternative therapeutic strategies.

Page link to thesis: <http://hdl.handle.net/10037/14070>

Faculty of Health Sciences

Department of Medical Biology

9 November 2018

Sundus Akhter

Philosophiae doctor

Synthesis and inhibitor design of carbapenemase inhibitors

Antibiotic resistance occurs when bacteria arm themselves with resistance mechanism and, as a result, they are no longer affected by the antibiotics. Over the past decades, antibiotic resistance has become a major concern for the whole world. Moreover, in the last few years, we have seen the global spread of carbapenem resistance among Gram-negative bacteria. Carbapenems are broad-spectrum β -lactam antibiotics that are considered as the best drugs and the last hope against multi-drug resistant bacteria. To maintain an upper hand against the rise of antibiotic-resistant bacteria, a continuous supply of new antibiotics or revival of existing antibiotics is crucial. The combination of antibiotics with inhibitors is a proven strategy for revival of β -lactams antibiotics. In this project, the researcher designed and synthesized small libraries of inhibitors with an ultimate aim to use them together with antibiotics which can restore the activity of the β -lactam antibiotics. All the inhibitor libraries show interesting results. Overall, the studies described in the thesis identified potent thiol-based and NH-triazole based inhibitors against metallo-carbapenemase, in addition to various fragments and their improved analogs against serine-carbapenemase.

Page link to thesis: <http://hdl.handle.net/10037/12987>

Faculty of Science and Technology

Department of Chemistry

24 May 2018

Anita Amundsen

Philosophiae doctor

***Supporting doctor-patient communication in oncology:
Providing communication aids to cancer patients in an
outpatient clinic***

Good communication is essential between patients diagnosed with cancer and their physicians, and communication aids can assist patients in obtaining the necessary information about their disease and treatment options. In this study, the research examined the effect of two communication aids: A question prompt list (QPL) and a consultation audio record (CAR) for the patients to bring home. A QPL is a list of questions patients may want to ask their physician. Patients that used the QPL asked more questions about their prognosis, the disease and the quality of treatment than those who did not receive it, but the research did not find any relationship between using a QPL and shared decision making. Providing patients with the QPL increased the consultation length, but it did not affect negatively on any patient outcomes. Patients rated both the QPL and the CAR positively and the researcher believes these communication aids can favour patient-centred care, which is essential in high-quality health care.

Page link to thesis: <http://hdl.handle.net/10037/14081>

Faculty of Health Sciences
Department of Clinical Medicine
10 October 2018

Ana Sofia Albuquerque Lima Aniceto

Philosophiae doctor

***Unmanned aerial vehicles for marine mammal surveys in
arctic and sub-arctic regions***

How can scientists use drones to study whales? Whales travel between vast areas and therefore require effective monitoring schemes that can inform management and conservation decisions. For mitigation of offshore operations, drones are proving to be an efficient tool to

understand, and possibly minimize, the potential impacts of these activities on marine resources. In such conditions, fixed-wing powered drones are the best option given their long operational range. Additionally, in the Arctic there are many areas of difficult access and the conditions can make it challenging to conduct surveys using traditional methods. Drones seem to be more cost-efficient and safer to operate than other methods, particularly for marine mammal surveys. To investigate how fixed-wing drones perform in different conditions, the researcher conducted 12 field trials during summer and winter in Tromsø (Northern Norway). The drones followed pre-designed tracks and took consecutive photos throughout the entire duration of the flights. After the flights, images were classified for environmental conditions, animal presence, and presence/absence certainty. The results in this study highlight the need for scientists to investigate not only how the technology has an impact on how we gather data but also how the study subjects can affect the amount and quality of data that we collect.

Page link to thesis: <http://hdl.handle.net/10037/14008>

Faculty of Science and Technology
Department of Geosciences
19 June 2018

Lene Antonsen

Philosophiae doctor

***Modelling Saami languages. Construction and adaptation
to real-world linguistic issues (Sámegielaide modellieren –
huksen ja heiveheapmi duohta giellamáilbmái)***

Saami languages and other circumpolar indigenous languages have not the text resources which are necessary for using statistical methods, which are the basis for language technology for majority languages. The thesis deals with whether grammatical language modelling is an appropriate response to the need for language technology for these languages. The grammatical language models under investigation are built as Finite state transducers (FST). The thesis examines the challenges of building such



grammatical models for Saami languages and adapting them to real-world linguistic issues. I show how Saami grammatical language models can be implemented in various end-user programs, and I have examined a number of ways both to limit and to expand the language models. With the appropriate infrastructure available, which also makes it possible to port results achieved for the Saami language to other languages as well, the FST approach places advanced user applications within the reach of minority languages with complex morphology, meagre corpus resources, and few speakers.

Page link to thesis: <http://hdl.handle.net/10037/12884>

Faculty of Humanities, Social Sciences and Education
Department of Language and Culture
26 June 2018

Nadia Arshad

Philosophiae doctor

Venous thromboembolism: incidence, recurrence and mortality

Venous thromboembolism (VTE) is a collective term for blood clots in the deep veins (DVT) or in the lung arteries (pulmonary embolism). VTE is a serious and potentially life-threatening disease. In this project, more than 26,000 participants from the 4th Tromsø study were followed. The rates of VTE increased by 27% from 1996 to 2012. This was mainly due to an increase in pulmonary embolism, which is the most severe form of VTE. Furthermore, the rates of VTE recurrence and death remained high in VTE patients, especially in the first year after the VTE. Among patients with hospital-related VTE, the reason for hospitalization appeared to have a high impact on the recurrence risk. Patients who developed a VTE after hospitalization for medical illness had a high risk of VTE recurrence. A history of myocardial infarction was associated with increased risk of VTE recurrence particularly in women. Our findings indicate that VTE is still a major health concern. Efforts should be made to identify new risk factors for VTE in the population in order to improve prevention of the disease.

Page link to thesis: <http://hdl.handle.net/10037/13828>

Faculty of Health Sciences
Department of Clinical Medicine
29 August 2018

Lindis Merete Bjoland

Philosophiae doctor

Radar studies of plasma parameters in the polar cap and the auroral zone

The European Incoherent SCATter (EISCAT) radars, located in Tromsø and in Longyearbyen, provide a unique opportunity to study large-scale features of the polar ionosphere. In this dissertation, the accumulated database of EISCAT data was used to study variations in the ionosphere on several time-scales. A comparison between the EISCAT data and the most widely used ionospheric model, the IRI model, was conducted. This comparison showed that the IRI model was biased towards an underestimation of the electron density in the polar ionosphere. Furthermore, long-term variations in the peak height of the conductivity and ion temperature were studied, and an attempt was made to search for long-term trends in these parameters. Lastly, regions of depleted electron density and their dependence on geomagnetic activity were studied. This type of depletion region was observed in the early morning sector above Longyearbyen, and the region seemed to expand as the geomagnetic activity increased.

Faculty of Science and Technology
Department of Physics and Technology
11 April 2018

Mathias Bockwoldt

Philosophiae doctor

Sequence-Based Analysis of Eukaryotic Protein Evolution

All life on Earth has its genetic information, the blueprint of its working, stored as nucleic acid macromolecules, DNA or RNA. This information consists of long strings of four different bases that together define the shape and function of each individual from the smallest bacterium to the greatest blue whale. Mutations are changes in these nucleic acid strings that are inherited by the offspring, changing its properties slightly compared to the parents,

until after many generations, a new species may be spawned. In this thesis, I analysed the fate of mutations in genes of proteins that do not have a defined three-dimensional structure. Furthermore, I analysed two biological pathways, one in plants and one present in all living organisms. By investigating mutations in the same gene of different species, I could trace the evolution of these pathways. The results help to deepen our understanding of evolutionary mechanisms and potentially contribute to drug development.

Faculty of Biosciences, Fisheries and Economics
Department of Arctic and Marine Biology
12 October 2018

Mariana da Silveira Ramos Esteves

Philosophiae doctor

Collapse of a marine-based ice sheet

During the Last Glacial Maximum (~21,000 years before present), the Barents Sea was covered by a large marine-based ice sheet, where the majority of its bed is located below sea level. The Barents Sea Ice Sheet has similar characteristics to the West Antarctic Ice Sheet and thus is a good palaeo-analogue to better understand marine-based ice sheet response to changes in climate. The sediments and landforms left behind by this former ice mass can be used to reconstruct the processes that occurred at its bed throughout the deglaciation, developing our understanding of the interactions between ice dynamics and bed processes. This doctoral thesis provides comprehensive insights into the ice retreat patterns in the central Barents Sea, the character of subglacial meltwater systems and ice dynamic influences on the hydrological networks observed in this area. Furthermore it provides the first sediment record from within potential palaeo-subglacial lakes in the Barents Sea.

Faculty of Science and Technology
Department of Geosciences
16 August 2018

Lene Gjelseth Dalbak

Philosophiae doctor

Diagnostic tests for lung and heart diseases in primary care – from quality assurance to epidemiology

A simple test that calculates the oxygen saturation in arterial blood (pulse oximetry) and a lung function test (spirometry) is increasingly used in general practitioner (GP) practices in Norway. Pulse oximetry takes approx. 1 minute to complete and is not painful to the patient. Low values may indicate heart and/or lung disease. Spirometry is used in the diagnosis and follow-up of lung diseases. This thesis is based on three studies of adult patients/individuals. In the first two, patients with stable asthma and/or COPD participated from the GPs' offices, and in the last, individuals participate from the sixth (2007/2008) survey of the Tromsø Study. Spirometry was found to be useful for identifying overuse of inhaled corticosteroids in patients with obstructive lung disease. Low oxygen saturation was associated with reduced lung function, coronary heart disease and echocardiographic measurements suggesting diastolic heart failure. Upon detection of low oxygen saturation, the GP should consider the treatment of existing lung disease and, in addition, look for co-morbidities, including undiagnosed heart disease.

Page link to thesis: <http://hdl.handle.net/10037/14068>

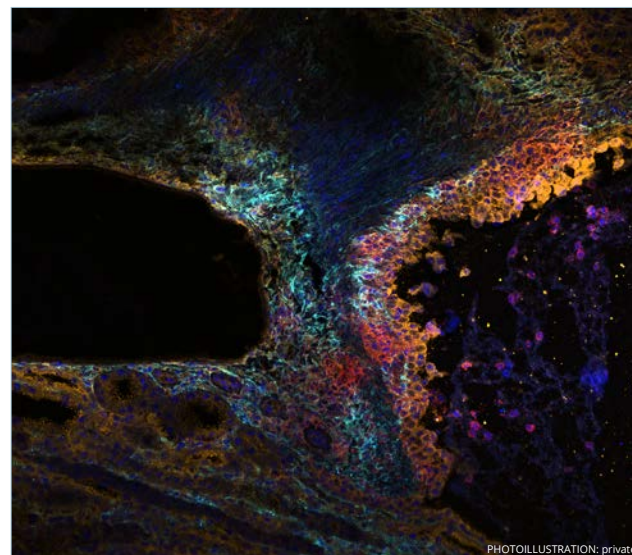
Faculty of Health Sciences
Department of Community Sciences
2 November 2018

Seyed Esmaeil Dorraji

Philosophiae doctor

Tertiary Lymphoid Structures (TLS) in Lupus Nephritis Induction, formation, and detection

Chronic kidney diseases such as lupus nephritis (LN) are currently not curable and require a lifetime of treatment. In this thesis, the induction and formation of kidney-specific tertiary lymphoid structures (TLS) at the transcriptome level, as well as the molecular and cellular levels in lupus-prone mice was investigated. The gene profile, cell



composition and structure of kidney-specific TLS in lupus-prone mice are similar to the lymph node in an active stage of the disease. The genes that were upregulated during the development of LN were mostly involved in attraction and activation of immune cells, while the downregulated genes were involved in metabolic processes. In kidney-specific TLS, distinct T cells zones and germinal center-like structures with supporting follicular dendritic cells networks were observed along with the local development of plasma cells producing autoantibodies. In an in vitro inflammatory milieu, mesenchymal stem cells (MSCs) could promote inflammation by expressing high levels of proinflammatory cytokines, adhesion molecules, and homeostatic chemokines. In conclusion, the formation of TLS may be an important event during the progression of LN. The TLS formation in kidneys of SLE patients may be a target for new early detection methods and treatment strategies of Ln.

Faculty of Health Sciences
Department of Medical Biology
8 June 2018

Trygve Sølberg Ellingsen

Philosophiae doctor

Red cell distribution width and risk of venous thromboembolism

Venous thromboembolism (VTE) is the formation of a blood clot in the veins. VTE is a serious disease affecting 1-2 per 1000 individuals each year. Novel biomarkers might help diminish the health burden of VTE. Red cell distribution width (RDW) is a measure of the variability of size of the red blood cells. In recent years, RDW has been associated with risk of several diseases, via unknown underlying mechanisms. The main aim of this thesis was to investigate whether RDW is associated with future risk of VTE and mortality among VTE patients, and whether underlying iron deficiency or intermediate development of other diseases may explain the association. Using data from the Tromsø Study, the researcher found that RDW was associated with future risk of VTE. The association could not be explained by underlying iron deficiency. Further, RDW was associated with future risk of cancer, but intermediate development of cancer, stroke or myocardial infarction did not explain the association between RDW and VTE.

Page link to thesis: <http://hdl.handle.net/10037/12848>

Faculty of Health Sciences
Department of Clinical Medicine
11 June 2018

Agnethe Eltoft

Philosophiae doctor

C-reactive protein and other circulating biomarkers in carotid atherosclerosis and cardiovascular disease. The Tromsø Study 1994-2013

Cardiovascular disease (CVD) is the leading cause of death and morbidity worldwide. Atherosclerosis is the underlying cause of most CVD events. The aim of this study was to investigate the relationship between the

inflammatory marker C-reactive protein (CRP) and other markers in blood with the progression of atherosclerosis, as well as clinical events such as myocardial infarction (MI) and ischemic stroke (IS). The Tromsø Study is a population-based cohort study where participants have attended repeated health surveys in the period 1994-2008. The study showed that CRP was associated with the presence of carotid plaque and total plaque area in cross-sectional examinations. Baseline CRP was not associated with novel plaque formation or plaque progression. Both CRP and carotid total plaque area were associated with higher risk of future MI and IS. Individuals who had both elevated CRP and large carotid plaques had the highest risk of MI and IS. Carotid ultrasound examination and CRP level added predictive value beyond traditional risk factors for identification of individuals with increased CVD risk. The inflammatory cytokine interleukin-6 was associated with plaque progression after six years of follow-up, suggesting that interleukin-6 may be a useful marker to identify patients with unstable plaque in a middle-aged general population.

Page link to thesis: <http://hdl.handle.net/10037/14089>

Faculty of Health Sciences
Department of Clinical Medicine
7 November 2018

Sigrid Margareta Engen

Philosophiae doctor

Local support for biodiversity conservation in community-based protected area governance

Community-based conservation has been proposed as a solution to environmental problems based on the idea that if conservation and development can be achieved simultaneously then the interests of both can be served. The Norwegian government decided in 2009 to employ a community-based conservation strategy for protected areas in Norway, and this thesis explores whether the reform has led to less local resistance towards conservation and reduced threats to biodiversity. The results show that

community-based conservation has accommodated local needs through a less strict conservation practice on private land. Local residents living near the protected areas seemed to accept the idea of restricting residential and industrial development inside protected areas, whereas a large proportion of key local stakeholders are less supportive of prioritizing conservation over economic development. These results call for greater attention to stakeholder participation and conservation impact assessments.

Page link to thesis: <http://hdl.handle.net/10037/12971>

Faculty of Biosciences, Fisheries and Economics
Department of Arctic and Marine Biology
13 June 2018

Ken Harald Enoksen

Philosophiae doctor

Taming the cod – the emergence of the Norwegian cod farming industry. An account of collective entrepreneurship (Å temme torsken – fremveksten av norsk torskeoppdrettsnæring. En beretning om kollektivt entreprenørskap)

The overall theme of this thesis is the emergence of new industries. By analysing the history of Norwegian cod farming, from the first ideas about cod farming through to the establishment of the world's first publicly listed cod farming company – Codfarmers with the ticker "COD" on the Oslo Stock Exchange – this thesis contributes new knowledge to the "knowledge gap" that exists within the field of new/emerging industries and innovation theory. The research question for this thesis is: How was the cod farming industry initiated, stabilised and eventually seemingly consolidated as a new industry? The thesis shows that the path of the cod farming industry from fiction to fact underwent a lengthy and time-consuming translation process, in which many different components eventually came together in more or less productive and stable constellations. The history of the cod farming industry shows that on the one hand the industry had to work to understand itself as an industry while, on the



PHOTO: Terje van der Meeren Havforskningsinstituttet

other hand, the industry increasingly understood the challenges it faced. These processes occurred in parallel and in interaction. The industry was thus constituted in the process of handling its own challenges. The history also shows that the domestication process of the cod was characterised by mutual adjustments. On the one hand, the people had to learn to know the fish and create favourable conditions in which it could grow and thrive. At the same time, the fish had to adapt to the people and the new conditions.

