

UiT

THE ARCTIC
UNIVERSITY
OF NORWAY

DOCTORAL DEGREES 2015





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103 new doctoral degrees in 2015

A total of 103¹ doctoral degrees were awarded at UiT The Arctic University of Norway in 2015. Of these, 53 candidates defended their doctoral thesis in the spring semester, and 50 in the autumn semester. This represents a slight increase compared to 2014 (101 new doctors).

There has been a significant increase in the number of female PhDs in recent years. In 2015, 63 women and 40 men defended their doctorate, which means that for the first time more than 60 per cent of the new doctors were female.

Among the new doctors, 38 came from 23 different countries outside of Norway.

In 2015, five of the university's seven faculties offered PhD programmes. The number of doctors were distributed as follows:²

Faculty of Health Sciences: 47

Faculty of Science and Technology: 18

Faculty of Humanities, Social Sciences and Education: 16

Faculty of Biosciences, Fisheries and Economics: 18

Faculty of Law: 4

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 2015, 102 candidates attained the PhD degree and one attained the Dr.philos degree.

Most theses are published in Munin, which is UiT's digital knowledge archive. Some of the theses 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 This number includes two joint doctoral degrees with foreign universities.

² The Faculty of Athletics, Tourism, and Social welfare and the Faculty of Fine Arts do not currently offer PhD programmes. The Faculty of Engineering Science and Technology was established on 1.1.2016.

Doctoral degrees in 2015 at UiT The Arctic University of Norway

A. F. M. Jalal Ahamed

Philosophiae doctor

Antecedents and outcomes of exporter- importer relationship quality – An exporting developing country's context

Based on a survey dataset collected from 185 organisations exporting ready-made garments in Bangladesh, the study draws on empirical findings on structural equation modelling using partial least squares techniques. There is a positive relationship between quality and financial and strategic export performance, and financial export performance has a positive effect on exporter satisfaction. There is a positive effect of exporter satisfaction on the exporters' expectations of continuing the export-import relationship. Relationship quality plays a mediating role in the relationships between distance and export performance and between the communication climate and export performance. Distance may not be a critical issue in cross-border export-import relationships. The influence of asset specificity and uncertainty on export performance is mediated by relationship quality. Competitive intensity moderates the commitment and that exporters, especially those in emerging economies, should pay more attention to maintaining strong relationship quality with their importers to ensure higher export performance. Page link to thesis: <http://hdl.handle.net/10037/8296>

School of Business and Economics
Faculty of Biosciences, Fisheries and Economics
13.11.2015

Siril Alm

Philosophiae doctor

Exploring social influences on children's food attitudes and consumption

In light of the increasing numbers of overweight children, this dissertation mainly explored how children are socialized as food consumers. An additional objective was to explore the advantages of using participatory photo interviews while researching children's attitudes and behav-



ioral patterns. The dissertation consists of four different papers applying two qualitative methods: interviews of 24 children (aged four to six) and participant photo interviews with 12 children (aged seven or eight) and their parents. Paper 1 found that children with a high level of seafood exposure used more cognitive associations by describing seafood as healthy, and expressed more positive attitudes towards seafood compared to the other children. Paper 2 found that most families were conversation-oriented and communication tended to shift from consensual on weekdays to pluralistic on weekends. Paper 3 found that children's participation in sporting activities made families feel stressed due to pressures of time, and often led to unhealthy food consumption. Paper 4 found that participant photo interviews were beneficial in order to explore children's sensory, cognitive and affective food associations.

School of Business and Economics
Faculty of Biosciences, Fisheries and Economics
27.6.201

Rania Ali Muhsen Al-Madhi

Philosophiae doctor

Identification of novel roles and new modes of regulation for the atypical MAP kinases ERK3 and ERK4

Kinases are proteins that regulate the activity of other proteins by the addition of phosphate groups. Genes encoding protein kinases are amongst the most commonly mutated genes in human cancer. ERK3 and ERK4 are atypical kinases belonging to the MAP kinase family. Very little is known about the function of ERK3 and ERK4, but MAP kinase pathways in general are evolutionarily conserved and control fundamental cellular processes. Protein kinases that have a role in cell survival, proliferation and migration are important drug targets because of their roles in cancer cell growth and tumour invasion. In this PhD project, a new role for ERK3 in cell morphology and migration was identified. ERK3 was also found to influence the loss of cell-cell adhesion and F-actin rearrangement. The researchers have discovered that the dual-specificity phosphatase2 (DUSP2) can interact with and regulate the activity of both ERK3 and ERK4. In addition, they found that Hsp90 can interact with and stabilize ERK4. The inhibition of Hsp90 is a very promising target for cancer therapy. Page link to thesis: <http://hdl.handle.net/10037/8355>

Department of Pharmacy
Faculty of Health Sciences
13.11.2015

Toril Andersen

Philosophiae doctor

Novel chitosan-containing liposomes as mucoadhesive delivery system for vaginal administration

Vaginal infections are one of the most common reasons women seek healthcare. Most women undergo at least one such infection in their lifetime. Unfortunately, using currently recommended treatment, repeated infections often occur as a result of surviving microorganisms. The local

treatment of these infections may result in better effect, lower dosages and a decreased risk of side effects. The aim of this project has been to develop a novel type of nanoparticles, chitosomes. These are lipid particles coated by a film of chitosan. They show increased residence time in the vagina, increasing the contact time with the infectious agent and improving the effect of treatment. Chitosan is a naturally occurring agent with an antimicrobial effect. In this project it has been shown that chitosomes are able to inhibit the growth of *Candida albicans*, the main cause of fungal infections. Chitosomes can be loaded with an antibiotic and thus provide two points of attack, improving treatment efficacy. Page link to thesis: <http://hdl.handle.net/10037/8219>

Department of Pharmacy
Faculty of Health Sciences
2.10.2015

Stine Andreassen

Philosophiae doctor

Claims for compensation after alleged birth injury in Norway. A study of obstetric claims to the Norwegian System of Compensation to Patients from 1994-2008

Andreassen and her fellow researchers analysed 871 reported claims for compensation to NPE. The most common maternal injuries were serious obstetric lacerations, damage to the bladder and bowel, heavy bleeding and infection after childbirth. Common injury to the child was a lack of oxygen during birth and difficult delivery of the shoulders. Human error seen as incomplete foetal monitoring, inadequate professional qualifications and management by involved health personnel when required were the most common causes of injury. A midwife was responsible almost as often as an obstetrician. There was only a moderate consistency in opinions when it came to the experts' assessment of labour claims with regards to rejection or pursuant to NPE. It is important that research groups work to reduce the risk of such damage occurring in an improvement and patient safety perspective. It can probably be approached

in many ways, including good procedures and policies, and systems which ensure that errors are detected and corrected. Multidisciplinary simulation training should probably also be prioritized. Page link to thesis: <http://hdl.handle.net/10037/8288>

Department of Clinical Medicine
Faculty of Health Sciences
16.10.2015

Monica Andreassen

Philosophiae doctor

Immune properties of cry1Ab transgenic maize studied in mouse models of airway and food allergy

The aim of the project was to gain more knowledge about the risk of immune system response related to the cultivation and use of genetically modified maize for food and feed. Using animal experiments, Andreassen and her colleagues have investigated whether the applied (transgenic) protein Cry1Ab in MON810 maize can trigger or intensify allergies. In the experiments, mice have been exposed to that particular protein, as well as to plant material from MON810 and conventional maize, both via respiratory



and digestive system. In serum from respiratory exposed mice, we found antibodies against the protein, including antibody IgE, which is associated with allergy. This applied only for the mice receiving pure protein, and not those who were exposed to plant material (which had lower concentration of Cry1Ab protein). We did not find that the protein could reinforce allergy to two known allergens. More research is necessary in order to know whether the antibodies against the protein can cause clinical allergic disease, and moreover whether the effects of long-term exposure should be investigated further. Page link to thesis: <http://hdl.handle.net/10037/8226>

Department of Pharmacy
Faculty of Health Sciences
19.3.2015

Vivian Berg

Philosophiae doctor

Concentrations and predictors of persistent organic pollutants in pregnant women and associations with maternal and infant thyroid homeostasis. The Northern Norway Mother-and-Child Contaminant Cohort Study

Berg and her fellow researchers have investigated the concentrations of persistent organic pollutants (POPs) in pregnant women and the factors that describe high or low concentrations in the blood. They have studied whether concentrations could be associated with abnormalities in the thyroid system of the mother and child. The work is based on blood tests and information about diet and lifestyle among 391 pregnant women and their children who participated in MISA study from 2007-2009. The number of prior childbirths, study time, maternal birth year and dietary habits are important explanatory factors for concentrations of POPs in the blood of women. Several POPs showed a correlation with the maternal thyroid function during and after pregnancy. All changes in the maternal hormones as a result of the influence of POPs were small and one cannot say whether the results are clinically important for women or children. However, small changes in the mother's hormone levels during pregnancy may affect foetal development.



Department of Community Medicine
Faculty of Health Sciences
10.12.2015

Sampada Satchidanand Bhagwat

Philosophiae doctor

Biological exposure agents relevant to the seafood industry work environment as inducers of inflammatory responses in skin and airway cell models. Focus on proteases, endotoxins and protease-activated receptor-2

This work revolves around the effect of biological exposures agents in the seafood industry on skin and respiratory tract. The study used cell models of skin cells and airway cells, and the effects on signaling pathways that lead to inflammation was analysed using molecular biological techniques. The enzyme trypsin from salmon and king crab induced release of inflammatory mediators from skin cells, an effect mediated by protease-activated receptor – 2 (PAR-2). The researchers examined the effects of mixed exposure of purified seafood trypsin and lipopolysaccharide (LPS) on the airway epithelial cells. The study shows that trypsin and other serine proteases are present in the working environment in the seafood industry. A method

for quantification of serine proteases in bioaerosols was validated. The method uses zymography as a sensitive technique for identification and quantification of trypsin and is transferable to other proteases in various environments. The results indicate that exposure to trypsin from salmon and king crab and mixture of seafood trypsin with LPS may result in inflammatory conditions of the skin and respiratory tract.

Department of Medical Biology
Faculty of Health Sciences
19.8.2015

Kari Birkeland

Philosophiae doctor

Ekstern revisors handleplikt – i et revisjonsrettslig og erstatningsrettslig perspektiv

(External auditor's obligation to act – in an audit law and law of torts perspective). The thesis contains an analysis of the diligence norm for statutory audit. The method is based on legal dogmatic. The main emphasis is on systematizing and analyzing obligations to act that are relevant for the diligence norm. The content of the diligence norm is particularly determined by the auditor's obligations to act, including generally accepted auditing standards, interacting with ordinary tort factors. The auditor's obligation to act is regulated by Sections 5-1 and 5-2 of the Auditors' Act. The auditor's obligation to act covers three main areas; control of annual accounts including an assessment of whether the audit client has violated laws and regulations of significance for the annual accounts, checking the audit client's financial affairs and a duty to prevent and detect financial crime. The duties of the auditor are not described in a specific way. The dissertation contributes to systematizing, analyzing and defining the nature of the auditor's obligations to act based on an audit law and tort perspective.

Faculty of Law
13.11.2015

Marjorie Bison

Philosophiae doctor

Taxonomic and functional approaches of trophic interactions between large herbivores and plant communities in a mountain ecosystem

Given the key role of large herbivores on species and functional plant diversity, Bison and her colleagues aimed to acquire a better understanding of the relationship between herbivory and plant communities mainly on a fine-scale. The researchers used three databases: (1) diet data from DNA metabarcoding applied on chamois (*Rupicapra rupicapra*), roe deer (*Capreolus capreolus*) and mouflon (*Ovis gmelini musimon*) faeces from the Bauges Massif (France), (2) characteristics of plant communities, and (3) plant functional traits. Firstly, they up scaled the niche variation hypothesis (NVH) from the intra- to the inter-specific level. Secondly, they revealed the absence of negative effects of the introduced mouflon population on native chamois population diet. Finally, analyses of diet selection criteria highlighted differences in choice criteria between chamois and mouflon in some seasons. In most cases, biomechanical traits had a direct effect on diet choices, whereas chemical traits had indirect effects. The results provide a better account for the structuration of herbivore communities, and should help to better assess the actual state and the evolution of relationships among individuals, species and their environment. (Joint degree University of Grenoble)

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
8.12.2015

Egil Støre Blix

Philosophiae doctor

Advanced flow cytometry to study signaling pathways and predict outcome in B cell malignancies

Patients with lymphoma and multiple myeloma have highly variable prognoses, some patients have slowly evolving disease over decades while other face rapid disease pro-

gression and death. In this project, Blix and colleagues have collaborated with researchers at the Norwegian Radium Hospital, St. Olav's Hospital and Stanford University. The researchers have identified risk factors for recurrence of disease and subsequent death in patients with these cancer diseases. Blood cells from patients are analyzed using flow cytometry technique. They found a subset of cancer cells in patients with small lymphocytic lymphoma/chronic lymphocytic leukaemia and marginal zone lymphoma with impaired signal transmission from the unique B cell receptor on the cancer cell surface and into the nucleus of the cell. Patients with a large number of cancer cells in this subgroup had a higher risk of early death from cancer. Furthermore, the researchers found a small and unique subset of blood vessel stem cells in multiple myeloma patients that was associated with the risk of rapid relapse and death from the disease. The findings may contribute to the development of new diagnostics and new treatment strategies for blood and lymph cancer. Page link to thesis: <http://hdl.handle.net/10037/7755>

Department of Medical Biology
Faculty of Health Sciences
16.1.2015

Eva Sigrid Braaten

Philosophiae doctor

Folkehelse, næringsinteresser eller individets frihet? Verdssettinger i lokal alkoholpolitikk

(Public health, business interests or individual liberty? Valuations in local alcohol policies.) This PhD thesis uses the theoretical perspective developed by Boltanski & Thévenot (2006 [1991]) to examine alcohol policy justifications in five municipalities in the period 2008-2012. The most inflammable topic in local alcohol policy settings are instruments that can be used to reduce or increase the availability of alcohol. The actors in the data material take two different positions: liberal (in favour of increasing/not reducing availability) and restrictive (against increasing/in favour of reducing availability). The conclusion is that local alcohol policy is characterised by valuations and valuation



compromises along several dimensions. The restrictive and the liberal sides both mobilise the civil order of worth, primarily by appealing to civil values like collective welfare and solidarity. The industrial order of worth is central to both justification practices. A civil-industrial compromise dominates. The liberal side mobilises the market order. As such, the two “camps” share several valuation principles (with the exception of market order). This is interesting considering that the two alcohol policy positions – liberal and restrictive – can seem almost irreconcilable. Page link to thesis: <http://hdl.handle.net/10037/8168>

