

UiT

THE ARCTIC
UNIVERSITY
OF NORWAY

DOCTORAL DEGREES

2016



Photo: Colourbox





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104 new doctoral degrees in 2016

A total of 104 doctoral degrees were awarded at UiT The Arctic University of Norway in 2015. 52 candidates defended their doctoral thesis in the spring semester, and 52 in the autumn semester. This represents a slight increase compared to 2015 (103 new doctors).

54 women and 50 men defended their doctorate at UiT in 2016. 41 of the doctors came from 26 different countries outside of Norway.

In 2016, six of the university's eight faculties offered PhD programmes ¹. The number of doctors were distributed as follows:

Faculty of Health Sciences: 43
Faculty of Science and Technology: 17
Faculty of Humanities, Social Sciences and Education: 20
Faculty of Biosciences, Fisheries and Economics: 22
Faculty of Law: 2
Faculty of Engineering Science and Technology: 0

General information about doctoral degrees

A doctoral degree is the highest academic degree awarded by Norwegian educational institutions.

The doctoral degree qualifies the candidate for research work of high academic level and for other 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 studies are financed either by grants from UiT, the Research Council of Norway or other external funding sources. The PhD programme is a three-year full-time programme. Some scholarships are for four years, where the doctoral thesis constitutes 75% and other work, teaching, etc., amounts to 25%. Students are admitted to a doctoral degree programme. Many of the 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).

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 organised training. The degree is achieved after evaluation of a scientific dissertation, disputation and trial lectures.

In 2016, 101 candidates attained the PhD degree and 3 attained the Dr.philos degree.

Most theses are published in Munin, which is UiT's digital knowledge archive. Some of the them were not ready when this brochure is printed. You can search for the candidate's name on <http://munin.uit.no> Read more about research at UiT on www.uit.no/forskning

¹ The Faculty of Athletics, Tourism, and Social welfare and the Faculty of Fine Arts do not currently offer PhD programmes.

Doctoral degrees in 2016 at UiT The Arctic University of Norway

Eirik Kjus Aahlin

Philosophiae doctor

Predictors and determinants for recovery and survival after upper abdominal surgery

Patients with upper abdominal malignant disease often experience delayed recovery and long-standing functional impairment. Postoperative complications are frequent and the prognosis is often poor. The aim of the research project was to explore predictors and determinants for recovery and survival after upper abdominal surgery. Recovery of mobility and GI function are considered the most important target of convalescence after surgery. The traditional global indicators of poor prognosis after surgery, preoperative weight loss and abnormal serum-albumin, are still valid today. There is a close correlation between functional impairment and prognosis after major upper abdominal surgery. Tissue loss during surgical and oncological treatment for upper abdominal cancer can be evaluated through routine CT examinations. Preoperative low muscularity is independently associated with poor prognosis after resection for gastric adenocarcinoma. However, preoperative body composition indices do not seem to be global indicators of poor prognosis as importance and cut-offs seem to vary with different diseases. Postoperative morbidity is associated with poor long-term survival after major upper abdominal cancer surgery.

Page link to thesis: <http://hdl.handle.net/10037/9837>

Department of Medical Biology
Faculty of Health Sciences
21.10.16

Bjørn Inge Berger Andersen

Philosophiae doctor

Livskamp og menneskelig endring: Analyser av seks noveller i Raymond Carvers forfatterskap

(Human struggle and change in a reading of six short stories by Raymond Carver). The purpose of this study is to examine how the short story writer Raymond Carver reflects on the question of human change in a selection of



his stories. Carver's stories are often depicted as dark and filled with hopelessness, and with characters that seem unable to change their life for the better. This study argues that the processes behind human change are far more complex and involve more aspects and nuances than what is normally considered by critics. The reading reveals the causes behind failed human change as well as the reasons for successful change. An important discovery is that the question of human change has an ethical dimension, which in various ways is related to the characters' imagination, their level of personal insight and their ability to act. The initial investigation is performed with the Textpraxis-method that Anniken Greve argues for in her thesis from 2008, Litteraturens meddelelse. Anthropological theories on rites of passage have been useful to understand and describe the different phases and variations of human change in Carver's stories.

Page link to thesis: <http://hdl.handle.net/10037/10016>

Department of Language and Culture
Faculty of Humanities, Social Sciences and Education
30.9.16



Hege Andersen

Philosophiae doctor

Enablers for change. A mixed-methods study of Lean-based quality improvement in hospitals

The varying outcomes of quality improvement interventions in health care constitute the point of departure of this thesis. How can we understand, and explain, that some interventions succeed while others do not? Knowledge of what happens when Lean thinking encounters practice enables targeted quality interventions. An umbrella review indicated that characteristics and application of Lean should be given more attention. Focus group interviews and a survey showed that translation processes brought about work-floor versions of Lean. The researchers claim that translation is decisive for interventions' outcomes. Through a linear mixed model analysis, they found that to achieve quality improvement in hospitals, one should invest in a comprehensive project organisation; engage multidisciplinary teams including employee- and safety staff representatives and pursue improvement for patients, across divisions. This study

contributes to reduce the quality chasm by shedding light on enablers for organisational change.

Page link to thesis: <http://hdl.handle.net/10037/9126>

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
15.3.2016

Svein-Erik Andreassen

Philosophiae doctor

Forstår vi læreplanen?

(Do we understand the curriculum?) In 2006, a wide range of content-oriented curricula in Norway were replaced by a competency-based curriculum, a curriculum that emphasizes what one should “be able to do” instead of what one should “know about”. The national curriculum documents are, however, fairly diffuse in the description of what this change will actually entail. Andreassen has performed a qualitative content analysis of national curriculum documents, participation in local curricula at a school and thought experiment. The study shows that the national requirements for competency-based curricula are not implemented, but translated so they end up as knowledge goals in local curricula, and thus have more affinity with content oriented curricula than competency-based curricula. Andreassen has seen what can and should be done, and has developed 21 principles for local curricula with LK06. The study findings are contributions to curriculum understanding – applicable to both curriculum designers at the national level and actors at local level; school administrators, teachers and students.

Page link to thesis: <http://hdl.handle.net/10037/9671>

Department of Education
Faculty of Humanities, Social Sciences and Education
23.9.2016

Yonas Zewdu Ayele

Philosophiae doctor

Risk-Based Analysis of Drilling Waste Handling Operations. Bayesian Network, Cost-effectiveness, and Operational Conditions

The aim of this study is to evaluate, identify, and propose a methodology for drilling waste handling practices by considering the complex and fast-changing nature of the Arctic operational conditions. The study seeks to foster an integrated interdisciplinary understanding of technical and operational risks associated with drilling wastes and their management by implementing the risk-based analysis. It also focuses on developing the concept of a dynamic model for spare parts transportation in Arctic conditions. The result shows that working in the cold Arctic environments has the potential, if not managed properly, to cause a significant negative effect on the cost elements and the risk of events. The result from the temporal link or dynamic Bayesian network based risk analysis demonstrates that these negative impacts of the peculiar Arctic risk influencing factors on the reliability of the waste handling system and the risk of marine pollutions, are more significant with time. The dynamic model analysis results demonstrate that the operating environment of the Arctic region increases the spare parts transportation time significantly. This is particularly the case during winter season, when transporting the spare parts from the southwestern part of Norway to northern Norway.

Page link to thesis: <http://munin.uit.no/handle/10037/9481>

Department of Physics and Technology
Faculty of Science and Technology
11.4.2016

Kathrine Ryvold Bakkemo

Philosophiae doctor

Francisella noatunensis ssp. noatunensis in Atlantic cod – intracellular localization, innate immune responses and antibacterial proteins

Francisellosis is a serious disease affecting Atlantic cod in the cod farming industry in southwestern parts of Norway. The study aims to increase the understanding of the interaction between the host and the disease-causing bacterium, *Francisella noatunensis ssp. noatunensis* (Fnn). A special feature with bacteria in the genus *Francisella* is the intracellular lifestyle and the invasion of immune cells. Two cell types were used as tools in the study and important findings are that Fnn is able to survive and replicate in cod macrophages and a cod cell line of epithelial-like cells. Inside macrophages the bacteria seem to escape into the cytosol. By looking at the expression of immune genes after infection or treatment with an endotoxin on the outer membrane of the bacterium, it seems like the bacterium has developed mechanisms to avoid host immune responses. Three types of antibacterial proteins studied, naturally produced by the host, were all important during infection of live cod, but at a cellular level, it appears that macrophages produce only one type; lysozym. Another important protein, interferon gamma, turned out to activate cod macrophages leading to increased control of bacteria in the cell system.

Page link to thesis: <http://hdl.handle.net/10037/9973>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
8.12.2016

Toril Bakken

Philosophiae doctor

Whole-grain bread, milk, and risk of colorectal cancer. The Norwegian Women and Cancer Study

Colorectal cancer (CRC) is the second and third most common cancer worldwide among women and men respectively. Diet is believed to influence the risk of CRC. This thesis aims to examine possible associations between whole-grain bread intake and CRC risk, and milk intake and CRC risk among Norwegian women, as well as to examine the characteristics of Norwegian female whole-grain bread eaters. Samples from the Norwegian

Women and Cancer Study was used in the analyses. The investigation of the characteristics of whole-grain bread eaters showed that energy intake was strongly positively associated with whole-grain bread intake. Women reporting high whole-grain bread intake generally did not have a healthier diet, but tended to be healthier in regard to other lifestyle factors. Education had little impact on whole-grain bread intake. Geographical differences in intake were observed. No association was found between whole-grain bread intake and CRC risk. There was a tendency of a weak inverse association between whole-grain bread intake and the risk of proximal colon cancer. There were indications that milk intake was inversely associated with the risk of colon cancer. Results on the risk of rectal cancer were different for each analytical approach.

Department of Community Medicine
Faculty of Health Sciences
30.11.2016

Trond Elling Barstad

Philosophiae doctor

Seasonal adaptation, phenology and survival in gall-inducing sawflies (Tenthredinidae: Nematinae: Pontania)

The phenological adaptation of herbivorous insects in the Arctic may be particularly prone to the negative impact of the current global climate change. Increasing temporal dissociation with their plant resources and to their natural enemies such as parasitoids may be detrimental for their survival. The life history adaptations for gall-inducing sawflies in the Arctic followed the common outline for overwintering insects. During winter hibernation, diapause intensity prevented resumption of morphogenesis in early winter and turned into a post-diapause quiescence mid-winter, in which response to temperature synchronizes spring eclosion. Hindcasts of temperature conditions in spring for the last 21 years revealed a highly significant advancement in dates of eclosion, an evidence of global warming. There were large inter-annual differences in eclosion timing, which probably is caused by timing of



Photo: private

the spring snow melt. In early spring, there is a short phenological window of opportunity for oviposition on suitable willow (*Salix spp.*) host resources. In autumn, diapause preparation was shown to occur in response to photoperiod during pre-diapause. *Pontania spp.* had a remarkable phenological synchronous behaviour in which larvae start to emerge from the galls in search for overwintering sites to pupate on September 5th.

Page link to thesis: <http://hdl.handle.net/10037/9911>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
4.11.16

Maarten T. P. Beerepoot

Philosophiae doctor

Calculating molecular properties in realistic environments

The calculation of the properties of molecules can improve our understanding of chemical processes and is an important tool to complement experimental chemistry. The researchers were interested in large molecular systems that are too big to describe using accurate quantum chemical methods. Therefore, they used so-called multiscale models that combine accurate quantum chemical methods for the central molecule with efficient classical models for the molecule's environment. Beerepoot and his colleagues have researched how one can achieve an efficient yet accurate description of the molecule's environment. The results of the thesis can contribute to research in, for example, chemical catalysis or drug development.

Page link to thesis: <http://munin.uit.no/handle/10037/9741>

Department of Chemistry
Faculty of Science and Technology
13.5.2016

Thomas Ibsa Beka

Philosophiae doctor

Geoelectrical structures beneath Spitsbergen-Svalbard derived from magnetotelluric imaging

As part of the thesis, a series of geophysical surveys were carried out on the geologically important and remote Svalbard using magnetotelluric (MT) imaging. The purpose was to better constrain the geology particularly defining geothermal resources. MT relies on natural source time-varying electric and magnetic field data measured at the earth's surface. The researchers acquired broadband MT data at 80 stations in central and northwest Spitsbergen. From the data, they derived 2D and 3D resistivity models and employed them to characterize the near-surface geology, the permafrost structure and a CO₂ storage target reservoir in central Spitsbergen. MT is



sensitive to subsurface geothermal attributes, such as fluid and heat migration zones. In this respect, the MT models helped to characterize the geothermal potential and crustal architecture in the central and Brøgger peninsula areas of the Svalbard archipelago. To summarize, the thesis has contributed a new kind of data set to previous studies that relied on surficial, seismic and gravity data from the region.

Page link to thesis: <http://hdl.handle.net/10037/9509>

Department of Physics and Technology
Faculty of Science and Technology
27.5.2016v

Bernt Arne Bertheussen

Doctor philosophiae

Interventions using digital tools to improve students' engagement and learning outcomes in higher business education

The purpose of the study was to develop interventions using digital tools to improve student engagement and learning outcomes. The empirical context was a finance course and special emphasis was placed on integrating spreadsheet usage into all learning and assessment activities with the overall goal to foster an active learning environment. In addition, rooted in a pragmatic research paradigm, the methodology utilized includes many similarities with interventionist action research, which has gained a foothold in qualitative management accounting research. This research project includes two main contributions. The first is its impact on practice, and six practical educational interventions are discussed. The second contribution is theory building, which advances our knowledge regarding the characteristics of the interventions and the process of designing and developing them. Consequently, a total of eight refereed scientific articles have been produced.

Page link to thesis: <http://hdl.handle.net/10037/10010>

School of Business and Economics
Faculty of Biosciences, Fisheries and Economics
25.11.2016

Shripathi Bhat

Philosophiae doctor

*Speciation reversal in sympatric eco-morphs of European whitefish (*Coregonus lavaretus*. L) – phenotypic and genomic consequences*

Anthropogenic activities, such as introduction of non-native species, may destabilize ecological barriers to gene flow between native populations. In the 1960s, a salmonid fish, vendace, was introduced to the upper parts of Pasvik watercourse and invaded the lakes studied in this

thesis. These lakes harbour post-glacially, sympatrically diverged eco-morph pair of European whitefish, namely DR and LSR. The vendace, being a competitively superior planktivore to the DR, relegated this eco-morph from its native pelagic habitat into the non-native littoral habitat, which is mainly occupied by the LSR. This thesis aims to study the phenotypic, genetic, and genomic consequences of the vendace invasion on native sympatric European whitefish eco-morphs. Using neutral microsatellite markers, the study documented that invasion of vendace have induced speciation reversal in the eco-morph pair. Population genomic analyses, using genome-wide SNPs acquired by sequencing of RAD libraries, revealed an unpredicted outcome of speciation reversal at the genomic and functional phenotypic levels, as well as introgression patterns at adaptive genomic regions. This was attributed to a change in the selective forces during speciation reversal. This study concludes that anthropogenic activities have wide-ranging and stochastic effects for species undergoing speciation reversal.

Page link to this thesis: <http://hdl.handle.net/10037/9670>

Department of Arctic and Marine Biology
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20.9.2016

Muhammad Bilal

Philosophiae doctor

Wind Energy at Nygårdsfjellet – Norway. Wind field characterization and modelling

Wind data is collected from the anemometers installed on the wind turbines and thereafter analysed for understanding the existing wind patterns. The analysis established existence of bi-directional high winds at Nygårdsfjell (NF) wind farm particularly during colder periods. Computational fluid dynamic (CFD) solver FLUENT is used to model the wind fields over the complex terrain of NF. The shear stress transport model gives good simulation results that explain the speed up effects at the turbine location, which makes the wind farm a suitable site for wind energy. Local terrain effects on the wind

flow over NF are modelled by coupling meso-micro scale models. One set of meso-scale winds are generated from Weather Research and Forecasting model, another is from the Modern-Era Retrospective Analysis for Research and Applications dataset. CFD-based numerical solver, WindSim, is used as micro-scale coupling partner. One of the proposed coupled models achieved improvements in wind speed modelling. A basic method for preliminary wind resource assessment at remote sites is proposed. The method is a combination of interpolation and extrapolation of wind data from the surrounding sites to the potential wind farm site. Due to large disparities between the terrains and conditions, the results do not contribute directly to the main research area.