Page link to thesis: <http://hdl.handle.net/10037/12276>

Faculty of Biosciences, Fisheries and Economics
The Norwegian College of Fishery Science
19 March 2018

Eirin Esaiassen

Philosophiae doctor

Antibiotics and probiotics to neonates-Adverse effects, impact on gut microbiota and antibiotic resistance, and Bifidobacterium pathogenicity

Antibiotics are the most commonly prescribed drugs in neonatal intensive care units. Changes in the gut flora, often induced by antibiotics, are associated with development of severe gut inflammation in preterm infants. Probiotics are live bacteria associated with health benefits in humans and are associated with reduced risk of gut inflammation in preterm infants. The main objective of this thesis was to systematically study the literature on potential side effects of antibiotic therapy in newborn infants, and to study the gut flora in preterm infants receiving probiotic therapy. The study also looked at the potential of *Bifidobacterium*, a commonly used group of probiotic bacteria, to cause infections in humans, including preterm infants. The findings support the potential of probiotics to reduce the spread of antibacterial resistance and thereby infections caused by antibiotic resistant bacteria. *Bifidobacterium* has the potential to cause infections in humans with a weakened immune system and may cause blood stream infections. However, specific disease-causing characteristics like those found in more dangerous bacteria were not found in *Bifidobacterium*.

Faculty of Health Sciences
Department of Clinical Medicine
16 February 2018

Carly Faber

Philosophiae doctor

Mountain building processes in the northern Norwegian Caledonides – Examining Caledonian continental collision using a combination of structural mapping, phase equilibrium modelling and geochronology

The Caledonian mountains were formed when the Baltica and Laurentian continents collided around 450-400 million

years ago. They are at an erosional level today such that they preserve processes that occur deep under mountains, such as the Himalaya. As two continents collide, they shorten and deform, one continent is thrust beneath the other (subduction), and they undergo metamorphism when they are subject to elevated temperatures and pressures. By studying the timing, pressure and temperature conditions of preserved metamorphism in rocks, it is possible to infer tectonic processes that occur deep in the colliding continents. This study combines mapping of deformation structures, modelling of metamorphic pressures and temperatures, and isotopic age dating in Northern Norway. The rocks preserve continental collision between 440-430 million years ago. An unusual metamorphic evolution implies an early heat source suggesting either subduction of a back-arc or break-off of the subducted slab.

Page link to thesis: <http://hdl.handle.net/10037/12201>

Faculty of Science and Technology
Department of Geosciences
17 January 2018

Wesley Randall Farnsworth

Philosophiae doctor

Holocene glacier history of Svalbard: Retracing the style of (de-)glaciation

Understanding Svalbard's Holocene (the last 11,700 years) glacier history helps with predicting future changes in Arctic climate and sea level. Past climatic conditions can be estimated by mapping where and when glaciers covered Svalbard and the surrounding waters. Today, over half of Svalbard is covered by glaciers; while nearly the entire Svalbard archipelago was glaciated at the start of the Holocene. Due to warm ocean and air temperatures during the Mid Holocene, glaciers retreated and likely covered ~25% of Svalbard. During the last 4,500 years, a combination of air / ocean temperature and precipitation has allowed glaciers to grow in size, covering nearly ~70% of Svalbard. During the last century, Svalbard glacial retreat

has been extensive and rapid. Glaciers have exhibited a complex pattern of ice-loss similar to the start of the Holocene, during the deglaciation of the Last Ice Age. This furthers our understanding of how Arctic glaciers respond to a warming environment.

Page link to thesis: <http://hdl.handle.net/10037/14378>

Faculty of Science and Technology
Department of Geosciences
6 December 2018

Jon Widding Fjalstad

Philosophiae doctor

Antibiotic Therapy for Neonatal Sepsis – Studies on epidemiology, gentamicin safety, and early adverse effects of antibiotics

Neonatal sepsis is a rare, but potentially deadly bacterial infection that affects infants in the first month of life. The study investigated neonatal sepsis and antibiotic use in all term born infants in Norway over a three-year period. It showed that 2% of all Norwegian infants received antibiotics in their first week of life, and only half of them were ever diagnosed with an infection. Gentamicin is an antibiotic that has been linked with hearing loss and kidney failure in adults. This antibiotic was studied in the neonatal unit in Tromsø and found to be safe for infants. Potential side-effects of antibiotic treatment were also examined in a systematic review. Antibiotics given to preterm infants can increase the risk of necrotizing enterocolitis (a very severe gut infection) and death. Some antibiotics increase the risk of serious fungal infection. Overuse of antibiotics causes increased development of antibiotic resistance and different changes in gut bacteria.

Page link to thesis: <http://hdl.handle.net/10037/13362>

Faculty of Health Sciences
Department of Clinical Medicine
25 May 2018

Richard Fjellaksel

Philosophiae doctor

Development and evaluation of gonadotropin releasing hormone antagonists as SPECT radiotracers

Alzheimer's disease (AD) is the most dominant reason of dementia. It is estimated that as many as 131.5 million people worldwide will be affected by dementia in 2050. Currently, there is no cure for AD. Researchers are looking for new treatments to alter the course of the disease and improve the quality of life for people with AD. An early overexpression of the gender hormone gonadotropin-releasing hormone (GnRH) has been linked to AD. This thesis focuses on the connection between GnRH and AD. The main aim was to develop radiotracers to GnRH, for use in single photon emission computed tomography and positron emitting tomography. These studies have resulted in several promising radiotracers with suitable characteristics for clinical use. The chosen radiotracers will further undergo preclinical and clinical trials to discover their true potential in labelling GnRH to investigate its role in AD and possibly be better diagnostic tools for early detection and follow up of patients with AD.

Faculty of Health Sciences
Department of Clinical Medicine
24 May 2018

Jacob Oscar Fransner

Philosophiae doctor

Late Weichselian ice-sheet dynamics and deglaciation history of the northern Svalbard margin

Marine terminating ice sheets are capable of rapidly transferring ice from their interiors to their margins. In order to increase our understanding of the interaction between climate, sea level change and the behaviour and presence of glaciers, the study of marine-based ice sheets becomes important. This study focuses on the configuration, timing and deglaciation of the Svalbard-Barents Sea Ice Sheet (SBIS) on the continental shelf and

slope north of Nordaustlandet during the late Weichselian. The main results show that significant amounts of Weichselian glacial sediments have accumulated off Kvitøya Trough while such sediments are absent off the neighbouring Albertini Trough. The glacial sediments in Albertini Trough are instead trapped at the continental shelf edge due to local differences in structural geology. Deglaciation of Albertini Trough was relatively slow, and was interrupted by reactivations of the ice stream. Carbon-14 dates indicate that the deglaciation rate of the continental shelf increased over time. The increasing sea level during deglaciation probably played an important role for the behaviour of deglaciation, since the ice front in deeper areas became floating and was affected by calving there. The complete deglaciation of the continental shelf north of Nordaustlandet took approximately 8000 years.

Page link to thesis: <http://hdl.handle.net/10037/12797>

Faculty of Science and Technology
Department of Geosciences
4 May 2018

Thibaud Freyd

Philosophiae doctor

Allosteric modulation of GABAergic and glutamatergic metabotropic receptors

The GABA_B receptor (GABA_B-R) and the metabotropic glutamate receptor 1 (mGlu₁-R) are drug targets for the treatment of central nervous system disorders and belong to the same family of cellular receptors. The first part of the thesis presents a successful drug discovery campaign to identify new potential drugs for the GABA_B-R. Using theoretical 3D structures of the GABA_B-R and information from already known ligands, 55 potential compounds were selected within a database of 8 million commercial compounds. The experimental testing confirmed that 8 of the identified compounds act as allosteric modulators for the GABA_B-R. The last part of the thesis is a molecular dynamics study of mGlu₁-R bound to different compounds. The crucial roles of water molecules were observed and linked to the

activity of the compounds. An intracellular water channel within the receptor was identified. The results could be utilized in future design and development of drugs targeting GABA_B-R and mGlu₁-R.

Page link to thesis: <http://hdl.handle.net/10037/13978>

Faculty of Health Sciences
Department of Medical Biology
10 September 2018

Oxana Gavriluk

Philosophiae doctor

Systems Epidemiology Approach in Endometrial Cancer. The NOWAC Study

Endometrial cancer (EC) is one of the most common gynecologic cancers with extensively rising incidence worldwide. Norway is among the countries with the highest rates of EC. The main aim of this PhD project was to evaluate the risk factors that mostly contribute to the development of EC in Norwegian women, and to assess whether these risk factors have any influence on blood gene expression prior diagnosis. The Norwegian Women and Cancer Study (NOWAC) is a prospective cohort study with approximately 172,000 female participants recruited from the entire Norway since 1991. Further, a subset of approximately 50,000 women from the NOWAC cohort were randomly recruited to NOWAC Postgenome Cohort and provided blood samples. In conclusion, the main findings of this work demonstrate the complexity of endometrial carcinogenesis and emphasize necessity of further investigations on both reproductive and lifestyle risk factors combined with translational research approaches. The results showing gene expression changes connected to long-term protective effect of parity might serve a solid foundation for further investigations on specific pregnancy-related mechanisms preventing EC development.

Page link to thesis: <http://hdl.handle.net/10037/14380>

Faculty of Health Sciences
Department of Community Medicine
13 December 2018

Maria Goes

Philosophiae doctor

Extracting human security from the Shtokman gas field. Security assemblage in the Murmansk region (2007-2012)

Security studies came of age in International Relations during the Cold War and mainly dealt with state sovereignty and border protection. In this thesis, I discuss human security in light of a particular case of oil and gas industry in the Murmansk region (Russia), contributing to the theoretical discussion related to the role and place of human security in security studies. My analysis of the security assemblage in the Murmansk region (2007-2012) shows that human security appears in the context of a broader security agenda (which includes state, energy, military, environmental, and economic security) and becomes an important issue at the regional level. I conclude that human security can be excluded from the political agenda at the national level but still be embedded in local security practices. This empirical finding allows me to make a theoretical claim relating to the place of human security in security studies. I conclude that conceptual disagreements on human security are equally valuable since they highlight different aspects of the concept and reveal numerous connections. I argue that a human security approach not only challenges the idea of a unitary actor within security studies, but the system of knowledge as well.

Page link to thesis: <http://hdl.handle.net/10037/12790>

Faculty of Humanities, Social Sciences and Education
Department of Social Sciences
8 May 2018

Victoria Gonzalez Tevendale

Philosophiae doctor

Niche construction across climate gradients: the case of Empetrum nigrum in tundra plant communities

Animals and plants that modify their surroundings (also known as niche constructors) are likely candidates to mediate the effects of climate change. The common evergreen dwarf shrub *Empetrum nigrum* (crowberry) produces large amounts of chemicals which leach into the ground when it rains. These chemicals can modify the soil environment and inhibit the growth and establishment of competing plants. In this thesis, I studied how crowberry, through its ability to strongly modify its surroundings, was able to mediate some of the predicted effects of climate change on biodiversity and abundance of other plant species in tundra plant communities along climatic gradients. The results of the research suggest that the outcome of climate change in tundra communities where crowberry is present might differ sharply from the general predictions on climate change in northern ecosystems.

Page link to thesis: <http://hdl.handle.net/10037/12989>

Faculty of Biosciences, Fisheries and Economics
Department of Arctic and Marine Biology
8 June 2018

Jakob Nils Evert Grahn

Philosophiae doctor

Multi-frequency radar remote sensing of sea ice

What do quantum theory, satellites and microwaves have to do with polar bears and narwhals? The Arctic sea ice cover is changing and thus is the habitat of a major part of the Arctic fauna. To better understand how to measure these changes, advanced physical models that describe how radar waves interact with sea ice can help us. In this thesis, models, some of which originate from quantum field theory, are used to explain what information can be extracted about sea ice by means of radar remote sensing. Detailed information about sea ice is needed over very large areas. For this, air- and spaceborne radars are useful tools. Radars have the advantage

of transmitting their own source of illumination in the form of microwaves that can penetrate through clouds. They can therefore operate in darkness as well as in bad weather conditions, which is particularly important in the polar regions which are frequently affected by clouds and are dark during the polar night. A key design parameter of a radar is the radar frequency. The diversity in frequencies used in recent and future satellite missions raises the interest in the multi-frequency aspects of radar remote sensing of sea ice. This thesis provides multi-frequency modelling results, a unique sensitivity study and new insights on the spectral behaviour of radar signals from ice in the process of being formed.

Page link to thesis: <http://hdl.handle.net/10037/13373>

Faculty of Science and Technology
Department of Physics and Technology
8 June 2018

Gro Grimnes

Philosophiae doctor

Infection, inflammation, and risk of venous thromboembolism

Venous thromboembolism (VTE) is a serious disease affecting 1-2 per 1000 each year. Acute infection and other inflammatory conditions have been associated with VTE risk in previous studies. This study aimed to investigate aspects of the association between infection, inflammation, and VTE. Data from the Tromsø Study was used. The results showed no association between the inflammatory marker neutrophil to lymphocyte ratio and risk of future VTE after long-term follow-up. In a case-crossover study, it was found that acute infection was a frequent and strong trigger for VTE in hospitalized patients, and that concomitant infection and immobilization had a synergistic effect on VTE risk. Acute inflammation, assessed by C-reactive protein (CRP), was associated with VTE risk, regardless of the cause of inflammation. In a randomized controlled trial, it was found that a Vancomycin-induced change in the gut microbiome was accompanied by increased levels of coagulation factor VIII: C and CRP.

Page link to thesis: <http://hdl.handle.net/10037/13406>

Faculty of Health Sciences
Department of Clinical Medicine
18 June 2018

Thea Karoline Walstad Grindstad

Philosophiae doctor

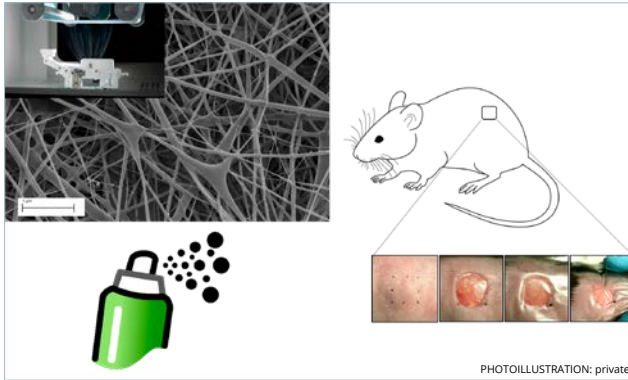
The role of steroid hormone receptors in prostate cancer. A study of estrogen- and progesterone receptors in adenocarcinoma of the prostate

Today, prostate cancer is the most frequent occurring cancer amongst men in Norway.

The dilemma with prostate cancer is that it can develop in several ways. It can remain “silent”, never giving the patient any complaints, and the patient will eventually die from other causes than the disease. Or it can be an aggressive cancer; quickly spreading and greatly affecting the patient's life quality, eventually resulting in death. So far, no optimal way to predict how the specific prostate cancer will develop has been discovered. This study sought to bring insight to this subject by investigating the influence of specific steroid hormone receptors on prostate cancer progression. Steroid hormones constitute an important signalling system in the human body. They do their job by stimulating their own receptors, located in cells throughout the whole body. This is similar to a key in a lock, where the key is the hormone and the lock the receptor. Several such steroid hormone receptors are connected to cancers. The study evaluated the receptors' presence in prostate cancers that had been surgically removed, in addition to evaluating how the patient's cancer had developed. Our discoveries indicate that these receptors can predict how the prostate cancer will progress. This knowledge can improve risk groups for prostate cancer patients, which in turn can benefit treatment decisions.

Page link to thesis: <http://hdl.handle.net/10037/13399>

Faculty of Health Sciences
Department of Medical Biology
15 June 2018



Jostein Grip

Philosophiae doctor

Development of novel wound dressings with soluble beta-glucan (SBG®) as an active ingredient

The increased prevalence of obesity and diabetes are co-morbidities that increase the risk of developing chronic wounds, e.g. venous leg ulcer and diabetic foot ulcer. The goal of this industry funded PhD thesis was to develop complementary wound healing products to the commercially available Woulgan® Gel using the proprietary β -glucan SBG® for treatment of chronic wounds. A spray and a nanofiber formulation for treatment of hard-to-heal wounds has been developed and tested *in vivo* on diabetic mice with full thickness wounds. The spray and nanofiber formulations developed in this thesis exhibit attributes that can be valuable in a clinical setting. Thus, both dressings exhibited strong potential for commercialization on an industrial scale.

Faculty of Health Sciences
Department of Pharmacy
26 October 2018



Poul Henning Gustaf Hansen

Philosophiae doctor

Modern Reading. Swedish Book Consumption during the Late Nineteenth Century

This study focuses on the reader and the book market in Sweden 1879–90. Three literary institutions, which together can be said to represent the backbone of the Swedish book market of the time, are studied: Gumpert's bookshop in Gothenburg, the parish library in Munka-Ljungby, and Sjöblom's commercial lending library in Lund. These institutions catered to all sections of society. Sales' and borrowers' records from the three institutions allow us to trace individuals' book consumption through time, and to see which authors were most in demand. The study contributes to knowledge about the readers, their access to literature, and their literary tastes. An important finding is that the reading public of the period was very segmented, and that factors such as economy, education, geography, gender, and age would be decisive for who would read what. Nonetheless, as a comparison of two neighbouring farmers' book lending demonstrates, these factors were not deterministic: individual tastes still shine through.