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
28.8.2015

Marianne Brekke

Philosophiae doctor

Samtidig, men midlertidig. En etnografisk studie av unge med flyktningbakgrunn i Tromsø

(Simultaneously, but temporary. An ethnographic study of young refugees in Tromsø.) This thesis deals with young refugees in Tromsø and how they create coherence in their everyday life. Methodically, the study is based on ethnographic fieldwork that examines the youths’ experiences of Tromsø, their relationships and friendships within and outside Tromsø, as well as conceptions and dreams of the future. Simultaneity and temporality are concepts that bring out some of the complexities in the lives of these young people. Brekke has been concerned with how inclusion and exclusion must be understood and analysed in specific contexts, and she has studied the youths’ experiences of being “inside” or “outside” in various social situations. Brekke shows that “insideness” and “outsideness” are fluid and constantly changing conditions. Actor-oriented and structural perspectives as well as cultural perspectives are applied to reveal how young refugees have the skills, knowledge and opportunity to make decisions in various areas. Moreover, Brekke uses theories on youth, place,

migration and transnationality to analyse the meaning of relations that these young people are involved in, and how places and people are linked together. Page link to thesis: <http://hdl.handle.net/10037/8276>

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
8.12.2015

Andrius Budrionis

Philosophiae doctor

Web-Based Surgical Telementoring. Service design and evaluation of the key features

Many surgical operations, particularly emergency situations, are treated by a team that may not always be well prepared for the specific case. An assessment by an expert who cannot be physically present can provide lifesaving advice in such scenarios. The “Mobile Medical Mentor” project helps surgeons to communicate regardless of distance by using videoconferencing. Studies at the Gastro Surgery Department, University Hospital of North Norway (UNN), showed positive results. Improvement and validation of the software is planned in the near future in order to prepare the system for approval by the Norwegian Directorate of Health. Telementoring may reduce the duration of surgical procedures, result in improved outcomes for patients and fewer postoperative complications as well as reduce logistics costs. The technology creates a new basis for research, surgical training and, most importantly, improved quality of care. Page link to thesis: <http://hdl.handle.net/10037/8287>

Department of Computer Science
Faculty of Science and Technology
13.10.2015



Teena Chauhan

Philosophiae doctor

Late Quaternary paleoceanography of the northern continental margin of Svalbard

This study focuses on reconstruction of the late Quaternary paleoceanography of continental margin of northern Svalbard. The following factors were investigated for this reconstruction: the distribution patterns of planktic and benthic foraminiferal assemblages, oxygen and carbon stable isotopes in planktic and benthic foraminifera, ice-rafted debris, grain size of sediments- mainly sortable silt and organic carbon content from two sediment cores. The results show that since MIS 5, the distribution of solar energy, subsurface inflow of warm Atlantic water to north-western and northern Svalbard and distinct increase in freshwater flux during deglaciation periods were major climate forcing mechanisms. These oceanographic conditions and ice sheet processes have exerted first-order control on sediment properties of the contourite-dominated depositional environment. The study emphasizes the importance of considering regional environmental parameters and feedback mechanisms in reconstructions of the past climate. Page link to thesis: <http://hdl.handle.net/10037/8258>

Department of Geology
Faculty of Science and Technology
27.8.2015

Xi Chu

Philosophiae doctor

Sociosexual behaviors and reproductive success in a group of rats housed in seminatural environment

People may always doubt whether they choose their sexual partners carefully enough. This PhD project may help us to discover the fact of partner selection in sex. By observing the behaviour of group of rats in a semi-natural environment, a great amount of useful information is provided that may help us to understand the possible partner selection pattern and whether this pattern may influence the fertility.

Department of Psychology
Faculty of Health Sciences
20.4.2015

Marek Cuhra

Philosophiae doctor

Ecotoxicological assessment of Roundup-Ready soybean agriculture investigated in a D. magna model

Genetically modified glyphosate-tolerant soya (Roundup-Ready soy) is a dominant ingredient in animal feed worldwide. Roundup-Ready soy contains glyphosate, a chemical residue from glyphosate isopropylammonium salt (glyphosate-IPA) used in commercial herbicides such as Roundup. Feeding experiments in test-animals indicate poorer survival, growth and reproduction, compared to conventional industrially grown unmodified soy. These biological parameters are negatively correlated with magnitude of glyphosate residues. Ecotoxicological testing in acute and long-term animal studies, show unexpected high toxicity of glyphosate-IPA. The primary explanatory factor is found to be a discrepancy in tested materials: archive studies show that previous safety assessments of glyphosate were per-

formed as toxicity tests with glyphosate acid. Glyphosate acid is not used in herbicides. The five published papers indicate that 1) glyphosate is more toxic than previously acknowledged, 2) glyphosate residues make Roundup-Ready soy significantly different from unmodified soy, 3) unresolved questions concerning animal feed and food safety relating to glyphosate residues should be clarified. Page link to thesis: <http://hdl.handle.net/10037/7869>

Department of Pharmacy
Faculty of Health Sciences
9.6.2015

Alexandre Pierre Descomps

Philosophiae doctor

Practical synthetic methods for three unstable, unsaturated bromomethyl ketones, and on the use of near-orthogonal experiments for synthetic exploration

The thesis presents the development of a convenient procedure for the synthesis of three rare, unstable α,β -unsaturated brominated methyl ketones from common commercially available reagents. This family of molecule is hard to synthesize so a brief history about these efforts and the strategies to produce them is presented. The route presented is a convergent and highly efficient synthesis in terms of yield and reaction time and may be scaled-up with classic laboratory equipment. Several key steps of this procedure offer significant improvements over the earlier procedures. The synthetic use of the target molecules has been explored on four different types of reactions. The optimization part presents a new strategy for orthogonal experiments for the design of explorative experiments. A brief summary of existing orthogonal experiments is also presented. In conclusion, the synthesized compounds are sensitive to work with, but allow access to new exotic heterocyclic molecules that have never been synthesized before. The optimization introduces a new solution for faster detection of important experimental. Page link to thesis: <http://hdl.handle.net/10037/7793>

Department of Chemistry
Faculty of Science and Technology
17.6.2015

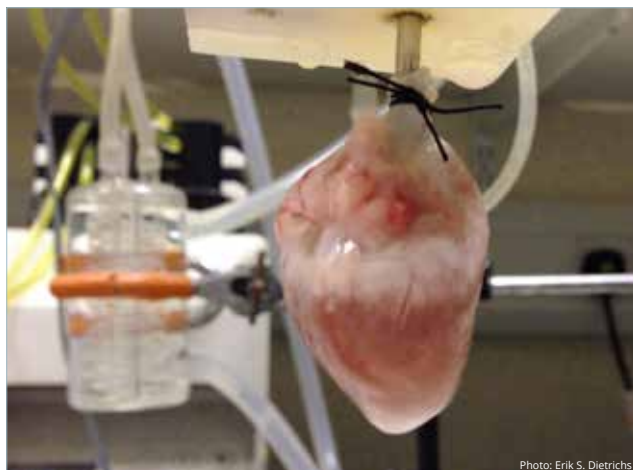


Photo: Erik S. Dietrichs

Erik Sveberg Dietrichs

Philosophiae doctor

Pharmacological approaches to management of hypothermia-induced cardiac dysfunction

European and American guidelines do not recommend pharmacological support of cardiac function during rewarming from accidental hypothermia until the core temperature has reached 30°C. However, several studies show that such treatment is used. In Dietrichs' thesis, the effect of adrenaline, milrinone and levosimendan on cardiovascular function during hypothermia and rewarming in rats is studied. The findings show a negative effect of adrenaline. This drug gave a depression of cardiac output during hypothermia, which is opposite to the effect during normothermia. This was not caused by B-receptor dysfunction, but rather by increased peripheral resistance through contraction of peripheral vessels. Contrary to adrenaline, levosimendan and milrinone both mediate cardiac effects through intracellular binding. Both drugs showed positive effects through elevated cardiac output and reduced peripheral resistance during rewarming. These findings indicate a reduced therapeutic window for adrenaline during hypothermia, and show that drugs like milrinone and levo-

simendan have a better potential for giving cardiac support during rewarming.

Department of Clinical Medicine
Faculty of Health Sciences
20.3.2015

Ingrid Marie Saga Drageset

Philosophiae doctor

«Å sette staven igjen» – tilhørighet til familie, sted, personer og natur. Å fremme et meningsfylt liv for personer med demenssykdom i sykehjem i Nord-Norge

(“Leaving the walking stick behind” – belonging to family, place, people and nature. Promoting a meaningful life for people with dementia disease in nursing homes in Northern Norway.) The thesis is based on fieldwork and interviews with people with dementia, their family, nurses and leaders. Narrative and content analysis were conducted. A meaningful life is connected with a feeling of belonging in one's own life. Narratives expressed a strong belonging to family, place, people and nature through life. As the lives of the patient and of their close relatives were intertwined, the



Photo: Tor Tveit

disease and moving to the nursing home were major transitions in the family's life. Nurses and leaders attached emphasis to getting to know the patients' identity. In the nursing home in a rural area, acquaintances and relations in the community were used in individual care. Home visits before moving to the nursing home can make the transition easier. Meals and personal hygiene provided opportunities for conversation about the person's earlier life. Preconditions for promoting belonging included nurses in sufficient numbers and competence. Nurses with local knowledge may be educated and employed. Continuous training and follow-up of untrained personnel is crucial, as is reflection within the nursing team about the best care of the patient. Page link to thesis <http://hdl.handle.net/10037/7051>

Department of Health and Care Sciences
Faculty of Health Sciences
23.1.2015

Firehun Tsigé Dullo

Philosophiae doctor

Methane Gas Detection with Waveguide Interferometers

An optical sensor for measuring methane concentration in air has been developed. Methane is a greenhouse gas and it is important to measure emissions from both man-made and natural sources such as tundra, wetlands and the ocean. In order to achieve this, it is necessary to have a robust, small, sensitive and accurate sensor. The sensor developed in this project has the potential to fill this role. The sensor was tested in the laboratory and provided repeatable results with relatively high sensitivity (17 ppm). The thesis suggests how the sensor may be further developed so that it can target the natural concentration of methane in the atmosphere (1.7 ppm). The sensor has also been implemented for the detection of optically capturing microparticles.

Department of Physics and Technology
Faculty of Science and Technology
16.11.2015



Tim Benjamin Dunker

Philosophiae doctor

Lidar measurements of mesopause region temperature and Na number density

Temperature is an important variable of state of the atmosphere, but it is difficult to measure temperature in the mesopause region (roughly 80 km to 110 km altitude). Due to the sublimation of meteoroids, metal atoms such as sodium exist in this region. In addition to the ubiquitous sporadic meteors, meteor showers occur at certain times. As meteoroids are the source of sodium, we can expect a meteor shower to increase the abundance of sodium. Dunker used the ALOMAR sodium lidar, located on Andøya, to measure temperature and Na number density. A rocket campaign on Andøya in December 2010, supported by lidar and radar, studied the effect of the Geminids meteor shower on the atmosphere. Dunker and collaborators found no detectable increase in Na number density that could be attributed to the Geminids. Instead, Na number density decreased and was strongly correlated to the number of sporadic meteors. Rocket data showed that the meteoric smoke particle abundance behaved similarly. The estimate of the global meteoric mass influx corresponds well to

assumptions made in a global atmospheric model, which simulates the lidar measurements well.

Department of Physics and Technology
Faculty of Science and Technology
25.11.2015

Liv-Marie Eike

Philosophiae doctor

Oncolytic Compounds as Novel Immunotherapeutic Agents: Studies on Mechanisms of Action in vitro and Efficacy in vivo

New research has shown that the immune system may contribute to successful cancer treatment. In modern immunotherapy against cancer, one tries to provoke the immune system to fight cancer cells. This is often done in combination with treatment to remove the brakes that cancer cells put on the immune system to protect the tumor. Molecules inspired by substances found in the natural immune system have been developed at UiT. In this thesis, the action mechanism of two new molecules that are effective against a variety of cancers are described in this thesis. Eike and her colleagues show how the molecules attack cancer cells and cause so-called lytic cell kill, whereby cells explode. They release substances that can cause the immune system to respond by attacking the surviving cancer cells. Local therapies in animal models show that this treatment can cause the tumor to disappear. Local tumor treatment was shown to be effective in a combination study with the conventional cancer drug cyclophosphamide, which caused the animals to become immune to the same cancer. These new lytic molecules have ability to activate the immune system against cancer.

Department of Medical Biology
Faculty of Health Sciences
16.10.2015

Mariana Eksteen

Philosophiae doctor

Anti-human platelet antigen (HPA)-1a antibodies: For better or for worse

Fetal and neonatal alloimmune thrombocytopenia (FNAIT) due to anti-HPA-1a antibodies carries a significant risk of intracranial bleeding in the fetus and newborn. Reduced birth weight is another possible complication of FNAIT. There are no specific ways to prevent or treat FNAIT. In this study, a human mAb strictly specific for HPA-1a was developed. *In vitro* experimentation shows that this mAb has qualities that can be used for treatment and diagnostics: it may be developed into a drug to specifically prevent maternal immunization to HPA-1a. This mAb may also be developed into a drug to treat FNAIT by protecting fetal platelets from harmful maternal anti-HPA-1a antibodies when the immunization has already occurred. Further, the potential of this mAb as a diagnostic reagent in FNAIT was evaluated. In addition, the mAb was used as a reagent to explore biological implication of such antibodies in pregnancy. Using an *in vitro* model, Eksteen and her colleagues found that anti-HPA-1a antibodies affect trophoblast functions crucial for placental development. The latter finding sheds light on one of the possible causes of reduced birth weight in FNAIT.