Page link to thesis: <http://hdl.handle.net/10037/10055>

Department of Physics and Technology
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25.11.2016

Espen Bjørkedal

Philosophiae doctor

Active Placebo – The relation of treatment expectancies to active analgesic treatments

The placebo effect is a component of almost any medical treatment and is controlled for in clinical trials. Placebo effects are defined as the reduction in symptoms due to positive treatment expectations and conditioning triggered by the treatment context. Conversely, nocebo effects are increased symptoms due to negative treatment expectations and conditioning. Bjørkedal and his colleagues investigated whether active drugs modify the placebo effect and whether placebo/nocebo effects change the total treatment effect of medical interventions for pain. The results indicated that active drugs modify the placebo effect. They also observed that positive treatment expectations increase the total treatment effect of pain relieving treatments. Negative treatment expectations, on the other hand, reversed the effect of a topical anaesthetic cream. These results highlight the importance of providing a positive treatment context and suggest possible

limitations of the randomized double-blind placebo controlled clinical trial design.

Page link to thesis: <http://hdl.handle.net/10037/10017>

Department of Psychology
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25.11.2016

Marie-Anne Ermeline Blanchet

Philosophiae doctor

At-sea behaviour of the world's northernmost harbour seal (Phoca vitulina) population in a changing Arctic

This thesis explores movement patterns and foraging behaviour, and the ontogeny of these behaviours, in harbour seals (*Phoca vitulina*) from Svalbard. The seals showed a strong preference for the west side of the archipelago, where they stayed within 50 km of the coast on the shelf, seldom entering the fjord systems especially in the winter. Some pups ventured out of the west coast shelf area occasionally, with individuals that explored the Bjørnøya region or the east coast of Spitsbergen. The adult and juvenile seals' diving behaviour had a marked seasonality and was influenced by local wind-driven upwelling phenomenon. During upwelling events, the West Spitsbergen Shelf is flooded by Atlantic Water masses, which were specifically targeted by the seals. Presumably these water masses brought Atlantic fish species close to shore and within the seals' foraging depth-range. This study strongly suggests that the influence of the West Spitsbergen Current on the western part of the Svalbard Archipelago is a determining factor for the presence of this harbour seal population in the High Arctic. The predicted warming will likely favour an increased abundance and a broader distribution of harbour seals through a borealization of the marine ecosystem in the coastal areas of the Svalbard Archipelago.

Page link to thesis: <http://hdl.handle.net/10037/9138>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
15.4.2016



Photo: Tom Melby

Ragnar Kåre Breckan

Philosophiae doctor

Helicobacter pylori infection in the 21st century:
Epidemiology, transmission and clinical aspects

More than half the world's population is colonized with *Helicobacter pylori* (*H. pylori*) in the gastric mucosa. This thesis aims to describe: 1) the association between *H. pylori* infection and reflux disease, functional bowel symptoms and obesity, 2) all age prevalence of *H. pylori* and 3) potential transmission routes of *H. pylori*. Breckan & Co found that *H. pylori* is protective against reflux symptoms

in men but not in women. Obesity was an independent risk factor for reflux symptoms in women. Functional bowel symptoms are prevalent in the population. Although female gender, high body mass index and low age are risk factors for the condition, *H. pylori* infection is not. Functional bowel symptoms are prevalent in the population. Although female gender, high body mass index and low age are risk factors for the condition, *H. pylori* infection is not. It seems that the *H. pylori* infection may start not only in childhood, but also in adolescence, and has its peak in adults. *H. pylori* infection is associated with reflux symptoms in men, but not with functional bowel symptoms or obesity.

Page link to thesis: <http://hdl.handle.net/10037/9502>

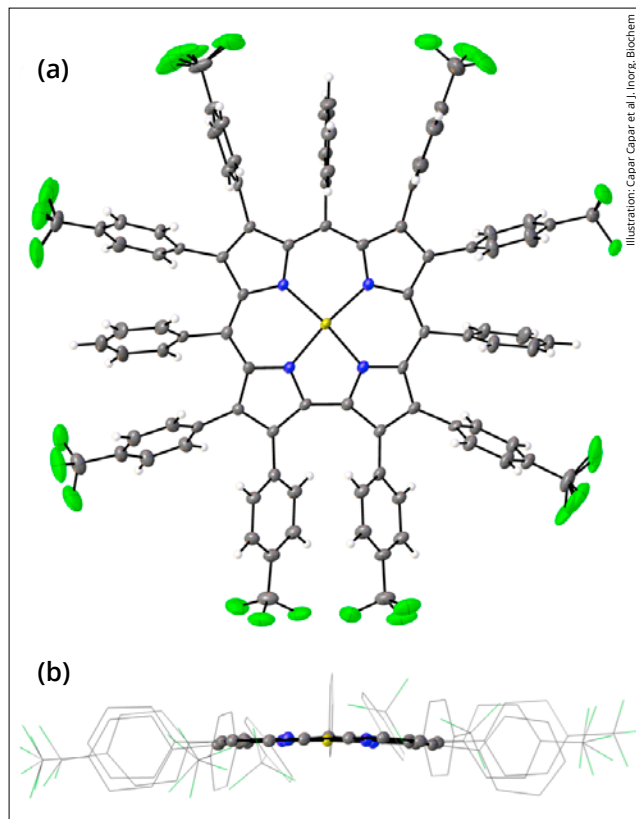
Department of Clinical Medicine
Faculty of Health Sciences
9.6.2016

Jan Capar

Philosophiae doctor

*Synthesis of Sterically Hindered Macrocyclic Ligands via
Demetalation of Metalloporphyrins*

Despite the important developments in synthetic corrole chemistry, the field has long been handicapped by the lack of procedures for demetalation of metalloporphyrins. This thesis presents general demetalation methods for metalloporphyrins. Electron-deficient free-base porphyrins and metalloporphyrins have been proven to be more robust and advantageous for several applications. Sterically hindered porphyrins also improve shape-selectivity for catalysis and safe-targeting for medicinal applications. Therefore, the demetalation methods are utilized to synthesize highly electron-deficient and sterically crowded corrole ligands, and new metalloporphyrins are prepared from these ligands. Isocorroles are new members of the porphyrinoid family, about which little is known. They are nevertheless of great interest as reagents in photodynamic therapy on account



of their strong absorption in the near-infrared. A general method for synthesizing undecaarylisorroles was developed and new highly sterically hindered ligands were prepared. In contrast to the free-base corroles, the free-base isocorroles are fairly stable and can be complementary to corroles in terms of applications, such as photodynamic therapy which is mainly performed with free-base analogs of porphyrins.

Page link to thesis: <http://hdl.handle.net/10037/9640>

Department of Chemistry
Faculty of Science and Technology
7.6.2016

Tammer da Costa Castro

Philosophiae doctor

Heritage and adult L2 acquisition of empty categories in a bidialectal-bilingual context

Despite their high degree of mutual intelligibility, Brazilian Portuguese (henceforth BP) and European Portuguese (henceforth EP) have been argued to differ in many micro-parametric domains. The present study investigates issues raised in current literature on heritage language (HL) and second language (L2) acquisition, L2 processing and first language (L1) attrition. Through the use of production and comprehension tasks, Castro examines whether late BP-EP bilinguals and heritage BP speakers growing up in Portugal, tested in both dialects, will pattern like native controls or display some effects of EP on their native BP or vice-versa. The findings indicate that, for this language pairing, the high degree of typological proximity between the L1 and the L2 appears to facilitate L1 attrition and restrict the acquisition of L2 properties. One can relate the findings of the present study to key theoretical questions and debates within the context of the larger field of bilingual studies.

Page link to thesis: <http://hdl.handle.net/10037/10015>

Department of Language and Culture
Faculty of Humanities, Social Sciences and Education
24.11.2016

Chia Jung Chang

Philosophiae doctor

Atlantic salmon type I interferons: Protection against virus infection in vivo and function as adjuvants in a virus DNA vaccine

Fish farming has been considered the important resource for supplying food for the global requirement. Norway is by far the country that produces the most salmon in the world, and virus disease is one of the major problems that causes the economic loss in fish farming. Vaccines have been developed to combat the diseases. In Norway, traditional

vaccines based on inactivated virus are available against IPN, PD, and ISA, but do not appear to give adequate protection. There is thus a clear need to develop effective vaccines against these and other virus diseases of Atlantic salmon. The understanding of the interaction of viruses with the immune system of Atlantic salmon is important for vaccine development. In the first part of the work, Chang and his colleagues have shown that salmon type I interferon (IFN-I) induces a strong antiviral activity and protection against ISAV and SAV3. Besides, they have studied IFN-I as adjuvants in fish DNA vaccines. The researchers have chosen ISAV HE DNA vaccine as the model that co-injected with salmon IFN-I plasmid, and the results show a strong adjuvant effect of salmon IFN-I. The result is the first time the adjuvant effect of IFN-I in fish has been illustrated, which could be useful for vaccine development.

Page link to thesis: <http://hdl.handle.net/10037/9513>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
25.8.16

Zhonghua Chen

Philosophiae doctor

Carbon Nanotube Spectrally Selective Solar Thermal Absorbers

The thesis deals with the fabrication of a novel spectrally selective solar absorber using multi-walled carbon nanotubes (MWCNTs) deposited on aluminum substrates by electrophoresis. It was indicated by SEM and Spectrophotometer that the deposited MWCNT coatings were homogeneous and exhibited good spectral selectivity combined with the underlying aluminum substrate. Accelerated ageing tests revealed that protective films coated MWCNT absorbers had an excellent thermal stability and were resistant to damage from condensation. The best MWCNT absorber spectral selectivity achieved had a solar absorptance of 0.92 and a thermal emittance of 0.15, which were slightly under par with the performance of currently available commercial absorber products. Electrophoretic deposition has been identified to be a

simple, fast, inexpensive and low chemical consumption alternative to other manufacturing methods of solar thermal absorbers.

Page link to thesis: <http://hdl.handle.net/10037/9971>

Department of Physics and Technology
Faculty of Science and Technology
4.10.16

Melina Dos Santos Duarte

Philosophiae doctor

State Membership: A Question of Individual Choice

The growing hostility against immigrants around the world has brought the debate on immigration and borders back to the core of moral and political philosophy. On the one hand, there is increasing pressure for international human mobility driven by, for example, globalisation, war and conflicts, economic development, family union, career development, and climate change. On the other, there are territorial states attempting to control the movement of persons across borders in order to preserve their sovereignty. The tension arises when, bond by human rights and liberal democratic states no longer can manage the effects of these pressures and determine emigration and immigration policies only according to their national agendas without compromising international relations. This thesis aims to examine some ways in which the free movement of persons across borders could be reconciled with states' jurisdictions. While international human mobility is defended as a claim for freedom of choice and equality of opportunities, states are seen as contingent institutions currently responsible for the distribution and enforcement of these rights. The main claim of the thesis is that freedom of mobility across borders can be reconciled with territorial states if state membership becomes a question of individual choice.

Page link to thesis: <http://hdl.handle.net/10037/9669>

Department of Philosophy
Faculty of Humanities, Social Sciences and Education
19.9.16

Christian Eckhoff

Philosophiae doctor

Multisite musculoskeletal pain in adolescence. The relationship with psychosocial problems, mental health and later welfare benefit receipt

Pain is common in youth and there is limited knowledge of how pain-troubled adolescents fare into young adulthood. In this thesis, the Norwegian Arctic Adolescent Health Study was linked to the Norwegian Patient Registry and the National Insurance Registry. In total, 3,987 adolescents (68% of the total population) consented to the registry linkage. The researchers found a significant relationship between the increasing number of adolescent musculoskeletal pain sites and an increasing proportion of later mental health problems, sickness and social welfare benefits, in both genders. Overall, the relationship between adolescent musculoskeletal pain and mental health problems in young adulthood was explained by adolescent psychosocial factors. However, adolescent musculoskeletal pain was significantly associated with later anxiety disorders when adjusted for the adolescent factors. These findings show that adolescents reporting frequent or recurrent pain may be at risk of later mental health disorders and social difficulties.

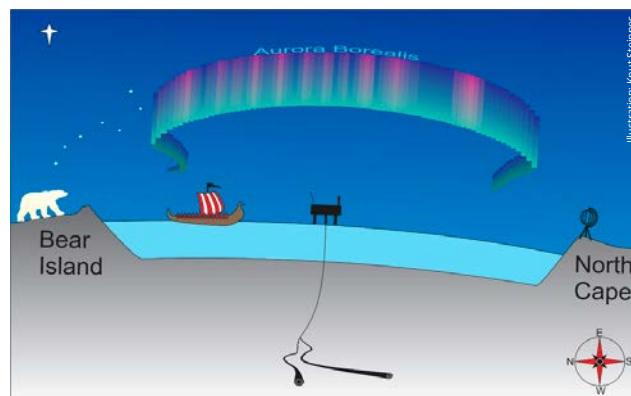
Department of Clinical Medicine
Faculty of Health Sciences
17.8.16

Inge Edvardsen

Philosophiae doctor

Effects of Geomagnetic Disturbances on Offshore. Magnetic Directional Wellbore Positioning in the Northern Auroral Zone

This thesis focuses on how disturbances in the geomagnetic field, offshore northern Norway, may affect the accuracy of magnetic directional wellbore surveying. Suggestions on how to manage the effect of increased geomagnetic activity on magnetic directional wellbore survey operations in and



near the auroral zone are described. The results clearly indicate that the direction from a monitoring station to a drilling site matters when using data from the monitoring station to quality control or correct downhole directional measurements affected by geomagnetic disturbances. While the deviations in total field and dip correspond well over large distances along the same geomagnetic latitude in east-west direction, the declination variations correlate better in the north-south direction. The deviations in declination during disturbed periods can be constantly offset from the quiet level for several hours. Magnetic directional surveys taken during such conditions will result in an unmodeled position-bias, if not corrected for. There can be significant differences in the geomagnetic conditions along concurrent geomagnetic latitudes, in addition to the known latitudinal variations.

Page link to thesis: <http://hdl.handle.net/10037/9125>

Department of Physics and Technology
Faculty of Science and Technology
29.1.201



Christian Ekeland

Philosophiae doctor

Hot emotions in cold landscapes. Towards spatial-emotional methodologies of interest development. Why research on Arctic winter tourism can ill afford to ignore the emotion of interest

This thesis explores the emotion of interest in touristic settings: The coastal steamer Hurtigruten and the extreme sport of kiting in Varanger. It is an interdisciplinary venture between psychology and anthropology where this particular emotion is sought explored through different methodological approaches: triangulation (questionnaires, participant observation and interviews) and analytic autoethnography. The project argues that the emotion of interest is one of the most powerful and important of human emotions and that it has played a vital role in the development of the Arctic Winter tourism in Northern Norway these past ten years.

Page link to thesis: <http://hdl.handle.net/10037/9684>

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
8.9.2016



Erik Eldjarn

Philosophiae doctor

Materiell prosessledelse

(Party guidance/judicial guidance). This dissertation seeks to address one simple yet profound question in civil procedure: To what extent may and should a judge influence the substantive matters in a legal dispute? In this thesis, Eldjarn approaches this topic with three distinct approaches. *Firstly*, he analyzes the concept of party guidance through the lens of civil procedure, including its classical goals and principles. *Secondly*, the concept is analyzed with regard to in which stage of the proceedings the question of guidance arises. *Thirdly*, he analyzes the question within the light of different areas of law and the impact these different areas have on the outcome of the thesis question. In addition, the thesis addresses certain questions that arise when a dispute is handled through relaxed judicial processes, such as the small claims track, where parties are often without formal legal representation. This last part draws on the perspectives developed throughout the thesis.