Page link to thesis: <http://hdl.handle.net/10037/12397>

Faculty of Humanities, Social Sciences and Education
Department of Archaeology, History, Religious Studies and Theology
16 March 2018

Line Veronika Hjelle

Philosophiae doctor

Serum Platinum retention and long-term effects in Testicular cancer survivors

Testicular cancer, the most prevalent malignancy in young men, has a remarkable survival rate due to chemotherapy treatment with cisplatin. For some, cure comes with the expense of late effects due to treatment. Cisplatin eliminates slowly from the body, and small amounts of platinum, the metal compound of cisplatin, are retained in the body for years after treatment. In our study, testicular cancer survivors have higher platinum levels up to three decades after cisplatin treatment, compared with controls. Our results showed associations between the retained platinum and increased second cancer, tinnitus, and hypogonadism. A larger platinum decline was associated with worsened tinnitus and paresthesias, and a reduced risk of second cancers. The associations with the retained platinum and late effects may be due to the platinum's ongoing damage to organs.

Page link to thesis: <https://munin.uit.no/handle/10037/13874>

Faculty of Health Sciences
Department of Clinical Medicine
30 August 2018

Magnus Hjortdahl

Philosophiae doctor

Norwegian General Practitioners Contribution and Participation in Emergency Medicine

This thesis examines the role of General Practitioners (GPs) in emergency medicine by interviewing Emergency Medical Technicians (EMTs) and GPs, and by analysis of questionnaires from more than 1000 GPs. They experienced that GPs play an important role in emergency medicine, and that GP participation improves the quality of health care. GPs were perceived to be good at patient examination and deciding about treatment or whether to admit the patient to hospital. The GP participates in several arenas, in casualty clinics and on callouts. The GP has different skills and knowledge

than the EMTs and the two professions complement each other. The participants suggested that interdisciplinary team training can lead to better teamwork, and there was a strong relationship between this type of training and GP participation in emergency medicine in the survey. My studies indicate that GPs play an important part in emergency medicine and that interdisciplinary team training may ensure participation.

Page link to thesis: <http://hdl.handle.net/10037/14109>

Faculty of Health Sciences
Department of Community Medicine
31 October 2018

Gry Hoem

Philosophiae doctor

Triggering mechanisms in the molecular pathogenesis of FXTAS

Fragile X-associated tremor/ataxia syndrome (FXTAS) is a neurodegenerative disorder. The patients develop tremor, gait problems and often signs of dementia. It affects individuals with a specific mutation in a gene on the X-chromosome. This mutation is especially problematic to brain cells. It causes the formation of two potentially toxic molecules, a ribonucleic acid (RNA) and a protein. But which one is the main troublemaker? And why are they toxic to cells? In this project I, along with my colleagues, have looked at how the RNA can be toxic. By studying what goes on inside cells that express different versions of this RNA, I found that a specific expansion of the RNA made it toxic. The presence of this RNA in the cell also leads to formation of an abnormal protein. In the second part of the study, they reveal that this protein itself is toxic to cells, even when the toxic RNA is absent. These findings help identify the cause of FXTAS. That information is needed in order to develop treatments.

Page link to thesis: <http://hdl.handle.net/10037/14006>

Faculty of Health Sciences
Department of Medical Biology
31 October 2018

Kjersti Daae Horvei

Philosophiae doctor

Immunopathology and DNase I in lupus nephritis – from mice to men

Systemic Lupus Erythematosus (SLE) is a chronic autoimmune disease with antibodies directed against nuclear components. Lupus nephritis is the renal manifestation, and immune complexes may impair renal function. Deoxyribonuclease I (DNase I) is important for clearance of DNA after cell death, and decreased renal DNase I levels may therefore affect immunization and immune complex deposition. This study characterized nephritis in the lupus-prone murine model FcγRIIB^{-/-}yaa, and found downregulation of renal DNase I. In a transgenic murine model with constitutively expressed DNase I in renal tissue, transgenic DNase I was enzymatically active, and transgenic mice developed lower levels of anti-dsDNA antibodies. However, progression of lupus nephritis was unaffected in transgenic mice. Further, the relationship between urinary and renal DNase I levels in murine lupus-prone models and in human lupus nephritis was investigated. The study found urinary DNase I to reflect renal DNase I, and levels were lowest in severe nephritis. Urinary DNase I may therefore be utilized as a biomarker of disease progression in lupus nephritis.

Faculty of Health Sciences
Department of Medical Biology
19 June 2018

Lars Daae Horvei

Philosophiae doctor

Obesity, body height and risk of venous thromboembolism

Venous thromboembolism (VTE) is a collective term for deep vein thrombosis (DVT) and pulmonary embolism (PE). VTE is the third most common cardiovascular disease after myocardial infarction (MI) and stroke, with an incidence that is stable or even slightly increasing. The aims of this thesis were to investigate how different patterns of body fat distribution, levels of obesity-related cardiovascular risk factors and chronic, low-grade inflammation influenced the risk of venous and arterial thrombosis. The study populations in this thesis were recruited from the third (1986-87) through the sixth (2007-2008) surveys of the Tromsø Study, a large population-based cohort. The study showed that body fat distribution had a differential impact on venous and arterial thrombosis. Subjects with wide hips were at elevated risk of VTE but not MI. Chronic low-grade inflammation assessed by C-reactive protein (CRP) appeared to be a shared pathway for the association between obesity and arterial and venous thrombosis, at least in women. Changes in body weight are associated with VTE risk independent of baseline body mass index (BMI). There is an increased risk of VTE among subjects with a tall stature. However, in contrast to obesity, the combination of a tall stature and prothrombotic genotypes did not yield excess risk of VTE.

Page link to thesis: <http://hdl.handle.net/10037/12043>

Faculty of Health Sciences
Department of Clinical Medicine
18 January 2018

Brage Håheim

Philosophiae doctor

The hemodynamic aspects of pharmacological manipulation of cardiac contractility and vascular resistance in rewarming from hypothermia

Hypothermia is a serious condition with potentially fatal outcomes. Hypothermia patients can be extremely unstable, and the treatment is complicated and requires highly specialized expertise. The patient is unstable because hypothermia damages the heart, lungs and circulation. This damage often persists even after rewarming. The cold temperature also affects how common medications, such as adrenaline, work on the body. The starting point for this doctoral thesis is the changes hypothermia causes to the heart and circulation and how these changes can be treated. I have made an experimental animal model to mimic hypothermia and test the effect of two important cardiac drugs, levosimendan and nitroprusside, on cardiac function during hypothermia and after rewarming. The objective is to increase our understanding of how hypothermia affects the body and how these drugs are affected by the cooling. I found that, despite different mechanisms of action, both drugs have a beneficial effect on cardiac function and blood flow to the brain and heart after rewarming from hypothermia. The results indicate that the blood vessels also suffer damage and that they unnecessarily contract and prevent blood flow to vital organs. Furthermore, this gives us the belief that these drugs can contribute to help unstable, hypothermic patients being treated in hospitals.

Page link to thesis: <http://hdl.handle.net/10037/14304>

Faculty of Health Sciences
Department of Clinical Medicine
7 December 2018

Sveinung Gaarden Ingebrigtsen

Philosophiae doctor

Novel dual centrifugation manufacturing method for liposomes-in-hydrogel: Potential in antimicrobial skin therapy

Dual centrifugation is a fast and simple mixing process that could simplify the production of liposomes-in-hydrogel delivery systems by enabling liposome preparation and the mixing of liposomes into the hydrogel to be performed in the same machine. In this PhD project, a manufacturing method based on dual centrifugation was developed and used to prepare novel liposomes-in-hydrogel formulations for improved antimicrobial skin therapy. The method enabled fast and easy preparation of both single- and dual-drug liposome formulations containing benzoyl peroxide and chloramphenicol with a high drug entrapment efficiency. Mixing of liposomes containing chloramphenicol into chitosan and soluble beta-glucan by dual centrifugation also resulted in a high degree of homogeneity. Thus, the method was highly suitable for the production of liposomes-in-hydrogel formulations. Moreover, all liposomes-in-hydrogel formulations exhibited a sustained drug release, and the liposomes-in-chitosan formulation that contained chloramphenicol exhibited similar or slightly improved antimicrobial activity compared to free drug in aqueous solution when tested against clinically relevant bacteria.

Faculty of Health Sciences
Department of Pharmacy
14 September 2018

Md Ashraful Islam

Philosophie doctor

Biology of mesenchymal stromal cells: Chondrogenesis, paracrine signalling and cartilage repair

Articular cartilage lesions lead to swelling of the synovial joint, debilitating pain, functional impairment, and eventually osteoarthritis. The use of mesenchymal stem/stromal cells (MSCs) has demonstrated as an attractive cell source for

cartilage repair due to their multilineage differentiation potential and hypoinmunogenic properties. Despite the advances in cartilage repair techniques, there is no consensus relating to the most suitable cell type for cartilage repair or osteoarthritis treatment. The overall aim of this thesis was to investigate and compare the chondrogenic capacity, and paracrine signalling potential of human MSCs harvested from adult knee joints and young umbilical cords to find a suitable source for cartilage repair. Additionally, several approaches were used to gather new knowledge about cell-based biomarkers to predict clinical outcomes after cell transplantation procedures.

Page link to thesis: <http://hdl.handle.net/10037/14118>

Faculty of Health Sciences
Department of Clinical Medicine
12 October 2018

Ioanna Dallari Jacobsen

Philosophiae doctor

Dental health and need for non-operative treatment among 16-year-olds in Northern Norway

Statistical data have shown a considerable reduction in caries disease among children and adolescents in Western countries for over 40 years. At the same time, dental erosion seems to be a growing problem among the same age groups. This present thesis was based on an oral and general health study (Fit Futures) of 869 16-year-olds from Troms County, Norway. The aim of the thesis was to estimate the dental health (caries disease and erosive lesions) of adolescents in Norway, with focus on need for non-operative treatment. The high prevalence of early signs of both conditions entails a need for early preventive interventions. A relevant and successful treatment strategy for teenagers might be general prevention and shorter recall intervals in order to diagnose any active disease (caries or erosion) in time for non-operative treatment. This implies an individually adjusted treatment, cost effectually performed by auxiliary dental personnel. The teen years is a vulnerable time in life. Adolescents leave parental guidance, family routines and food habits, and need

support on their way to adult life. The high number of teeth with cavitation per participant, and the high proportion of 16-year-olds with fillings needing repair or replacement further indicate the importance of a “non-operative” treatment strategy aiming to reduce the need for traditional treatment with fillings and minimize the vicious circle of subsequent re-treatments throughout life.

Page link to thesis: <http://hdl.handle.net/10037/12213>

Faculty of Health Sciences
Department of Clinical Odontology
16 February 2018

Simin Jamaly

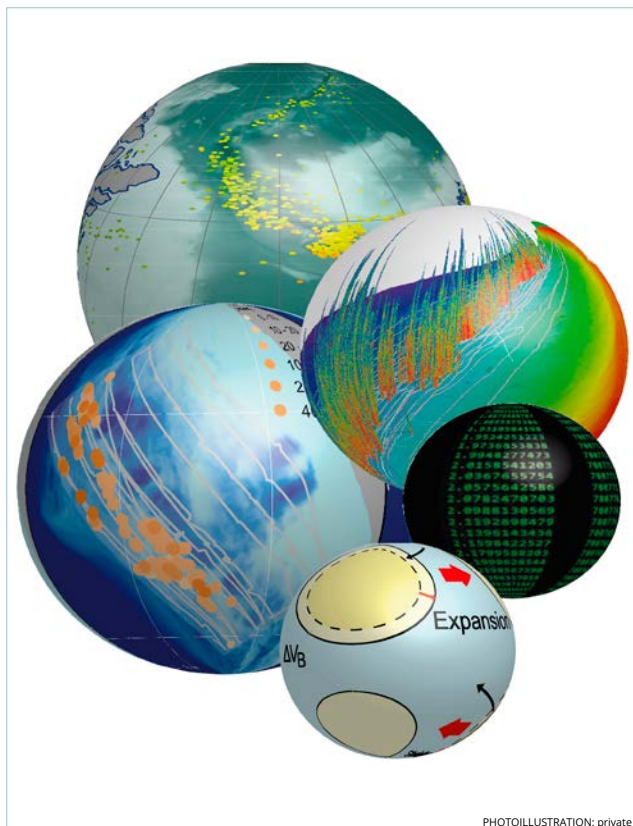
Philosophiae doctor

Role of Extracellular Vesicles in the Pathogenesis of Venous Thromboembolism

Extracellular vesicles (EVs) are vesicles with bilayer phospholipid membranes budded off from cells under various conditions. Recent advances in experimental and observational studies suggest a pivotal role of EVs in venous thromboembolism (VTE). The study measured plasma levels and parental origin of P-Selectin Glycoprotein Ligand-1 positive (PSGL-1+) EVs in patients with unprovoked VTE, and found that high plasma PSGL-1+ EV levels were associated with increased risk of VTE. It also showed that plasma miRNA profiling could provide novel biomarkers for VTE. Further, the effect of pre-analytical conditions on plasma concentrations and size distribution of EVs by nanoparticle tracking analysis (NTA) was analysed. It showed that the mean size of VLDL particles interfered with EV-measurements in the postprandial phase. A reliable and cost-effective modified assay to measure procoagulant phospholipid activity of EVs was developed. It can be used for large scale measurement of PPL activity.

Page link to thesis: <http://hdl.handle.net/10037/12803>

Faculty of Health Sciences
Department of Clinical Medicine
13 June 2018



PHOTOILLUSTRATION: private

Pär Gunnar Jansson

Philosophiae doctor

Methane bubbles in the Arctic Ocean – Quantification, variability analysis and modelling of free and dissolved methane from the seafloor to the atmosphere

This study quantifies methane gas bubbles released from the seafloor offshore western Svalbard. It investigates its variability by repeated surveys and suggests that seepage intensity depends on transient gas pathways. Numerical ocean modelling, investigations of bubbling intensity and dissolved methane shows that concentrations depend on

both seepage variation and dispersion patterns. A process-based model for free and dissolved gas shows that bubble size is the most important factor for the vertical methane distribution. The model allows choices of bubble shapes, rising speeds and transfer velocities, and allows integration into ocean- and climate models. High-resolution sensing revealed patchy methane distribution near seepage areas, suggesting strong emission and rapid diffusion, and was reproduced with a numerical 2-dimensional model. The research brings tools for understanding the methane distribution around seepage areas, including an easy-to-use process-based model, suitable for large-scale ocean models.

Page link to thesis: <http://hdl.handle.net/10037/14485>

Faculty of Engineering Science and Technology
Department of Geosciences
9 November 2018

Elisabeth Jarhelle

Philosophiae doctor

What are the molecular consequences of germline mutations in breast and ovarian cancer susceptibility genes in a Norwegian breast and ovarian cancer population?

It is estimated that 5 -10% of breast cancers (BC) and 25% of ovarian cancers (OC) are caused by inherited sequence variants in genes. In the mid 90s, the two genes BRCA1 and BRCA2 were discovered to be directly associated with increased risk of BC and OC. Molecular screening of these two genes has revealed several disease-causing variants as well as variants of unknown clinical significance (VUS). In this study, several BRCA1/2 VUSs were investigated for their impact on gene expression and protein product. Additionally, patients with BC and/or OC were investigated for disease causing variants in 92 additional genes. The study identified five BRCA1/2 variants affecting the gene expression and/or protein product and further identified 13 patients with disease causing variants in other genes, demonstrating the need for broader genetic evaluation of patients with BC and OC.

Page link to thesis: <http://hdl.handle.net/10037/12811>

Faculty of Health Sciences
Department of Clinical Medicine
1 June 2018

Marius Kadek

Philosophiae doctor

Advancing relativistic electronic structure methods for solids and in the time domain

Properties of molecules and materials range from how they reflect light to how they conduct electricity. We experience such properties on a daily basis, but they are, in fact, determined by the laws of quantum theory. However, correct theoretical predictions of properties of materials containing heavy elements requires incorporation of another of the fundamental physical theories, namely the Einstein theory of relativity. I have developed a method and a tool for incorporating relativistic effects in the studies of the electronic structure of materials, and the response of molecules to electric fields. Such a method requires solving complicated quantum mechanical equations using a computer. The method can support the interpretation of experiments and has the potential to predict properties of novel materials.