Department of Medical Biology
Faculty of Health Sciences
11.12.2015

May-Britt Ellingsen

Doctor philosophiae

The Trust Paradox. An inquiry into the core of social life

This is a theoretical thesis, which pursues three ambitions. It develops a process perspective on trust, examines the integration between an empirical grounded theory of trust and sociological theory, and explores the relationship between trust and social change. The thesis explores how the main elements of the empirical grounded process theory

of trust are elaborated on in sociological theory and relates this to trust. This exploration provides a theoretical grounding of the empirical grounded theory. However, grounded theory methodology is not very explicit about how empirical grounded theories can be theoretically grounded and integrated into existing theory. Consequently, the thesis discusses this issue and introduces four strategies for integration of grounded theory and existing theory. The process theory of trust is applied to analyse the trust paradox, which is an inquiry into the relationship between trust and social change. The trust paradox indicates that social change is about changes in our bases for trust, and that social change leads to development new configurations of trust bases. Page link to thesis: <http://hdl.handle.net/10037/7090>

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
29.1.2015

Christel Elvestad

Philosophiae doctor

Better Market Access? New Challenges, New Trade Policy Instruments

This thesis addresses what conditions are critical for the ability of exporting countries to ensure market access for its products in foreign markets. The four qualitative studies of the thesis deal with both tariff and non-tariff barriers to trade, and discuss the range of policy instruments available to reduce and remove trade barriers. The main findings of the thesis are that internal factors such as defensive trade interests and a lack of national capacity can have negative effects on the ability of states to ensure and improve market access. Furthermore, asymmetrical power-dependence relations can put importing countries in a position to dictate market conditions, restrict and refuse market access. The main conclusion is nevertheless that exporting states can benefit from adopting more proactive policies and cooperating long term and more systematically with trading partners on different levels. In particular, the thesis emphasizes the value of soft/non-binding regulatory cooperation to

prevent and reduce non-tariff barriers to trade. Page link to thesis: <http://hdl.handle.net/10037/7048>

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
15.1.2015

Anna Endresen

Philosophiae doctor

Non-Standard Allomorphy in Russian Prefixes: Corpus, Experimental, and Statistical Exploration

In this dissertation, focus is on one of the most fundamental notions of modern linguistic theory, the notion of allomorphy. Allomorphy is a relationship between variants of the same morpheme in a language. This dissertation challenges the traditional idealized model, which narrows allomorphy down to a mere variation of form where the meaning remains constant. Endresen proposes that this phenomenon is broader and has gradient nature. She explores the origins of this concept, reveals its drawbacks and elaborates an alternative usage-based model of allomorphy in terms of Cognitive Linguistics. This model can handle non-trivial cases where morpheme variants develop differences in meaning and are distributed by interacting and conflicting factors. Endresen examined 15 Russian aspectual prefixes on the basis of large datasets collected from an electronic corpus and two experiments. This study aims to optimize the criteria for allomorphy and advocates the use of statistics in analyzing linguistic variation. Page link to thesis: <http://hdl.handle.net/10037/7098>

Department of Language and Linguistics
Faculty of Humanities, Social Sciences and Education
16.1.2015



André Engesland

Philosophiae doctor

In vitro permeation models for healthy and compromised skin: The Phospholipid Vesicle-based Permeation Assay (PVPA) for skin applications

The dissertation examines the development of a model that can predict how drugs go through the skin, and testing of the model against animal skin and human skin cultivated in a laboratory. The model is a precise and highly reproducible method for estimating how drugs go through the skin both for simple and advanced systems. At the same time, it may be adapted so that it can predict how substances go through a skin barrier that is partially damaged. The model is made up of fat bubbles, which can be layered on a filter, and resembles the skin's barrier in form and content. In addition, the model can be used to examine special effects for nano carriers of drugs. The model has a wide range of applications in both the pharmaceutical and cosmetic industries, where it can help to reduce and replace many preliminary animal experiments.

Department of Pharmacy
Faculty of Health Sciences
20.3.2015

Gry Debora Wisthus Eveborn

Philosophiae doctor

The Epidemiology of Valvular Aortic Stenosis. Prevalence, incidence, mortality, risk factors and progression of aortic stenosis in a general population. The Tromsø Study

Eveborn and her colleagues have used echocardiographic data from participants in the Tromsø Study in 1994-1995, 2001 and 2008 to study the occurrence and development of degenerative aortic stenosis. The researchers demonstrated an exponential increase in the incidence of aortic stenosis with increasing age. The rate of progression was less in those with mild aortic stenosis compared to those with severe disease, but there were great individual variations. The researchers found no significant increase in mortality in those with asymptomatic aortic stenosis or in those who had surgery. This confirms a satisfactory follow-up and treatment of patients. Statistical analysis showed that age, smoking, hypertension and obesity are significant predictors for the development of aortic stenosis. Healthy lifestyle can, to a certain extent, prevent the development of aortic stenosis, but age is the strongest risk factor. Calcification is an expression of mechanical wear of the flap. Eveborn and her colleagues found that a third of participants with mean gradient across the aortic valve in the upper normal layer developed stenosis during a seven-year period. Page link to thesis: <http://hdl.handle.net/10037/8424>

Department of Community Medicine
Faculty of Health Sciences
19.11.2015

Asbjørn Johansen Fagerlund

Philosophiae doctor

Transcranial direct current stimulation: the effect on functional outcomes in the pain and motor domains

Earlier studies using transcranial direct current stimulation (tDCS) have found that the method can reduce pain in patients with chronic pain. In addition, it has been shown that motor performance in healthy individuals can be

improved. The studies underlying the present thesis investigated the effects of tDCS on functional outcomes in two experiments and one clinical trial. The results show that tDCS reduces pain in fibromyalgia, but the effect on acute pain and fine motor skills in healthy individuals is small.

Department of Psychology
Faculty of Health Sciences
8.6.2015

Lill Tove Fredriksen

Philosophiae doctor

*... mun boadán sin manis ja joatkkán guhkkelebbui...
Birgenjoansttat Jovnna-Ánde Vesta románatrilogijjas
Árbbolaččat*

(Coping skills in Jovnna-Ánde-Vest's *Árbbolaččat* ("The Heirs") (1997-2002)). The novel trilogy *Árbbolaččat* ("The Heirs") is written by the Sámi novelist Jovnna-Ánde Vest from Roavvesavu in Northern Finland. The narrative is built around the stories of several of the characters living in the remote Sámi village of Máhtebáiki in Northern Finland, from the beginning of the 1960s through the 1980s.



Photo: Ánde Somby

The people here are small-scale farmers and follow a traditional agricultural way of life. Different characters appear in the story, among others a writer, a fisherman, an elderly woman reflecting upon the developments in the society, a horseman, a housewife and even a painter. What kind of coping skills do the characters in *Árbbolaččat* need in times of poverty and in order to withstand the pressures from the majority society? The interpretation is grounded in a contextual reading of the text. Fredriksen also investigates textual elements in the text. She uses the yoik theory, based on Sámi yoik tradition, as a theoretical backdrop to explain the individual's place within the community. This is something new in the investigation of Sámi prose. She attaches particular emphasis to the contextual part of the yoik tradition and how it has functioned as a social device in the Sámi community, as well as what people's worldview and life philosophy tell us about life in a small Sámi village. Page link to thesis: <http://hdl.handle.net/10037/7915>

Department of Culture and Literature
Faculty of Humanities, Social Sciences and Education
28.4.2015

Hege Gade

Philosophiae doctor

Dysfunctional eating behaviours and personality traits in severely obese patients undergoing bariatric surgery

The PSYMO study is a randomised controlled trial including 102 severely obese patients undergoing bariatric surgery (BS). Gade and her colleagues examined the relationships between dysfunctional eating (DE), personality, anxiety and depression and whether a pre-surgical cognitive behavioural therapy (CBT) intervention exceeds usual care in the improvements of DE both before and one year after BS. The personality traits neuroticism (N) and conscientiousness were more strongly related to DE than symptoms of mood and anxiety. Furthermore, N partially mediated this relationship, thus indicating a putative mechanism. The intervention group improved their DE significantly. Patients were less inclined to eat for emotional reasons and to lose control of their eating following the intervention. A

supplementary benefit was a reduction in the symptoms of anxiety and depression. One year after BS, the two groups were indistinguishable in terms of weight loss and both groups had comparable improvements in DE and symptoms of anxiety and depression. However, the onset of improvement in the CBT group was earlier in all DE, affective and mood symptoms. Page link to thesis: <http://hdl.handle.net/10037/8217>

Department of Psychology
Faculty of Health Sciences
21.5.2015

Miriam Grgic

Philosophiae doctor

Insights into bacterial protection and survival. A study of three enzymes from cold-adapted bacteria

Bacteria are the most abundant organisms and can be found in different habitats. They are exposed to various environmental threats including chemical hazards, such as antibacterial chemicals (antibiotics) produced by some organisms that are found in the same habitat. In addition, they are exposed to threats from infection by bacteriophages. In order to protect themselves, bacteria have evolved several mechanisms towards avoiding antibiotics and phage infection. In this work, enzymes involved in these protection mechanisms have been characterized both functionally and structurally. Specifically, two DNA modifying enzymes have been worked upon. They are involved in bacterial protection from phages, namely the type II restriction enzyme DpnI and the C5-DNA-MTase ParI. Both originate from the psychrophilic bacterium *Psychrobacter arcticus*, which was isolated from 30,000-year-old permafrost in Siberia. The third enzyme that has been targeted is a metallo- β -lactamase (ALI-1) from the cold-adapted marine bacterium *Aliivibrio salmonicida*. Since all three enzymes originate from organisms adapted to a cold environment, the presence of possible cold-adapted enzyme features like heat lability and high activity at low temperature were analyzed. Page link to thesis: <http://hdl.handle.net/10037/8260>

Department of Chemistry
Faculty of Science and Technology
2.10.2015

Eythor Gudlaugsson

Philosophiae doctor

Modelling the subglacial hydrology of the former Barents Sea Ice Sheet

In this thesis, Gudlaugsson and his colleagues investigated the effect of subglacial water on the evolution of the Fennoscandian and the Barents Sea Ice Sheets. This is done by implementing a thin film model of water flow into an existing numerical ice sheet model and simulating the growth and decay of the ice sheets during the last glacial cycle. Additionally, they examined the influence of a subglacial lake on ice dynamics and isochrone layers within the ice. Basal water separates the ice and bed, softens the underlying sediments and leads to a strong increase in ice velocity. Including subglacial hydrology in numerical ice sheet models leads to less ice building up over time during glacial periods and speeds up deglaciation. Subglacial water forms lakes underneath the ice that greatly affect its speed and thermal regime. Lake drainage can result in travelling waves at depth within isochrone layers, indicating the possibility of detecting past drainage events with ice penetrating radar.

Department of Geology
Faculty of Science and Technology
1.12.2015



Photo: Anne M. Gussgard

Anne Margrete Gussgard

Philosophiae doctor

Cancer therapy-induced oral mucositis in head and neck cancer patients

Radiotherapy of the head and neck causes oral mucositis, manifested as painful ulcers. Fifty patients with head and neck cancer received radiotherapy at Canada's largest cancer hospital. During the treatment period that lasted 6 or 7 weeks, mouth and throat were examined twice per week, and the participants completed a questionnaire where they reported how much the oral mucositis affected their mouth-, taste and swallowing functions. All participants experienced oral mucositis. The level of patient-reported suffering was compared with the clinical appearance of the ulcers. There was good correlation at the group level. It is important to consider the individual patients' experience of pain and agony when evaluating the toxic side-effects of radiotherapy. The questionnaire will be an important supplement, and may substitute a clinical examination of the mouth and throat in situations where patients cannot endure oral examinations. The findings are important when planning new trials to test therapies that may prevent or cure oral mucositis. Page link to thesis: <http://hdl.handle.net/10037/8171>

Department of Medical Biology
Faculty of Health Sciences
17.6.2015

Mali Anja Bjerkhaug Hartviksen

Philosophiae doctor

Replacement of fishmeal with alternative proteins in diets for Atlantic salmon (Salmo salar L.): A study on the microbiota, morphology and function of the intestine

Alternative protein sources influence the intestinal microbiota, digestive physiology and intestinal morphology in fish. There is limited information available about this in farmed fish. The thesis focuses on the impact of certain alternative feed ingredients, with particular focus on the effects on the community population and metabolism of intestinal microbiota, its ability to compete with pathogens, gut physiology and health, fish performance and feed utilization. The results indicate a more stable intestinal microbiota than previously reported. Atlantic salmon is able to compensate for low digestible feed ingredients. Use of alternative feed ingredients may intensify the damage resulting from the exposure to pathogen bacteria. This damage can be alleviated by pre-exposing the intestine to probiotic bacteria. Pea protein concentrate and poultry by-product meal are highly useful for use as fishmeal replacements. However, soy protein concentrate and extracted sunflower should be used with caution due to potentially negative effects on the digestive physiology. Moreover, feather meal merits further study due to its potential to modulate the digestive enzyme activity. Page link to thesis: <http://hdl.handle.net/10037/7874>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
16.6.2015



Pål Haugen

Philosophiae doctor

Antibiotic use – Human consumption patterns and effect on bacteria

This thesis investigated prescriptions of antibiotics in Norway, and the effect of antibiotics on bacteria. The aim was to describe the consumption of antibiotics through prescriptions to patients and address how antibiotics can favour bacterial resistance. Several methods were applied; multivariate statistics, quantile regression and mathematical modelling of experimental conditions aided in the investigations. Variation in prescription profiles was found for patient gender and age groups, as well as for prescriber age groups and gender. Prescriber age interacts with patient demographic variables and influences antibiotic prescription profiles. This was also found for prescriber gender within subgroups of patients. Furthermore, the total amount of antibiotics prescribed in Norwegian municipalities varies up to ten fold and is dependent on municipality size and a south-north gradient. Finally, it was shown that a heterogeneous environment of antibiotics can favour maintenance of genetic elements that pose a fitness cost for the bacteria. Page link to thesis: <http://hdl.handle.net/10037/7237>

Department of Pharmacy
Faculty of Health Sciences
17.3.2015

Jon Helgheim Holte

Philosophiae doctor

Remuneration and organization in general practice: Three essays on doctors' preferences