Page link to thesis: <http://hdl.handle.net/10037/9425>

Faculty of Law
22.1.2016



Photo: private

Mona Maria Fuhrmann

Philosophiae doctor

The role of the invasive red king crab in the food web of a high-latitude fjord. Studying macrobenthic communities and trophic control in Porsangerfjord, northern Norway

The invasive red king crab was introduced into the Barents Sea in the 1960s and has since spread along the northern Norwegian coast. This thesis provided new knowledge on the trophic niche of the crab and how its predation may affect benthic productivity and the food web of Porsangerfjord. The red king crab is a generalist, feeding on multiple trophic levels. Small and large crabs took a similar trophic position in the food web, but

likely affect different habitats. EwE mass balance models revealed that the red king crab played an important role in the benthic compartment of the Porsangerfjord food web through predation and competitive effects on large, long-lived benthic invertebrates. In the future, red king crabs may partly replace these invertebrates as major predators in the benthos. The crab had little significance as prey for higher trophic levels (e.g. fish). Niche overlap and competitive effects with fish species were comparably low, but those may be of significance for benthic feeding birds. Predation pressure by the red king crab may be buffered by high production, e.g. in polychaetes, but may lead benthic communities to an overall lower biomass and higher turnover system, with unknown consequences for ecosystem stability and resilience.

Page link to thesis: <http://hdl.handle.net/10037/9974>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
24.11.2016

Samuel Jakob Geiseler

Philosophiae doctor

Breathtaking brains - Intrinsic neural adaptations to hypoxia

Despite the brain's high vulnerability to hypoxia (insufficient oxygen supply), a number of animals are exposed to and survive it on a regular basis. This project investigated intrinsic adaptations to hypoxia such animals must consequently possess. Geiseler et al. show that potassium dependent ATP channels are present in the eider duck brain, possibly contributing to reduced neuronal activity during hypoxia to reduce energy demand. In the hooded seal, it was shown that neuronal activity is maintained during hypoxia, both in the presence of glucose and even of lactate instead of aglycemia, possibly due to high neural glycogen reserves. For the first time Geiseler et al. performed recordings of synaptic activity in the hippocampus of large mammals. In the hooded seal, such activity is maintained in severe hypoxia for >3h, possibly due to an alternate pre-synaptic calcium regulation. The

presented results contribute to the understanding of intrinsic neural adaptations to hypoxia in diving animals and the underlying molecular mechanisms.

Page link to thesis: <http://hdl.handle.net/10037/9426>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
7.4.2016

Monica Grini

Philosophiae doctor

Samisk kunst i norsk kunsthistorie: historiografiske riss

(Sámi Art in Norwegian Art History: A Historiographical Study). In 1940, the art historian Harry Fett described what he called the “the art of the Sámi” as “a chapter of its own in the art myth of humanity”. He related this art to “that of a larger group, namely the art of the peoples living in Siberia; North America and Greenland’s great plains up toward the Arctic Ocean”. He considered the “particular and vital art of the Finnmark Plateau” an important part of the national art history. In other contexts, however, most of the objects that were categorized as Norwegian art were not placed in the same transnational Arctic relations, but were instead perceived as part of European art history and thus oriented southwards. How is the story of Sámi art related to the story of Norwegian art? This study looks at the representation of Sámi art within the larger structures of the history of the discipline in Norway, and by doing so it also tries to shed light on discourses and schemas that dominate the discipline, both today and in a historical perspective.

Page link to thesis: <http://hdl.handle.net/10037/10019>

Department of Language and Culture
Faculty of Humanities, Social Sciences and Education
2.12.2016

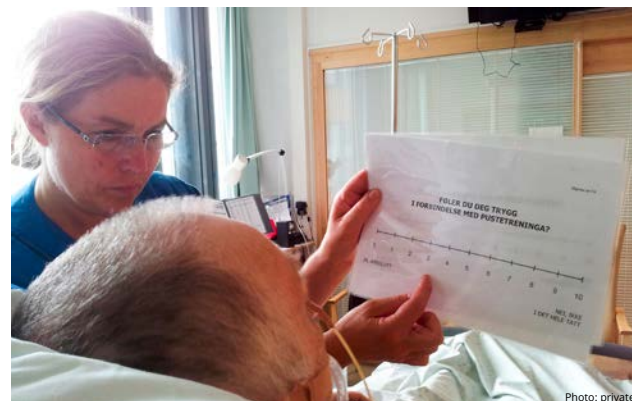


Photo: private

Hege Selnes Haugdahl

Philosophiae doctor

Mechanical ventilation and weaning: Roles and competencies of intensive care nurses and patients' experiences of breathing

Breathlessness is an under-recognized problem in intensive care. This study explored the roles and competencies of nurses in mechanical ventilation (MV) and weaning, and patients' experiences of breathing during and after MV. Breathlessness was found to be prevalent among patients, and underestimated by nurses and physicians. Patients' experiences of breathing were not necessarily a separate experience, but intertwined with the whole illness experience and existential dimensions of life. The nurses' roles in MV were their continuous presence and vigilance detection of early changes in the patients' condition. To acknowledge the presence and impact of breathlessness was important. A potential link between breathlessness and post-intensive care syndrome is an argument for patients' own reports of breathing to form part of nursing interventions and follow up supporting the patients' quest for meaning.

Department of Health and Care Sciences
Faculty of Health Sciences
21.10.16



Audun Hetland

Philosophiae doctor

Why risk your life for fun? Emotional Experiences in Extreme Sport

What is it that motivates people to engage in dangerous activities like BASE jumping or skiing down steep mountains? Extreme sport athletes say it makes them happy, but in the middle of it, these activities can be anything but pleasant. This thesis explores these somewhat puzzling reports from extreme sport athletes. It presents data from three different studies. In the first study, the feeling qualities

of a sample of BASE jumpers and skydivers were investigated with traditional self-report measures and a heart rate measure immediately after the jump, and also reconstructed emotions after seeing the jump on film. In the second study, existing technology on automatic facial coding was tested on a sample of tourists watching tourist commercial films, where their facially-expressed emotions were compared to their self-reported emotions. In the third study, a new tool was developed where the facially-expressed emotions of a sample of backcountry skiers were captured as they were skiing and compared to their self-reported emotions assessed immediately after the trip. The results show that the skiers experience significantly less happiness while skiing compared to afterwards. During the decent it is emotions like interest and engagement that motivates the participants to push their own limits. Happiness comes afterwards as a reward for reaching their goals.

Department of Psychology
Faculty of Health Sciences
9.9.2016

Silje Eriksen Holmen

Philosophiae doctor

Trends and variability of polar mesopause region temperatures attributed to atmospheric dynamics and solar activity

The mesopause is a part of the atmosphere located between 80 km and 100 km height above the ground. At these heights, it is difficult to measure temperature directly. Therefore, we rather measure other parameters, which we know are related to temperature, and calculate temperature from these. Examples of phenomena we can utilise to calculate temperature are airglow, which emanate from chemical reactions, and the process of meteors burning up or evaporating when they reach the mesopause region. In this thesis, we have investigated seasonal variations and trends in temperatures in the mesopause over two Arctic locations: Tromsø (70°N, 19°E) and Longyearbyen (78°N, 16°E). Temperature over Tromsø varies with periodic oscillations which may be explained by atmospheric



wind patterns and waves generated near the ground. Temperature over Longyearbyen shows a slightly different variation, indicating that local factors play a role. The winter trend from Longyearbyen is near zero from 1983 to 2013, while the winter and summer trends from Tromsø are negative and near zero from 2003 to 2014, respectively.

Department of Physics and Technology
Faculty of Science and Technology
19.12.2016

Tone Huse

Philosophiae doctor

The Car, the Citizen and the Climate: Rethinking the Politics of Urban Climate Mitigation

Why do people resist acting upon climate change? The thesis approaches this much-debated question through a multi-sited, ethnographic study of the failed attempt to implement congestion charging in Tromsø, Norway. Taking this event as its starting point, the thesis sets out to examine how climate change is rendered governable, and how the logic of the incentive-driven climate politics presumes certain forms of subjectivity and human action which rarely correlate with the practices people engage with. The thesis is therefore concluded by the statement that if climate politics are to become more effective, the authorities need to develop their governmental technologies in the direction of collaboration with their citizens.

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
4.2.2016

Solveig Joks

Philosophiae doctor

“Laksen trenger ro”. Tilnærming til tradisjonelle kunnskaper gjennom praksiser, begreper og fortellinger fra Sirbmá-området

(“The salmon needs peace”. Approach to traditional knowledge through practices, concepts and stories from the Sirbmá Area). This thesis makes visible the continuity in practices and communities of practice. The Deatnu river comes into being and takes its shape through practices, observations and stories. Traditional knowledge is clearly visible in the practices of salmon fishing. The knowledge is expressed by the observations that people make by being on the Deatnu river, and through the relations that they have to the salmon. Different kinds of relations are established

through different kinds of fishing methods. Therefore, the Deatnu river is experienced differently by different actors. Traditional knowledge practices are different from the management practices, which are mostly based on scientific knowledge. If traditional knowledge is to be brought into official management, the differences between knowledge practices have to be recognized. Those differences require space for expression. Traditional knowledge will only become available to management if this can be achieved.

Page link to thesis: <http://hdl.handle.net/10037/9668>

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
14.9.16

May Wenche Bakke Jøraholmen

Philosophiae doctor

Surface modification of liposomes increases drug efficacy in local vaginal therapy

The aim of this PhD project was the development of a mucoadhesive drug delivery system for improved topical therapy. Liposomes are spherical vesicles that form spontaneously when phospholipids interact with water that enables the incorporation of poorly soluble compounds. Liposomal resveratrol exhibited stronger anti-oxidative and anti-inflammatory activities as compared to resveratrol solution. Jøraholmen and her colleagues confirmed the hypothesis that the mucoadhesive liposomes may assure prolonged retention time at vaginal site and prolonged and controlled resveratrol release properties, enhancing its activity. This will subsequently improve the patient compliance due to less frequent dosing as well as maximize the effect. The system seems to be safe to be applied to pregnant patients. This project was funded by Norske Kvinners Sanitetsforening (Norwegian Women's Public Health Association).

Department of Pharmacy
Faculty of Health Sciences
19.2.2016

Anne Martha Kalhovde

Philosophiae doctor

Living with voices and sounds other cannot hear

The aim of this project was to understand how people experience hearing and dealing with voices and sounds in everyday life and over time. The results revealed that they all found living with hearing voices and sounds to be recurrently upsetting. The participants were recurrently struck by the experiences of hearing someone; this echoed and amplified past and present experiences with others and existential magnitudes. The participants developed ways of dealing with the opposing presences and the adversity they reflected through personal trajectories: some were linear, most were circular or spiralling. Central themes encompassed: retrieving or developing their sense of having a voice and navigating health care. Being believed by someone whom the participants trusted and could talk to about their experiences was essential to becoming more confident and developing new ways of understanding and dealing with the troublesome presences. The results challenge nurses and other health care providers to engage in participatory dialogues and thus acknowledge voice hearer's experiences and attune their interventions and aims to the voice hearer's perspectives. Furthermore, they are challenged to address past, present and future concerns or existential matters echoed by the voices.

Page link to thesis: <http://hdl.handle.net/10037/9098>

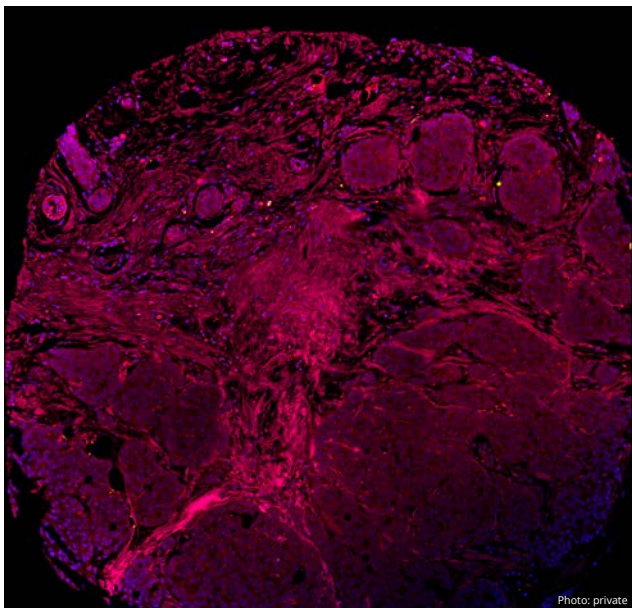
Department of Health and Care Sciences
Faculty of Health Sciences
31.3.2016

Erik Knutsen

Philosophiae doctor

Comprehensive Analysis of Non-Coding Transcriptomes in Breast Cancer – A Next Generation Sequencing Approach

Knutsen and colleagues have studied the roles of non-coding RNAs (ncRNAs) in breast cancer. ncRNAs have important roles in fine-tuning of the expression of many



genes involved in cellular processes like proliferation, survival, and differentiation, and deregulated expression of such ncRNAs have been found to be implicated in the development of many cancers. In this thesis, the researchers studied different high-throughput ncRNA profiling platforms in order to identify a platform that is suited for unbiased expression analyses. Further, the researchers profiled ncRNA secreted from breast cancer cell lines, in order to identify a breast cancer-specific ncRNA signature. Transcriptome analysis of mitochondrial encoded ncRNAs was performed to give further insight into their regulatory role in mitochondrial function. Finally, functional studies of a metastasis associated ncRNA were conducted. Here, the ncRNA showed a highly specific breast cancer expression, and the ncRNA was proposed to have a pro-survival functional role.

Department of Medical Biology
Faculty of Health Sciences
29.4.2016

Susanne Kortsch

Philosophiae doctor

Marine food-web structure and community patterns in high-latitude marine ecosystems

This study deals with spatial and temporal community patterns in Barents Sea marine food webs and benthic communities in Svalbard. A main aim has been to study how community and food-web structure changes along environmental and climatic gradients, and to elucidate how species respond to climate warming in the Arctic. Kortsch and her colleagues used network analysis to study how the network of who eats whom in the Barents Sea changes from the boreal, warm-water regions in the southwest to the cold-water, Arctic regions in the northeast. They documented differences in the food-web structure across the entire Barents Sea, separating biogeographic food-web regions. This study provides further evidence that food-web structure is linked to broad-scale environmental gradients through environmental constraints on niche space and environmental filtering of species' spatial distributions. The researchers also showed that the current climate-driven poleward shift of boreal fish in the Barents Sea affects the Arctic food web by increasing its connectivity and decreasing its modularity. Along the rocky shores of Svalbard, they documented a regime shift in the sea-floor communities most likely as a response to warming.

Page link to thesis: <http://hdl.handle.net/10037/9639>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
24.6.2016

Line Krane

Philosophiae doctor

Comparisons of sickness absence patterns, trends and attitudes in the health and care sectors in two municipalities in Norway and Denmark

This study compares the sickness absence patterns of municipal employees in the health and care sector in two

municipalities in Norway and Denmark. Higher sickness absence rates are found in Norway than Denmark. Employees in Denmark had more frequent, but shorter sick leave episodes. An overall increase in the sickness absence rate in Denmark was found, while the largest overall increase in number of sick leave episodes was found in Norway. The largest increase rates and number of episodes were observed among young employees in both countries. The results indicate that sickness absence, measured as rate and number of sick leave episodes, converged in the two countries between 2004 and 2008. Attitudes towards sickness absence and presenteeism were socially and morally determined at the individual level by an overall perception of work, independent of country. The results indicated that the overall sickness absence rates in Denmark increased, whereas they were stable in Norway. Sickness absence patterns, measured as rate and number of sick leave episodes, converged during the study period and the sickness absence rates in young employees increased significantly in both countries. Attitudes towards sickness absence and sickness presenteeism seemed similar, independent of country.