Page link to thesis: <http://hdl.handle.net/10037/13796>

Faculty of Science and Technology
Department of Chemistry
28 August 2018

Michael Christian Kampffmeyer

Philosophiae doctor

Advancing Segmentation and Unsupervised Learning Within the Field of Deep Learning

Due to the large improvements that deep learning based models have brought to a variety of tasks, they have in recent years received large amounts of attention and are nowadays often unknowingly used by many people on a daily basis. In this thesis, the focus is on two aspects within the field of deep learning: segmentation and unsupervised learning. Segmentation aims to deliver fine-grained image understanding, by assigning pixels in an image to a given class. Segmentation based on images taken from airplanes and satellites has for example been used for environmental monitoring, forestry, and disaster monitoring. This thesis advances deep learning segmentation approaches specifically targeted towards applications of remote sensing and medical imaging. Further, inspired by the lack of labelled data in many high-impact domains, such as medical imaging, the study proposes methodology targeted towards four unsupervised tasks: domain adaptation, clustering, representation learning and zero-shot learning.

Page link to thesis: <http://hdl.handle.net/10037/14264>

Faculty of Science and Technology
Department of Physics and Technology
19 October 2018

Olga Alexandrovna Kharkova

Philosophiae doctor

Changes in smoking behavior during pregnancy: prevalence and effect on selected adverse pregnancy and birth outcomes. The Murmansk County Birth Registry study

The registry-based study with data from the Murmansk County Birth Registry demonstrated that 25.2% of women smoked before pregnancy, and 18.9% of these continued smoking during pregnancy. Primiparous women with higher

education or those having a husband are more likely to stop smoking during pregnancy. Maternal smoking was inversely associated with preeclampsia/eclampsia (P/E). The number of cigarettes smoked daily during pregnancy decreased the odds of P/E. However, the women who quit smoking during pregnancy had the same risk of P/E as those who smoked while pregnant. Compared to non-smokers, the women who stopped smoking during the first trimester were at no higher risk of having a baby with adverse birth outcomes, including low birth weight, low birth length, low head circumference, low ponderal index, or low Apgar score at 5 min. Of special interest is that smoking reduction during pregnancy was not associated with a reduction in the adverse birth outcomes examined.

Page link to thesis: <http://hdl.handle.net/10037/12529>

Faculty of Health Sciences
Department of Community Medicine
6 April 2018

Jean-Baptiste Philippe Koehl

Philosophiae doctor

Mid/Late Devonian-Carboniferous extensional faulting in Finnmark and the SW Barents Sea

The focus of this study is the geometry, kinematic and timing of large cracks in coastal rocks, using fieldwork, satellite images, bathymetry, topography and aeromagnetic data in NW Finnmark, and seismic data in the Barents Sea. The study documents a network of topographic troughs created by km-scale extensional displacement along large cracks in the Earth's crust. The bottom of these troughs is now filled with 400-300 million year-old sedimentary rocks deposited when the Caledonian mountain chain started to collapse on itself due to gravitational forces. During this period, rocks in Finnmark were quickly uplifted and exhumed from depths > 10 km to shallow depths < 3.5 km. Our data also show that most cracks in coastal Finnmark and adjacent areas in the Barents Sea were inactive or only mildly reactivated through the past 300 million years, although major cracking events related to the opening of the Atlantic Ocean occurred farther west.

Page link to thesis: <http://hdl.handle.net/10037/13021>

Faculty of Science and Technology
Department of Geosciences
24 May 2018

Anton Alexandrovich Kovalenko

Philosophiae doctor

Epidemiology and new opportunities of investigating risk factors for congenital malformations in Northwest Russia: a registry-based linkage study

Birth defects constitute an important public health issue as they are the main causes of perinatal and infant mortality. To address incomplete data coverage in Russia, the studies described in this thesis all have a registry-based study design, and were based on the linkage of the Murmansk County Birth Registry (MCBR) and the Murmansk Regional Congenital Defects Registry (MRCDR) to investigate the epidemiology and selected risk factors for congenital malformations. The study population included all 52,806 births recorded in the MCBR during 2006-2011 and were followed up to two years after birth through MRCDR. Routine under-reporting of major birth defects to the MRCDR of 40% cases occurred in Murmansk County. Hypospadias was the most common birth defect with a prevalence of 25.7 per 10,000 newborns and the cases were associated with cervical erosion, low infant birthweight and preeclampsia. Smoking, alcohol abuse during pregnancy and maternal diabetes mellitus were also risk factors for delivering infants with ventricular septal defects. Potentially numerous cases of hypospadias and ventricular septal defects are preventable in Russia if health policy makers were to give more attention to established risks. Public health efforts should therefore focus on reducing smoking and alcohol consumption, as well as improving diabetes control in pregnant women.

Page link to thesis: <http://hdl.handle.net/10037/14071>

Faculty of Health Sciences
Department of Community Medicine
12 November 2018

Rita Kral

Philosophiae doctor

Cortical bone and fracture risk: The Tromsø Study

The aim of this thesis was to explore the association of the cortical architecture of the proximal femoral shaft with non-vertebral fractures. The study tested the hypotheses that: (i) cortical bone parameters are associated with fracture risk independent of Fracture Risk Assessment Tool (FRAX) or Garvan estimates, (ii) women with fractures that are unidentified by FRAX but identified by cortical porosity have a different patient profile that contributes to their fracture risk, and (iii) women with type-2 diabetes mellitus (T2DM) have lower bone turnover markers (BTMs) and lower cortical porosity than those without diabetes, and that higher serum glucose and body mass index (BMI) are associated with lower BTMs and cortical porosity. The results of this study suggest that cortical porosity was the most important cortical parameter associated with fracture risk. Fracture cases unidentified by high FRAX score but identified by high cortical porosity alone had a different patient profile compared with those identified by FRAX alone. Women with T2DM had lower serum BTMs and a lower cortical porosity than women without diabetes. Further research is needed in larger prospective studies to determine whether cortical porosity predicts fractures independent of FRAX and can be useful in clinical practice and to examine why T2DM patients have increased risks for fracture.

Page link to thesis: <http://hdl.handle.net/10037/13979>

Faculty of Health Sciences
Department of Clinical Medicine
20 March 2018

Martin Sollund Krane

Philosophiae doctor

Branding and Local Democracy: Unintended Consequences of Strategic Approaches to Identity and Communication for Municipalities' Role as Arenas of Democracy (Omdømmehåndtering og lokaldemokrati. Uintenderte implikasjoner av strategiske tilnærminger til identitet og kommunikasjon for kommunene som lokaldemokratiske arenaer)

This thesis examines in what ways branding and reputation management (BRM) might pose unintentional, yet challenging implications for municipalities' roles as arenas of local democracy. The focus is on democratic participation in municipal identity building and the consequences of strategic communication on public debate and deliberation. The thesis is built on a qualitative case study of BRM work in four large Norwegian municipalities. Based on the empirical inquiry, the study indicates that the strategic approaches to municipal identity building and communication in BRM "recipe" seem to pose challenges to local democracy, as they may conflict with participatory and deliberative democratic values.

Page link to thesis: <http://hdl.handle.net/10037/13443>

Faculty of Humanities, Social Sciences and Education
Department of Social Sciences
20 August 2018

Erling Inge Kvig

Philosophiae doctor

Studies in pathways to care – duration of untreated psychosis and its determining factors in early psychosis

Many patients with psychosis are treated late in their course of illness, and have a long duration of untreated psychosis. Delay may be related to both patient and system related factors. The determinants of system related delay are largely unexplored in the literature. This study investigated treatment delay and its determinants in a

Norwegian health care context. Data is from both treated patients and healthcare professionals. The study shows that system delay accounted for more than half of overall treatment delay. Referral delay and diagnostic delay were important reasons for delay. Referral decisions were dependent also on contextual factors, and the threshold for hospital referral was elevated in more peripheral areas. By understanding where and why treatment delay occurs, it becomes easier to design interventions to facilitate better earlier detection and treatment of psychosis. Important targets are improving referral pathways and reducing diagnostic delay.

Page link to thesis: <http://hdl.handle.net/10037/14273>

Faculty of Health Sciences
Department of Clinical Medicine
23 November 2018

Maria Kristina Labba

Philosophiae doctor

The Internal Organization of Reindeer Herding

The Swedish Reindeer Herding Act, *Rennäringslag* (1971:437), gets special attention in this thesis. This thesis analyzes the rules in order to highlight shortcomings in them. The thesis also contains a comparison between the Swedish Reindeer Herding Act, the Norwegian Reindeer Herding Act and the Sami Siida System. The analysis of the provisions of the Swedish Reindeer Herding Act shows that they have a number of shortcomings, of two different kinds. The shortcomings of the first kind mean that the protection for an individual member of a so-called Sami village (sameby), against internal abuse of power, is worse than the protection is in the models for the act; the Swedish Act on Cooperatives, *Lag* (1987:667) *om ekonomiska föreningar*, and the Swedish Limited Companies Act, *Aktiebolagslag* (2005:551). The shortcomings of the second kind mean that some of the provisions in the Reindeer Herding Act are inappropriate for reindeer herding carried out within so-called siidas. The comparison with the Norwegian Reindeer Herding Act and the Sami

Siida System, in turn, shows that the Swedish Reindeer Herding Act differs from them both, in many ways. This applies, for example, to the question of which subjects is considered to carry the right to reindeer grazing areas. The thesis recommends that the issues the thesis highlights are investigated further and that the Swedish Reindeer Herding Act is reformed.

Faculty of Law
9 February 2018

Admassu Nadew Lamu

Philosophiae doctor

Three Essays on Subjective Well-being and Preference-Weighted Health

This thesis is based on a large international dataset from the Multi Instrument Comparison (MIC) project undertaken in 2011/12. The MIC project is the largest study undertaken worldwide that aims to compare a wide range of instruments purporting to measure health related quality of life (HRQoL) and subjective well-being (SWB). Data was collected by a global company, CINT Pty Ltd., Australia, which administered an online survey to respondents from six OECD (Organization for Economic Cooperation and Development) countries: Australia, Canada, Germany, Norway, the UK, and the US. This thesis aims to: i) explore the importance of preference-weighting in health state utility (HSU) instruments and ii) examine the contribution of policy-relevant factors (health, social relationships, and income) to SWB. Results revealed that, in decreasing order of importance, social relationships, health, and income were significantly associated with SWB. As a matter of necessities, health and income were more important for individuals with lower levels of SWB. Social relationships had, more or less, stable effect across the distributions of SWB, implying that social relationships are very important regardless of the level of happiness of an individual. The novel finding is that health is important for SWB, but as much for its importance through social relationships.

Page link to thesis: <http://hdl.handle.net/10037/12092>

Faculty of Health Sciences
Department of Community Medicine
25 January 2018

Jostein Lappegård

Philosophiae doctor

Red Cell Distribution Width (RDW) and future risk of arterial cardiovascular diseases

Heart attack and stroke are the top two deadliest diseases worldwide. Awareness and treatment of known risk factors is an important step to prevent the development of these diseases. Additionally, identification of new risk factors could further improve the disease prevention. This study has investigated whether a measure of the variability in the size of the red blood cells (RDW) could be such a risk factor. Data from the Tromsø Study, where RDW was measured in >27,000 inhabitants were analyzed. The study showed that participants with high values of RDW, measured in 1994/95, had a higher risk of developing atherosclerosis, stroke and heart attack, compared to those with low RDW values. The disease risk associated with high RDW values was independent of known risk factors including high cholesterol, hypertension, diabetes and smoking. This means that RDW could be used, alongside other risk factors, when evaluating future risk of cardiovascular disease.

Page link to thesis: <http://hdl.handle.net/10037/12988>

Faculty of Health Sciences
Department of Clinical Medicine
28 May 2018

Anette Iren Langås Larsen

Philosophiae doctor

Mapping the experience and use of traditional healing in Northern Norway among conventional health care providers, users and traditional healers

The aim of this research project was to improve the knowledge of the people in Northern Norway (the Sami, Kven and Norwegians) when it comes to their understanding of health, including the use of traditional healing. Sixty semi-structured interviews and 7 focus group interviews was conducted. The participants were health personnel, healers, and users of traditional healing. Both the Sami and Norwegians often used traditional healing. In cases of illness, traditional healing was used in combination with conventional medical treatment. The users wanted the health personnel to have knowledge of the use of traditional healing to help facilitate this use for the users when they were admitted in hospitals or nursing homes. The healers explained their healing ability as a divine power that worked within them. The healers combine Christian prayers and Sami rituals with information from conventional medicine (diagnosis and medical test results) when conducting the healing rituals. The health personnel in our research project had no education in traditional healing and culture. Nevertheless, many of them conducted traditional healing including the use of familiar rituals on the patients' request. The health personnel claimed that this provided the users with more culturally sensitive health care services, even though the use was never documented in the patients' medical records.

Page link to thesis: <http://hdl.handle.net/10037/12836>

Faculty of Health Sciences
Department of Community Medicine
31 May 2018

Magnus Larsen

Philosophiae doctor

Prognosis in acute aortic dissection – Insights from the International Registry of Acute Aortic Dissection

Factors that determine the long-term prognosis after an acute aortic dissection (AAD) are poorly understood. This study has used the available literature and an international acute aortic dissection registry to evaluate certain factors' influence on outcome. Trends in the management and outcome of AAD were also examined. It showed that the presence of clotted blood in the so-called false lumen in an AAD did not influence the prognosis. The extent of aortic resection during surgery for AAD did not influence short- or long-term outcome. Whether the construction of the "distal anastomosis", which is the connection between the prosthetic vascular graft and the patient's aorta, is done with a clamp on the aorta or in hypothermic circulatory arrest, should be determined by each surgeon and to a certain extent based on the patient's age and life expectancy. The treatment of AAD has changed in the last two decades with more patients being treated with surgical therapies in the current era.

Page link to thesis: <http://hdl.handle.net/10037/13597>

Faculty of Health Sciences
Department of Clinical Medicine
20 June 2018

Amando Putra Ersaid Lasabuda

Philosophiae doctor

Cenozoic tectonosedimentary development and erosion estimates for the Barents Sea continental margin, Norwegian Arctic

Some parts of the Barents Sea we see today are inferred to be a series of lowlands and topographic highs in the early-middle Cenozoic (~66 to 2.6 Million years ago). During this period, the source areas have undergone a severe uplift and erosion, transported sediments to the

adjacent basins. This thesis aims to quantify this erosion by integrating seismic and well data in the mass-balance approach. This approach utilizes the estimated volumes of the sediments in the basin and the likely source area in order to estimate the average erosion. The thesis signifies the importance of Cenozoic pre-glacial erosion, which has been so far less understood in comparison to the glacial erosion. The highlights of the thesis are, (i) Cenozoic paleoenvironmental reconstruction, (ii) the average erosion estimates and the corresponding erosion rates for each periods, and (iii) the tectonic, sedimentary, and glacial interaction in the Barents Sea continental margin.

Page link to thesis: <http://hdl.handle.net/10037/12800>

Faculty of Science and Technology
Department of Geosciences
26 April 2018

Marko Lukic

Philosophiae doctor

Coffee and cancer

You cannot imagine powering through the day without your favorite beverage being on your desk all the time. Have you ever wondered what the consequences might be? Norway has a long tradition when it comes to coffee consumption. This study aimed to investigate the effect of drinking more than seven cups of coffee per day on the cancer risk. Information on coffee consumption collected during 90s from around 100,000 Norwegian women that are part of the ongoing Norwegian Women and Cancer Study was used. The study showed that even consuming large amounts of coffee on a daily basis does not affect your chances of cancer, specifically bowel, breast, lung, and cancer of the ovaries. Finally, the results from all previously published scientific papers that aimed to determine if coffee drinking was affecting the risk of endometrial cancer was "lumped" together. The meta-analysis showed that coffee drinking was greatly reducing the risk of endometrial cancer. However, this effect of coffee seems to be apparent only in women that have body mass index

over 30 (women with obesity). You can rest assured that the coffee you have been drinking would not affect your health, at least when it comes to cancer. However, as there are many other diseases that still need to be researched in regard to coffee drinking, keep in mind that moderation is always an option.

Page link to thesis: <http://hdl.handle.net/10037/14112>

Faculty of Health Sciences
Department of Community Medicine
12 October 2018

Åke Staffan Lundberg

Philosophiae doctor

Studies of some Operators of Harmonic Analysis in certain Function Spaces with Applications to PDEs

The study in this PhD thesis aims at development of certain mathematical methods used in applications, in particular, in the study of regularity properties of solutions in various mathematical models described by Partial Differential Equations (PDEs). To this end, various operators of harmonic analysis in certain function spaces were studied, since solutions to many PDEs may be expressed in terms of such operators.

Faculty of Engineering Science and Technology
Department of Computer Science and Computational Engineering
5 December 2018

Sarah Joy Lyons

Philosophiae doctor

Indulging in Premium versus Luxury products: Seeking justification to avoid regrets

The demand for premium products is expanding across saturated markets, such as food and beverages. Premium products stand out on the store shelf because they signal higher quality and exclusivity with their fine product packaging, higher prices, and selective distribution. The main purpose of this thesis was to pursue an understanding of premium and luxury perceptions from a consumer's point of view. The findings provide insight into how consumers justify premium and luxury products, and how intrinsic and extrinsic factors such as the nature of the good, framing of the marketing message, the nature of the product, individual motivation, and self-justification play a role in shaping consumer perceptions and reactions to premium and luxury products. The knowledge from this thesis may lead to the development of premium food products that consumers are likely to justify. Scholars have found that sustainability and authenticity are concepts that are increasingly important for the premium and luxury segments. Thus, consumers want to indulge, but they also want to know that what they buy holds solid quality and meets their expectations in terms of the value it offers. The knowledge generated from this thesis may be useful for marketers who want to better understand what cues trigger premium and luxury associations and evaluations to develop and manage products in accordance.