The evidence for the effectiveness of various incentive schemes, which can be specifically implemented to boost recruitment to general practice, is generally considered to be poor. The overarching objective of this thesis is to improve the current understanding of what policy makers could do to boost recruitment and retention of general practitioners (GPs). More specifically, this thesis aims to identify doctors' preferences for various pecuniary and non-pecuniary job characteristics. Structured questionnaires, including discrete choice experiments (DCEs), were used to collect data from young doctors (i.e. medical students and interns in 2010) and GPs (those registered in the HELFO database in 2012). The results suggest that joint policy programs containing several non-pecuniary incentives (e.g. improved opportunity for professional development and control over working hours) could contribute to solving the current issue of getting doctors to rural areas. Increased income, from the current levels in Norway, appears to have limited effects. Page link to thesis: <http://hdl.handle.net/10037/8259>

Department of Community Medicine
Faculty of Health Sciences
16.10.2015

June Utnes Høgli

Philosophiae doctor

Appropriate antibiotic prescribing in Community-Acquired Pneumonia in a Norwegian hospital setting

Antibiotics are among our most important medicines. However, increasingly accelerating levels of antibiotic resistance threatens the value of antibiotics. Focusing on appropriate use of antibiotics is essential for patient safety and reducing the emergence of resistance and health care costs. Appropriate use of antibiotics is reflected by recommendations in clinical guidelines. For community-acquired pneumonia (CAP), Høgli and her colleagues have explored whether physicians at the University Hospital of North Norway prescribe antibiotics in accordance with recommendations in clinical guidelines. Further, they have also explored whether choice of therapy is associated with length of stay in hospital, mortality and risk of readmission. The researchers documented that for CAP, physicians at UNN have a high quality of empirical antibiotic prescribing, and that following guidelines is safe for patients. Moreover, empirical prescribing according to the guidelines provides lower risk of 30-day readmission. Mean total treatment duration was long, and this should be focused on in future intervention studies. Page link to thesis: <http://hdl.handle.net/10037/8356>

Department of Pharmacy
Faculty of Health Sciences
1.10.2015

Ragnhild Sørensen Høifødt

Philosophiae doctor

Internet-based cognitive behavioural therapy: A novel approach to treating depression in primary care patients

The thesis aims to explore the effectiveness and acceptability of a web-based self-help program (MoodGYM) combined with brief face-to-face therapist support for adult primary care patients with mild to moderate depression. Many depressed patients will receive all their treatment in



primary health care. Structured psychological interventions are infrequently delivered, despite the development of several effective psychological therapies for depression, patients' preferences for such treatments, and guideline recommendations. The effect of the intervention was investigated in a randomised controlled trial. The results indicate that the intervention was acceptable and effective in reducing symptoms of depression and anxiety and increasing life satisfaction in primary care patients with mild to moderate depression. A short educational course for general practitioners promoted recommendation of MoodGYM. However, follow-ups were not implemented due to time constraints, competing tasks and inadequate module knowledge and practical training. Page link to thesis: <http://hdl.handle.net/10037/8202>

Department of Psychology
Faculty of Health Sciences
15.9.2015

Geir Villy Isaksen

Philosophiae doctor

Protein Dynamics Regulates Enzyme Enthalpy-Entropy Balance

Enzymes are biological super catalysts indispensable for any living organism. Understanding of their function at the atomic level can enable design of enzymes to catalyze any chemical reaction. Enzymes and proteins are involved in so many diseases and it is believed that they can be designed to be part of the cure. Understanding is also important for industrial purposes. Accurate predictions of free energies and the corresponding enthalpies and entropies from computer simulations are invaluable for understanding enzymatic catalysis and drug actions in terms of actual structure-activity relationships. The researchers have developed a high-throughput interface for automated free energy and empirical valence bond calculations. The software was used advantageously to investigate the actual structure-activity relationships in several enzyme model systems. It was demonstrated that single point mutations distant to the active site can tune the enzyme temperature optimum. The seemingly perfect enthalpy-entropy compensation induced by the mutations originates from altered protein surface softness. By softening the protein surface, one can potentially design enzymes to operate at lower temperatures. Page link to thesis: <http://hdl.handle.net/10037/8177>

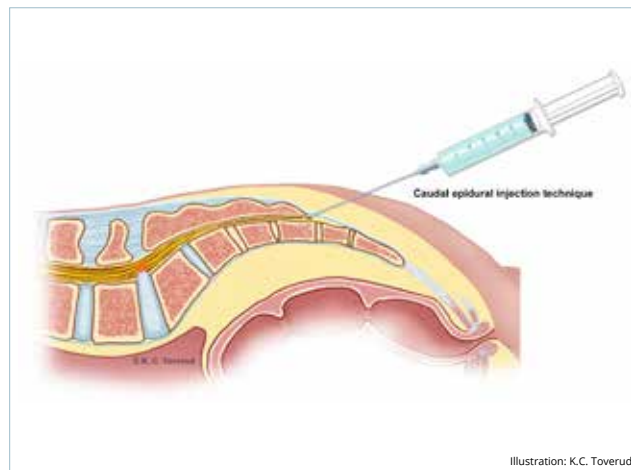
Department of Chemistry
Faculty of Science and Technology
26.6.2015

Trond Iversen

Philosophiae doctor

Lumbosacral radiculopathy managed in multidisciplinary back clinics. Diagnostic accuracy, prognostic factors and efficacy of epidural injection therapy

This thesis deals with some of the key issues in evidence-based medicine, i.e. to provide knowledge about diagnostic accuracy, prognostic factors and treatment efficacy, which



can be used in the clinical decision-making process for patients with lumbosacral radiculopathy. There is still a lack of scientific evidence for diagnostic workup and treatment recommendations. Consequently, few areas of clinical medicine are as controversial as the non-surgical management of patients with lumbosacral radiculopathy, and treatment recommendations are often made with considerable ambiguity. The main results from the study were that Iversen and his fellow researchers found a low correlation between clinical findings and MRI proven disc herniation. They identified that lower age and low fear avoidance predicted a better functional outcome and less back pain. In the randomised clinical trial, 39 patients received caudal epidural injection of saline and 37 received caudal epidural injection of saline plus steroid. At both short- and long-term follow-up, there was a significant within-group difference for both groups compared with the baseline values for pain and function, but there were no between-group differences.

Department of Clinical Medicine
Faculty of Health Sciences
27.10.2015

Hilde Jensvoll

Philosophiae doctor

Cancer and venous thromboembolism

Venous thromboembolism (VTE) is a collective term for blood clots in the lungs and in the deep veins. VTE is a common complication and a leading cause of death in cancer patients. It is important to identify risk factors for cancer-related VTE to enable preventive therapy in high-risk patients. Among 27,000 subjects included in the Tromsø Study (Tromsø 4, 1994-1995), the incidence of VTE was 13.5 per 1,000 person-years in cancer patients and 1.2 per 1,000 person-years in people who are cancer-free. High levels of platelets and white blood cells increased the risk of VTE in cancer patients. VTE can also be the first sign of an undetected cancer. We have examined this relationship among 145,000 participants ("the Scandinavian Thrombosis and Cancer Cohort", 1993-2012). VTE patients had a fourfold higher risk of cancer than people without VTE during the first year after a VTE event. In subsequent years, this risk was 1.3 times higher. The anatomical site of the clot had little impact on cancer risk, and there were only slight differences in cancer risk between patients with spontaneous VTE and provoked VTE. The results suggest that future studies investigating efficacy of cancer screening after VTE should not be limited by these factors.

Department of Clinical Medicine
Faculty of Health Sciences
2.10.2015

Simon Pind Jessen

Philosophiae doctor

Ice rafting, Ocean circulation and Glacial activity on the western Svalbard margin 0–74.000 years BP

The thesis builds on 11 sediment cores from c. 600 to 1900 m water depth from the continental slope west of Svalbard and one core from the Barents Sea shelf. The primary goal was to gain a better insight into ocean circulation and glacial activity in a climatic context on glacial-interglacial and



Photo: Colourbox

millennial time scales. The main findings are that the Svalbard-Barents Sea ice sheet reached the shelf break 24,000 years before BP, when it was at its maximum size. The timing is at least 3,000 years earlier than previously reconstructed. The ice sheet was at its largest size for a relatively short time. The millennial scale activity of the Svalbard Barents Sea ice sheet was closely linked to climate change, with a more actively calving ice sheet during warm climate intervals and a stable, probably growing ice sheet during cold climate intervals. The bottom current strength oscillated in phase with millennial scale climate, probably reflecting changing deep water production in the Greenland Sea gyre. Warm Atlantic water was always present on the slope, but occasionally submerged under a cover of fresh and cold Polar water. Page link to thesis: <http://hdl.handle.net/10037/7877>

Department of Geology
Faculty of Science and Technology
27.3.2015

Aslak Johansen

Philosophiae doctor

Persistent post-surgical pain: Prevalence, risk factors and pain mechanisms

In the 6th Tromsø Study (2007-2008), almost 13,000 participants answered questions about prolonged pain and surgery, and their sensitivity to pain was studied experimentally. A selection of the participants that had undergone surgery were followed up 15-32 months later with a survey and investigation of sensitivity to neutral and painful stimuli. Johansen and his colleagues found that 18.3% of the participants reported moderate to severe pain in the operation area 3-36 months after surgery. Most of these had simultaneous prolonged pain from other causes. After statistically adjusting the figures to take into account the contribution of other long-term pain, the researchers found no correlation between post-surgical pain and general pain sensitivity. They detected a strong statistical association between prolonged pain after surgery and self-reported disorders of sensitivity in the operated area. This indicates nerve damage as a possible contributory cause of the pain. With experimental methods, local changes in sensitivity were detected as frequent in individuals with prolonged pain after surgery as well as in individuals without prolonged pain. Nerve damage alone seems to be insufficient as explanation. Page link to thesis: <http://hdl.handle.net/10037/8222>

Department of Community Medicine
Faculty of Health Sciences
18.9.2015

Eva Josefsen

Philosophiae doctor

Selvbestemmelse og samstyring – En studie av Sametingets plass i politiske prosesser i Norge

(Self-determination and Governance – A study of the Sámi Parliament's space in the political processes in Norway.)
Norway as a unitary state has implications for how Sámi



politics can be organized within the state and how the Sámi Parliament can be secured to be part of decision-making processes within the government system on a local, regional and national level. The research question addressed is: How can indigenous people maintain and develop self-determination within the territorial framework of a unitary state? The Sámi Parliament's political autonomy is a central premise of the "breaking in" dimension. In the dissertation, it is operationalized into a governance perspective. The articles examine how the Sámi Parliament has strived to become part of public decision-making processes through formal agreements. Such arrangements contribute to strengthening the Sámi Parliament's position within the established territorially based model of government and, as a result, becomes a part of the Norwegian unitary state system. Page link to thesis: <http://hdl.handle.net/10037/7089>

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
22.1.2015

Kjersti Julin

Philosophiae doctor

Infectious pancreatic necrosis virus (IPNV) – Persistent infections, virulence and antiviral defence

Infectious pancreatic necrosis (IPN) is a fish disease that affects many species worldwide. The virus that causes the disease is infectious pancreatic necrosis virus (IPNV). Fish that are carriers of IPNV are free of symptoms and have low or undetectable levels of the virus. IPN outbreaks vary widely, ranging from low to high mortality. This thesis describes how molecular differences in field isolates are helping to give the viruses different virulence. A real-time polymerase chain reaction (PCR) for detection of the VP2 gene was designed for more sensitive detection of virus. When the salmon encounters IPNV for the first time, the outcome of the infection depends on both the virulence traits of the virus and how effectively the innate antiviral immune system of the fish is. Macrophages are important cells of the innate immune system, but they also represent a reservoir for many persistent viruses, including IPNV. In this work, researchers have infected smolts in the freshwater phase with high and low virulent virus isolates. They have looked at differences in development of disease between virus isolates by measuring the amount of virus and mortality in the sea phase. The researchers also examined whether the antiviral defence in salmon reacts differently to the various virus isolates. Page link to thesis: <http://hdl.handle.net/10037/7044>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
6.2.2015

Anders Benjamin Kildal

Philosophiae doctor

Acute heart failure – Exploring pathophysiology, monitoring tools and drug treatment in experimental animal models

An acute myocardial infarction (AMI) can potentially impair the cardiac pump function to such an extent that the body organs receive less oxygen and are damaged. This is called cardiogenic shock, and occurs in 10% of all AMI patients. Cardiogenic shock is a life-threatening condition in which much of the treatment is unclear. Using a clinically relevant model of cardiogenic shock, Kildal and his fellow researchers revealed that the reduction in blood pressure and blood flow is compensated by increased oxygen extraction and cellular energy production in the internal organs. Furthermore, the microcirculation is unaffected in untreated cardiogenic shock, while the increase in blood pressure with vasopressin aggravates it. The researchers have also shown that drugs that stimulate the natural adrenergic system (dobutamine and norepinephrine) are beneficial to the cardiac function, as opposed to a pure blood pressure increasing drug (vasopressin). Omecamtiv is a cardiac drug that was launched recently and is under clinical investigation. However, the researchers discovered that omecamtiv increases cardiac pump function, but at the expense of increased cardiac energy consumption due to a continuous activation of the cardiac muscle cells.