Page link to thesis: <http://hdl.handle.net/10037/8576>

Department of Community Medicine
Faculty of Health Sciences
11.2.2016

Margrethe Kristiansen

Philosophiae doctor

Contradictory management requirements and organisation of daily work in Norwegian nursing homes

The dissertation focuses on contradictory management requirements in daily work that are created when ideas from New Public Management (NPM) are introduced into public nursing homes. With its focus on marketization and managerialism, NPM are in many ways contradictory to traditional professional practices in nursing homes. Through interviews and observations of 18 employees holding various positions, the aim of the study was to shed light on how employees relate to contradictory

management requirements in the organisation of daily work. The analysis demonstrated that in an attempt to balance NPM requirements and professional values, employees found new and creative ways to modify existing practices that allowed them to retain their professional values in daily work. NPM ideas were not ignored or rejected by the employees. Instead, employees created room for NPM requirements and professional values to co-exist in daily work. The dissertation contributes with new knowledge about some effects, opportunities, and limitations with NPM. Such knowledge is vital in order to obtain a deeper understanding about the impact of NPM and how to create improvement in the delivery of care in nursing homes.

Page link to thesis: <http://hdl.handle.net/10037/9919>

Department of Health and Care Sciences
Faculty of Health Sciences
04.11.16

Rune Gangsøy Kristiansen

Philosophiae doctor

A novel ammonia lowering strategy for the treatment of intracranial hypertension in acute liver failure. Experimental studies in pigs

Acute liver failure is a clinical syndrome affecting many organs. Reduced metabolic function of the liver can lead to hyperammonemia. Increased systemic levels of ammonia is toxic to the brain and a strong correlation between increased arterial levels of ammonia and increased risk of intracranial hypertension in acute liver failure has been shown. In this project the researchers used a well characterized porcine model of acute liver failure to study the newly invented drug Ornithine Phenylacetate and its potential ammonia reducing effect in pigs with acute liver failure. Furthermore, they characterized the histopathological changes in the brain using light and electronmicroscopic methods. Ornithine Phenylacetate reduced ammonia in blood and brain and led to a normalization of intracranial pressure in this model of acute liver failure. The findings can have implications for patients

with both acute and chronic liver failure. Clinical trials are currently being performed to assess the effects of Ornithine Phenylacetate in patients suffering from liver failure.

Page link to thesis: <http://hdl.handle.net/10037/9244>

Department of Clinical Medicine
Faculty of Health Sciences
29.1.2016

Inger Pauline Landsem

Philosophiae doctor

Results from the Tromsø Intervention Study on Preterms until children's age of nine. The influence of structured early parental guidance on behavior-emotional development and well-being among children born preterm and parenting stress in their families

An early structured intervention program, offered families with preterm infants in the newborn period, has been tested in a randomized, controlled trial. Its influence on children's socio-emotional behavioral development until age 9, parents' reports of parenting stress in the same period and children's quality of life at 9 years have been investigated. Analyses show that the average prevalence of behavior problems varied according to the same pattern in the two preterm groups 2-9 years irrespective of the intervention. Significant differences between preterm groups became visible at children's age of 7 and 9 years as parents and teachers reported less attentional problems and better social competence, adaptability and school-related performances in the intervention group. These children were not reported as different from healthy term born children at their age of nine. Children in the preterm control group continued to be reported with more problems and less competencies. Parents who had received intervention reported decreased levels of parenting stress throughout childhood. The results indicate that the structured guidance given parents of preterms in the newborn period has promoted positive and long-lasting effects on families as these children perform at a similar level as their term born peers at 9 years of age.

Page link to thesis: <http://hdl.handle.net/10037/9118>



Department of Clinical Medicine
Faculty of Health Sciences
26.2.2016

Tarjei Mandt Larsen

Philosophiae doctor

Phenomenologizing Epistemology: Essays in Husserlian Philosophy

The dissertation consists of three essays questioning important aspects of Edmund Husserl's metaepistemology and substantive epistemology. Husserl's main metaepistemological claim is that epistemology is possible only as phenomenology. His most important argument for this is what could be called the "transcendence argument", on which the "problem of transcendence" entails methodological requirements that phenomenology

alone can satisfy. The first essay seeks to specify this problem, arguing that it be construed as the problem of the possibility of defeasible cognition, which, when combined with the transcendence argument, commits Husserl to a questionable view of epistemological cognition. The second essay considers the transcendence argument itself, and provides reasons for rejecting its most decisive step, the claim that any attempt to solve the problem of transcendence requires performance of an “epistemological reduction”. The third essay challenges Husserl’s view of the epistemic role of perception, which constitutes the cornerstone of his substantive epistemology. It suggests that Husserl’s conception of perceptual justification is in tension with his basic conception of epistemic justification, and that at least one of them must be rejected or revised.

Page link to thesis: <http://hdl.handle.net/10037/9686>

Department of Philosophy
Faculty of Humanities, Social Sciences and Education
30.8.16

Kjersti Rønningen Lillevoll

Philosophiae doctor

Internet-based cognitive behavior therapy for depression: Effectiveness and patient experiences

Internet-based cognitive behavioural therapy (ICBT) has potential of both prevention and treatment of depression. This thesis aims to evaluate the effect of ICBT using MoodGYM. Paper 1 presents a study conducted in high schools that used ICBT as a mental health promotion program with automated e-mail support or no support. Drop-out was found to be high and unaffected by e-mail support. The low rate of participation and adherence compromised analysis regarding intervention effects on mental health measures. Paper 2 investigates the effect of ICBT with face-to-face therapist support in depressed patients compared to a waitlist control group. The results favored ICBT at post-treatment, with moderate to high effect sizes on measures of depression, anxiety and satisfaction with life. Paper 3 explores patient’s experiences of helpfulness from ICBT with face-to-face

therapist support. The patients’ accounts describe what helps alleviate symptoms as 1) their own agency seeking treatment and during treatment; 2) the role of ICBT as a source of relevant knowledge; and 3) the dialogue with the therapist for sharing thoughts and feelings, and receiving feedback and bridging the ICBT to real life.

Page link to thesis: <http://hdl.handle.net/10037/9115>

Department of Psychology
Faculty of Health Sciences
26.1.2016

Susan Mariah Lindecrantz

Philosophiae doctor

Waveguide Mach-Zehnder interferometer for measurement of methane dissolved in water

This dissertation describes the development of a highly sensitive and compact optical methane sensor, and the study of its optical properties. Because methane is such a critical greenhouse gas, it has become very important to monitor methane emissions from both human activities and natural sources, e.g. from the seas and permafrost regions in the Arctic. This integrated optical sensor consists of optical waveguides forming an interferometric structure. The top surface of the sensor is covered with a highly sensitive layer, consisting of a polymer mixed with a supramolecular compound that captures the methane molecules. When the methane molecules are trapped, the refractive index of the sensitive layer changes and is detected by the interferometric waveguide structure. The sensor has been used in the laboratory to measure methane with a high sensitivity in both air and water (17 ppm for gas and 49 nM in water).

Page link to thesis: <http://hdl.handle.net/10037/9236>

Department of Physics and Technology
Faculty of Science and Technology
25.4.2016

Ingrid Elisabeth Liodden

Philosophiae doctor

Acupuncture for postoperative morbidities in children, and placebo by proxy

The two RCTs investigated the effects of acupuncture for postoperative morbidities in children by means of pragmatic randomised controlled trials. A survey explored placebo effects by proxy. Some main conclusions: When investigating the system effect, acupuncture seems to reduce vomiting. When investigating the specific effects, acupuncture does not seem to reduce nausea and vomiting. The explanations for the manifest discrepancy between the RCTs should be sought understood by several factors: Placebo effects not accounted for by preoperative parental expectancy. Placebo effects emerging into and throughout the postoperative period on/by parents and children. Nocebo effects in Paper I conveyed by all involved persons, knowing that children were allocated to control group. – A specific effect of acupressure in the postoperative period in Paper 1. The survey was not able to detect any placebo effect by proxy. There may have been a placebo effect that was not captured by the measures.

Page link to thesis: <http://hdl.handle.net/10037/9423>

Department of Community Medicine
Faculty of Health Sciences
29.4.2016

Knut Ljøgodt

Doctor philosophiae

Historiemaleriet i Norge

(History painting in Norway). Ljøgodt's dissertation deals with history painting in Norway and Scandinavia in the 19th century. He has particularly researched the usage of different subjects and themes, and how these can be read in a political and mental historical context. As the dissertation demonstrates, subjects from the Viking and saga era dominated, and Ljøgodt interprets this as a part of the ongoing nation building project. History painting



Photo: Knud Baade

as a genre has been marginalized in late 19th and 20th century art history, when modernist ideals prevailed. The dissertation also investigates these reception historical mechanisms.

Page link to thesis: <http://hdl.handle.net/10037/8541>

Department of Language and Culture
Faculty of Humanities, Social Sciences and Education
14.1.2016

Vito de Lucia

Philosophiae doctor

The “Ecosystem Approach” in International Environmental Law: a Biopolitical Critique. The Thesis explores the concept of ecosystem approach in international environmental law, to assess whether or not it represents a paradigm shift

The thesis explores the ecosystem approach, a novel legal and governance “strategy for the integrated management of land, water and living resources”, increasingly adopted within many international environmental regimes. Responding to hopes of arresting, and reversing, the increasingly negative trends of resource depletion and ecological degradation affecting most ecosystems in the world, the ecosystem approach promises to “protect the environment, maintain healthy ecosystems, preserve biological diversity, and achieve sustainable development”, all at once. Against this background, the main research question is whether the ecosystem approach represents a paradigm shift in international environmental law and governance, as often suggested. The research question is explored first through a critical legal methodology called genealogy, in order to unveil the complexities and contestations that shaped the concept. Subsequently the ecosystem approach is subjected to a biopolitical critique, in order to move beyond the anthropocentrism/ecocentrism binary.

Faculty of Law
8.4.2016

Miriam Marquart

Philosophiae doctor

Marine microbial eukaryotes in Svalbard waters: Seasonality, community composition and diversity

There is an increasing awareness of the importance and diversity of the microbial eukaryotes in Arctic regions, but their role in the ecosystem is still largely unknown. Sampling was conducted in Svalbard waters with focus on

a time series station in Adventfjorden during 2011-2012. Marine microbial eukaryotes (< 10 µm) were investigated by Next-Generation Sequencing. The results revealed a strong seasonal-influenced succession of microbial eukaryote with a diverse and active community even during the polar night. Molecular tools not only revealed new taxa contributing to the vertical export, but also suggested new potential mechanisms for vertical export demonstrated by parasite-host interactions. This study emphasizes the extreme seasonality of Arctic microbial eukaryotic communities driven by the environment (e.g. light regime), but points to the necessity of a thorough knowledge of hydrography for full understanding of their succession and fate.

Page link to thesis: <http://hdl.handle.net/10037/9804>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
18.10.16

Natalia Mitrofanova

Philosophiae doctor

Paths and Places: Aspects of Grammar and Acquisition

The articles included in this dissertation explore the underlying structural properties of spatial expressions, and the acquisition of these structures by children. In the first article, Mitrofanova and her fellow researchers propose a new analysis of directional expressions in Russian. The remaining three papers argue for a new model of acquisition of locative expressions by children. They report on two studies with Norwegian- and Russian-speaking children aged 2-5 years. The researchers propose that before children acquire individual locative prepositions, they go through a stage when all locative utterances involve a generalized (underspecified) locative category. The methods used in this thesis include production and comprehension experiments, grammaticality judgements and eye tracking.

Department of Language and Culture
Faculty of Humanities, Social Sciences and Education
10.11.2016

Krzysztof Mozgawa

Philosophiae doctor

Interfacial solvation modelling with PCM

The effect of surfaces and interfaces on the molecular properties and structure is of great interest in the applied sciences and technology. In the following thesis, a theoretical framework for the calculations of the free energy and properties, including the effect of interfaces and surfaces, in quantum-mechanical formalism is presented. The model of choice is Polarizable Continuum Method (PCM), which is an implicit and versatile way to include solvent-related effect in the QM calculations. The classical implementation of this model is available in most of popular QM program suites, regrettably usually only including electrostatic effects. Within the following thesis, a formalism to include the non-electrostatic contributions (mainly dispersion and repulsion) in the calculation is derived and discussed, together with the extension to surfaces and interfaces. The thesis comprises of three papers/manuscripts based on the current results of the presented model.

Page link to thesis: <http://hdl.handle.net/10037/9480>

Department of Chemistry
Faculty of Science and Technology
17.2.2016

Mbachi Ruth Msomphora

Philosophia doctor

Stakeholder Involvement in the Governance of Fisheries in Europe: With perspectives of the result-based management

The purpose of this study is to establish a theoretical framework on how and to what extent the stakeholders can efficaciously be involved in the management of fisheries, within the perspectives of RBM. This central topic is explored through four papers: Paper 1 discusses how the proposed discard-reduction management mechanism strategy may be formulated in order to attract fishers' participation and to make it profitable for them to comply

with the rules. Paper 2 explores the association between stakeholder levels of participation and satisfaction in the decision-making process for the development and implementation of the fisheries management plan. This issue is also discussed in paper 3, but in light of exploring the important fisheries conditions for success in stakeholder participation. Lastly, paper 4 demonstrates what the stakeholder involvement in scientific knowledge-production of policy-making may imply for the fisheries science community. Moreover, it illustrates how science with the incorporation of all stakeholders may be practiced to provide valuable knowledge for policy-making without compromising the ethos of science as an institution.

Page link to thesis: <http://hdl.handle.net/10037/9619>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
27.5.2016

Jonas Nordhaug Myhre

Philosophiae doctor

Machine Learning using Principal Manifolds and Mode Seeking

A wide range of machine learning methods have taken advantage of density estimates and their derivatives, but research on this area has been limited. The fact that the derivatives of a distribution over a point set can provide a statistical framework for manifold learning has not yet been used to its full potential. The aim of this thesis is to help fill these gaps, and to provide novel machine learning algorithms and tools based on principal manifolds using density derivatives. The research presents three different lines of work aiming towards this goal. The first work presents a fast and exact kernel density derivative estimator. The method takes advantage of the fact that the derivatives of a multivariate product kernel can be decomposed into a product of univariate differentiations. The next present a novel algorithm for manifold unwrapping based on tracing the gradient flow along a manifold estimated using density derivatives. Finally, a novel framework for robust mode seeking is provided,

based on ensemble clustering and resampling techniques.

Page link to thesis: <http://hdl.handle.net/10037/9921>

Department of Physics and Technology
Faculty of Science and Technology
14.10.16

Hanne Kirsti Mæhre

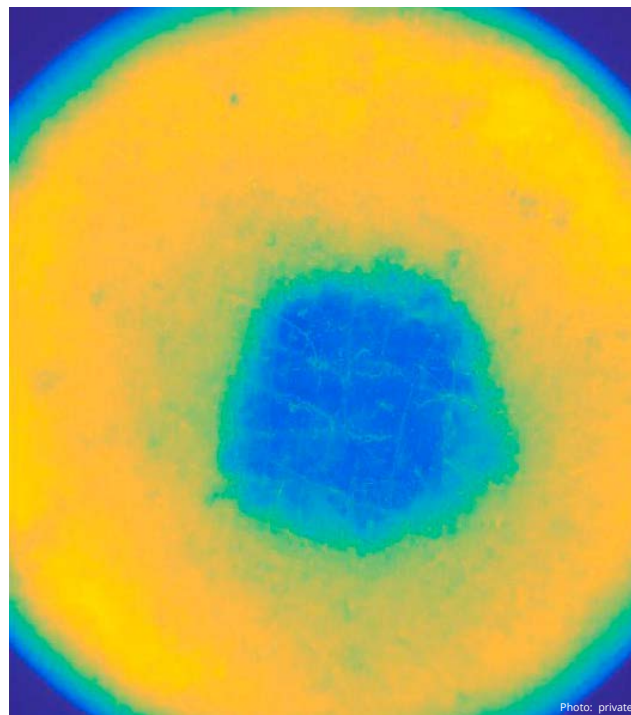
Philosophiae doctor

Seaweed proteins – how to get to them? Effects of processing on nutritional value, bioaccessibility and extractability

Due to the expected population growth towards 2050, the demand for food proteins will increase. Utilization of marine raw materials for food and feed is currently low and should be increased. The overall aims of this project were to examine the nutritional quality, along with effects of processing on bioaccessibility and extractability of seaweed proteins, and to evaluate their suitability as food, feed or ingredients in such. Biochemical analyses showed that most seaweeds are low in lipids and high in minerals. Several seaweed species were rich in good quality proteins, holding the ability to cover human requirements of essential amino acids. Heat treatment increased the bioaccessibility of *Palmaria palmata* proteins in an *in vitro* gastrointestinal digestion model, while *Alaria esculenta* proteins remained unaffected. Enzymatic pre-treatment increased both bioaccessibility and extractability of *P. palmata* proteins. The overall conclusions of this project were that several seaweed species are good sources of high quality proteins and that processing seems to increase the utilization potential. However, as only *in vitro* models were used, the results obtained must be confirmed in pre-clinical and clinical models.