Page link to thesis: <http://hdl.handle.net/10037/12793>

Faculty of Biosciences, Fisheries and Economics
School of Business and Economics
22 May 2018

Petia Nikiforova Mankova

Philosophiae doctor

Homewarding Remoteness: Representations, agency and everyday life in a tundra village (NW Russia)

In remote geographical areas, state power and modernization processes often slow down, become subverted or fail. For the people who live there, the everyday life usually brings other worries and concerns. Based on anthropological fieldwork in Krasnoshchelye, a remote tundra village in Murmansk region, the dissertation addresses questions of remoteness. At the same time, by focusing on the century old Izhma Komi diaspora in an area considered and recognized as traditional for the indigenous Sami people (Lovozero District), in a region (Murmansk region) where the majority today is constituted of Russians, Ukrainians, Belarusians and many other nationalities, I also question ideas of home and belonging.

Page link to thesis: <http://hdl.handle.net/10037/12107>

Faculty of Humanities, Social Sciences and Education
Department of Social Sciences
9 February 2018

Ieva Martinaityte

Philosophiae doctor

Storage of vitamin D in adipose tissue and associations between vitamin D related genetic variants and diabetes, myocardial infarction, cancer, death, and low bone mineral density. Results from a high-dose vitamin D study and the Tromsø Study

Vitamin D is a hormone found in most of tissues and organs. Vitamin D modifies about 3% of human genes, and acts directly in cells. In addition to the essential role of maintaining bone health, vitamin D is also believed to be important in boosting the immune system, regulating processes in fat tissue, and preventing the certain negative health outcomes. This study found that vitamin D supplementation for 3–5 years maintained sufficient serum



vitamin D levels the following year after cessation, likely due to storage of vitamin D in fat tissue. In addition, it was investigated if there were any gene variations related to vitamin D and estrogen, which could increase the risk of negative health outcomes, including cancer and death. The study showed that certain vitamin D and estrogen related genes could increase the risk of type 2 diabetes, myocardial infarction (rs7968585) and low bone mineral mass (rs4870044 and rs6013897) in our population from Tromsø, Northern Norway.

Page link to thesis: <http://hdl.handle.net/10037/12516>

Faculty of Health Sciences
Department of Clinical Medicine
22 March 2018

Derek John McKay

Philosophiae doctor

KAIRA – The Kilpisjärvi Atmospheric Imaging Receiver Array

The Kilpisjärvi Atmospheric Imaging Receiver Array (KAIRA) is a new scientific instrument located in Arctic Finland, where the Northern Lights are a common occurrence. This unique deployment of a modern radio telescope in an unconventional location has resulted in a novel and powerful instrument capable of carrying out a large variety of experiments for astronomy and atmospheric research. In particular, a new method of making images of the Northern Lights has been developed. This technique uses radio waves, which means it can operate during cloudy weather or during summer when there is midnight sun.

Page link to thesis: <http://hdl.handle.net/10037/13716>

Faculty of Science and Technology
Department of Physics and Technology
24 August 2018

Lars Moksness

Philosophiae doctor

Understanding researchers' intention and habit regarding publishing in open access journals

Publishing research articles is achieved by submitting a manuscript to a peer-reviewed scientific journal. Specialists will then evaluate the content and quality of the manuscript and make a recommendation of whether the journal should accept the manuscript and publish it or reject it. A second option is called Open Access (OA). It is relatively new and made possible by the internet and digital media. For various reasons, this method of publishing has met resistance among researchers, even though it arguably is a more democratic way of enabling access to research articles. The purpose of this study is to provide a theory-driven approach and analyse procedures that would contribute to this research stream. This study suggests that

institutions can encourage OA publishing by expanding on the way in which information campaigns and presentations are run. Attitudes are important in this context; however, researchers operate within a social context as well, emphasizing the importance of normative influences. The results show that perceived visibility is positively associated with OA but not perceived content quality and status. Care should be taken to run recurring events with question and answer sessions at faculties and departments. Recurring events will increase the probability that behavioral change interventions will be successful, particularly if habits are involved.

Page link to thesis: <http://hdl.handle.net/10037/14289>

Faculty of Biosciences, Fisheries and Economics
School of Business and Economics
13 December 2018

Bo Wold Nilsen

Philosophiae doctor

Methacrylates in polymer-resin based dental materials: Assessment of exposure and biological effects

Polymer-resin based dental materials (PRMs) is a group of materials, which include white filling materials that are extensively used in dentistry. PRMs contain compounds that may cause adverse effects in exposed patients and dental personnel. The purpose of this thesis was to study the biological effects, on a proteomic level, of one of the most common methacrylates in PRMs and provide new knowledge on how patient and dental personnel may be exposed to these components. This thesis adds novel data on how patients may be exposed to several ingredients, usually found in white filling materials, through the use of PRMs that are applied directly to the dental pulp. The thesis also provides novel, clinically relevant data on airborne exposure to components in PRMs. In addition, it also reinforces the notion that methacrylates are reactive compounds that can induce several biological effects in exposed cells — even at doses that are reported to be non-toxic.

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Faculty of Health Sciences
Department of Clinical Medicine
4 May 2018

Fredrik Nilsen

Philosophiae doctor

From Prohairesis to Wille and Willkür: A historical and critical study of free will in Aristotle, Augustine and Kant (Fra Prohairesis til Wille og Willkür: En historisk og kritisk studie av fri vilje hos Aristoteles, Augustin og Kant)

Do human beings have free will? No doubt, this question is a highly relevant question to ask in light of results in modern neuroscience. In my dissertation, I offer an affirmative answer to the question and, in doing so, I retract the history of the concept down to its origins. My point of departure is Hannah Arendt and her thesis that Augustine was “the first philosopher of free will”. Through an examination of the ethical theory of Aristotle in general and his concept of “choice” (*prohairesis*) in particular, I try to show that Arendt is right in claiming that we do not find a conception of free will in classical Greek thought. In contrast, the theory of Augustine contains the concept of “the free choice of the will” (*liberum arbitrium voluntatis*), which means that the will is free to choose between following reason or desire. Since I think it is important that a free will is a will that is not determined by other factors (for example God) than the will itself, as Rousseau teaches us, I think we must dig further in the history of philosophy to find an adequate conception of it. We find a prominent candidate for such a conception in the ethical theory of Kant, since Kant understands a free will as an autonomous will. Our “choice” (*Willkür*) is free to choose between practical reason and desire, but it realizes its freedom only when it chooses to follow practical reason, since it is identical to our own “will” (*Wille*).

Page link to thesis: <http://hdl.handle.net/10037/14278>

Faculty of Humanities, Social Sciences and Education
Department of Philosophy
17 December 2018

Tine Nilsen

Philosophiae doctor

Long-range memory in Earth's climate response – analysis of paleoclimatic records and climate model simulations

Simplified statistical models of the natural variability of the Earth's surface temperature are tested using paleoclimate records based on model simulations and indirect temperature estimates from the past. A property known as long-range memory is assumed to represent the internal variability of the climate on time scales from years to centuries. This property reflects the inertia in the climate system, and is relevant for modelling past, present and future climate change. Statistical analysis of reconstructed temperature is performed using spectral methods, wavelet-based methods and other time series analysis tools. The results show that temperature from the past apparently exhibits long-range memory on the time scales under study. However, the influence from non-climatic effects such as noise and reconstruction methodologies on the signal makes the interpretation of the memory less intuitive than it is for instrumental temperature records.

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Faculty of Science and Technology
Department of Mathematics and Statistics
23 January 2018

Yngve Nordby

Philosophiae doctor

Angiogenic biomarkers in prostate cancer - A study into the prognostic significance of angiogenesis related growth factor ligands and receptors and miR-205 in a cohort of Norwegian prostatectomy patients

Prostate cancer is the most common cancer in men in developed countries. While some develop to be aggressive and lethal, most forms of prostate cancer are indolent and slow growing. There is an urgent need to find new and better prognostic tools to identify which patients

really need treatment and which patients can be spared of the side effects of radical surgery or radiotherapy. The formation of new blood vessels within a cancer tumor is crucial for the cancer disease to progress. In our study, molecules associated with blood vessel formation were measured in patients' prostate cancer tissues. The appearances of the molecules associated with blood vessel formation were evaluated and compared to the patients' course of disease. Interestingly, most of the studied biomarkers were only associated with cancer relapse when exploring the cells adjacent to the malignant cells (tumor microenvironment), namely in surrounding supportive tissue (stroma) or non-malignant prostate glands. This points to the importance of the tumor microenvironment in disease progression and the need for future studies to be sure of which prostate tissue they are sampling for research. The studied molecules can, if confirmed by other studies, be used as prognostic markers aiding treatment decisions and inhibition of these biomarkers or their pathways may be attractive targets for medical therapy.

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Faculty of Health Sciences
Department of Clinical Medicine
3 May 2018

Reidunn Håøy Nygård

Philosophiae doctor

Family and community involvement in Indigenous social work. A comparative study

This study compares social work in Sami communities in Norway and Native American communities in Montana. There is a common agreement regarding the need for culturally adequate social work for use in indigenous communities. What is culturally adequate social work? How do social workers in Sami communities in Norway and Native American communities in Montana involve family and community in their work? Is Family Group Conference a potentially culturally adequate method for social work in Sami communities? Family Group

Conference is a method involving the family in social work. This study shows that the theoretical principles of Family Group Conference; family involvement, restoration, and revitalization, is relevant for the development of Family Group Conference in social work in Sami communities. For a culturally adequate social work, social workers in both Sami and Native American communities assert the relevance of closeness to local community. Involving community in research is a way of grounding knowledge production in the local context. Dialogue with community is important when developing methods for use in social work.

Page link to thesis: <http://hdl.handle.net/10037/14319>

Faculty of Health Sciences
Regional Centre for Child and Youth Mental Health and Child Welfare
7 December 2018

Mona Nystad

Philosophiae doctor

Role of Laeverin in the pathophysiology of preeclampsia

Preeclampsia is a pregnancy-specific disease, affecting 5-10% of human pregnancies worldwide. It is defined as new-onset hypertension after 20 weeks of gestation with either proteinuria and/or organ failure. Laeverin is a membrane-bound aminopeptidase exclusively expressed in the placenta with a significant upregulation of laeverin mRNA in preeclamptic placentas. This builds the background for this doctoral thesis. A translational approach aiming to investigate the possible role of laeverin in the pathophysiology of preeclampsia revealed: 1) Expression of laeverin protein in the cell membrane of trophoblasts of healthy placentas at term; 2) Ectopic expression in cytoplasm, microvesicles and fetal capillaries of trophoblasts in term placentas from women with preeclampsia; 3) Decreased migration and invasion of trophoblast cells when the laeverin gene was silenced and; 4) Lower levels of laeverin protein in maternal plasma measured at 22-24 weeks which might be associated with the development of preeclampsia later in gestation. This

thesis shows that laeverin has a role in human placentation and possible implications in the pathophysiology and clinical manifestation of preeclampsia.

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Faculty of Health Sciences
Department of Clinical Medicine
5 November 2018

Petter Olsen

Doctor Philosophiae

Food traceability in theory and in practice

This thesis consists of five papers and a synopsis, and outlines theoretical concepts and practical considerations when implementing traceability in food supply chains. The term traceability and the components of a traceability system are discussed and defined, a method for describing and analysing material flow, information flow, and information loss is outlined, and numerous practical implementations and implementation issues are described.

Faculty of Biosciences, Fisheries and Economics
The Norwegian College of Fishery Science
12 January 2018

Pål Anders Opdal

Philosophiae doctor

About pedagogical intentions: A theoretical and empirical study using pedagogical-philosophical and qualitative methods (Om pedagogiske intensjoner: En teoretisk og empirisk studie ved bruk av pedagogisk-filosofiske og kvalitative metoder)

Do we need to be taught what we shall learn, or do we learn regardless of a teacher's efforts? What should we emphasize when educating young people – their learning or the teacher's teaching? It is clear that it is possible to learn a whole lot without being taught, such as how to

walk, feel and speak. But is it possible to learn what a school wants us to learn without being taught it? How to count, calculate, read and write: Is this something we learn without being taught it? What is the connection between teaching and learning? Based on such questions, my work consists of analysing some of the new pedagogical words, and some of the prerequisites that underlie these new words. The focus is on two Norwegian concepts – *læringsutbytte* and *generell kompetanse* – but I have also made a deep dive into the concepts of teaching and learning. “Teaching” and “learning” are not new words but, in order to understand the new words, it has been necessary to understand the old ones. I interviewed employees in Norwegian higher education to investigate what they understand by the same new word – and I have also attempted to describe this. What they understand? That a new way of talking about (and thus understanding?) teaching and learning is in the process of establishing itself in Norwegian higher education contexts. And not everyone thinks the education is best safeguarded by the new vocabulary.

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Faculty of Humanities, Social Sciences and Education.
Department of Education
18 June 2018

Marit Osima

Philosophiae doctor

Cortical porosity, medullary adiposity, type 2 diabetes mellitus, serum vitamin D, parathyroid hormone, and nonvertebral fractures

Despite advances in therapies, assessment of fracture risk and diagnosis of bone fragility, few women and men with high fracture risk receive treatment, even after they develop fracture. To be able to recognize and identify subjects who are at risk for fragility fracture, and to target treatment well, it is important to search for risk factors that are associated with, or ideally, predict fracture. In case-control studies from Tromsø and Melbourne medullary adiposity,

type 2 diabetes mellitus, parathyroid hormone and vitamin D were studied. The role of cortical porosity in the associations between risk factors and nonvertebral fracture was explored. Fracture cases had higher distal tibial medullary adiposity and higher cortical porosity. Higher medullary adiposity and cortical porosity were associated with increased odds for nonvertebral fracture, independent of bone mineral density. Combining medullary adiposity and cortical porosity may improve identification of women at risk for fracture. Cortical porosity is lower in women with type 2 diabetes mellitus than in those without. PTH increases intracortical bone turnover, leading to trabecularization of the inner cortical bone.

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Faculty of Health Sciences
Department of Community Medicine
28 March 2018

Kärt Paiste

Philosophiae doctor

Reconstructing the Paleoproterozoic sulfur cycle: Insights from the multiple sulfur isotope record of the Zaonega Formation, Karelia, Russia

Earth's O₂-rich atmosphere and its capacity to sustain complex life is the most paramount feature that distinguishes Earth from all other planets. Oxygenation of Earth's atmosphere occurred about half way through its history at ~2.3 Ga (the Great Oxidation Event – GOE) when photosynthetic O₂ production surpassed its consumption by chemical reactions. However, there has been significant debate about the environmental changes that followed the GOE and how these changes are recorded in the rock record. The focus of this thesis is the ~2.0 Ga Zaonega Formation, Russian Karelia, which is one of the finest archives from which to decipher environmental conditions in the aftermath of the GOE. The study applies organic carbon and sulfur isotope results to assess the microbial communities and sulfur cycle. The results indicate that following the establishment of a substantial



seawater sulfate reservoir after the GOE, its size and isotope composition may have remained stable for a few 100s Ma.

Page link to thesis: <http://hdl.handle.net/10037/14211>

Faculty of Science and Technology
Department of Geosciences
8 November 2018

Anja Maria Pesch

Philosophiae doctor

Creating space for multilingualism. A study of discursive conditions for ECEC-teachers' linguistic practice with multilingual children (Å skape rom for flerspråklighet. En studie av diskursive vilkår for barnehagens språklige praksis med flerspråklige barn)

This study explores how kindergarten teachers use language with multilingual children in kindergarten, how they understand multilingualism and how they cooperate with the children's parents. I have carried out fieldwork in two kindergartens, one in Norway and one in Germany. Both kindergartens viewed multilingualism as a resource, but this resource perspective had different limits, which among other things were related to the national guidelines. The study also shows how the teachers' beliefs on multilingualism were connected to how they legitimized and valued both their own and children's choice and use of language. In the Norwegian kindergarten, the findings show a field of tension between acknowledging multilingualism and including the children's different mother tongues in kindergarten on the one hand and a strong obligation towards developing their skills in Norwegian on the other hand. This relates to the emphasis and focus in the national guidelines in Norway. This study raises questions about how kindergartens meet parents with multilingual children, how teachers and parents view each other's knowledge and whose beliefs may have the greatest authority. These are important issues to discuss for teachers working in kindergartens and Early Childhood Teacher education, preparing students for work in kindergartens with a growing linguistic diversity.