Department of Medical Biology
Faculty of Health Sciences
27.10.2015

Carola Babette Kleemann

Philosophiae doctor

Lek på to språk. En studie av kodeveksling og språkaltenering i tospråklig rollelek på nordsamisk og norsk i en samisk barnehage

(Play in two languages. A study of language alternation and codeswitching in bilingual role-play in North Sámi



and Norwegian at a Sámi kindergarten.) This project aims to describe how bilingual children use their languages to organize role-playing at various levels. The analyses are based on film-recordings of children playing in North Sámi and Norwegian in a Sámi kindergarten in Finnmark. The different levels of role-play are expressed in four different utterance types, which can be translated into directory utterances, role utterances, “out of play” utterances and “magical” utterances. These types are manifestations of communicative codes in sociodramatic pretend play. Klee-mann found that children at the Sámi kindergarten often used language alternation related to the communicative codes of role-play. There were also instances where language alternation was not linked to switching between these communicative codes, or where language alternation took place without the communicative codes changing. The different patterns of language alternation and code-switching led her to the conclusion that bilingualism is the language choice for role-play at the Sámi kindergarten. These children had expertise in performing role-play in North Sámi, Norwegian, or both simultaneously. Page link to thesis: <http://hdl.handle.net/10037/8153>

Department of Language and Linguistics
Faculty of Humanities, Social Sciences and Education
30.10.2015

Jesper Andreas Kuhn

Philosophiae doctor

Spatial and temporal variations in parasite communities of freshwater fish in the subarctic

The main purpose of this study was to examine spatial and temporal differences in the occurrence of parasites in Norwegian freshwater fish, while also examining the importance of three-spined stickleback as a transmission host for parasites. By comparing parasites of an introduced stickleback population and its nearby source population, high similarity was found. This indicates that the introduction of a host species over a short geographical distance is likely to also introduce the parasites of that species. Studying possible impacts of stickleback introduction on parasite infections in other fish species, *Diphyllbothrium* infections in brown trout were observed to be elevated in lakes where the stickleback was present. Finally, by studying temporal and spatial variation in intestinal parasites of Arctic char, overall stability was found. This possibly indicates a high receptiveness to ecosystem changes, such as that caused by the introduction of new parasites brought along with a host introduction. Page link to thesis: <http://hdl.handle.net/10037/8413>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
3.11.2015

Kjersti Lian

Philosophiae doctor

*DNA metabolism in extremophiles Structure-function studies of proteins involved in DNA repair and replication from *Aliivibrio salmonicida* and *Deinococcus radiodurans**

DNA is a storage unit of genetic data, so changes in the DNA must be kept to a minimum in order to maintain this information intact. In this study, three enzymes involved in nucleotide pool sanitisation, DNA repair or replication from the psychrophilic fish pathogen bacterium *Aliivibrio salmonicida* and the UV-light and desiccation resistant bacterium

Deinococcus radiodurans were chosen as research models. The aim was to see how the enzymes adapt to their respective organisms' natural habitat and if they have gained individual functions to optimize the organisms' DNA metabolism. One of Lian's discoveries shows that the enzyme MutT from *A. salmonicida* has cold-adapted properties by efficiently hydrolyzing the oxidative damaged nucleotide, 8-oxodGTP, in the nucleotide pool at low temperatures. This prevents the oxidized nucleotide from being incorporated into genomic DNA. This was seen by higher catalytic efficiency and lower activation energy when compared to its mesophilic counterpart. Taken together, the three enzymes studied all show indications of adaption to the organisms' natural habitat. Page link to thesis: <http://hdl.handle.net/10037/8173>

Department of Chemistry
Faculty of Science and Technology
16.6.2015

Karianne Fredenfeldt Lind

Philosophiae doctor

Bioactivity profile of baretin – With special focus on anti-inflammatory, antioxidant and anticoagulant activities

Lind studied baretin isolated from the marine sponge *Geodia barretti*, and its effect on important processes in the development of atherosclerosis. Atherosclerosis is a multi-factorial disease caused by fat, cholesterol and calcium deposits in arteries, leading to the formation of plaque. Over time, the chance of a plaque rupture increases, which can cause blood clots and, in worst case, result in infarction or stroke. The processes leading to atherosclerosis are complex and several factors are involved. Using multiple cell models, baretin was tested for its ability as an antioxidant and anti-inflammatory compound. Studies showed that in cells treated with baretin, the cell membrane was protected against damage from free radicals. Baretin was also able to inhibit production of inflammation-inducing signaling molecules called cytokines. In addition, when tested in a whole blood model, baretin was able to reduce the activity of tissue factor. Tissue factor is important in normal regulation of blood coagulation, but can cause problems if a plaque bursts. So far, baretin has shown

to have positive effects on important processes involved in the development of atherosclerosis. Page link to thesis: <http://hdl.handle.net/10037/7906>

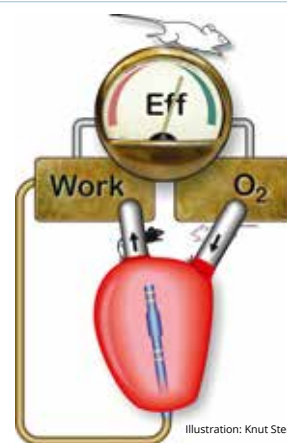
The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
17.4.2015

Jim Lund

Philosophiae doctor

Improving cardiac efficiency in type 2 diabetes. Exercise training and nitrates reduce myocardial oxygen wastage – experimental studies in mice

Cardiovascular disease is currently the leading cause of death in diabetic patients. The hearts of these patients can develop dysfunction due to changes in the heart muscle, where increased oxygen consumption and cardiac inefficiency are hallmarks. Although it is known that exercise training has beneficial effects in diabetic/obese subjects, the effect of exercise on the heart is less clear. Using experimental models of diet-induced obesity, this thesis shows that exercise training and treatment with nitrates improved cardiac efficiency due to oxygen-sparing effects. The hearts of these models were also found to display increased injury following



ischemia-reperfusion. Finally, both treatments decreased the susceptibility of these hearts to ischemic injury. Therefore, this thesis highlights the cardioprotective effects of regular exercise.

Department of Medical Biology
Faculty of Health Sciences
13.5.2015

Roger Stelander Magnussen

Philosophiae doctor

Good faith acquisition without statutory authority

The research topic of the thesis is if and when a good faith acquisition can and should occur without statutory authority. The thesis consists of five parts. The first part is an introduction, where good faith acquisition is positioned among other bases for acquisition. Moreover, this part identifies the margins for good faith acquisition without statutory authority. Part two is a legal historical and comparative analysis of the development of good faith acquisition in time and space. Part three deals with immemorial usage and adverse possession, while the rules and principles of good faith acquisition are analyzed in part four. The fifth and final part contains an overview of the legal effects of good faith acquisition.

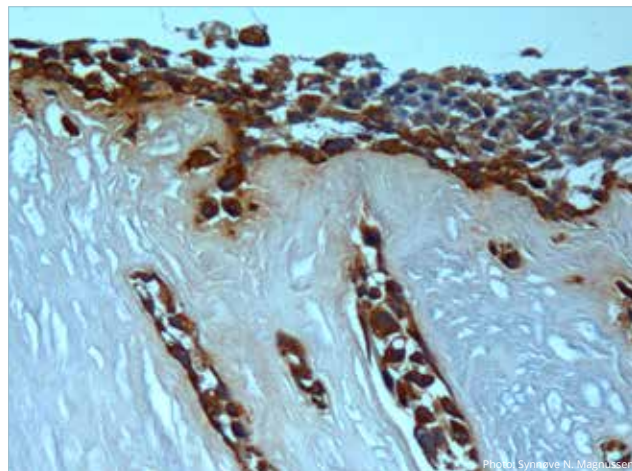
Faculty of Law
2.10.2015

Synnøve Magnussen

Philosophiae doctor

Oral Squamous Cell Carcinoma – Role of the Plasminogen Activation System in Tumour Progression

Oral squamous cell carcinoma (OSCC) is an aggressive and unpredictable cancer with a high tendency to recur and metastasise. Despite increasing efforts to improve treatment, the five-year survival rate is still low. This signifies the need for a deeper understanding of this disease. Magnussen and her colleagues discovered that the presence of two proteins (uPAR and PAI-1) in low amounts in OSCC



predicted better prognosis for the patients. These proteins are usually involved in wound healing. Thus, this suggests PAI-1 and uPAR as potential biomarkers to aid clinicians in treatment stratification. The protein uPAR is a receptor involved in the activation of tissue degrading enzymes. Moreover, further studies showed that several factors in the tumour microenvironment were involved in the regulation of uPAR. Increased levels of uPAR were accompanied by an enhanced activity of tissue degrading enzymes. This indicates that uPAR and the tumour microenvironment are involved in cancer progression. Page link to thesis: <http://hdl.handle.net/10037/7038>

Department of Medical Biology
Faculty of Health Sciences
30.1.2015

Børge Idar Mathiassen

Philosophiae doctor

IQ as a Predictor and Moderator of Children's Mental Health Status

This dissertation examined various properties of the HoNOSCA and CGAS in a clinical population. The find-

ings indicate that clinicians can perform reliable assessments of severity with the HoNOSCA and CGAS, even when they must select and evaluate information with a complexity and comprehensiveness similar to clinical practice. The most important findings are related to IQ as a predictor and moderator of the HoNOSCA and CGAS scores. The results indicate that IQ predicted clinician-rated mental health problems using the HoNOSCA, but the same association was not found for the CGAS. IQ also moderated the outcomes that were measured with the HoNOSCA and CGAS. The HoNOSCA and CGAS have methodological limitations. However, at present, they are the best available clinician-rated measures. The effect of the limitations can be reduced with the use of a multiple informant and measure approach, combined with the application of appropriate statistical analysis. Page link to thesis: <http://hdl.handle.net/10037/7127>

Department of Psychology
Faculty of Health Sciences
27.1.2015

Mari-Ann Norum Moen

Philosophiae doctor

Analysis and Interpretation of C-band Polarimetric SAR signatures of Sea Ice

Operational sea ice charts are currently produced manually, which is an inefficient process resulting in subjective ice charts. This thesis investigates how polarimetric microwave radar signatures relate to the physical properties of sea ice, and how these signatures may contribute to the development of robust automatic algorithms. The analyses of Moen and her colleagues are based on polarimetric space-borne synthetic aperture radar (SAR) scenes and coincident in-situ data. The first analysis revealed big discrepancies between automatically and manually drawn ice charts and demonstrated the benefits of incorporating polarimetric information into sea ice charting. The second paper explored the transferability of information from one scene to another. Under stable environmental conditions and with an incidence angle difference of $\sim 7^\circ$ between the reference

scene and the test scene, the results were reasonable. The third paper investigated the classification potential of 44 polarimetric features. The best feature subset included six features, which achieved a classification accuracy of 70% and reflected the complexity of the scene. Page link to thesis: <http://hdl.handle.net/10037/7049>

Department of Physics and Technology
Faculty of Science and Technology
16.1.2015

Mohamed Mahmoud Ezat Ahmed Mohamed

Philosophiae doctor

North Atlantic – Norwegian Sea exchanges during the past 135,000 years: Evidence from foraminiferal $\delta^{14}C$, $\delta^{11}B$, $\delta^{18}O$, $\delta^{13}C$, Mg/Ca and Cd/Ca

The ocean is an important regulator of climate. It circulates heat and has influence on the concentration of greenhouse gases in the atmosphere. Present exchange of surface and deep water between the Arctic Mediterranean Seas and North Atlantic is an important part of the global ocean circulation. In this study, Mohamed and his colleagues studied the exchange of heat and carbon between the North Atlantic and Norwegian Sea over the last 150,000 years. The scientists have reconstructed sea temperature, salinity, carbonate chemistry (pH and CO_2) and looked at the rate of ocean ventilation in the Norwegian Sea and then compared this to the northern North Atlantic. The results show that the Norwegian Sea hydrography and its exchanges with the North Atlantic changed in step with regional climate changes in the past. The study provided new insights into how the High Latitude North Atlantic (HLNA) circulation operated during times of rapid melting of ice sheets and a general global warming phase. This will help to better learn about how the HLNA circulation may operate during the present phase of ice melting and global warming.

Department of Geology
Faculty of Science and Technology
3.7.2015



Photo: Martin A. Mörsdorf

Martin Alfons Mörsdorf

Philosophiae doctor

Effects of local and regional drivers on plant diversity within tundra landscapes

In tundra, the diversity within plant communities is determined by conditions of habitat productivity and ungulate grazing. However, little is known about how such conditions modify the difference between communities. Furthermore, diversity patterns may be constrained by the number of available species in a region – the species pool size. Until now, these interactions have not been addressed in tundra. In this thesis, diversity patterns of vascular plant species were assessed in Icelandic tundra valleys that have contrasting regimes of sheep grazing. The same was applied at comparable locations in Norway, a mainland region with a greater species pool size than Iceland. Plant diversity in Iceland was strongly driven by topography of contrasting landform curvature and elevation, which represents different conditions of habitat productivity. Diversity was not affected by current contrasts in sheep grazing. In all likelihood, this is due to the persistence of historical grazing effects. Topography in Norway had similar effects, but the comparison with Iceland indicated that a large species pool

size may amplify diversity patterns that are shaped by topography. (Joint degree University of Iceland)

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
21.12.2015

Elenaz Naderkhani

Philosophiae doctor

Development of biomimetic phospholipid-vesicle based permeation assays (PVPA) as screening tool in drug development

Oral administration of drugs is still the preferred route of administration as it provides good patient compliance. For an oral drug to be absorbed, it must first be dissolved and then pass the intestinal wall. It is of significant interest to predict recordings of drugs over the intestinal wall so that one can point out the best candidates early in the drug development. As part of the PhD project, a new screening model was developed to simulate drug absorption through the intestine. The model consists of a tight barrier of small fat bubbles called liposomes. The idea behind using liposomes was that these would serve as simple models for cells. The model proves to be a useful tool for determining drug absorption over bowel membrane, and about 90% of the medicines tested were correctly classified according to how they are addressed in humans. Page link to thesis: <http://hdl.handle.net/10037/7705>

Department of Pharmacy
Faculty of Health Sciences
17.4.2015

Torunn Kristin Nestvold

Philosophiae doctor

A study of changes in glucose metabolism and inflammatory markers in morbidly obese patients undergoing bariatric surgery

In this prospective study, Nestvold and her colleagues have investigated what impact lifestyle intervention followed by bariatric surgery has on markers of glucose metabolism, inflammation and coagulation. A total of 134 morbidly obese patients were followed one year after surgery, while 36 lean subjects served as a control group. The study shows that markers of low-grade inflammation, such as the concentration of hs-CRP, C3 and C4 in serum, were significantly higher in the obese group compared to the control group. The concentration of C3 and C4 in the obese group reduced significantly after surgery, meaning there was no longer a significant difference compared to the control group. There was a positive correlation between serum lipopolysaccharide and HbA1c, and an increasing content of bacterial DNA with increasing proximity to the gut. Monocyte activation measured by sCD14 is closely associated with obesity-related vascular dysfunction. On admission, 40 patients had insulin resistance. However, one year after surgery, this resistance was no longer present for 11 of these patients. These findings indicate a central role of low-grade inflammation in development of comorbidity in morbidly obese patients, and underscores the position of the gut microbiota in this process. Page link to thesis: <http://hdl.handle.net/10037/7870>

Department of Community Medicine
Faculty of Health Sciences
8.6.2015

Andrea Markús Nilsen

Philosophiae doctor

Taming the Hungarian (in)transitivity zoo. Undiagnosed species and a complete derivation of the morphosyntactic patterns

The main empirical contribution of the thesis is the unearthing of two overlooked constructions in Hungarian: the 2DPC and the half-passive. These constructions spice up the verbal domain with their hybrid characteristics, and much of the work was spent on pinpointing the data and establishing the relevant generalizations. Nilsen shows in the thesis that these constructions line up along an (in)transitivity scale together with inchoatives and causatives. Moreover, the four constructions with varying degrees of (in)transitivity are brought under a unified analysis on the premises of progressively growing syntactic structures. The assumption that morphemes have an internal syntactic structure coupled with a gap-based approach allows Nilsen to capture morphological diversity, speaker variation and a puzzling morphology vs. syntax/semantics mismatch. But most of all, this thesis represents pioneering work in providing a comprehensive and data-oriented account of intricate morphosyntactic patterns with remarkable accuracy.