Page link to thesis: <http://hdl.handle.net/10037/9130>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
11.3.2016



Kajsa Møllersen

Philosophiae doctor

Melanoma detection. Colour, clustering and classification

Almost everyone has moles, and some have melanoma. To be completely sure whether a mole is a tumor or not, it must be cut out. The GP considers which moles should be cut out and which ones can safely be on your body, or if the patient must proceed to a dermatologist. Can a computer help the GP so that the correct moles are chosen? And how? An image, for example of a mole, consists of millions of pixels. With such a large amount of numbers there is only one thing that applies; statistics. Using statistical methods, an image analyzed and characteristics of the mole can be described in characteristic such as colour, shape and size. By combining these properties, and many more, the computer can guess

whether a mole has cancer or not. In order to find out how a computer can best distinguish normal moles from cancer, thousands of photos of moles have been collected. The result is Nevus Doctor, a computer program that can help your GP in pursuit of melanoma.

Page link to thesis: <http://hdl.handle.net/10037/9508>

Department of Mathematics and Statistics
Faculty of Science and Technology
19.1.2016

Masoud Naseri

Philosophiae doctor

*RAM Analysis of Oil and Gas Production Facilities
Operating in the Arctic offshore: Expert Judgements and
Operating Conditions*

The Arctic offshore has a sensitive environment and is associated with a range of harsh operating conditions with considerable year-round variations. Such conditions can adversely affect the reliability, availability, and maintainability (RAM) of oil and gas (O&G) production facilities in different ways. One of the main challenges in RAM analysis of Arctic offshore O&G facilities is the lack of adequate historical data due to the comparatively limited experience of the O&G industry. The aim of this research is to identify and discuss the key elements of Arctic operating conditions and their effects on RAM performance of O&G production facilities and to develop expert-based models for RAM performance analysis of such facilities operating in the Arctic environment. The results of this study illustrate that harsh Arctic operating conditions adversely affect the RAM performance of O&G production facilities, and thus their production levels. It is also shown that the expert-based techniques are useful and powerful tools for RAM modelling of Arctic offshore facilities.

Page link to thesis: <http://hdl.handle.net/10037/9972>

Department of Physics and Technology
Faculty of Science and Technology
31.8.2016

Ngoc Duy Nguyen

Philosophiae doctor

*The Economics of Open-Access Fisheries: Subsidies and
Performance of Vietnamese Fisheries*

This dissertation analyzes the economics of an open-access fishery and on evaluating the effects of government subsidy programmes on the fishing industry. It indicates that the Government's subsidy interventions have had a negative impact on the sustainable development of the offshore fisheries. The thesis also recommends that it would be wise for Vietnam to seek to operate a fisheries management system that is designed to prevent overfishing and overcapacity and to promote the recovery of overfished stocks for offshore fisheries, hence approaching the goals of sustainable development. Finally, the dissertation contributes



Photo: Colourbox

to development of methods for comparing the economic performance and efficiency of vessels by the standardization of fishing effort and the estimation of a Salter diagram. It extends the traditional economic model of Gordon to illustrate the existence of intra-marginal rent for an open-access fishery with heterogeneous vessels and to model the static effects of revenue-enhancing lump sum subsidies on the fishery and individual vessels. It provides a contribution to the literature regarding the treatment effect evaluation of a subsidy programme on a Southeast Asian fishery. It also uses different fish stock measures to estimate the technical efficiency of vessels due to the lack of stock estimates.

Page link to thesis: <http://hdl.handle.net/10037/9416>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
10.3.2016

Hildegunn Nordtug

Philosophiae doctor

Physical activity and exercise: The role of implicit attitude, intention, and affect

Research on physical activity has traditionally used explicit behavioral intention as the most direct predictor of physical activity. A more recent line of research highlights the role of implicit attitude as a predictor of behavior. A theoretical model specifies the possibility of an interactive effect of intention and implicit attitude on behavior. The present thesis tested this possibility for physical activity. The findings supported this possibility and indicate that implicit attitudes can tip the weight which decides whether good intentions will or will not result in exercise behavior. The aim of the second part of the thesis was to investigate the role of affect in changing implicit exercise attitudes. Together, the results were in line with the expectation that increased positive affect in response to exercise will lead to more positive implicit attitudes towards exercise. That means, joy in exercise is not only a goal in itself, but also a means to promote physical activity.

Department of Psychology
Faculty of Health Sciences
29.1.2016

Stig Haugset Nymo

Philosophiae doctor

Teaming Up to Fight Inflammation Combined inhibition to modulate activation in complex human models of inflammation

Today it is well known that the immune system plays a key role in a number of diseases as varied as sepsis, cardiovascular diseases and traumatic injuries. It has nevertheless proved difficult to find points to intervene and modulate the way the immune system reacts in these conditions. A possible reason for this difficulty is that the model systems used to study different interventions have been inadequate. The immune system can be thought of as a sort of ecosystem, where one has so far mainly focused on the single components of the system, whereas their interdependency and interactions have been neglected. Nymo has in his thesis developed a method to study a small part of the ecosystem in order to better understand how inflammation can be modulated to prevent and treat disease. The thesis specifically focuses on the interaction between endothelial cells, the cells constituting the blood vessel wall, and the blood cells. He found that by inhibiting key components one could completely abolish immune activation and activation of the endothelial cells. This might bring us one step closer to finding new pharmaceutical treatments for diseases where the immune system plays a key role.

Department of Clinical Medicine
Faculty of Health Sciences
3.6.2016

Audhild Nyrnes

Philosophiae doctor

Atrial fibrillation in The Tromsø Study 1994-2007. Risk factors, occurrence and gender differences

Atrial fibrillation (AF) is a common arrhythmia, which increases morbidity and mortality, imposing high health costs on society. The prevalence of AF has increased for several decades. The identification of risk factors is important, as some of them could be modifiable. Participants of the Tromsø Study in 1994 provided data to study the frequency and different risk factors for AF. Around 23 000 persons were followed for 11 years, and found that 2.2% of women and 3.3% of men were diagnosed with AF. The researchers found different strength of associations in women and men for several variables. Palpitations, coronary heart disease and overweight were stronger risk factors in men. Hypertension was a stronger risk factor in women, and diabetes predicted AF in women only. A few inflammatory biomarkers were available for this study. The researchers found that hs-CRP was associated with AF in men. Higher levels of white blood cells increased the risk in both sexes. Serum uric acid was a strong risk factor for AF, especially in women.

Page link to thesis: <http://hdl.handle.net/10037/9095>

Department of Community Medicine
Faculty of Health Sciences
14.1.2016

Hilde Karen Ofte

Philosophiae doctor

Hypothalamic clock involvement in cluster headache. A study of chronobiology, sleep, and cranial autonomic function in cluster headache

Cluster headache (CH) is claimed to be a chronobiological disorder because of its striking periodic occurrence. This suggests that the biological clock is involved in CH pathophysiology. In this thesis, Ofte and her colleagues

found that the periodicity of headache attacks is the same in CH patients living north of the Arctic Circle as in other CH populations, but they also found a high frequency of chronic insomnia and shift work occupation. Further, a mutation of the core clock gene PERIOD3 was assessed in 149 patients as well as chronotyping a subgroup of them. No difference was found in genotype nor chronotype distributions. Finally, 30 CH patients were examined in remission phase, undergoing light-reflex pupillometry and measurements of retinal and temporal artery diameters. The researchers found a reduced parasympathetic response in the pupillary light reflex on both eyes. The findings suggest a central origin of the disease, and propose a theory of hypothalamic involvement in CH pathophysiology.

Page link to thesis: <http://hdl.handle.net/10037/9856>

Department of Clinical Medicine
Faculty of Health Sciences
24.10.16

Hallvard Lauritz Olsvik

Philosophiae doctor

FYCO1 and NBR1: Autophagy and beyond

Autophagy is a degradative process that functions as the cells' garbage sorting system. Damaged proteins and other cellular components are recognized and sorted into garbage cans called autophagosomes. From there, the cellular garbage is transported to recycling facilities, the lysosomes. Autophagosomes melt together with the lysosomes, and the cellular garbage is here broken down into smaller components that can be reused. Olsvik has studied how the two proteins FYCO1 and NBR1 can recognize molecular tags on and inside the garbage cans, and how FYCO1 can facilitate the transport of such garbage cans inside cells. The transport is mediated by FYCO1 first recognizing the tag on the garbage cans, and then linking it to motor proteins that can be viewed as locomotives driving on railways. These railways are called microtubules, which crisscross the cellular inside. Earlier research has shown this garbage sorting to be essential for cellular health and ensuring long life. When autophagy

is not fully functional, it may lead to the development of serious diseases like cancer, dementia, diabetes and cardiovascular diseases. Mutations in the gene coding for the protein FYCO1 may lead to congenital cataracts.

Department of Medical Biology
Faculty of Health Sciences
3.5.2016

Alice Marie Pedersen

Philosophiae doctor

Calanus® Oil. Utilization, composition and digestion

In this work, it was investigated if the use of commercial proteolytic enzymes could improve oil recovery from *C. finmarchicus* in an industrial-like process, and to characterize the oil obtained. The results showed a substantially higher oil yield with the use of proteolytic enzymes compared to standard fish oil production technology. The main components of the oil extracted from *C. finmarchicus* are monoesters of long-chain fatty acids and fatty alcohols, namely wax esters. In addition, the oil is rich in the deep red antioxidant astaxanthin present mostly as di- and monoesters. The fatty acid moiety of the wax



esters consists of high quantities of stearidonic acid (SDA, 18:4n-3), EPA and DHA, but also a considerable amount of monounsaturated fatty acids, especially gondoic acid (20:1n-9) and cetoleic acid (22:1n-11). The final part of the thesis was to study the digestion of wax esters in mice fed a high fat diet supplemented with 2% Calanus® Oil. The findings confirmed that the mice were able to digest and absorb the Calanus® Oil, as the fatty acid composition of the adipose tissue and liver reflected the enrichment with the marine wax esters. Feeding mice a high fat diet supplemented with a small amount of wax ester-oil reduced the body weight gain, in line with recent published studies.

Page link to thesis: <http://hdl.handle.net/10037/9759>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
3.6.2016

Robert Molund Pettersen

Philosophiae doctor

Improving Latency in Mobile/Cloud Applications

Use of cloud-provided services is integral to the operation of mobile/cloud applications. While the computational power of the cloud seldom is a performance concern, the network latency incurred when connecting a mobile device to the cloud can cause perceptible delays in the application. Users have a low tolerance for delays, so avoiding user-perceived delays is imperative to stop users from switching application providers. This dissertation presents the Jovaku system, which aims to reduce communication latency between mobile devices and cloud services in a generic way, and by reusing existing infrastructure. Jovaku consists of a middle tier component designed to optimize mobile/cloud interactions and a Software Development Kit that allows developers to leverage its capabilities. The viability of the Jovaku system is substantiated through implementation of several modern mobile/cloud applications. Picster and Dapper both make use of Jovaku to reduce communication latency with their respective cloud services. The researchers also perform an extensive experimental evaluation of Jovaku, revealing latency

reduction by as much as 72% for certain mobile/cloud applications.

Page link to thesis: <http://hdl.handle.net/10037/9922>

Department of Computer Science
Faculty of Science and Technology
25.8.16

Vitaly Alexandrovich Postoev

Philosophiae doctor

Using medical birth registries in the Kola Peninsula for birth defects surveillance and investigation of their risk factors

Medical birth registries are valuable sources of information about maternal and newborn health. In North-West Russia, the registries were initiated in 1997 in the city of Monchegorsk and for all of Murmansk County in 2005. In this thesis, the researchers demonstrate the effectiveness of these data sources for surveillance of birth defects with the following objectives: (i) estimated changes in prevalence of birth defects during forty-year period, (ii) identified effect of ultrasound screening during pregnancy, (iii) defined factors associated with higher risk of urinary malformations. The study with data from 1973 to 2011 showed that the prevalence of birth defects demonstrated a two-fold increase, and the initiation of prenatal ultrasound screening was the most likely reason for such changes. Generally, the medical birth registries in Murmansk County constitute powerful sources for birth defects surveillance and the investigation of risk factor, especially in historical perspectives. Combination of these registries with the existing system of monitoring birth defects and mandatory registration of pregnancy terminations can increase their research potential.

Page link to thesis: <http://hdl.handle.net/10037/10013>

Department of Community Medicine
Faculty of Health Sciences
18.11.16

Siv Rasmussen

Philosophiae doctor

Samisk integrering i norsk og svensk kirke i tidlig nytid – en komparasjon mellom Finnmark og Torne lappmark

(Sámi Integration in Norwegian and Swedish Church in the Early Modern Period – a comparison between Finnmark and Torne lappmark). The thesis is a comparative study of the integration of the northernmost Sámi in Denmark-Norway and Sweden in the ecclesiastical systems of the Early Modern Period. The first article “The Protracted Sámi Reformation – Or the Protracted Christianizing Process” discusses the contact the Sámi had with Christianity from the Middle Ages until the year 1700. The next article “Navn i det nordlige Sápmi på 1500 - 1600-tallet - eller historien om navnene som forsvant” is based on a survey of Sámi personal names, indicating the degree of integration within the Catholic Church in the Middle Ages. The third article “Samiske prester i den svenske kirke i tidlig nytid” provides an overview of Sámi clergymen in the Swedish Church in the Early Modern Period. The last article “Churches in Finnmark County and the Torne Region in the Early Modern Period” focuses on the availability of church buildings for the Sámi in Finnmark County (Denmark-Norway) and the Torne region (Sweden). The conclusion is that most Sámi in the two regions were integrated in the Lutheran churches in the Early Modern Period, although many still took part in religious practices with roots in the Sámi indigenous religion and the Catholic Church.

Page link to thesis: <http://hdl.handle.net/10037/9755>

Department of History and Religious Studies
Faculty of Humanities, Social Sciences and Education
27.9.16

Robert Joshua Reynolds

Philosophiae doctor

Russian natural language processing for computer-assisted language learning

Reynolds investigate practical and theoretical issues surrounding the use of natural language processing technology in the context of Russian Computer-Assisted Language-Learning, with particular emphasis on morphological analysis. In Part I, Reynolds present linguistic and practical issues surrounding the development and evaluation of two foundational technologies. In Part II, Reynolds present linguistic, theoretical, practical issues surrounding the application of the morphological analyzer and constraint grammar to three real-life computer-assisted language-learning tasks. In order to demonstrate the value of a high-recall constraint grammar, Reynolds developed a system which allows teachers and learners to automatically generate grammatical highlighting, identification activities, multiple-choice activities, and fill-in-the-blank activities, enabling them to study grammar using texts that are interesting or relevant to them. Reynolds show that the morphological analysis described above is instrumental not only for generating exercises, but also for providing adaptive feedback, a feature which typically requires encoding specific learner language features. A final test-case for morphological analysis in Russian language-learning is automatic readability assessment, which can help learners and teachers find texts at appropriate reading levels.