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Faculty of Humanities, Social Sciences and Education
Department of Education
1 March 2018



Gro Hilde Ramsdal

Philosophiae doctor

Attachment problems and mental health issues among long-term unemployed youth who had dropped out of high school

This thesis focused on the process of dropping out of school in Norway. The study interviewed youth about their experiences in the aftermath of school dropout. The participants focused on their experiences of abandonment, lack of adult involvement and academic demotivation but also described feelings of social awkwardness and loneliness. These 'off track' youths reported more frequent and serious symptoms of mental health problems and less social support than same aged college students who were also interviewed. Reviewing the research literature on the role of parent-child attachment in dropout processes, some support for explanatory factors like self-regulation, maternal instruction, social competence and test anxiety linking attachment to school dropout was found.

The findings seem to point to relationships as essential and possibly underrated factors in school motivation processes.

Page link to thesis: <http://hdl.handle.net/10037/14039>

Faculty of Health Sciences
Department of Clinical Medicine
1 October 2018

Ludvig Balteskard Rinde

Philosophiae doctor

Arterial cardiovascular diseases and risk of venous thromboembolism

Despite differences in epidemiology, pathology and treatment, growing evidence suggests a bidirectional relationship between venous thromboembolism (VTE), a collective term for pulmonary embolism (PE) and deep vein thrombosis (DVT), and arterial cardiovascular diseases (CVD i.e. myocardial infarction [MI] and ischemic stroke). The aim of this thesis was to investigate the impact of atherosclerosis, MI, ischemic stroke on the risk of VTE. In all four papers, participants were from the fourth, fifth and six survey of the Tromsø Study. The study found no association between atherosclerosis and risk of VTE. MI and stroke were associated with a transient risk of VTE, and individuals with MI had a particularly high risk of developing PE. After both MI and stroke, the risk was particularly high for provoked VTE events. A synergistic effect of ischemic stroke and prothrombotic genotypes on the risk of VTE was found. The risk increased gradually with the number of risk alleles. Our findings imply that MI and ischemic stroke are associated with an increased transient risk of VTE, and that genetic risk factors are important in the development of VTE after stroke. The transient nature of the VTE risk suggests that indirect (e.g. hospitalization, immobilization) or direct (e.g. activation of the coagulation system) mechanisms related to the CVD are primarily responsible for the association.

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Faculty of Health Sciences
Department of Clinical Medicine
12 December 2018

Sigbjørn Olav Rogne

Philosophiae doctor

Cognitive function and mild cognitive impairment in a general population: roles of cardiovascular and genetic risk factors and magnetic resonance volumetry. The Tromsø Study

After Alzheimer's disease (AD), vascular dementia is the most common dementia type. Most persons with AD over the age of 65 (late onset AD, LOAD) are from families without LOAD. However, up to 25% have biological relatives with LOAD. In families with recurring LOAD, there is an increased risk of LOAD. Familial and sporadic LOAD might therefore differ. In the Tromsø Dementia Study, probable prodromal familial and sporadic LOAD differed in MRI volumes of cerebral structures for women. Probable parental LOAD, the ApoE ε4 allele, higher plasma homocysteine and higher Estimated Glomerular Filtration Rate were independently associated with less hippocampal volume. In a prospective study on a general population, albuminuria, intima media thickness of the internal carotid artery and smoking independently predicted psychomotor tempo and executive function 13 years later.

Page link to thesis: <http://hdl.handle.net/10037/14630>

Faculty of Health Sciences
Department of Community Medicine
14 December 2018

Jørgen Schei

Philosophiae doctor

Oxidative stress and inflammation as risk factors for accelerated age-related GFR decline and albuminuria in the general population

The kidney is essential in several functions necessary for life, including filtration and excretion of waste products from the blood. The overall best measure of kidney function is the glomerular filtration rate (GFR). Reduced GFR or chronic kidney disease affects nearly 10% of the

world's population and is a risk factor for cardiovascular disease, kidney failure and premature death. Inflammation and oxidative stress are closely linked to cardiovascular disease and chronic kidney disease. Biomarkers of inflammation and oxidative stress have predicted a faster GFR decline and albuminuria in people with diabetes. In the Renal Iohexol Clearance Survey Follow-up (RENIS-FU) study, the GFR in 1627 middle-aged people and repeated the measurements in 1324 people after approximately 6 years were measured. To the best of our knowledge, this is the largest longitudinal study with accurate measurements of GFR. Markers of oxidative stress were not related to the age-related GFR decline but predicted albuminuria at follow-up. Studies with an even longer observation period, multiple biomarkers, and repeated measurements of the GFR are needed to fully evaluate the effects of oxidative stress and inflammation on age-related GFR decline and albuminuria in the general population.

Page link to thesis: <http://hdl.handle.net/10037/12838>

Faculty of Health Sciences
Department of Clinical Medicine
8 June 2018

Andrea Schneider

Philosophiae doctor

Diagenetically altered benthic foraminifera reveal paleo-methane seepage

Methane is a powerful greenhouse gas and its atmospheric concentrations varied throughout the geological history. Large amounts of methane are stored in seafloor sediments and society is apprehensive that some of this methane may enter the water column and atmosphere. Vestnesa Ridge, located offshore north-western Svalbard, is one of the northernmost known active methane seeps. This PhD project aims at gaining a better understanding about 1) when methane release from Vestnesa Ridge occurred throughout the past 24,000 years, 2) how this can be recorded, 3) why the methane was released, and 4)

whether periods of methane release be linked to regional environmental changes. Foraminifera, single-celled organisms that float in the water column or live on the seafloor, help answer those questions. Foraminifera build shells from calcite and are often well-preserved in marine sediments. When methane is released from the seafloor, a different type of calcite encrusts these shells. Investigating the changes in calcite composition over time reveals that periods of past methane release started as the massive ice sheet covering Svalbard and the Barents Sea began retreating 24,000 years ago, and reach until today. Such knowledge helps understanding whether methane release is a recent phenomenon or whether it is a natural process that persists over long time scales. This research contributes to our knowledge of climate change and can inform models used for predictions of future climate change.

Page link to thesis: <http://hdl.handle.net/10037/12780>

Faculty of Science and Technology
Department of Geosciences
2 May 2018

Pavel Serov

Philosophiae doctor

Cryosphere-controlled methane release throughout the last glacial cycle

During the last 35,000 years, the Arctic experienced dramatic climatic changes. Approximately 35,000 years ago, cold climate provoked growth of large masses of ice covering vast territories of today's Barents Sea. Accumulation of large volumes of ice in polar regions resulted in 120 m global sea-level drop. Due to the low sea-level, today's continental shelves not covered by ice, such as the South Kara Sea, froze. Frozen grounds and ice masses accumulated large amounts of methane in the form of gas hydrates – ice-like formations containing methane gas in a very concentrated form. These gas hydrates are only stable when the temperatures are cold and the pressures are high, otherwise they turn into methane gas and water. Studying the seafloor of the Barents Sea and

Kara Sea, it was found that areas previously covered by ice or frozen leak methane. Relying on observations and models, it is found that melting of ice and frozen soils caused decomposition of methane-rich gas hydrates. This process produced large quantities of methane gas in geological layers that eventually escaped the seafloor and entered the ocean.

Faculty of Science and Technology
Department of Geosciences
4 December 2018

Line Silsand

Philosophiae doctor

Growing an information infrastructure for healthcare based on the development of large-scale Electronic Patient Records

This thesis discusses the challenges of growing an openEHR based Information Infrastructure (II) for healthcare. The openEHR framework for designing health information systems is a promising strategy to improve Electronic Patient Record (EPR) systems. This framework addresses vital differences from the traditional proprietary EPR systems presently in use by the way it separates the technical design of the reference model from designing clinical information models. Hence, I have analyzed the openEHR approach to understand the challenges faced in the empirical process. I found that the separation of the technical and clinical concerns influenced the design process, and gave rise to new collaboration forms between the vendor and users, new roles and new responsibilities in the design and implementation. Empirically, the research is based on a 5-year study on the design of an EPR conforming to the openEHR specification. The study is an interpretive case study, making use of semi-structured interviews, participatory observation and document studies as methods.

Page link to thesis: <http://hdl.handle.net/10037/12530>

Faculty of Health Sciences
Department of Clinical Medicine
6 April 2018

Kristin Sjøvik

Philosophie doctor

Perioperative quality assurance in neurosurgery

Difficult surgical disciplines base much of their activity on traditions and old superstitions. The new generation of surgeons want research-based, streamlined treatments of the highest quality. Neurosurgery, or brain surgery if you prefer, is a discipline associated with high risk. Even though the surgery is mostly performed in the same way regardless of whether you receive treatment in Tromsø, Copenhagen or Stockholm, the complication rates arising from this type of intervention vary considerably. Three different neurosurgical departments in Scandinavia have collaborated on the project “Perioperative quality assurance in neurosurgery”. With the main grounding in Tromsø, this thesis has been based on conducting systematic retrospective reviews of more than 2,000 neurosurgical interventions, and has already succeeded in changing important factors that are decisive for patient outcomes. For a relatively small hospital such as UNN, it is important to document that we provide treatment of high quality. We achieve this, and we once again have solid figures to back this up. The specialist environment in Scandinavia has welcomed the new research results with open arms.

Page link to thesis: <http://hdl.handle.net/10037/12840>

Faculty of Health Sciences
Department of Clinical Medicine
8 June 2018

Kaja Konstanse Skjefstad

Philosophiae doctor

The prevalence and prognostic significance of endocrinology-related biomarkers in non-small cell lung cancer

Lung cancer kills more people than breast, colon and prostate cancer combined, making it the deadliest of all cancers. Gender-related survival differences in cancer patients have

been observed, initiating research focus on sex hormones and their possible role in cancer development and treatment. Sex hormones are already well-established treatment targets in breast cancer, rendering hope of a similar potential in lung cancer. The study sought to determine a possible link between sex hormone expression in lung cancer and survival. Tumors were collected from surgically treated lung cancer patients in Tromsø and Bodø. It was observed that the sex hormones are expressed in both genders, however their impact on cancer survival is gender related. This may present a way of separating patients into different treatment groups based on hormone receptor expression in their lung cancer tumors, and may potentially be used in a new treatment strategy of lung cancer using hormones as an individual treatment target.

Page link to thesis: <http://hdl.handle.net/10037/13376>

Faculty of Health Sciences
Department of Medical Biology
22 June 2018

Torbjørn Øygard Skodvin

Philosophiae doctor

Predicting rupture of intracranial aneurysms: morphological and hemodynamic parameters

Which aneurysms will rupture? Increasingly, many people discover that they have outpouchings on the blood vessels of their brains. These are known as intracranial aneurysms and will cause a life-threatening bleeding if they rupture. In this doctoral work, I show that it is possible to predict which aneurysms will rupture, several years in advance. Even the first day the aneurysms were discovered, I found that there could be slight differences between the aneurysms that rupture later and those that did not rupture. I found these differences with accurate measurement methods on X-rays, and computer simulation of the blood flow. The findings can help us discover the most dangerous aneurysms so that these patients can receive surgical treatment, while saving patients with less dangerous aneurysms from risky brain surgery that they do not need. As most aneurysms that are

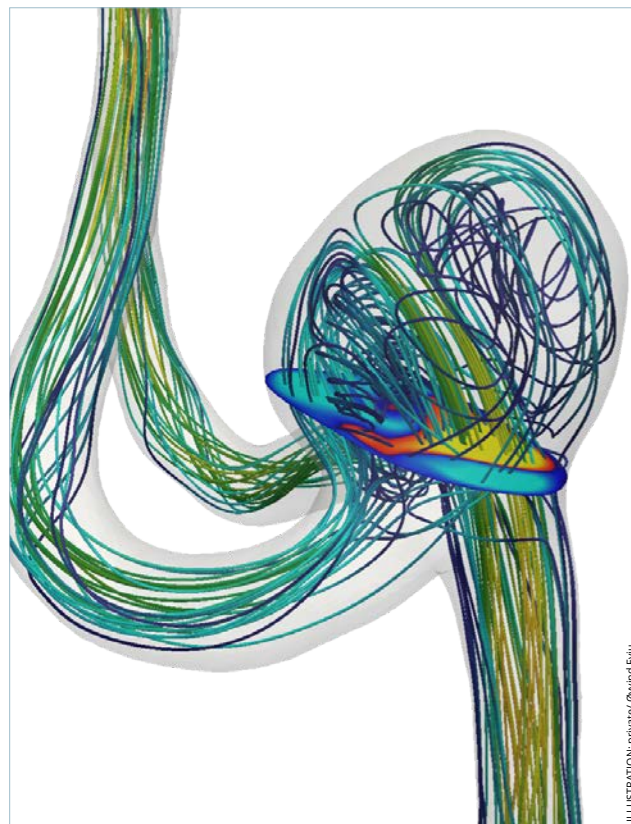


ILLUSTRATION: private/ Øygard Skodvin

discovered are surgically treated, we have not known for certain how it would have gone without such treatment. By identifying 43 patients with intracranial aneurysms that were not treated but that later ruptured nevertheless, I have found a unique data material. Consequently, we have been able to answer questions asked by neurosurgeons around the world.

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Faculty of Health Sciences
Department of Medical Biology
22 June 2018

Jeanette Skoglund

Philosophiae doctor

Upbringing by relatives. Incorporating new understandings and perspectives into the study of kinship foster care

How should kinship foster care be understood in research – as a service within child protective services or as upbringing by relatives? In kinship care research, this phenomenon has primarily been studied as a service. In this dissertation, I have used effect studies as a case to demonstrate the limitations of this construction in research. I show what type of knowledge we can gain from shifting our understanding of kinship care in research and why this is important. Drawing on qualitative interviews with children and young adults who grew up in foster care with relatives, I show that the construction allows us to explore kinship care in all its variability and complexity. Moreover, it allows us to explore what the formal aspect of kinship care can involve for how family life is practiced, and for how childhood is understood. The thesis demonstrates that each understanding has consequences. By acknowledging this, therefore, the researcher, child welfare worker, bureaucrat, policy maker and so on will also need to make implicit and explicit arguments for the choices he or she makes: The choice between approaching kinship care as a service within child protective services or as upbringing by relatives – as family.

Page link to thesis: <http://hdl.handle.net/10037/13201>

Faculty of Health Sciences
Regional Centre for Child and Youth Mental Health and Child Welfare
27 June 2018

Glen Smith

Philosophiae doctor

Governance and power in the planning of Scotland's seas

Marine spatial planning (MSP) has its roots in town planning. It is fundamentally about organising our activities in the sea to minimise conflicts between these and to minimise their impact on vulnerable ecosystems. However, the actions of a lot of people must be organised for this to be achieved. This involves creating institutions and groups that will help to make MSP work. It seems that some groups are not entirely satisfied that marine planning is fair. In order for MSP to work, it needs to be representative and produce outcomes that are widely desirable.

Page link to thesis: <http://hdl.handle.net/10037/14092>

Faculty of Biosciences, Fisheries and Economics
The Norwegian College of Fishery Science
21 November 2018

Annfrid Rosøy Steele

Philosophiae doctor

Research in Teacher Education – We need to speak the same language. Joint supervision practice between school-based teacher, university-based teacher and students (Forskning i lærerutdanning – Vi må snakke samme språk. Veiledningssamarbeid mellom praksislærer, universitetslærer og studenter)

The purpose of this dissertation is to explore the potential collaboration with regard to research and development in professional education. This dissertation is based on an action research study where the intention was to develop collaborative practices between teacher educators on university campuses and in schools. The aim for this study was to explore how collaboration between university-based teachers and school-based teachers concerning joint-supervision of student teachers' bachelor projects can become a model for developing partnerships and mutual

understanding for research and development between universities and schools; and at the same time develop an improved understanding of research for the student teachers.

Page link to thesis: <http://hdl.handle.net/10037/12243>

Faculty of Humanities, Social Sciences and Education
Department of Education
8 March 2018

Anja Striberny

Philosophiae doctor

Feeding and fasting in Arctic charr (*Salvelinus alpinus* (Linnaeus, 1758)): Central regulation of food intake in a highly seasonal fish species

The anadromous (sea-migrating) Arctic charr (*Salvelinus alpinus*) feed a lot during their short feeding-migration to the sea during summer and little or nothing during their stay in fresh water during the rest of the year. The seasonal feeding cycle is maintained in captive charr that have year-round feed access. In mammals, appetite and energy homeostasis are regulated by a network of hormones, neuronal signals, and neuroendocrine signals. Many of these appetite regulating mechanisms are also found in fish. However, their function in fish is far from understood. This work aimed at revealing the involvement of neuroendocrine signals produced by the brain in the control of food intake in the seasonal Arctic charr. How can the charr stop feeding for months without getting hungry? Data in this study indicate that changes in central appetite signalling occur only during transition phases from fasting-mode to feeding-mode and vice versa.