Department of Language and Linguistics
Faculty of Humanities, Social Sciences and Education
27.11.2015

Torgeir Nordvik

Philosophiae doctor

Læstadianerne og kirken. De førstefødtes og Lyngen-retningsens forholde til Den norske kirke ved inngangen av 2000-tallet

(The Laestadian movement and the Church. The Firstborn and Lyngen direction in relation to the Norwegian Church at the beginning of the 21st century.) This thesis describes the relationship between the Laestadian movement and the Church of Norway, with emphasis on the period 2000-2010. This thesis treats two Laestadian groups: 1) The First-



born group and the Lyngen group. The basis for the treatment is two emerging conflicts between these groups and the church. 2) The Firstborn group in 2000 and the Lyngen group in 2008. The question to be answered is whether the turmoil that arose from these conflict coincides with overarching processes at the beginning of the decade. Several historical processes gained new relevance towards the start of the 21st century. The Church of Norway was gradually separated from government leadership. Simultaneously, the Norwegian society moved towards greater diversity in relation to faith. This situation caused an adjustment of the identity of the church and it emerged as a separate organization, detached from the state. At the same time, the Firstborn and Lyngen groups underwent changes in their relationship with the church. The motivation behind this development is seen as a need for growth in the face of a rapidly changing society. Page link to thesis: <http://hdl.handle.net/10037/7794>

Department of History and Religious Studies
Faculty of Humanities, Social Sciences and Education
4.6.2015

Elisabeth Klungerbo Olsen

Philosophiae doctor

Bioprospecting of Arctic marine organisms employing bioassay-, chemistry-, and metabolomicsguided isolation

The aim of the thesis was to isolate bioactive marine natural products. Three approaches were studied: bioassay, chemistry and metabolomics-guided isolation. The bioassay-guided approach yielded an antioxidant bromophenol, isolated from the alga *Vertebrata lanosa*, which was active in both biochemical and cellular assays. Employing chemistry-guided isolation, two brominated indoles, structurally resembling the known bioactive compound baretin, were isolated from the sponge *Geodia barretti*. The brominated indoles were used as inspiration for synthesising a library of 22 structurally similar compounds. Synthetic compounds with a combination of a bromine substituent in a specific structural position and a positively charged amine were most potent. However, the brominated indoles were less potent as AChE inhibitors compared to baretin and 8,9-dihydrobaretin. Metabolomics-guided isolation was used to study differences in natural products produced by *G. barretti* and *G. macandrewii*. A novel compound unique for *G. macandrewii* was identified. Page link to thesis: <http://hdl.handle.net/10037/8145>

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
25.9.2015

Irene Dorothea Pathirana

Philosophiae doctor

Holocene primary productivity variability in the western Barents Sea – A multi-proxy geochemical approach coupled with organic-facies modelling

The thesis aims to investigate the effects of environmental changes in the Arctic versus flux, conservation and accumulation of organic carbon in the Barents Sea over the last 6000 years. This is done by examining the production of organic matter in the water column and its fate in the

sediments at the regional level and thus demonstrating the potential for carbon storage in the Barents Sea. For this purpose, multi-proxy geochemical and organic-sedimentological methods are combined with modelling of organic facies, using the software OF-Mod 3D developed by SIN-TEF Petroleum Research. The results of this study show that modern primary production (PP) rates, reconstructed from marine organic matter stored in the sediment, are highest at the ice edge in the Barents Sea. PP rates of the past 6000 years reconstructed from sediment cores from the northern winter ice-covered Barents Sea are more variable and generally higher than in the ice-free south, where they have remained relatively stable during the Holocene. The results suggest that the incidence of first-year ice is a necessary prerequisite for potential carbon storage in the Arctic.

Department of Geology
Faculty of Science and Technology
30.10.2015

Kristine Bondo Pedersen

Philosophiae doctor

*Applying Multivariate Analysis to Developing
Electrodialytic Remediation of Harbour Sediments from
Arctic Locations*

Pedersen has worked with the development of a method for removing pollutants from contaminated harbour sediments from the Arctic in Northern Norway, Greenland and Russia. Historical as well as current sources of pollution in harbours include various present and past on-shore activities, runoff from industrial sites on land, discharges from vessels and illegal dumping in the harbour. In the experiments she applied an electric field to the sediment, thereby mobilising and removing pollutants from the sediments by electrodialysis. The method was optimised for removal of heavy metals and targeted organic pollutants. The remediation efficiency proved to be dependent on the type of sediment. It was shown that the grain size, chemical composition of the pollutant and how pollutants were bound in the sediment were among the most important characteristics

for the removal. Pedersen found that the various pollutants proved to require different conditions for effective purification; e.g., the current, time, stirring of the sediment and temperature proved to be important for removal of heavy metals, while stirring of the sediment, light and temperature were important for the organic pollutants, including PAH and PCB. She concludes that it is possible to remove heavy metals and some organic pollutants to acceptable levels. Moreover, she believes the electrodialytic remediation method has potential for increasing the future re-use of harbour sediments.

Department of Chemistry
Faculty of Science and Technology
13.3.2015

Torunn Pettersen

Philosophiae doctor

*Sámi ethnicity as a variable. Premises and implications for
population-based studies on health and living conditions
in Norway*

Insufficient Sámi-demographic data and blurred Sámi-ethnic boundaries challenge the use of Sámi ethnicity as a variable in studies aiming at quantitative knowledge of patterns of health and living conditions at the population level in contemporary Norway. The thesis aims to contribute to more systematic knowledge and understanding of factors that may affect the design, results and interpretations of such studies. The thesis explores aspects of different goals for Sámi ethnicity, including how both the objectives and individuals' (self) reported ethnicity based on such goals may change over time. It argues that a key challenge is weighing the ethnicity measures "Sámi language conjunction" and "Self-identification as Sámi". It emphasizes that all use of Sámi ethnicity as a variable must take into account internal Sámi variety and the complexity inherent in studying ethnically defined populations. The thesis offers a systematic overview that may make it more transparent who we talk about when the topic is health and living conditions in a population that is neither given or uniform. Page link to thesis: <http://hdl.handle.net/10037/8354>

Department of Community Medicine
Faculty of Health Sciences
4.11.2015

Alexander Peter Pfaff

Philosophiae doctor

Adjectival and Genitival Modification in Definite Noun Phrases in Icelandic – A Tale of Outsiders and Inside Jobs

Icelandic provides great diversity of modification patterns in definite noun phrases. This thesis takes a closer look at that diversity and argues that various aspects of adjectival modification can be used as diagnostics for a layered noun phrase structure. Pfaff proposes that the noun phrase structure can be segmented into four distinct zones, where each zone defines a distinct entity. Once established, a zonal structure allows us to simplify the semantics of adjectival modification in that it dispenses with the assumption of different kinds of adjectives. Rather the interpretation of the adjective is dependent on the zone in which it is merged. Furthermore, Pfaff develops an analysis of genitives that allows us to abolish the distinction common vs. relational noun/modifier vs. argumental genitive. This traditional distinction can be simulated by the structure containing the genitival being merged in different zones. Thus, genitival modification is also a matter of being merged in a certain zone. This insight opens the prospect that adjectival and genitival modification can be unified to a considerable extent. Page link to thesis: <http://hdl.handle.net/10037/7792>

Department of Language and Linguistics
Faculty of Humanities, Social Sciences and Education
22.6.2015

Alexey Portnov

Philosophiae doctor

Role of subsea permafrost and gas hydrate in postglacial Arctic methane releases

Greenhouse gas methane is contained as gas hydrate, an icy

structure, under the seabed in enormous amounts in Arctic regions. West Svalbard continental margin is one of these regions. In the Russian South Kara Sea, the relict subsea permafrost is acting both as a gas storage and a cap for the gas to be released in the future. Continuous expulsions of methane have already been observed in both places. This study shows how the subsea permafrost in the South Kara Sea, and gas hydrate system offshore West Svalbard, have evolved from the last ice age to the present day. The conclusions are based on integrated field geophysical and gas-geochemical studies as well as modelling of permafrost, gas hydrate reservoirs and Barents Sea ice sheet dynamics. It shows that continuous permafrost of the Kara Sea is more fragile than previously thought. It is likely to be limited to the shallow water depths of ~20 meters in this Arctic shelf region, allowing expulsions of methane from an area of ~7500 km². Offshore Svalbard, almost 2000 active and inactive gas expulsion sites are attributed to dissociating of gas hydrate and thawing of shallow subsea permafrost from past to present. The research approach of Portnov and his colleagues shows that natural climate drivers such as methane release can change and that they are connected to the ice sheet retreat since the last ice age. These processes triggered widespread seafloor gas discharge, observed over the Arctic shelf and upper continental margins to this day. Page link to thesis: <http://hdl.handle.net/10037/8220>

Department of Geology
Faculty of Science and Technology
18.9.2015

Nadine Durema Pullar

Philosophiae doctor

Tuberculosis in HIV positive individuals – risk factors, diagnostic methods and follow-up in a low-endemic county

Tuberculosis (TB) is a diagnostic challenge in persons infected with human immunodeficiency virus (HIV). In this thesis, Pullar and her colleagues have assessed the performance of interferon-gamma release assays (IGRA) and the tuberculin skin test (TST) in the diagnosis and follow-up of TB infection in HIV positive individuals living in Norway,

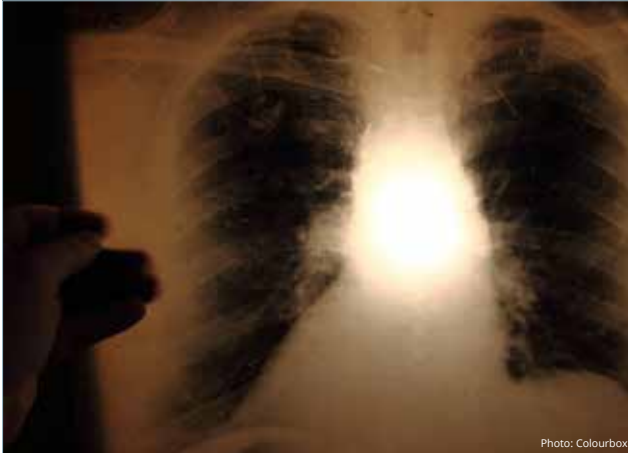


Photo: Colourbox

a TB low-endemic country. HIV positive individuals were included from seven clinics throughout the country and followed-up clinically and with repeat IGRA for a period of two years. In a smaller sample of this cohort, we have also explored the potential of a number of cytokines as biomarkers to improve both active and latent TB diagnosis. Further, Pullar and her colleagues assessed the association between vitamin D status and its prognostic potential in TB infection in HIV positive persons. The findings contribute to the knowledge base for TB diagnosis and latent TB treatment guidelines for HIV positive patients living in TB low-endemic countries.

Department of Community Medicine
Faculty of Health Sciences
9.12.2015

Virginie Ramasco

Philosophiae doctor

Spatial and temporal patterns of foraging of harbour seals (Phoca vitulina) in Porsangerfjord: from behavioural interpretation to resource selection

The coastal cod stock of the Porsangerfjord drastically



Photo: Michael Poltermann

declined in the 1980s and has never fully recovered. A population of harbour seals, resident in the fjord all year round, has been hypothesised to affect the lack of recovery of cod. In order to understand their role in this ecosystem, the movement patterns of individual harbour seals ($n = 15$) were followed and their foraging behaviour investigated by assessing the presence of preference for certain prey types and the behavioural response to the seasonal dynamics of prey distribution in the fjord. Results indicated that harbour seals in the Porsangerfjord preferred small size fish ($< 25\text{cm}$). Harbour seals showed preference for small pelagic fish, when these aggregated near the seals' haul out sites to overwinter. When small pelagic fish did not aggregate, their preference was small cod. Consequently, the effect of harbour seals feeding on cod in the Porsangerfjord can be assumed to decline in line with increased availability of aggregated pelagic fish during the winter and spring seasons. Page link to thesis: <http://hdl.handle.net/10037/8149>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
24.9.2015

Arlanda Ines Moreno Rangel

Philosophiae doctor

Gerundio no perifrástico. Estudio de corpus orales del español de Mérida, Venezuela

(Non-periphrastic gerund. A study of oral corpora of the Spanish from Mérida, Venezuela.) This thesis describes the uses of the non-periphrastic gerund in the Spanish of Mérida, Venezuela. A functional analysis of this form has been conducted. The results show that a gerund placed at the beginning of a sentence introduces old information interpreted as frames, while gerunds placed at the end of a sentence introduce new information that can be interpreted as comments. The sociolinguistic analysis was carried out on the presumption that young and non-educated speakers would use more often the non-periphrastic gerund. However, the analysis showed that the hypothesis was wrong. Non-educated speakers obtained lower results than the other groups. There are no significant differences related to age and few differences related to gender. The main contributions of this thesis to the study of the non-periphrastic gerund are the following: a deep analysis of its *Aktionsart* and subevent structure as well as the study of its pragmatic functions. In addition, this thesis presents evidence of a semantic interpretation that has not been described before, *especificativa*, and provides evidence of the use of this form in positions that are usually occupied by the infinitive. Page link to thesis: <http://hdl.handle.net/10037/7103>