Page link to thesis: <http://hdl.handle.net/10037/9685>

Department of Language and Culture
Faculty of Humanities, Social Sciences and Education
15.8.16

Randolph Wallace Rhea

Philosophiae doctor

Ex-Combatant Reintegration in the Great Lakes Region: Processes & Mechanisms, Trajectories & Paradoxes

This doctoral thesis investigates the social and economic processes of ex-combatant reintegration as a part of DDR programming in the Great Lakes Region (GLR) of Africa. The analysis is based on survey data collected by the World Bank's Transitional Demobilization and Reintegration Program (TDRP) from nearly 10,000 ex-combatants and community members across Rwanda, Uganda, Burundi, Republic of Congo, and DRC between 2010 and 2012. Armed with this vast empirical source, the doctoral thesis utilizes a comparative case-study approach to ask: 1) What are the observable social and economic processes that ex-combatants navigate as they reintegrate into communities; and 2) What are the underlying mechanisms that govern ex-combatants' trajectories in these observable processes? More broadly, the doctoral thesis uses the analysis of the processes, mechanisms, and trajectories of ex-combatant reintegration in the GLR as a field to reflect on the paradoxes of evaluating the successes and failures of reintegration programming.

Page link to thesis: <http://hdl.handle.net/10037/9500>

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
13.5.2016

Dilli Prasad Rijal

Philosophiae doctor

Invasive Heracleum in northern Europe: Introduction history and impact on native plant diversity

Exotic invasive giant hogweeds are infamous in Europe for their ecological and economic damage; however, the magnitude of their impact on plant diversity has not yet been fully explored. In addition, uncertainties in their source and route of introduction impede management

interventions. This thesis developed a microsatellite library for hogweeds, reconstructed the introduction history and evaluated the impact of *H. persicum* on Norwegian plant diversity. The microsatellite markers clearly discriminated the genetic structure of hogweeds and their hybrids. In contrast to the contemporary hypothesis of an English origin of Norwegian populations, Finland appeared as a more likely source. The cover of *H. persicum* had a strong negative effect on the native cover, and species richness was reduced in the invaded plots. In conclusion, the strong negative impact of *H. persicum* on the Norwegian plant diversity justifies the need for the urgent management interventions to control and eradicate *H. persicum*.

Page link to thesis: <http://hdl.handle.net/10037/9114>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
15.1.2016

Henriette Riley

Philosophiae doctor

When coercion moves into your home. A study of outpatient commitment in Northern Norway

The use of coercion on people with mental health problems is a serious intervention, and a reduction in its use is a declared goal in mental healthcare. Yet, many countries have introduced expanded powers of coercion in recent years, including outpatient commitment (OC). However, the evidence of the effectiveness of OC is inconclusive, and little is known about how patients experience OC schemes. The objective of this qualitative study was to explore (i) patients' experiences with OC, and (ii) how routines in care and health services affect patients' everyday living. The data were collected in 2011–2012 and included 11 qualitative in-depth interviews with patients subject to OC. The study used a narrative approach to interviews and a thematic narrative analysis. Participants generally complied with the OC requirements because of the clear and secure framework of OC, and also because they believed that the alternative would be involuntary hospitalisation. No one reported physical force, but coercion was experienced

as limitation of freedom of action through excessive control and little patient influence or participation in their own treatment. Factors affecting patients' freedom of action under OC should be taken into account when the imposition of an OC order is considered.

Page link to thesis: <http://hdl.handle.net/10037/7292>

Department of Community Medicine
Faculty of Health Sciences
8.12.2016

Atal Saha

Philosophiae doctor

*Genetic complexity in the marine environment: Population genomics of saithe (*Pollachius virens*), Greenland halibut (*Reinhardtius hippoglossoides*), beaked and golden redfish (*Sebastes mentella* and *S. norvegicus*) in the North Atlantic*

Saha investigated genetic complexity in four commercially exploited species from the North Atlantic: saithe (*Pollachius virens* L.), Greenland halibut (*Reinhardtius hippoglossoides*), and beaked and golden redfish (*Sebastes mentella* and *S. norvegicus*). The investigation revealed biologically distinct populations within each of these species. The results indicate a correlation between genetic differentiation and life history differences in the studied species. These findings imply that distinct genetic heterogeneity can exist in different marine species and may be influenced by different abiotic and biotic factors. The results highlight that in most cases the current management units of these species are comprised of multiple biological populations. The new definition of gene pools may serve to define biologically meaningful management units to ensure their sustainable exploitation and preserve evolutionary legacies. This study provides the first SNP-based population genomic investigation in saithe, Greenland halibut and beaked redfish. The present work illustrates outstanding opportunities of the SNP marker system for investigating population genomics of non-model organisms.

Page link to thesis: <http://hdl.handle.net/10037/9482>

Per-Jostein Samuelsen

Philosophiae doctor

Use of analgesics in the general population: Trends, persistence, high-risk use and associations with pain sensitivity

Analgesics are commonly used drugs but we lack knowledge of trends, persistence, high-risk use and the association with pain sensitivity at a population-level. This thesis aimed to describe the use of analgesics, particularly persistent analgesic use, in a general population (30+ years), including change over time, contraindications and drug interactions, risk factors, and associations with pain sensitivity. The use of analgesics increased from 2001 to 2008. The extent of use of non-steroidal anti-inflammatory drugs in the presence of chronic kidney disease, gastrointestinal ulcers, cardiovascular disease and interacting drugs increasing the bleeding risk was a particular cause for concern. The prevalence of persistent analgesic use was relatively low, also among those reporting chronic pain, perhaps indicative of limited effectiveness. Analgesic use was associated with increased pain sensitivity but the potential causal mechanisms are unclear.

Page link to thesis: <http://hdl.handle.net/10037/9517>

Department of Community Medicine
Faculty of Health Sciences
19.8.16

Erlend Dancke Sandorf

Philosophiae doctor

Valuing Unfamiliar and Complex Ecosystem Services – The influence of survey mode, knowledge and dishonesty

This thesis addresses some of the challenges practitioners face when using discrete choice experiments (DCEs) to value unfamiliar and complex environmental goods. The thesis utilizes two identical DCEs to elicit the Norwegian population's preferences for increased protection of cold-water coral (CWC). Sandorf shows that it is possible to use internet panels to elicit preferences for unfamiliar and complex environmental goods, but that practitioners should pay close attention to information provision, emphasize consequentiality and implement procedures to reduce speeding behavior. Furthermore, results show that a respondent's level of knowledge about the environmental good influences the likelihood of ignoring attributes on the choice cards. Lastly, he shows that respondents providing an incorrect answer to a follow-up question are more likely to be characterized by a less deterministic choice process and more likely to ignore the non-cost attributes on the choice cards. However, the former effect is reduced when both choice determinism and attribute non-attendance are modeled jointly.

Page link to thesis: <http://hdl.handle.net/10037/9510>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
15.8.16

Simone Sauer

Philosophiae doctor

Past and present natural methane seepage on the northern Norwegian continental shelf

This thesis aims to understand past and present methane cycling on the northern Norwegian margin. A comparison of the carbon cycling in the surface sediments of a cold seep site on the Vesterålen shelf and organic rich sediments of a northern Norwegian fjord revealed distinctly different

organic carbon sources, accumulation rates and turnover processes. The seep site is mainly influenced by carbon input via the rise of thermogenic methane rich-fluids, whereas the fjord site is completely dominated by marine organic matter deposition originating from primary production in the water column resulting in higher rates of organoclastic sulphate reduction and methanogenesis. The study of methane-derived authigenic carbonates (MDACs) from the seep site on the Vesterålen shelf provided insight into formation environment and source fluids. The most important information derived from the MDACs are the temporal constraints of methane seepage inferred from U-Th dating. The events may be tentatively correlated to seismicity events related to isostatic rebound of the lithospheric crust after retreat and melting of the Scandinavian ice sheet and local/regional earthquakes.

Page link to thesis: <http://hdl.handle.net/10037/9548>

Department of Geology
Faculty of Science and Technology
30.6.2016

Rajesh Shigdel

Philosophiae doctor

Cortical porosity as a target for fracture prevention: The Tromsø Study

This thesis aims to determine the structural basis of fractures in order to identify why some women develop high remodeling, bone architectural decay and sustain fracture. The following hypotheses was tested: i) cortical porosity at the proximal femur is associated with non-vertebral fracture, independent of femoral neck (FN) areal bone mineral density (aBMD) and Fracture Risk Assessment Tool (FRAX) score; ii) combining measurements of porosity with FN aBMD or FRAX score improves identification of women with fracture; and iii) bone turnover markers (BTM) are associated with cortical porosity and fractures. The researchers assessed determinants of the transitional zone area and porosity. The overall conclusion was that cortical porosity is a risk factor for fracture, independent of aBMD and FRAX score, and improves identification of women with fracture. Bone

turnover markers are associated with higher porosity, thinner cortices, larger bone size, and higher odds for fracture. Women with larger bone size had a relatively larger transitional zone area and higher porosity. Enlargement of the transitional zone and higher porosity was determined more by height and bone size than by age, and infers that this architecture is predisposing for fracture. Further work in a prospective study is needed to assess the prediction of fracture by cortical porosity.

Department of Health and Care Sciences
Faculty of Health Sciences
2.3.2016

Dagfinn Skaare

Philosophiae doctor

Non-beta-lactamase-mediated beta-lactam resistance in Haemophilus influenzae: Mechanisms, epidemiology and susceptibility testing

In recent years, a new type of antibiotic resistance has emerged in the bacterium *Haemophilus influenzae*, which is a frequent cause of ear infections, sinusitis and



Photo: private

respiratory tract infections. In one of three patients with *H. influenzae* infections, the bacterium has acquired resistance to beta-lactams, which is the most important group of antibiotics in respiratory tract infections. The most frequent mechanism is mutations altering the target of cephalosporins and penicillins. The most important countermeasure is rational use of antibiotics. Secondly, infection control measures are necessary to prevent the spread of resistant bacteria in healthcare institutions. Finally, surveillance of resistance must be intensified. In this project, a novel approach to molecular characterization of resistant bacteria was developed. This is a powerful tool for global surveillance of resistant *H. influenzae*, which may contribute to the identification of successful clones combining resistance and virulence, and eventually to the development of effective vaccines. Skaare and his team also evaluated methods for susceptibility testing of *H. influenzae*. The data have resulted in improved test methodologies used by microbiological laboratories in Scandinavia and Europe.

Page link to thesis: <http://munin.uit.no/handle/10037/9650>

Department of Medical Biology
Faculty of Health Sciences
20.5.2016

Igor Snapkov

Philosophiae doctor

The role of inflammatory pathways in neuroblastoma tumorigenesis

Neuroblastoma (NB) is an embryonal tumor of the peripheral nervous system, and is a common and deadly childhood tumor. Despite extensive treatment, including chemotherapy, surgery, radiation therapy and immunotherapy, the survival rate among high-risk patients is less than 50 %. Hence, there is a great need for new therapies, particularly those based on a biological understanding of tumor development. In this thesis, the signaling pathways of the inflammatory receptors FPR1 and CMKLR1 have been studied in terms of their contribution to NB tumorigenesis. The researchers were

able to demonstrate that both receptors participate in tumor progression and the development of a highly malignant phenotype. The experimental results supported by survival data obtained from several cohorts may provide a foundation for future research aimed at specifically targeting of FPR1 and CMKLR1 in NB. Moreover, drugs selectively targeting these receptors could be a novel approach in the treatment of patients with NB. Additionally, this thesis expands the knowledge of FPR1 biology, hence revealing the receptor's expression in the liver and identifying its role in hepatic clearance.

Page link to thesis: <http://hdl.handle.net/10037/9728>

Faculty of Health Sciences
Department of Medical Biology
23.8.16

Ida Therese Solhaug

Philosophiae doctor

Cultivating helper qualities: Immediate and longer term impacts of mindfulness training for medical and psychology students – A prospective randomized controlled study and qualitative exploration

This thesis explored the immediate and long-term impact of participating in a 7-week mindfulness-based stress reduction intervention on medical and psychology students. A significant proportion of healthcare professionals experience distress and stress-related burnout, which have been linked to patient dissatisfaction, worse patient outcomes, and increased rates of medical error. Distress, burnout, and stress can occur early in the educational process, and medical and psychology students report increasing levels of stress and mental distress during educational training. The results indicate that a mindfulness-based intervention can reduce distress, enhance adaptive coping responses and boost helper qualities (i.e. mindfulness disposition) in medical and psychology students both in the short and long run. Integrating mindfulness into the education of helpers holds promise.



Photo: Colourbox

Page link to thesis: <http://hdl.handle.net/10037/10012>

Department of Psychology
Faculty of Health Sciences
11.11.16

Ann Iren Solli

Philosophiae doctor

Intracellular MMP-2. A study of tissue distribution, localization and potential role in skeletal muscle

Matrix metalloproteinases (MMPs) are well known for their functions in the extracellular environment. These enzymes are involved in many physiological processes, but their over-expression is associated with various diseases including cancer. Thus, MMPs are regarded as therapeutic targets. Recent studies have demonstrated several MMPs, including MMP-2, also act inside cells, but the knowledge about the extent of intracellular MMP-2 activity and intercellular MMP-2 functions is still limited. The current study shows intracellular MMP-2 activity during physiological conditions in several cell types, and that MMP-2 is localized at different sites inside cells. The researchers investigated one of many potential intracellular roles for this enzyme in skeletal muscle, and found that it

might have a regulatory role in glucose metabolism. The results add to the growing body of evidence that MMP-2 also act inside cells. In this study, Solli and her colleagues have found intracellular MMP-2 activity in several tissues during physiological conditions. They have detected intercellular MMP-2, at sites not associated with the secretory pathway and identified a potential intracellular role for MMP-2 in skeletal muscle.

Department of Medical Biology
Faculty of Health Sciences
30.5.2016

Stina Therese Sollid

Philosophiae doctor

Glucose metabolism, genetic factors, vitamin D binding protein and directly measured free 25-hydroxyvitamin D – Results from a randomized controlled trial with high-dose vitamin D supplementation in subjects with prediabetes

Subjects with vitamin D deficiency have an increased risk for developing type 2 diabetes (T2D); however, whether vitamin D supplementations can prevent the development of T2D is not known. A randomized controlled study was conducted, with 511 subjects with prediabetes randomized to 20,000 IU vitamin D per week or to placebo for 5 years. The results for 12 months' are presented. High dose vitamin D supplementations was found not to improve glycaemic indices or cardiovascular risk factors in a population with prediabetes. In subjects with adequate vitamin D status, vitamin D supplementations cannot be recommended for the prevention of T2D, nor can it be recommended to improve blood pressure or blood lipids. Large individual differences were found in the serum 25(OH)D response following vitamin D supplementation, due to genetic, BMI and baseline 25(OH)D differences. These variations found for the serum 25(OH)D response should be considered when giving advice on vitamin D supplementation. The direct measurements of free 25(OH)D reduces the differences seen in serum 25(OH)D between DBP phenotypes and sexes, most likely caused by the differences seen in DBP concentrations. Thus, in subjects

with conditions affecting serum DBP concentrations, direct measurements of free 25(OH)D should be considered.