Page link to thesis: <http://hdl.handle.net/10037/13005>

Faculty of Biosciences, Fisheries and Economics
Department of Arctic and Marine Biology
15 May 2018

John Fredrik Strøm

Philosophiae doctor

Ocean migration of Atlantic salmon

The aims of this thesis were to record the ocean migration of post-spawned Atlantic salmon (*Salmo salar*) from the Alta River, Norway, and the Miramichi River, Canada, and to quantify the marine mortality of post-spawned adults from large parts of the species' distribution range, using electronic tags that record and store data about the behaviour of the individual and the habitat they occupy. The results documented that Atlantic salmon from the Alta River used Arctic areas, with individual migration routes extending from the eastern Barents Sea to Jan Mayen Island. In comparison, Atlantic salmon from the Miramichi River displayed an exclusive utilization of the Gulf of St. Lawrence and the Labrador Sea during their ocean migration. Furthermore, this thesis documented that a variety of large marine animals, including large fish and toothed whales, preyed on Atlantic salmon during their time at sea. Predation by endothermic fish was most common, occurring primarily in the Gulf of St. Lawrence and in waters spanning from west of the Irish Shelf to the Bay of Biscay. In conclusion, this thesis revealed several novel aspects of the ocean migration of individual Atlantic salmon and large geographical variation in the ocean mortality. This information is important towards a greater understanding of the ecological process influencing Atlantic salmon's growth and survival in the ocean.

Page link to thesis: <http://hdl.handle.net/10037/13694>

Faculty of Biosciences, Fisheries and Economics
Department of Arctic and Marine Biology
14 September 2018

Carl Christian Lein Størmer

Philosophiae doctor

Hearing in rock musicians

Musicians are known to be at risk of developing hearing loss and tinnitus. In this dissertation, the largest study to date on hearing disorders in rock musicians is presented. Rock musicians are at an increased risk of developing hearing loss and tinnitus, but the study also shows that musicians tend to develop an increased resistance towards developing hearing loss. Furthermore, damage to the inner ear does not seem to be the sole causative factor in the development and management of tinnitus.

Page link to thesis: <http://hdl.handle.net/10037/14370>

Faculty of Health Sciences
Department of Clinical Medicine
14 December 2018

Ragnhild Aven Svalheim

Philosophiae doctor

Stress responses influencing fillet quality of trawled Atlantic cod and haddock

To obtain the best possible fillet quality, capture should be made as gentle as possible, preferably in a way that allows the fish to move inside the trawl. This is the main conclusion from this PhD study on how trawl capture may influence fillet quality in Atlantic cod (*Gadus morhua*) and haddock (*Melanogrammus aeglefinus*). The objective of the study was to identify critical stages during trawl capture with potential detrimental effects on fillet quality. The experiments were carried out using a swim tunnel attached to an experimental cod end, which allowed us to study physiological stress responses of 1) exhaustive swimming (to mimic swimming in front of the trawl mouth), 2) a combination of exhaustive swimming and crowding in the cod end, and 3) a combination of crowding in the cod end and exposure in air. The results suggest that crowding in the cod end followed by air exposure has a strong impact on fillet quality. Exhaustive swimming, on the other hand,

only has a minor effect on fillet quality.

Page link to thesis: <http://hdl.handle.net/10037/14238>

Faculty of Biosciences, Fisheries and Economics
The Norwegian College
12 December 2018

Kristina Svensen

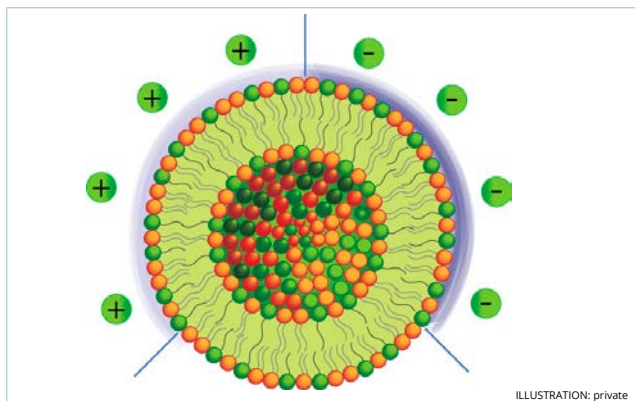
Philosophiae doctor

Deverbal Adjectives in Spanish: a nanosyntactic approach (Los adjetivos deverbales en español: un estudio nanosintáctico)

This thesis studies Spanish adjectives formed from verbs. Examples of adjectives like this are “forgetful”, “breakable” and “foldable”: we can see the link between these and the verbs “to forget”, “to break” and “to fold”. These adjectives express different meanings that are frequent when a verb is turned into an adjective. “Forgetful” might be considered a habit; we understand that a forgetful man tends to forget things often. If a glass is breakable, this means that it can break easily; it is fragile. This is called disposition. Finally, if a phone is foldable, it simply means that it can be folded. This is referred to as a potential reading. I have studied a selection of adjectives like this in Spanish, and their use in real world texts. I suggest that they are constructed differently grammatically, and that it is this that causes the different meanings. This can provide us with important and more detailed knowledge of how the adjectives are different from verbs.

Page link to thesis: <http://hdl.handle.net/10037/13010>

Faculty of Humanities, Social Sciences and Education
Department of Language and Culture
12 June 2018



Selenia Ternullo

Philosophiae doctor

Nanocarriers for tailored skin delivery: More than just the carriers?

Localized drug action is expected to improve therapeutic outcome of many diseases, including skin therapy. The optimization of nanocarriers that can carry the drug into the targeted skin layers in a controllable manner leads to improvement in therapy. In this PhD project, different lipid nanoparticles were tested as nanocarriers on the skin model developed to closely mimic the living human skin. Elastic spherical vesicles, deformable liposomes, were found to be the most promising nanocarriers delivering the active compounds in the deeper skin layers while avoiding systemic absorption. By exploring the effect of vesicle surface charge, a sustained dermal delivery of the active substances was achieved and their biological activities, such as anti-inflammatory and anti-bacterial, enhanced. Positively charged deformable liposomes in chitosan hydrogel were proposed as advanced wound dressing able to assure prolonged drug localization at the administration site.

Faculty of Health Sciences
Department of Pharmacy
23 November 2018

Jens Andreas Terum

Philosophiae doctor

Learning from what might have been – judgments and evaluations of counterfactual outcomes

People frequently stop to consider how aspect and events in their life could have been different. We may regret opportunities we failed to seize, or shudder at the thought of what might have happened “If only...”. Such thoughts are purely hypothetical, but still have an impact on how we feel, think and evaluate the world around us. Sometimes, or maybe most times, such thought seem to drift in the direction of outcomes that are the polar opposite of what actually happened. For instance, “If only I had been encouraged to keep playing...” one might think, subtly hinting at a missed career in the music industry, or “It’s a miracle it all ended well”, contemplating the mischief indulged in childhood. In this thesis, I report on research asking people to evaluate scenarios describing situations that could easily have taken a turn for the better or worse. The study shows that: 1) such counterfactual speculations seem to be less constrained by reality than ordinary predictions, 2) such thoughts are affectively unimpressive, and 3) such exaggerated thoughts about what “could have happened” do not seem to inspire caution after accidents and near-accidents.

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Faculty of Health Sciences
Department of Psychology
23 March 2018

Audun Theodorsen

Philosophiae doctor

Statistical properties of intermittent fluctuations in the boundary of fusion plasmas

The statistical properties of intermittent fluctuations in the boundary of fusion plasmas have been elucidated by analysis of experimental measurement data time series of unprecedented duration. These fluctuations are due to hot

and dense plasma structures moving through the boundary region to the reactor walls, resulting in detrimental plasma-material interactions. A recent phenomenological model for the fluctuations assumes that the structures arrive independently of each other and do not interact. Their shape is fixed, but their amplitudes are random. From this, predictions for the probability distribution function and power spectral density can be derived. The model assumptions and predictions are shown to be consistent with all statistical properties of the measurements. New predictions for the number of crossings above a threshold and excess time above a threshold have been derived and are also shown to correctly describe the measurements. Furthermore, model parameter estimation for synthetic data with noise is investigated using numerical simulations.

Page link to thesis: <http://hdl.handle.net/10037/13374>

Faculty of Science and Technology
Department of Physics and Technology
14 June 2018

Hervé Emile Louis Thevenon

Philosophiae doctor

What are the necessary characteristics of the nervous system to exhibit habituation?

The mainstream foundations of neurosciences are grounded in Herbert Gasser's view (circa 1930) that the detailed analysis of each component of the nervous system is the only way to understand its workings. Edgar Adrian held an alternative view: the complexity of the behaviours produced by the nervous system is more likely to be explained by a mass of simple neurons with negligible distinctive features rather than by the delicate balance of the individual characteristics of each neuron. While the demonstration of the latter remains elusive, my work vindicates Adrian's insight.

The simplistic algorithmic model of the neuron developed in this thesis is indeed sufficient to build small stateful connectomes that express a handful of innate behaviours in a semi-stochastic environment

that provides organisms with ambiguous stimuli. The behaviours that can maximise the organism's survival value when environmental conditions change noticeably, do habituate or sensitise without any alteration of the network or its parts. The connectomes also show graceful ataxia when lesions are inflicted in the mass. While several neuroscience communities question the pertinence of the findings obtained from experimental designs where the environment or the behaviours are overly simplified, my results question the robustness of the current foundations of neurosciences.

Faculty of Health Sciences
Department of Psychology
28 August 2018

Ivar Kristian Thomassen

Philosophiae doctor

Octaiodoporphyrin and Octaiodocorrole: Isolation of a Cis Porphyrin Tautomer

Porphyrins are a class of ring-shaped molecules capable of binding a metal ion at their center, which are perhaps most familiar in the form of the red color (hemoglobin) of blood and the green color (chlorophyll) of plants. They serve an incredible number of biological functions and are often referred to as the colors of life. Chemists are adept at making synthetic analogues of these molecules, which can also be very useful in a wide-range of applications such as cancer treatment, the construction of solar cells, and industrial catalysis. This is what I have worked on. The synthetic porphyrins that I have made should act as precursors to a variety of reagents for cancer imaging and therapy. In a second development, I have performed an in-depth study of the position and movement of the hydrogen atoms in a metal-free porphyrin. This study should allow a deeper understanding of how porphyrins incorporate a metal such as iron when forming hemoglobin.

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Faculty of Science and Technology
Department of Chemistry
28 September 2018

Kjærsti Thorsteinsen

Philosophiae doctor

Self-regulating Physical and Mental Activities: Intensive Longitudinal Intervention Studies of Physical Fitness and Happiness

Being active is a primary necessity in life that helps us achieve our goals, but it is also an essential part of what makes life worth living. This thesis explored goal pursuit activities people might not experience as pleasant in the moment, but where the self-chosen activities are still considered good and worthwhile. Three papers, building on data from two studies testing different online self-regulation interventions, are presented. The results showed that online interventions helped participants self-regulate physical and mental activities. Furthermore, they indicated a duality between hedonic wellbeing (HWB) and eudaimonic wellbeing (EWB) in the goal pursuit process: while EWB ignited and sustained wellbeing in effortful goal pursuits, HWB was more related to the outcome phase, rewarding goal achievement. Congruent findings from different analyses also supported convergent and discriminant validity of HWB and EWB as separate constructs. The importance of having personal goals and striving to reach them is thus an argument in favour of expanding the notion of wellbeing beyond hedonic pleasure and satisfaction to also include eudaimonic wellbeing.

Page link to thesis: <http://hdl.handle.net/10037/14206>

Faculty of Health Sciences
Department of Psychology
29 November 2018

Sweta Tiwari

Philosophiae doctor

Atrial Fibrillation: A prospective population study of risk factors and complications. The Tromsø Study

Atrial fibrillation is a common heart disease and may increase the risk of serious health complications. In the population based on the Tromsø Study, this study investigated which risk factors increased the risk of future atrial fibrillation, and which complications people with atrial fibrillation get by following them over many years. Our focus was particularly the size of the heart's left atrium as an atrial fibrillation risk factor, atrial fibrillation as a risk factor for stroke, and cognitive function decline in subjects without stroke. The study found that enlarged left atrium size of the heart as measured by echocardiography gave a fourfold increased risk for atrial fibrillation in both sexes. In addition, individuals with enlarged left atrium and at least one risk factor for stroke had nine times higher stroke risk irrespective of whether they had atrial fibrillation or not. In stroke-free participants, subjects with atrial fibrillation had 40% increased cognitive decline.

Page link to thesis: <http://hdl.handle.net/10037/13346>

Faculty of Health Sciences
Department of Community Medicine
26 April 2018

Randi Tofthagen

Philosophiae doctor

Recovery from self-harm. A qualitative study

The overall aim of this dissertation was to expand understanding of the recovery process from direct self-harm for adult persons who self-harm. Study I included a theoretical evolutionary concept analysis to clarify the content of the concept self-harm. In Study II, mental health nurses' experiences of caring for adult inpatients who self-harm during an acute phase were explored using manifest and latent content analyses. In study III, former patients' experiences of recovery from self-harm was explored, and

a phenomenological hermeneutical analysis of data. After persons who self-harm acknowledged a turning point and chose life and/or contact with close relatives, they became motivated to receive professional help and start the individual learning processes toward recovery from self-harm. A personal recovery process was begun where they learned to recognize personal stress, what it was that triggered their self-harm, how to distract themselves, and how to master their own basic needs. One central implication for each nurse is the question of how he/she can guide the patient to recovery, both prior to and after the patient's acknowledged turning point.

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Faculty of Health Sciences
Department of Health and Care Sciences
11 May 2018

Lisa Torell

The Norwegian Artistic Research Programme

Potential of the Gap

Potential of the Gap has been about method and place. In site-specific, contextual or relational art, the relationships between and relationships to are critical to the critical artistic licence. The work has been performative, with place and audience as a material in itself, and the gap as a tool and artistic device for challenging what is taken for granted, exposing structures, to enable a rethink and thinking afresh. It has taken place in, about and alongside the public space and semi-public space. In addition to developing and strengthening the method, I also wanted to review the terminology of the site-specific field, to make it more accessible and enable multidisciplinary interaction. The Gap is a word which describes an (often) unwanted state between two states. The gap “works” when it occurs as a contrast to other. It offers an opening and an alternative. The gap amplifies the movement as well as the relationship to one thing and the other. Thus, for me it is a metaphor describing something greater. Potential of the Gap, have been artistic research through: art pieces: performative

site-related installations, performances, preformances, video, sculptures, sound and through: articles, texts, books, projects, discussions, workshops, lectures.

Page link to thesis: <http://hdl.handle.net/10037/14676>

Faculty of Fine Arts
Tromsø Academy of Contemporary Art and Creative Writing
28 May 2018

Gro-Hilde Ulriksen

Philosophiae doctor

Socio-technical Challenges of Large-Scale EPR Standardization in Healthcare

In this thesis, I present empirical insight to socio-technical challenges of Standardizing large-scale healthcare information infrastructures (II). The main focus was how to balance the requirements between technological, organizational, and user related requirements in large-scale IIs, as well as the power balance between the actors, and the need for extensive user involvement in such standardization. The most important findings from this study relates to the need for close collaboration between technology, organization and system users in large-scale healthcare standardization, hence the main contribution of this thesis is the need for closer interrelation between the archetype standards and the EPR system than the two-level model presents. I emphasize the importance of balance between user involvement and the efficiency of the standardization processes, including keeping the end users as the main developers of the archetype standards. In such large-scale standardization effort including numerous users, it was important to address the power relations between the actors in the standardization and how this influences the outcome of the work.

Page link to thesis: <http://hdl.handle.net/10037/14036>

Faculty of Health Sciences
Department of Clinical Medicine
5 October 2018

Sara Magelssen Vambheim

Philosophiae doctor

Sex differences in pain, fear of pain and placebo analgesia

The placebo analgesic effect is pain reduction after treatment with an inert substance or procedure, administered with suggestions of pain relief. This study tested the hypothesis that males are more responsive to placebo treatment than females. The results showed that males were more responsive to placebo treatment and that the sex difference was related to a difference in males' and females' stress response after placebo treatment. The sex difference was reflected in EEG-measurements. One widely used instrument for measurements of fear of pain is the Fear of Pain Questionnaire-III (FPQ-III). A more recent device, derived from the FPQ-III, is the Fear of Pain Questionnaire-Short Form (FPQ-SF). Two different studies investigated sex differences in fear of pain and the applicability of the two abovementioned instruments. The results uncovered higher fear of severe pain in females than in males. Possibly, this may have been due to sex differences in psychological processes, such as fear and anxiety, and interpretation of fear of pain items. The results also showed that neither the FPQ-III nor the FPQ-SF had good fit to the Norwegian data, but the FPQ-SF was better than the FPQ-III. Our findings illustrate the importance of validating and adjusting models for measurements of fear of pain.