Department of Language and Linguistics
Faculty of Humanities, Social Sciences and Education
10.3.2015

Åsta Rimstad

Philosophiae doctor

Teikn- og meningsskaping i studentars arbeid med installasjonar

(Formation of metaphors and meaning in students' work with artistic installations.) The dissertation examines pre-

conditions for work with complex contemporary expressions in the teaching practices of the arts and crafts subject. The students' work with installations is studied from different perspectives. The study examines the resources that are used to interpret, adapt, transform and create characters and meaningfulness through the installations. The results show that students used narrative elements in which modalities largely served as allegories. The individual modality in installations had character and a sensing function in interaction with the others modalities. Students' experiences were a combination of sensing and recognition. In the processes this combination worked as a link between the material and the immaterial. The results also show the potential contemporary artistic literacy within the teaching practices of the arts and crafts subject. Page link to thesis: <http://hdl.handle.net/10037/7658>

Department of Education
Faculty of Humanities, Social Sciences and Education
23.4.2015

Unni Ringberg

Philosophiae doctor

General Practitioners' Decisions to Refer Patients to Secondary Care – Referral Rates, Reasons for Referral and Expected Medical Benefit of the Referrals

In a survey with a cross-sectional design, a random sample of general practitioners (GPs) in Northern Norway completed electronic questionnaires after each consultation in 2008-2010. This showed that 13.7% of 4350 consultations resulted in referral to secondary care and 4.2% to radiological examination. The higher the referral rates, the more frequently the GPs referred to avoid overlooking something. Female GPs referred more frequently than male GPs. Their referrals were more often substantiated with wanting to reassure patients and that they had inadequate medical knowledge, but less often because they assumed the specialist was readily available. The GPs expected one-quarter of their referrals to secondary care to yield little or no medical benefit. This was reported more often in referrals from GPs with high referral rates, referrals to private secondary



Photo: Colourbox



Photo: Hector A. Rodriguez

care, and when the patient introduced the issue of referral. The results indicate a 50% increase in GPs' referral rates to secondary care over the last 20 years, and that GPs expected little or no medical benefit from a substantial proportion of their referrals. Page link thesis: <http://hdl.handle.net/10037/7607>

Department of Community Medicine
Faculty of Health Sciences
9.4.2015

Hector Antonio Andrade Rodriguez

Philosophiae doctor

Ecology of a tropical bay and the social aspects of small-scale fisheries: Implications for management

Andrade and his colleagues have investigated the ecosystem functioning and fisheries of Amatique Bay, a tropical estuary located in the Guatemalan Caribbean. Their research focussed on: 1) The ecological processes that occur in the bay influencing the biology and evolution of aquatic species and how these compare to other tropical estuaries of the world, 2) Social aspects of the fisheries including how fishers make a living and comply with regulations

and 3) How integrating socio-ecological information may improve fisheries management. Important traits of the bay are the marked precipitation, wind regimes and weak tides that drive seasonal migrations and reproduction of several species. Comparisons across a latitudinal-temperature gradient in species life-history traits revealed differences in reproduction and growth patterns relative to temperature and hydrographical cycles. The fisheries are important sources of food and income for people living under economic hardships who, in the absence of other economic alternatives, fish even if it entails breaking fishery regulations. In these circumstances, the adoption of more sensible fishing regulations was discussed. These results are pertinent for the management of small-scale fisheries in developing countries and other tropical estuaries of the world.

The Norwegian College of Fishery Science
Faculty of Biosciences, Fisheries and Economics
2.9.2015

Jan Nyquist Roksvold

Philosophiae doctor

Some combinatorial invariants determined by Betti numbers of Stanley-Reisner ideals

The thesis contains new results on the connection between the algebraic properties of certain ideals of a polynomial ring and properties of error-correcting linear codes, matroids and simplicial complexes. Roksvold and his colleagues demonstrate that the graded Betti numbers of the facet ideal of a matroid are determined by the Betti numbers of the blocks of the matroid. The extended weight enumerator of coding theory is generalized to matroids. They show that this generalization is equivalent to the Tutte-polynomial, and that the coefficients of this polynomial are determined by Betti numbers of the Stanley-Reisner ideal of the matroid and its elongations. The Betti numbers of the Stanley-Reisner ring of a skeleton of a simplicial complex are demonstrated to be an integral linear combination of the Betti numbers associated with the original complex. Page link to thesis: <http://hdl.handle.net/10037/8190>

Department of Mathematics and Statistics
Faculty of Science and Technology
8.9.2015

Jorun Irene Rui

Philosophiae doctor

Mistenktes innsyn i straffesaken – i spenningsfeltet mellom tillit og kontroll

(The suspect's access to the criminal case – between the conflicting priorities of trust and control in criminal procedure.) In a constitutional state, it is a minimum requirement that the person subject to accusations of having committed a criminal offence becomes aware of these. Only those who know the facts upon which accusations are based, and the evidence obtained, can defend themselves effectively. The right of access to the criminal case may indirectly provide the ability to control the gathering and selection of evidence done by the police and the prosecu-



tion. The nature and functions of criminal procedure raise a number of questions relating to the right of access: What kind of discretionary competence do the police and prosecution have as they gather and select subject matter relevant details? To what extent should criminal proceedings rely on the suspect's control function, and to what extent can the courts control the scope of the right of access? These overall issues place the right of access in a normative tension field between trust and control.

Faculty of Law
22.5.2015

Faozi Saïd

Philosophiae doctor

On the Generalized Curvature Ocean Surface Scattering Model for the NRCS and Doppler Frequency and its application to ocean surface wind retrieval from Synthetic Aperture Radar data

Ocean wind monitoring is an integral part of weather forecasting, maritime shipping lane planning and offshore wind research, as well as the study of climate patterns. Sat-



Photo: Colourbox

ellite radar instruments, such as Synthetic Aperture Radars (SAR), can help achieve this important task by monitoring the wind conditions over the sea surface. Using specially developed functions, called geophysical model functions, wind speed and direction can be inferred from the radar measurements. In this thesis, an alternative approach using two key parameters from the SAR instruments to infer wind measurements from SAR data is presented. Such a procedure is made possible by using both backscatter and Doppler models based on an electromagnetic scattering model developed by Geir Engen, Ida Friestad-Pedersen, Harald Johnsen and Tanos Elfouhaily. The researchers also revisit and improve these two geophysical model functions by including a more realistic description of the sea surface. Page link to thesis: <http://hdl.handle.net/10037/7876>

Department of Physics and Technology
Faculty of Science and Technology
23.1.2015

Wahida Salma

Philosophiae doctor

Anti-Obesity and Anti-Hypertensive Action of Calanus Oil

In this doctoral project, the researchers have examined the biological effects of Calanus oil in a mouse model of obesity. This oil is extracted from the marine copepod *Calanus finmarchicus* and is one of the richest sources of polyunsaturated fatty acids in nature. Mice were given a high-fat diet over a 27-week period in order to induce obesity. The researchers have shown that dietary supplementation with Calanus oil during high-fat feeding in mice was able to significantly reduce abdominal as well as ectopic fat deposition. The treatment significantly reduced the obesity-related low-grade inflammation in adipose tissue, while at the same time improving glucose tolerance. These findings support the notion that low-grade inflammation in adipose tissue is the link between obesity and insulin resistance, and that reduction of visceral fat mass by Calanus oil supplementation is an obvious possibility for targeting the inflammatory network. Finally, dietary Calanus oil can antagonize Ang II-induced hypertension and cachexia. This effect should most likely be ascribed to the anti-inflammatory action of the oil. Page link to thesis: <http://hdl.handle.net/10037/7040>

Department of Medical Biology
Faculty of Health Sciences
4.3.2015

Mikkel Nils Mikkelsen Sara

Philosophiae doctor

Siida ja siiddastallan. Å være en siida – om forholdet mellom siidatradisjoner og videreføringen av siidasystemet

(Being *siida* – on the relationship between *siida* tradition and continuation of the *siida* system.) The term *siida* is known throughout Sápmi. In the Kautokeino and Karasjok area, the *siida* tradition is especially vivid. The *siida* tradition is in a cross-pressure between the representation of the former eastern *siidas* in the literature and the administra-



tive practice of reindeer husbandry law. Issues and administrative practices in the reindeer grazing system impacts on the approach to the siida system. In order to rehabilitate the siida system, one must start by connecting lines situated in the continuation of siidas through time and base it on one's own system concepts, understanding shapes and priorities. Today, it is primarily about extracting and submitting the shared concepts and traditional knowledge of siidas in the work with reindeers, and also looking towards traditional perspectives behind practices in siida exercise. Determination of outer limits for reindeer grazing districts has thematically been a meeting point between herders and public administration, and the traditional knowledge and ways of thinking of the siida has not served as a starting point. The study looks at examples of traditional Sámi philosophy of life and approaches to the siida's basis of their own concepts and practices.

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
16.11.2015

Marianne Nikolaisen Solbakk

Philosophiae doctor

Mål, utfordringer og muligheter for omdømmehåndtering i offentlig sektor: Fra identitet via ekspressivitet og transparens til autokommunikasjon?

(Goals, challenges and opportunities for reputation management in public sector organizations: From identity via expressiveness and transparency to autocommunication?) The thesis discusses goals, challenges and opportunities for reputation management in public sector organizations. The thesis is composed of five articles and is based on interview studies from the Norwegian hospital sector and the university sector. An important finding is that public sector organizations may be too complex to be encapsulated by one brand or identity definition. Secondly, the thesis illustrates that the premise about creating a unique organization as is found in the reputation management literature is not the goal for public organizations. Thirdly, the thesis discusses the organizations' desire to be both transparent and strategic at the same time. Finally, it is argued that an organization's "substance" and its "appearance", which are often referred to in the literature as contradictions, should instead be viewed as being interdependent. By analyzing public organizations using the perspective autocommunication, the boundaries of what constitutes internal and external communications are moved. Consequently, the reputation process in itself will be of significance for organizational identity.

Department of Sociology, Political Science and Community Planning
Faculty of Humanities, Social Sciences and Education
29.5.2015

Lina Stangvaltaite

Philosophiae doctor

The "deep caries" challenge. Prevalence and management of deep carious lesions in Northern Norway

One in every four 18-year-olds in Troms County has treated or untreated deep holes in their teeth, deep caries, a



clinical diagnosis with no established treatment guidelines. People in this age group are about to leave the free-of-charge public dental service and in the future they will have to seek treatment in the private and the public dental service. As a consequence of this, in her second project, Stangvaltaite' studied how dentists in Northern Norway treat deep caries. The result, which is in line with similar surveys worldwide, is dentists do not agree on the best treatment of the deep caries. This is mainly due to the lack of scientific evidence, especially for adults. As a result, in her third study, she investigated whether one of the new materials (MTA) is more effective than the commonly used material in a treatment method, which "keeps" the tooth alive. The new material showed a success rate that was almost twice as high, and it presents new evidence in favour of less invasive treatment methods for deep caries in adults. Page link to thesis: <http://hdl.handle.net/10037/8295>

Department of Clinical Dentistry
Faculty of Health Sciences
22.10.2015

Linda Maria Stein

Philosophiae doctor

Oral health literacy in adult dental patients – A clinical study

As the management of many oral health conditions highly depends on patients' daily self-care behavior, patients need oral health knowledge and skills to be able to take this responsibility. However, a recent EU study proposed that almost half of the adult population in European countries have trouble understanding important health information, i.e. they have limited health literacy. The aim of the thesis was to develop and validate the Adult Health Literacy Instrument for Dentistry (AHLID), and utilize the instrument to assess the level of oral health literacy. Further, the effects of communication at the dental clinic sensitive to the patients' level of oral health literacy was tested. The AHLID was found reliable and valid to assess oral health literacy. The result of the randomized controlled trial indicated that providing information regarding patients' oral health using oral health literacy sensitive communication techniques might enhance the patients' oral hygiene and gingival status compared to a control group.

Department of Clinical Dentistry
Faculty of Health Sciences
13.5.2015

Jennifer Stien

Philosophiae doctor

Nest predation in birds of conservation concern. Case studies of monitoring and management

Stien has used a variety of study methods at different spatial and temporal scales to explore population processes and management of two bird species of conservation concern, focusing particularly on the role of nest predation in declining populations. She has demonstrated the role of proximate and ultimate causes of nest loss in common eider at two declining colonies, highlighting the negative effects of human disturbance on nesting success and the potential role of disturbance in the decline at one of the colonies. Stien also demonstrates the usefulness of combining investigation of the regional decline of Slavonian grebe with the targeted alien invasive species, American mink. Finally, she shows that collaborative control programs that include volunteer mink hunters are best focused on hotspots of conservation concern. This adaptive protocol approach can be undertaken with relatively little funding and resource use and is simple in its design. Thus, conservation management in general, and game management in particular in Norway should be more willing to tackle management challenges using this approach. Page link to thesis: <http://hdl.handle.net/10037/7875>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
12.6.2015

Linda Strand

Philosophiae doctor

Clonal Diversity and multiresistance in Quinolone Resistant Escherichia coli

This study has investigated *Escherichia coli* resistant to quinolones. The aim was to find out why these bacteria are often resistant to other antibiotics. The study is based on molecular genetics, including clonal analysis, plasmid-analysis and investigation of antibiotic resistance. The results show that quinolone resistant *Escherichia coli* are often mul-

tiresistant. The results contradict several hypotheses for this relationship, including the proliferation of clones and plasmid mediated quinolone resistance coupled with multiple resistance genes. The study suggests that resistance to other antibiotics occurs early in the development of quinolone resistance. The hypothesis that is most consistent with our results is that quinolones trigger the SOS response (a stress response in bacteria), which in turn leads to increased mutation and mobilization of multiresistant plasmids. Page link to thesis: <http://hdl.handle.net/10037/7791>

Department of Medical Biology
Faculty of Health Sciences
26.3.2015

Henriette Kyrrestad Strøm

Philosophiae doctor

Effectiveness of school-based alcohol preventive interventions for adolescents

Early onset of alcohol consumption and early drunkenness, in particular, represent a risk factor for adolescents. Policy-makers and school professionals prioritize preven-



Photo: Colourbox

tive alcohol interventions in schools. At the same time, the effectiveness of such interventions has been questioned. The major aim of this dissertation was to evaluate the effectiveness of school-based alcohol preventive programs for adolescents. A key to preventing alcohol use is to explore factors associated with early drinking behavior. The first study examined risk and protective factors associated with early onset of drinking, both of which are important when planning prevention efforts in addition to investigating the prevalence of early drinking and identifying determinants predicting early drinking onset among adolescents. The second study, based on a longitudinal quasi-experimental design including a comparison group, attempted to evaluate the effectiveness of the intervention, “Unge & Rus” (Youth & Alcohol). Finally, a meta-analysis was conducted in order to estimate the general effectiveness of universal school-based interventions in preventing alcohol consumption.