Page link to thesis: <http://hdl.handle.net/10037/9424>

Department of Clinical Medicine
Faculty of Health Sciences
21.4.2016

Runar Gjerp Solstad

Philosophiae doctor

Antimicrobial peptides in Urticina eques and Echinus esculentus. Isolation, characterisation, and structure-activity relationship studies

Bacterial resistance to antibiotics has become a serious global problem. There is a desperate need for new antibacterial drugs. Antimicrobial peptides (AMPs) are a diverse group of compounds often capable of both killing bacteria and other microorganisms. AMPs have been suggested as an option for treating bacterial infections where traditional antibiotics have little effect. The overall aim of the study was to discover and characterise novel AMPs in Echinodermata and Cnidaria. The most potent AMPs were discovered via bioassay-guided purification in the edible sea urchin Echinus esculentus, killing bacteria at low μM -concentrations and fungi at somewhat higher concentrations. The AMPs were homologous to the centrocins and strongylocins of the green sea urchin Strongylocentrotus droebachiensis and were named EeCentrocins 1 and 2 and EeStrongylocin 2. An AMP in Urticina eques was named τ -AnmTx Ueq 12-1 and characterised. This AMP was antibacterial exclusively towards the Gram-positive Corynebacterium glutamicum at 50 μM concentrations. Ueq 12-1 was bifunctional as it potentiated the TRPA1 ion channel in addition to its antibacterial activity.

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
9.12.2016

Timofey Sovershaev

Philosophiae doctor

Bone morphogenetic proteins: Novel mediators of atherothrombosis

The aim of this thesis was to investigate the effects of BMPs 2 and 7 on of the major components of the atherosclerotic plaques, monocytes. The researchers hypothesized that Bone morphogenetic proteins have a distinct role in atherosclerosis. They found out that BMPs 2 and 7 take part in the regulation of the expression of tissue factor (TF), major activator of coagulation in atherosclerotic plaques. To do this they attenuate activation of several signaling kinases, namely ERK1/2, p38 and JNK, as well as two transcription factors, AP-1 and NFkB. BMP-2 is capable of significantly reducing induced expression of TF, while BMP-7 upregulates it. In the last papers, a novel function for BMP-7 is described. BMP-7, via activation of focal adhesion kinase and Akt kinase, facilitates all stages of monocyte extravasation – crawling, adherence and transendothelial migration. This proposes a new role for BMPs in atherosclerotic process, and the use of natural or synthetic inhibitors of BMPs signaling might be one of the directions in future therapies.

Page link to thesis: <http://hdl.handle.net/10037/10052>

Department of Clinical Medicine
Faculty of Health Sciences
8.12.2016

Vigdis Staven

Philosophiae doctor

Y-site compatibility testing of intravenous drugs and total parenteral nutrition. Establishment of a test program and study of mixtures relevant for children

Critically ill patients often receive many drugs simultaneously in the same line. Some also need total parenteral nutrition (TPN). It is important that the drug and TPN are miscible the short time they meet. There is often a lack of documentation regarding which drugs and

TPN mixtures may be mixed. In addition, the content of TPN formulas vary. This means that each mix must be tested with each drug to exclude the possibility of incompatibility. In this project a set of methods were evaluated for testing compatibility between drugs and TPN. Miscibility between different drugs and TPN formulas for children were examined using this method set. It was found that certain blends led to precipitation of particles, and administration of such blends in the Y-site must be avoided. Some measurements were slightly off what was defined as a stable emulsion. This might be due to other causes and must be investigated further. Knowledge of miscibility between drugs and TPN may lead to easier and safer administration of drugs to critically ill children.

Department of Pharmacy
Faculty of Health Sciences
12.2.2016

Bjørn Stensrud

Philosophiae doctor

Experiences with outpatient commitment orders from the perspectives of patients, relatives and staff – A qualitative study

Compulsory outpatient psychiatric care or outpatient commitment orders (OC) is intended to ensure treatment of people with severe psychotic disorders after discharge from inpatient care. The present study show that patients found OC to be an obstacle to social integration and prevented them from basing their recovery process on their own experiences. Relatives found that the scheme relieved them, but they felt that health professionals did not acknowledge their expertise and experiences. Health professionals experienced a dilemma in attempting to combine therapeutic responsibility with the management of coercion. Recovery from mental illness is largely a question of patients developing everyday coping skills. Health professionals should increasingly consider whether OC is equally useful for all patients with psychosis and whether poor cooperation on treatment may partly be due to patients having other priorities for their lives. Since



the use of OC is largely justified by the patient's treatment needs, the scheme must facilitate patients' involvement in their own recovery, and use resources in the patient's environment to enhance treatment. The results show that the interaction between patients, relatives and OC decision makers should be improved compared to how the scheme is practiced today.

Page link to thesis: <http://hdl.handle.net/10037/9877>

Department of Community Medicine
Faculty of Health Sciences
27.10.16

Hilde-Merete Storhaug

Philosophiae doctor

Uric acid – its role as a risk factor for the metabolic syndrome, cardiovascular and kidney disease

Uric acid as a potential risk factor for cardiovascular and renal conditions has gained renewed attention. In this work, the researchers aimed to assess the associations between serum uric acid, metabolic syndrome, hypertension, renal dysfunction, cardiovascular events and mortality. In this project, the researchers found that increased uric acid

levels increased the risk of declining kidney function and abnormal secretion of the protein albumin in the urine after 7 and 12 years. Increased value of uric acid over time seemed to have a negative impact on kidney function. It was also investigated whether uric acid level had significance for the development of heart attack and stroke and increased mortality in the population, after 12 and 15 years. Uric acid did not seem to have any independent significance for the development of heart attacks, but has significance for stroke in men. In both sexes, increased uric acid levels increased the risk of death. The findings support the view that serum uric acid is associated with obesity, metabolic syndrome and hypertension, but also is a risk factor for cardiovascular and kidney disease, independently of these risk factors. Moreover, increasing values of serum uric acid over time may imply an even higher risk.

Faculty of Health Sciences
Department of Clinical Medicine
6.12.2016

Eike Ingrid Stübner

Philosophiae doctor

Seasonality of Meroplankton in Svalbard Waters

This thesis aims to increase the knowledge on meroplankton dynamics and their ecological role in the Arctic marine coastal ecosystem. Three different approaches including high-frequency field sampling, molecular identification (DNA bar-coding, Bivalvia) and feeding experiments (Cirripedia nauplii) were applied to investigate the highly dynamic nature of meroplankton, how they relate to biological and environmental drivers and what might be their potential feeding impact during mass occurrences. Meroplankton contributed considerably to the total zooplankton abundance during the productive time of the year. A strong correlation of total meroplankton abundance with phytoplankton biomass was observed as a general pattern. The timing of the spring bloom determined the onset of the “meroplankton-boost”, which mainly comprised Cirripedia and Bivalvia larvae. Strong seasonality was found in the occurrence of the different

bivalve larval species. The feeding experiments gave limited results. The investigation suggests that benthic invertebrate larvae play a significant role in the pelagic ecosystems in Arctic coastal regions, linking the pelagic and benthic realms. The different reproductive strategies of benthic invertebrates with planktonic larvae are discussed and some speculations about potential changes in a warming Arctic climate are made.

Page link to thesis: <http://hdl.handle.net/10037/10018>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
14.12.2016

Yury Sumarokov

Philosophiae doctor

Suicides in the Nenets Autonomous Okrug, Russia

The study aims to assess suicide rates in the indigenous and non-indigenous populations of the NAO, socio-demographic characteristics, differences in suicide methods, seasonal variations, and the potential role of alcohol. Study of suicides in the NAO used socio-demographic and other data of suicide victims in the region in 2002-2012 among the indigenous Nenets and the non-indigenous population. Variations in suicide methods, seasonal and week-day variations of suicides in the NAO were compared with national data from Russia. Data on the presence of alcohol in the blood and blood alcohol content in suicide cases from the NAO were compared with data from neighboring Arkhangelsk Oblast (AO). The study showed that suicide rates in the NAO were higher than corresponding national figures. Suicide rates were higher among the indigenous Nenets than the non-indigenous population, and were associated with different socio-demographic characteristics. Suicides by hanging, cutting, and firearm were different compared to Russia as a whole, as well as the suicide occurrence by month and day of the week in the NAO. The study showed a higher role of alcohol consumption prior to suicide in the NAO compared with Russia and AO.



Page link to thesis: <http://hdl.handle.net/10037/9774>

Faculty of Health Sciences
Department of Community Medicine
25.10.2016

Bente Sundsvold

Philosophiae doctor

“Den nordlandske fuglepleie” – Herligheter, utvær og celeber verdensarv. Mellom tekster og praksiser i Vegaøyen

In 2004, the Vega archipelago was inscribed as a UNESCO World Heritage Site, based on the now unique practice of eider down harvesting. The thesis and films follow the process of WH inscription, and the practice of eider down harvesting as it performed today. The thesis explores the powerful transformations the practice has undergone during the past century, from being considered valuable amenities (herligheter) to becoming marginalized outskirts (utvær), and now entering the prestigious WH list. “Den nordlandske fuglepleie” refers to a particular form of co-domestication, arguing that in this practice

the birds domesticate the humans as much as the humans domesticate the eiders. Video camera is used as a tool for expanding the field of observation, allowing the researcher to explore both humans and birds as subjects in the interaction, although they share neither language nor perceptive faculty. Such an etho-ethnographic approach allows the birds to be co-producers in the practice, as well as in the writing of the thesis, and to explore the interfaces between language and performativity analytically.

Page link to thesis: <http://hdl.handle.net/10037/8457>

Department of Archaeology and Social Anthropology
Faculty of Humanities, Social Sciences and Education
22.2.2016

Dragana Šurkalović

Philosophiae doctor

The No-Reference Hypothesis: A Modular Approach to the Syntax-Phonology Interface

This dissertation investigates the interface of syntax and phonology in a fully modular view of language. It

explores the effects of the Multiple Spell-Out Hypothesis and “syntax-all-the-way-down approaches”, specifically Nanosyntax, on the phonological computation. Three issues for modularity in phonology are addressed: (i) seeing edges of syntactic constituents, (ii) distinguishing between lexical and functional elements in syntax, and (iii) recognizing Information Structure marking features. The No-Reference Hypothesis states that phonological computation needs to proceed in phases in order to achieve domain mapping while maintaining an input to phonology consisting of purely phonological information, and that spell-out does not proceed in chunks but produces cumulative cyclic input to phonology. Analysis of data from English, Kayardild and Ojibwa, formalized in Optimality Theory through Phase-Phase Faithfulness constraints, shows how prosodic domains can be derived from phases.

Page link to thesis: <http://hdl.handle.net/10037/8438>

Department of Language and Culture
Faculty of Humanities, Social Sciences and Education
22.1.2016

Gaute Emil Svensson

Philosophiae doctor

Negotiating norms in nature: The moral landscape of outdoor recreation and nature based tourism in North Troms

This dissertation is about norms of the outdoors and it is based on four publications. While the articles are about specific norms, the summary article focuses on how these norms are negotiated between locals and tourists and how they in sum can be seen as a negotiable room – a moral landscape of the outdoors. Svensson sets out to investigate how nature-based tourism is affecting the normative negotiations among hunters, anglers and outdoor recreationists in North Troms. He also focuses on what these norms can do. The main finding of this dissertation is that nature based tourism has a substantial impact on how outdoor recreation is practiced and how acceptable behavior

in nature is negotiated and reconstructed in North Troms. The norm denotes the line between the acceptable and the un-acceptable. The negotiations about where this line should be drawn mark the processes that altogether constitute morality. These processes are characterized by a tension and overlap between outdoor recreation and tourism as something non-commercial and commercial, that Svensson argues is a symbiotic antagonism. This antagonism, which must be seen as extremes on a scale rather than a dichotomy, leads in turn to a morality of the outdoors that is unique to North Troms.

Page link to thesis: <http://hdl.handle.net/10037/9570>

Department of Archaeology and Social Anthropology
Faculty of Humanities, Social Sciences and Education
15.6.2016

Rannveig Grøm Sæle

Philosophiae doctor

Academic performance and student dropout. Results from two studies in upper secondary and higher education in Northern Norway

Education is important for the individual and for society. One of the most important and stable predictors of educational dropout is academic performance, typically measured by grades. This thesis aims to investigate factors related to academic performance and student dropout. It comprises two projects. The first project, Young Will (Ung vilje), is based on a sample of adolescents entering upper secondary school in the autumn of 2010. The second project, Learning in Higher Education, studies a sample of students entering university in the autumn of 2013. The findings indicate that educational institutions should focus not only on what students learn, but also on how they learn. At upper secondary level, this includes supporting students with literacy problems and paying attention to low academic performance. At the higher education level, it seems important to foster productivity and commitment from the beginning of the programme of study.

Page link to thesis: <http://hdl.handle.net/10037/9507>

Department of Psychology
Faculty of Health Sciences
19.8.16

Vidar Arne Ytterdal Sørum

Philosophiae doctor

Evolution and Maintenance of DNA-uptake and Recombination in Acinetobacter baylyi

Natural transformation is a trait inherent in many bacterial species that enables them to transport DNA from their surroundings through small pores in their cell membrane. Sørum and his fellow researchers have studied how bacteria can take advantage of this foreign DNA once it has entered the bacterial cell. By constructing different bacterial strains with certain characteristics, they found that the bacteria that could take up foreign DNA from their surroundings adapted faster to a new environment and that they could incorporate beneficial genes harboured on this DNA into their own DNA. Potential benefits of uptake of DNA was dependent on different environmental factors. Foreign DNA could also provide benefits to single bacteria either as a source of nutrient or alternatively as a signal for rapid growth. The findings in this thesis have contributed to a broader and deeper understanding of natural transformation and its implication on bacterial biology and adaptation. Knowledge on this subject is also of clinical relevance as it may facilitate development of evolutionary informed treatment strategies based on an understanding of how antibiotic resistance spreads in bacterial populations.

Department of Pharmacy
Faculty of Health Sciences
22.4.2016

Giacomo Tartari

Philosophiae doctor

A distributed remote presence system for latency critical human-to-human and human-to-computer interaction

In a computer-based distributed stage performance, such as a theater play or opera, the actors and the audiences are spread among different stages in different locations. Actors in different cities can be on the same virtual stage and perform in front of an audience that can enjoy a whole consistent performance. A distributed stage performance raises a set of challenges both of a principled and of a practical nature. This dissertation presents MultiStage, a system to enable distributed performances. In Multistage both actors/users and audience can interact with remote presences, but not with the full gamut of interactions available with real actors/users. However, this dissertation showed the attainability of opening new channels of interaction between remote stages allowing the actors/users to exploit them. These channels can be gestures performed by the actors/users on the stage to emphasize some actions on stage or to trigger some service routine to be ran on a computer on stage to activate special effects.

Page link to thesis: <http://hdl.handle.net/10037/9846>

Faculty of Science and Technology
Department of Computer Science
27.9.16

Hanna Leena Thim

Philosophiae doctor

Adjuvant combinations with the Toll-like receptor-ligand CpG. Protective immune responses in Atlantic salmon

Aquaculture is in need of improved viral vaccines to meet the demands of a growing sustainable industry. Toll-like receptor (TLR) agonists are well explored mammalian vaccine adjuvants. Synthetic TLR-agonist's potential as adjuvants lie in their ability to provide signals engaging both innate and adaptive immunity. Here, the main aim was to increase the knowledge regarding the

immunostimulatory properties of the nucleic acid-sensing TLR-agonists CpG and polyI: C in Atlantic salmon. The thesis shows that the adjuvant combo; formulated with inactivated whole salmonid alpha virus (SAV) antigens (Ag), greatly potentiates neutralizing antibody responses against PD (pancreas disease). It also shows that leukocytes can take up the soluble Ag CpG and ovalbumin (OVA) and home to the immunological tissues head kidney (HK) and spleen, displaying traits common for maturing Ag-presenting cells (APCs). Further, CpG stimulation alone could induce IgM secretion in sorted HK and spleen IgM+ B cell cultures, and mRNA transcript analyzes of these cells show that they express several nucleic acid-sensing TLRs. The findings suggest that these TLRs are promising 'model- agonists' and research regarding their direct and indirect effects, particularly on salmon B cells, should be emphasized.