Page link to thesis: <http://hdl.handle.net/10037/14210>

Faculty of Health Sciences
Department of Psychology
13 November 2018

Marie Vangen

Philosophiae doctor

Universal Jurisdiction – Limits of General International Law on States' Right to Prosecute Offences Committed Abroad (Universaljurisdiksjon – Alminnelige folkerettslige rammer for staters transnasjonale straffeforfølgningsrett)

Universal jurisdiction is national criminal jurisdiction over offences committed abroad by foreigners against foreigners, and which are not threatening the vital interests of the state itself. The topic is politically sensitive, and international legal doctrine as well as state rhetoric concerning the matter is characterized by a great degree of discrepancy and uncertainty. Among the most controversial issues are the questions of which crimes can actually provide the basis of universal jurisdiction, what characterizes illegal abuse of such jurisdiction, whether it is compatible with international rules on immunity, and whether it can be executed *in absentia*. The thesis' main research question is as follows: When are states allowed by general international law to prosecute crimes on the basis of universal jurisdiction? The answer is given by an analysis based on a systematic and strictly legal approach, where the many political arguments and agendas are disregarded as far as possible. As a consequence of the chosen method, I am also able to provide well founded conclusions to the most highly disputed questions regarding universal jurisdiction.

Faculty of Law
4 May 2018

Marta Velnic

Philosophiae doctor

Ditransitive structures in Croatian adult and child language: the role of animacy and givenness

This dissertation investigates how children acquire ditransitive structures in Croatian with respect to a non-contextual factor (animacy) and a contextual factor (givenness). Ditransitive sentences concern a special class of verbs called ditransitive verbs (such as 'give'), which can take three arguments: the subject, the direct object, and the indirect object. In Croatian, the choice of order of the two objects depends on the factors investigated in this research. The tested groups included children and adults and different methodologies were used: naturalistic (corpora) and experimental data, the latter was structured both in terms of comprehension (acceptability judgment task) and production (elicitation). The main finding of this dissertation is that animacy strongly affects children's choice of word order. Adults' preferences are also affected by it but to a lesser degree. Both adults and children favour DO-IO when animacy is controlled for, thus I suggest that DO-IO is the underlying object order in Croatian ditransitives. Additionally, the results suggest that children are more likely to mark givenness locally, through referring expressions, rather than globally, with object order.

Page link to thesis: <http://hdl.handle.net/10037/12197>

Faculty of Humanities, Social Sciences and Education
Department of Language and Culture
22 February 2018

Theresa Maria Wagner

Philosophiae doctor

How to Be a Bad Bug: Virulence Determinants of Enterococcus faecium

Enterococci are a normal part of the human intestinal flora, but they can infect our body via the bloodstream. Usually, immune cells protect us from infection. In the hospital, however, especially weak patients face bacteria,

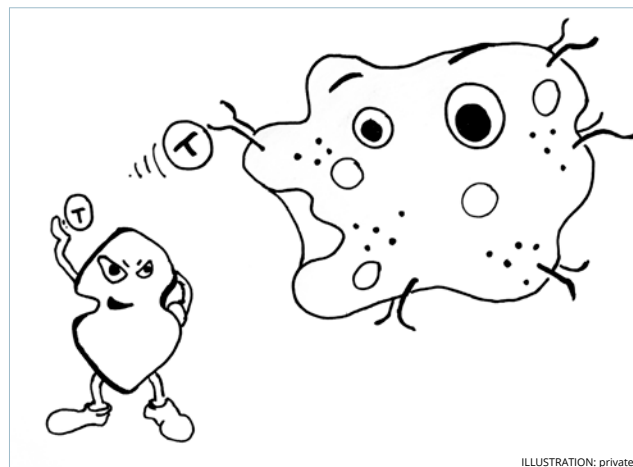


ILLUSTRATION: private

which evade their defense system. A treatment challenge is the enterococci's resistance to many antimicrobial drugs. In the first project, proteins exclusive to hospital enterococci, which help bacterial immune evasion were identified. The second project describes small spheres released by enterococci, called membrane vesicles, which can transport proteins related to resistance and virulence. The third project explored large genetic structures, called megaplasmids, which promote the survival of enterococci in blood. The knowledge gained in this thesis will help to understand the differences between enterococci naturally inhabiting our intestine and those entering our blood. This will lead the way to the development of new treatment strategies and drugs.

Page link to thesis: <http://hdl.handle.net/10037/14108>

Faculty of Health Sciences
Department of Medical Biology
18 October 2018

Mari Johannessen Walquist

Philosophiae doctor

Anti-inflammatory, antioxidative and anti-atherogenic bioactivity in marine sources ascribed to nonlipid constituents

Cardiovascular disease (CVD) has been, and continues to be, one of the main causes of global deaths. For decades, fish consumption has been acknowledged to reduce the risk of CVD, especially omega-3 fatty acids which are known to have anti-inflammatory properties. Still, there are indications that beneficial effects are not limited to fatty acids alone. In this study, the bioactivity in marine sources ascribed to nonlipid constituents was investigated. Lipid-free extracts from cold-pressed whale oil (CWO) displayed antioxidative and anti-inflammatory effects in biochemical and cell assays. CWO had beneficial effects on the atherogenesis in apolipoprotein E-deficient (ApoE^{-/-}) mice with reduced formation of lesions in the aortic arch, reduced cholesterol parameters and reduced weight, whereas total antioxidant status and expression of several hepatic genes were heightened. A diet with a lean protein source of cod-scallop reduced the total aortic burden and reduced glucose and leptin levels in ApoE^{-/-} mice when compared to chicken-fed ApoE^{-/-} mice. This study provides novel insight into the putative protective mechanism of dietary supplement of CWO and cod-scallop in atherosclerosis and demonstrates the importance of further investigation of nonlipid bioactivity in marine sources.

Page link to thesis: <http://hdl.handle.net/10037/13598>

Faculty of Biosciences, Fisheries and Economics
The Norwegian College of Fishery Science
31 August 2018

Linda Wiechetek

Philosophiae doctor

When grammar can't be trusted – Valency and semantic categories in North Sámi syntactic analysis and error detection

Have you ever tried to understand an ungrammatical sentence in a foreign language? When learning a language, we are usually taught vocabulary and grammar. But this may not be enough. For example, *I like reading* cannot be translated into North Sámi **Mun liikon lohkame*. But how do we know that like can be followed by a gerund, but liikot cannot? The capacity of a verb to appear in different constructions is called valency. While a native speaker “knows” a verb’s valency, a language learner needs to learn it. In this thesis, I developed a grammar checker for North Sámi, GoDivvun, with access to semantics and valencies. It does the same as a language learner: understand a sentence and decide which parts belong together. The sentence **Su liiko fiskes ivnni* ‘Her likes the color yellow’ is grammatically incorrect. But due to semantics, we know that she likes the color yellow and not the other way around. By means of semantic relations, GoDivvun finds these types of errors.

Page link to thesis: <http://hdl.handle.net/10037/12726>

Faculty of Humanities, Social Sciences and Education
Department of Language and Culture
23 May 2018

Tor Aamodt Wigum

Philosophiae doctor

Religious Practice in Public Spaces – Restrictions on Religious Clothing and Symbol Use (Religionsutøvelse i det offentlige rom – restriksjoner i religiøs bekledning og symbolbruk)

The overall theme of this thesis is religious practice in public spaces. The main purpose of the thesis is to analyse which legal barriers Article 16 of the Norwegian Constitution,

Article 9 the European Convention on Human Rights, and Article 18 of the UN's International Covenant on Civil and Political Rights set out for legislators' access to regulate the use of religious clothing and symbols in public spaces. The thesis also discusses specific issues related to the use of religious clothing and symbols in various aspects the public space; public spaces in general, in the school-sector and in the workplace respectively.

Faculty of Law
30 November 2018

Anna Maria Wirsing

Philosophiae doctor

The immune microenvironment in oral squamous cell carcinoma – characterization and prognostic markers

Oral cancer is an aggressive disease often associated with poor survival. The patient's immune reaction to the cancer is crucial to fight the disease and is an important diagnostic tool in many cancer types. The researchers studied the organization and prognostic value of immune cells and immune-regulating

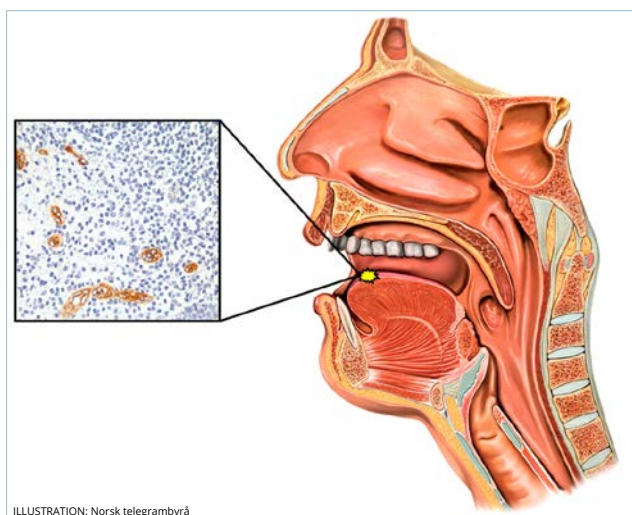


ILLUSTRATION: Norsk telegrambyrå

components surrounding the cancer cells in cancer tissue of 80 oral cancer patients. These components are good indicators of how the patient's immune system responds to the cancer. I found that the presence of specialized blood vessels in the cancer tissue predicts improved survival in oral cancer patients. This is probably because these vessels play a role in the transport of cells that can kill the cancer. In the future, one may take advantage of these vessels to enhance anti-tumor responses in oral cancer patients.

Faculty of Health Sciences
Department of Medical Biology
27 September 2018

Temesgen Gebrie Yitayew

Philosophiae doctor

Investigation of Sea Ice Using Single and Multiple Synthetic Aperture Radar Acquisitions

The thesis investigates three-dimensional imaging of different types of ice in the Arctic using multiple synthetic aperture radar (SAR) measurements. The vertical layering structure within snow-covered fjord and lake ice are effectively identified by using a ground-based three-dimensional imaging SAR system. Datasets collected over two test sites in Tromsø area, Northern Norway, are used for the analysis. The retrieval of the surface topography of multi-year sea ice is investigated by using a pair of SAR acquisitions. Datasets acquired by satellites over the Svalbard area are used for analysis. The work contributes to an improved understanding regarding the potential of three-dimensional radar imaging for analyzing the vertical scattering structure of snow and ice layers. Such layering information of snow and ice can be associated to the local temperature history of the area. The results also show the potential of three-dimensional radar imaging for revealing information that can be vital for modelling the radar responses of snow and ice. Moreover, the presented results reveal the potential of satellite-based radar measurements for retrieving the surface topography of sea ice, which is important information for climate studies as it affects atmosphere-ice-ocean interactions.

Page link to thesis: <http://hdl.handle.net/10037/12244>

Faculty of Science and Technology
Department of Physics and Technology
23 February 2018

Hao Yu

Philosophiae doctor

Optimization models and methods for sustainable reverse logistics network design

With the increased focus on environmental pollution and sustainable development, the value recovery and re-creation from the End-of-Use and End-of-Life products has been given considerable attention by the whole society. Reverse logistics is the process for recovering the value from End-of-Use and End-of-Life products through a series of activities, i.e. reuse, repair, remanufacturing, recycling and energy recovery. Nevertheless, due to the stochastic reverse product flow, unstable quality, the changing costs for facility operation and transportation, as well as the price fluctuation of the recovered products, the design of a reverse logistics network is a complex decision-making problem. In this PhD project, advanced optimization models and methods have been developed for providing decision-makers, supply chain managers and practitioners with better support and implications for the planning of a sustainable reverse logistics system under an uncertain environment. Moreover, the development on the modelling and solution techniques has contributed to the knowledge accumulation in operational research and management science and can also be used for modelling and resolving optimization problems in some other fields.

Faculty of Engineering Science and Technology
Department of Industrial Engineering
4 December 2018

Konstantin Zaikov

Philosophiae doctor

The Russian - Norwegian Border Convention 1826 and the northern frontier issue in the history of the Russian - Norwegian relationship 1708-1920

This monograph is devoted to the history of the Norwegian – Russian borderland (Northern Frontier) in 1708-1920. I used a wide range of materials from the archives of Russia, Norway, Sweden, Denmark and the United States to present the social, economic, ethnic and cultural space of the Norwegian – Russian borderland in the eighteenth and nineteenth centuries and to analyze the borderland strategies of the Norwegian and Russian authorities on the local, national and international levels. The data was the most important factor in establishing my interpretation of the Norwegian-Russian borderland grounded on the idea that its evolution proceeded from the frontline zone to physical and political border between the years 1708 and 1920.

Faculty of Humanities, Social Sciences and Education
Department of Archaeology, History, Religious Studies and Theology
13 April 2018

Andrea Sofie Henriette Milde Øhrn

Philosophiae doctor

Unrecognized Myocardial Infarction. Pain tolerance, prognosis and pathogenesis in men and women

Many people undergo myocardial infarction, more commonly known as a heart attack, without knowing it has happened. This is called unrecognized myocardial infarction. In the 6th round of the Tromsø Survey, 6, 199 people were examined by electrocardiogram (ECG), which shows if a person has undergone myocardial infarction. Furthermore, data on pain tolerance and markers for small and large vessel disease were collected. I found that people with unrecognized infarction tolerated more pain than those with recognized infarction, and this may partly explain the lack of symptoms of unrecognized



infarction. Furthermore, I found that people with unrecognized infarction have small vessel disease to a greater extent and large vessel disease to a lesser extent than people with recognized infarction. When I followed people with unrecognized infarction, I found that these people have greater risk of death and further infarction than people without infarction, but that this increased risk is largely explained by well-known risk factors of cardiovascular disease. My findings indicate differences between recognized and unrecognized infarctions, and is a good starting point for further research that should aim to prevent unrecognized infarction and treat it correctly. Unrecognized myocardial infarction is a hidden public health problem that accounts for a large proportion of female heart disease.

Page link to thesis: <http://hdl.handle.net/10037/12514>

Faculty of Health Sciences
Department of Community Medicine
22 March 2018

Roald Andreas Øien

Philosophiae doctor

Autism Spectrum Disorders: Complexities associated with sex-differences, screening and diagnosis

This doctoral thesis examines screening and sex differences in autism spectrum disorders (ASD), and how behavioral, developmental and temperamental features of males and females affect early identification of the disorder.

Page link to thesis: <http://hdl.handle.net/10037/13375>

Faculty of Health Sciences
Department of Psychology
28 June 2018

Karin Emmelie Åström

Philosophiae doctor

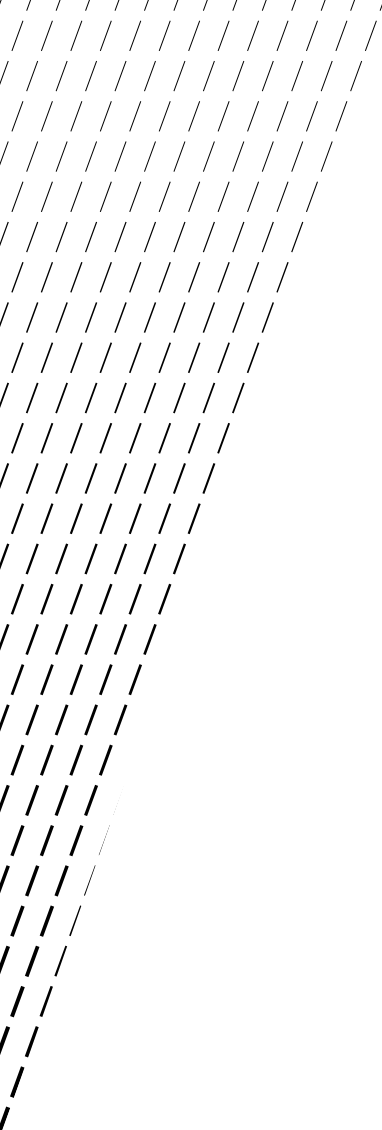
Benthic communities at high-Arctic cold seeps: Faunal response to methane seepage in Svalbard

Have you ever heard about cold seeps? Cold seeps are places where methane and other reduced compounds are released at the seafloor, which can form the basis of chemosynthetic habitats and specialized animal communities on the seabed. Offshore Svalbard shelves and in the Barents Sea, cold seeps within the depth range of 85-1200 m were investigated in order to describe the animal assemblages and surrounding habitats. The aim was to study the ecological structure, diversity and food web dynamics at high-Arctic cold seeps, document how they compared with conventional, non-seep communities and examine the interaction between seep and non-seep communities where they co-occur. This is the first dedicated study of high-Arctic cold seeps that focuses on the biological and ecological aspects of seafloor communities offshore Svalbard. Cold seeps in the Arctic are of high ecological importance and methane is a key environmental driver of the biological system. Characteristic seep features, such as methane derived carbonate rocks and chemosymbiotic worm tufts, add

complexity and 3D-structure to the otherwise relatively flat and barren seafloor. Cold seeps provide shelter and substrate to animals living in the sediment and on the seafloor, and to larger and free-swimming animals. Furthermore, cold seeps and seabed methane emissions add a supplementary energy source into the Arctic ecosystem.

Page link to thesis: <http://hdl.handle.net/10037/12795>

Faculty of Science and Technology
Department of Geosciences
20 April 2018



UiT The Arctic University of Norway

N-9037 Tromsø, Norway

Telephone +47 77 64 40 00

postmottak@uit.no

uit.no