Page link to thesis: <http://hdl.handle.net/10037/10008>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
1.12.2016

Astrid Unhjem

Philosophiae doctor

Tidlig språkutvikling hos barn med familær risiko for dysleksi. En studie av sammenhenger mellom gester, lek og talespråk

(Early language development in children with familiar risk of dyslexia. A study of the relationship between gestures, play and spoken language.) The study is a part of the Tromsø Longitudinal study of Dyslexia. It followed development of communicative gestures, play and language in children with family risk for dyslexia and a control group without this inheritable risk at 12, 15, 18 and 24 months of age. The results showed no differences between the two groups in oral language at 24 months of age. There were stronger concurrent and predictive relations between gestures, play and language skills in the family-risk group. Vocabulary development revealed a more consistent

pattern in this group. There were stronger relations between low vocabulary at 18 months and productive language delay at 24 months (late talkers). Late talkers the family-risk group were also inferior to late talkers in the control group in gestures and play (12-18 months). Earlier research has found that children with family risk for dyslexia are more vulnerable to language delay during preschool years. It is urgent to follow their language development in order to detect signs of early language delay. The results from the study indicate that gestures, play, and language development are strongly related to oral language skills at 24 months in this group of children. By focusing on early gestures and play, risk of language delay could be detected at an earlier age. In addition, gestures and play might be important approaches for early intervention.

Page link to thesis: <http://hdl.handle.net/10037/10020>

Department of Education
Faculty of Humanities, Social Sciences and Education
8.12.2016

Ilona Urbarova

Philosophiae doctor

Sea anemone transcriptomes and their responses to climate change stressors

Urbarova and her fellow researchers have studied sea anemones, marine organisms that are close relatives of corals. Little is known about sea anemones at the cellular and genetic level. They appear to be interesting biological model systems well suited to research both on fundamental processes in biology and ecology, and to medical research on cancer and other disease genes. In this project, the researchers have developed a fast and efficient large-scale method, called "Digital Marine Bioprospecting", to be able to simultaneously find multiple new biomolecules with commercial potential for further exploitation. They also studied a particular species of sea anemones, *Anemonia viridis*, to identify the effects of climate change on marine organisms. Urbarova & Co have specifically studied how the sea anemone reacts to ocean acidification. Advanced "deep-



sequencing methods” and various bioinformatic analyses were used. A high level of stress at low pH conditions were proven, although sea anemones appeared environmentally adapted. Sea anemones have proven to be great and informative model organisms in climate studies, and there is every reason to believe that such studies are representative of animals in general, and probably also for humans.

Department of Medical Biology
Faculty of Health Sciences
2.12.2016

Olga Urek

Philosophiae doctor

Palatalization in Latvian

Palatalization – a phenomenon characterized by a consonant acquiring a secondary palatal articulation or shifting its primary place of articulation to or closer to the palatal region – is commonly attested across languages. However, palatalization notoriously exhibits a large degree of diversity, both cross-linguistically and within individual languages, which poses considerable challenges for formal phonological accounts. In this dissertation, Urek undertakes a systematic investigation of a group of palatalization processes in Modern Standard Latvian, which have hitherto received very little attention in the literature. The relatively narrow empirical focus of this work made it possible to examine the phenomena in considerable depth and to uncover some regularities and dependencies that have been previously overlooked. She also develops a formal analysis of Latvian palatalization, and shows how the phenomenon interacts with other aspects of Latvian phonology and morphology.

Page link to thesis: <http://hdl.handle.net/10037/9501>

Department of Language and Culture
Faculty of Humanities, Social Sciences and Education
23.5.2016

Birthe Vang

Philosophiae doctor

*Recovery and properties of oil from the copepod *Calanus finmarchicus**

The limited amount of fish oils available has led to extensive search for alternative sources of oils rich in health beneficial long-chain polyunsaturated ω -3 fatty acids. The zooplankton *Calanus finmarchicus*, also known as redfeed, is present in large amounts in the North Atlantic and has lipid-rich stages, which can be harvested. This study aims to investigate if the use of proteolytic enzymes could improve oil recovery from *C. finmarchicus* in an industrial-like process, and to characterize the oil obtained.

The results showed a substantially higher oil yield with the use of proteolytic enzymes compared to standard fish oil production technology. The oil from *C. finmarchicus* was rich in the powerful antioxidant astaxanthin and had a high content of the ω -3 fatty acids, mainly found as wax esters. The wax ester rich oil is well utilized by fish, and recent reports indicate that Calanus oil may have beneficial health effects beyond those, which may be ascribed to intake of ω -3 fatty acids alone. Tropomyosin is known to be the main allergen in crustaceans and another objective was to investigate if this protein could be detected in Krill and Calanus oils. Tropomyosin was not detected in Calanus oil probably due the production method. A method for accurate determination of the protein content in oils by direct amino acid analysis was also developed.

Page link to thesis: <http://hdl.handle.net/10037/8426>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
29.1.2016

Anna Sofía Veyhe

Philosophiae doctor

The Northern Norway Mother-and-Child Contaminant Cohort Study (MISA): Population Characteristics, Dietary Intake and Predictors of Organochlorine Contaminants in Meconium and Maternal Serum, and of Essential and Toxic Elements in Mothers' Whole Blood

Food is the most important source of contaminants in humans. High levels in pregnant women may cause risk for fetal development. This is the background for the project Pollutants in pregnancy and lactation (MISA study). Women from Northern Norway participated in the study. Pollutants and dietary data were analyzed using factor analysis and regression analysis. Maternal age, number of children, consumption of fish and local cuisine can explain the organic toxins. Mercury and selenium levels can be explained by the consumption of fish. Cadmium and lead levels may be due to smoking habits, intake of cereal products and local food. Meconium can be used



to measure fetal exposure to organic compounds, such as pesticides and PCBs. The study concludes that maternal contaminant levels were generally low compared with results from other countries. The proven levels do not have clinical significance for the individual participants in the study. It is necessary to follow up levels of toxic metals and potential new toxins in relation to children's development.

Page link to thesis: <http://hdl.handle.net/10037/9139>

Department of Community Medicine
Faculty of Health Sciences
3.3.2016

Hanne Maaret Vidgren

Philosophiae doctor

Remediation of contaminated marine sediments – Sediment capping technology and adverse effects of remediation actions

Contaminated marine sediments and the increase in suspended sediment concentrations (SSC) pose ecological and human health risks, which raises a need

for less invasive approaches for sediment management. These studies were carried out in three sites on the Norwegian coast and the papers specifically address (i) the technical challenges and adverse effects of thin sand cap construction, (ii) initial cap efficiency during consolidation of the underlying sediments, (iii) dredging induced plumes as a model input, and (iv) monitoring of the suspended sediment plumes arising from the operations. Paper I concerns the cap construction which is critical especially in the thin capping approach. The results of Paper II show the importance of an appropriate cap design to minimize the effects of consolidation-induced advective transport. Paper III addresses how sediment characteristics may affect the dredge plume source terms and complicate the far-field model input. In Paper IV the advantages of acoustic method to provide understanding of the suspended sediment plume induced by capping was showed.

Department of Geology
Faculty of Science and Technology
4.2.2016

Gísli Arnór Víkingsson

Doctor philosophiae

Decadal changes in distribution, abundance and feeding ecology of baleen whales in Icelandic and adjacent waters. A consequence of climate change?

During the last two decades, substantial changes have occurred in the marine physical and biological environment around Iceland. Increased sea temperatures have apparently caused a northward shift in distribution of several fish species, a reduction in abundance of krill and a near collapse of the sand-eel population. Simultaneously, appreciable changes were detected in whale populations in the area, including a northward shift in distribution of blue whales, rapid increase in abundance of humpback whales, a steady increase in abundance of fin whales in the Irminger Sea and an abrupt decrease in abundance of common minke whales in Icelandic near-shore areas. The reasons for these changes in whale distributions and abundance are most likely associated with changed availability of some important prey species. A density-



Photo: private

dependent relationship was found between per-capita prey availability and fecundity in fin whales. The results presented in this thesis indicate that climate change has already started to have effect on the distribution of cetaceans in this region.

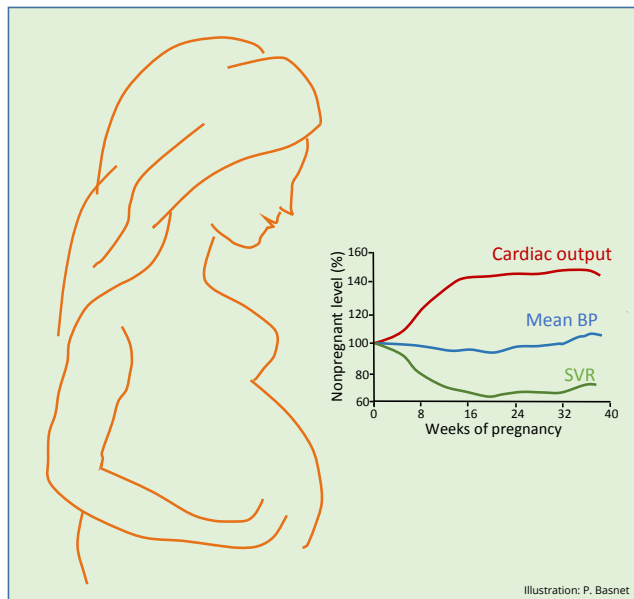
Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
15.1.2016

Åse Lillian Vårtun

Philosophiae doctor

Dynamic functional assessment of maternal hemodynamics in human pregnancy

In healthy pregnancy, the blood volume, heart rate, stroke volume and cardiac output are known to increase and these physiological alterations are largely complete by mid-gestation. Investigation into cardiovascular response to dynamic changes in the loading condition of heart during pregnancy might contribute to better understanding of gestational cardiac adaption and help to identify women at risk of developing pregnancy complications. In this study, functional hemodynamic response of the maternal heart to a



volume load caused by passive leg raising was investigated in healthy women in the second half of pregnancy to establish reference values. Vårtun and her fellow researchers also evaluated functional hemodynamic response to passive leg raising in pregnancies at risk of developing pregnancy complications as identified by abnormal uterine artery Doppler. Functional hemodynamics in healthy pregnant women at 22-24 weeks of gestation was compared with non-pregnant women, and the functional hemodynamic response to passive leg raising was similar among healthy pregnant and non-pregnant women, indicating that the physiological response is not modified in pregnancy at 22-24 weeks of gestation. The researchers observed that healthy pregnant women have reduced cardiac contractility and preload reserve, especially in the last trimester. This makes pregnant women vulnerable to fluid overload and heart failure. Assessment of systemic functional hemodynamics may help identifying women who have cardiovascular maladaptation in pregnancy.

Page link to thesis: <http://hdl.handle.net/10037/9912>

Department of Clinical Medicine
Faculty of Health Sciences
9.9.16

Ragnhild Margrete Wold

Philosophiae doctor

*Hypothermia-induced myocardial calcium overload.
A study of intracellular Ca^{2+} handling during profound
hypothermia and rewarming*

The researchers performed randomized controlled experimental studies in an intact animal model and in isolated cardiac myocytes with the following aims: To establish an in vivo model for measuring cardiac intracellular $[\text{Ca}^{2+}]$ ($[\text{Ca}^{2+}]_i$) in an anesthetized rat with maintained spontaneous circulation. In this model they could sort out if alterations in Ca^{2+} homeostasis take place in response to hypothermia and rewarming. To investigate myocardial $[\text{Ca}^{2+}]_i$ during graded hypothermic exposure-time and after rewarming during maintained spontaneous circulation. To describe the Ca^{2+} homeostasis in subcellular compartments; if mitochondria buffer excessive cytosolic Ca^{2+} in single beating cardiac myocytes during hypothermia and rewarming. Main results and conclusions: Wold & Co established an in vivo model for measuring cardiac cell $[\text{Ca}^{2+}]_i$ which revealed that cardiac Ca^{2+} overload evolves during long-lasting profound hypothermia, and that the increase in $[\text{Ca}^{2+}]_i$ remains unchanged during rewarming. In vitro mitochondria buffer cytoplasmic $[\text{Ca}^{2+}]$ ($[\text{Ca}^{2+}]_{\text{cyt}}$) during hypothermia (0,5 hs). They conclude that prolonged deep hypothermia alters cardiac myocyte Ca^{2+} handling which may deteriorate mitochondrial function contributing to the post-hypothermic myocardial failure.

Page link to thesis: <http://hdl.handle.net/10037/9758>

Department of Clinical Medicine
Faculty of Health Sciences
30.9.16

Marte Christine Ørbo

Philosophiae doctor

Resuscitate the heart and remember the brain. A prospective observational study of cognitive outcome after Out-of-Hospital Cardiac arrest

Out-of-Hospital Cardiac Arrest can cause hypoxic-ischemic brain injury, which may lead to persistent cognitive impairments in survivors. Cardiac arrest survivors are usually considered to be cardiac patients, hence cognitive functioning is not regularly addressed in clinical care. The results from an out-patient neuropsychological assessment of 48 good-outcome adult survivors conducted at 3 and 12 months after cardiac arrest, showed that mild and moderate cognitive impairments are common despite ability to live independently. Cognitive tests representative of memory, attention/executive functions and fine-motor functioning were significantly impaired in almost half of the survivors at 3 months. Significant associations were observed between worse cognitive functioning and poorer health-related quality of life. Results were stable from 3 to 12 months. Cognitive functioning should be addressed in all survivors from cardiac arrest.

Department of Clinical Medicine
Faculty of Health Sciences
3.6.2016

Lene Angell Åsli

Philosophiae doctor

Potato consumption and risk of colorectal and pancreatic cancer. The Norwegian Women and Cancer cohort and the HELGA cohort

Potatoes are an important source of fiber, niacin, vitamin C, proteins and several minerals. Potatoes also have a high glycemic index (GI) and glycemic load (GL), and studies have shown that food with high GI and GL are associated with increased risk of several chronic diseases, heart disease and several cancers. The aim of this thesis

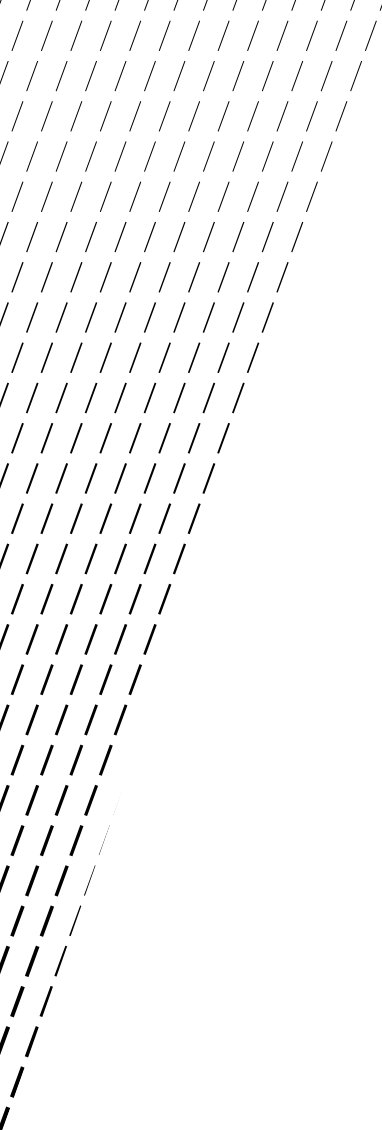


Photo: Ole M. Rapp

was to conduct a cross-sectional investigation of what characterises women who eat potatoes, investigate prospectively the association between potato consumption and colorectal cancer risk, and to investigate prospectively the association between potato consumption and pancreatic cancer risk. Åsli and her colleagues found that the high potato consumption group consisted of more elderly women and women with lower socioeconomic status. Health-related factors like smoking and diabetes were found to influence potato consumption. Further, they found that high potato consumption was associated with an increased risk of colorectal cancer among women with a BMI <25 kg/m². Lastly, the researchers found that a high potato consumption was associated with an increased risk of pancreatic cancer, although the association was only significant for women. In addition, there was an interaction between potato consumption and age, and age-specific analyses showed only significant association for the oldest age group.

Page link to thesis: <http://hdl.handle.net/10037/9775>

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14.10.16



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