RKBU North
Faculty of Health Sciences
21.8.2015

Kristoffer Svendsen

Philosophiae doctor

Compensable damage ex delicto as a result of harm in the Barents Sea caused by petroleum spills from offshore installations. A Norwegian and Russian comparative legal analysis of conflict of laws, the concept of harm, losses suffered by third parties, and environmental damage and its valuation and calculation, caused by petroleum spills from offshore oil rigs and installations in the Barents Sea

The dissertation explores aspects of liability for pollution damage caused by petroleum spills from offshore installations in the Barents Sea. It examines the application of Norwegian and Russian delict law to transboundary pollution damage scenarios originating on either the Norwegian or Russian side of the sea border inflicting damage on the opposite side of the sea border. The dissertation scrutinizes which of the Norwegian and Russian legal systems' rules apply to transboundary petroleum spill scenarios in the



Barents Sea, and how conventions to recognize and enforce foreign judgments impact the ability to receive fulfilment of Norwegian or Russian court judgments awarding delict compensation for pollution damage. The dissertation also examines the definition of damage/harm under Norwegian and Russian delict law, as well as the understanding of damage to the environment and the valuation and calculation of damage to the environment under Norwegian and Russian delict law.

Faculty of Law
4.9.2015

Ding Tao

Philosophiae doctor

Maritime Target Detection in Non-homogeneous Sea Clutter Environments based on Single- and Multi-polarization Synthetic Aperture Radar Data

This thesis studies the subject of maritime target detection using synthetic aperture radar (SAR). In real maritime surveillance and monitoring systems, an advanced operational target detector is a key component and must be able to work

in unknown target situations and under various non-homogeneous sea surface conditions. In this study, truncated statistics and a modified segmentation stage are adopted in the constant false alarm rate (CFAR) detection scheme, which is proved to be an optimal solution to simultaneously address the frequently encountered detection issues, i.e. the capture effect in multiple-target situations and the clutter edge effect due to meteorological and oceanographic phenomena. Compared to the conventional CFAR detectors, the proposed target detection algorithm is able to operate in various contaminated non-homogeneous environments, provide rigorous statistical analysis of local background clutter and deliver improved robust detection performance.

Department of Physics and Technology
Faculty of Science and Technology
3.12.2015

Gyrd Thrane

Philosophiae doctor

Arm function and constraint-induced movement in early post-stroke rehabilitation

Constraint-induced movement therapy (CIMT) is a treatment for mild-to-moderate upper extremity motor dysfunction in post-stroke patients. The method is characterized by: 1) intensive training, 2) measures that promote the use of the arm, and 3) use of a mitten on the healthy hand. Thrane examines the documentation of whether the treatment works by making a systematic review with meta-analysis. He then examined whether CIMT works in the early post-stroke phase (<28 days). One group received a three-hour CIMT treatment per day and used a mitten on the good arm. They were compared with a control group receiving standard treatments. Finally, Thrane examined the correlation between use of the weakest arm and motor function outcomes in the early post-stroke phase. There is good evidence that CIMT works if the treatment is given three or more months after the stroke. The result is inconsistent in the early stages. CIMT should be carried out with caution in the early stages of rehabilitation. The clinical trial showed that patients who received CIMT were



Photo: Colourbox

able to carry out activities with the arm that was damaged by strokes faster than the control group immediately after treatment, but these differences were assessed after six months. Page link thesis: <http://hdl.handle.net/10037/8208>

Department of Clinical Medicine
Faculty of Health Sciences
10.9.2015

Sverre Braathen Thyholdt

Philosophiae doctor

Just Like Putting Scissors to a Market – Investigating Supply and Demand Relations of Farmed Atlantic Salmon

Price and quantity, as observed in a market, occurs because of an interaction between supply and demand. Consequently, an understanding of the drivers of supply and demand is important in order to understand the market itself. This thesis sets out how exogenous, geophysical factors affect the growth of salmon. The results show that the sea temperature is a critical factor and that periods of higher sea temperatures lead to faster growth in Northern and Central Norway, but slower growth in Southern Norway. Norwegian salmon producers respond to price changes in

the long term with regional differences, but in the short term there is limited response. The total demand growth for the global salmon market and the factors that influence this growth are also analyzed. Since the start of the 21st century, the average demand growth for farmed salmon has been high. However, there is considerable variation from year to year and between the different salmon importing regions in the world.

School of Business and Economics
Faculty of Biosciences, Fisheries and Economics
17.6.2015

Ståle Tøfteland

Philosophiae doctor

Extended-spectrum β -lactamases and carbapenemases in clinical isolates of Enterobacteriaceae in Norway. Aspects of detection and epidemiology

The study provides insight into the epidemiology of extended-spectrum β -lactamases (ESBLs) in two important pathogenic bacteria, *E.coli* and *Klebsiella* spp. It considers ESBL- detection methods adapted to the epidemiological situation in Norway. The oldest core material (2003) documented for the first time that the CTX-M – type ESBL dominated in Norwegian isolates. Norway was therefore participant of what somewhat later was described as a global pandemic spread of ESBLs of this type. The study showed that the spread of CTX-M type ESBL in *E.coli* in Norway at a molecular level is facilitated by bacteria acquiring movable resistance genes that “infect” or spread between different strains with plasmids (especially IncF plasmids), and in that the resistance genes spread as a result of dispersing international successful bacterial clones, especially *E.coli* ST131 with CTX-M-15-type ESBL coupled to IncFII plasmids. The knowledge of Norwegian ESBL epidemiology and different mechanisms for resistance to 3rd generation cephalosporins, which were acquired by the study was important when Norwegian guidelines for detection of ESBL was made. The study also provides insight into the mode of spread of *K.pneumoniae* harboring carbapenemases in the hospital context, and highlights the added contribution of the hos-

pital environment, particularly sinks. Page link to thesis: <http://hdl.handle.net/10037/7599>

Department of Medical Biology
Faculty of Health Sciences
16.4.2015

Garth Daryl Tylden

Philosophiae doctor

Investigation of the antiviral effects of lipid conjugated derivatives of cidofovir on BK and JC polyomavirus replication

BK- (BKPyV) and JC polyomavirus (JCPyV) cause unnoticed persistent infections in most people. During severe immunosuppression, the viruses may reactivate and cause kidney damage, severe hemorrhagic bladder inflammation or progressive destruction of brain tissue. There is no effective antiviral treatment. This thesis investigated the effects of BCV and OCV, two new variants of the antiviral drug cidofovir, on polyomavirus replication. Human bladder- and brain cells were cultured, infected and treated with BCV. The results showed that BCV inhibited both BKPyV and JCPyV

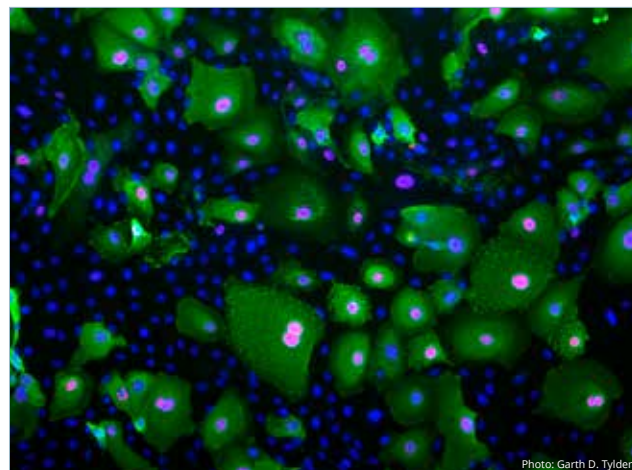


Photo: Garth D. Tylden

replication, although the antiviral effect was linked to cyto-static effects. Since OCV may penetrate the brain better than BCV, its effects were compared to those of BCV on JCPyV infected brain cells. The results show that both compounds inhibit viral replication equally. BCV and OCV may be useful for treatment of polyomavirus disease and should be investigated further. However, targeted antiviral compounds are still needed.

Department of Medical Biology
Faculty of Health Sciences
4.12.2015

Ane Live Gunnes Utnes

Philosophiae doctor

*Evolutionary Costs and Benefits of Natural Transformation in *Acinetobacter baylyi**

Bacteria can acquire exogenous DNA from the environment through natural transformation. Natural transformation is one mechanism of horizontal gene transfer in bacteria. Once inside the cell, the DNA can potentially be integrated into the host genome by homologous recombination. Although the impact of natural transformation on bacterial adaptation/evolution is well known, the immediate benefit for the transformable bacterium is unclear. Since there are metabolic as well as genetic costs associated with taking up DNA, it is assumed that there must be a benefit in order for the trait to be maintained over evolutionary time. Utnes and her colleagues have tested different hypotheses for the maintenance of natural transformation in the bacterium *Acinetobacter baylyi*. Through experimental evolution experiments with *A. baylyi* in a novel stressful environment, the researchers found that natural transformation was beneficial since it led to increased adaptation, but that this benefit was growth phase-specific. Furthermore, they found that natural transformation could provide an immediate fitness benefit that was uncoupled from recombination of DNA into the genome. Finally, the researchers tested the hypothesis that natural transformation can alleviate clonal interference between beneficial mutations.

Department of Pharmacy
Faculty of Health Sciences
29.5.2015

Mikko Juhani Vihtakari

Philosophiae doctor

Bivalves as indicators of environmental perturbations related to climate and ocean acidification

The thesis aims to increase knowledge on susceptibility of bivalves to environmental perturbations and usage of bivalve shells as sub-annual environmental proxy archives. This was addressed using two experimental settings: 1) ocean acidification (OA) experiments on bivalve gametes and early larval stages, and 2) year-long bivalve deployments on oceanographic moorings in two Svalbard fjords followed by geochemical sampling of bivalve shells. The results indicate that *Mytilus* larvae are sensitive to ocean acidification, but changing temperatures might have a larger impact than acidification. Sperm activity of *Mytilus galloprovincialis* was negatively affected by high-end OA scenarios for 2100, indicating a reduced fertilization success in low-density populations. Individual males demon-



Photo: Mikko J. Vihtakari

strated different tolerances of OA, indicating that *Mytilus* populations may adapt to moderate reductions in ocean pH. Shell growth rate of *Serripes groenlandicus* and *Ciliatocardium ciliatum* correlated with temperature, and the length of the shell growth season was determined by food availability. Both species deposited a prominent winter growth line that can be used as an indicator of low food availability. Interpretation of elemental ratios in *Serripes groenlandicus* and *Ciliatocardium ciliatum* shells is complicated by multiple factors. Page link to thesis: <http://hdl.handle.net/10037/7152>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
13.3.2015

Ole Petter Laksforsmo Vindstad

Philosophiae doctor

Cyclically outbreaking geometrid moths in sub-arctic mountain birch forest: the organization and impacts of their interactions with animal communities

Outbreaks of herbivorous geometrid moths periodically cause mortality of enormous areas of mountain birch forest in northern Scandinavia. Relatively little is known about the ecological consequences of these outbreaks. Part of the goal of this PhD project was to investigate the short-term effects of outbreak-induced forest mortality on communities of passerine birds and wood-decaying beetles. Both groups appeared to be relatively little affected by forest mortality, suggesting a high degree of resistance to such disturbance. Another goal of the project was to gain a better understanding of the functioning of one of the most important enemy communities of geometrid moths, namely parasitoid wasps. The project concluded that different species of parasitoid have similar capacity for inflicting parasitism on moth populations. This will cause parasitism rates to be less affected by variation in parasitoid species composition in space and time. Page link to thesis: <http://hdl.handle.net/10037/7004>

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
9.1.2015



Photo: Jan Alexandersen Fagtrykk Ide

Svein Arild Myhra Vis

Philosophiae doctor

Factors that determine children's participation in child welfare decision making

The purpose of this thesis was to study factors that determine whether children participate in decision making in the processing of child protection cases. The overall aim was to identify variables related to organizations, decision makers and cases that determine consultative and collaborative participation. The study's conclusion was that consultative participation is a prerequisite for collaborative participation. The decision to consult with a child is determined by factors related to the social worker and the organization. A decision about the weight that is given to a child's views is determined by characteristics of the case and the decision-making process. It is mandatory for social workers to facilitate consultative participation. More specific guidance should be issued in order to ensure that all children have the opportunity to express their views through consultations. Page link to thesis: <http://hdl.handle.net/10037/7042>

RKBU North
Faculty of Health Sciences
5.3.2015

Monica Linea Vold

Philosophiae doctor

Pulse oximetry in an adult population: Predictors of low oxygen saturation and associations with mortality; The Tromsø Study

The project has been based on the participants who took part in the Tromsø Study (Tromsø 5, 2001-2002 and Tromsø 6, 2007-2008) where they were examined by spirometry and pulse oximetry. Pulse oximetry calculates oxygen saturation in arterial blood. Low values may be an indication of cardiac and/or respiratory disease. The incidence of low values was 11.5% in Tromsø 5 and 6.3% in Tromsø 6. Low oxygen saturation in Tromsø 6 and drops in oxygen saturation from Tromsø 5-6 was associated with smoking, obesity, reduced lung function and increased inflammation. Low oxygen saturation in Tromsø 5 resulted in an increased risk of 10-year mortality, especially lung diseases. When low oxygen saturation is detected, giving up smoking is recommended for smokers and weight loss for obese, as this is likely to reduce the risk of death. Page link to thesis: <http://hdl.handle.net/10037/7598>

Department of Community Medicine
Faculty of Health Sciences
19.3.2015

Gøril Voldnes

Philosophiae doctor

Buyer-seller relationships across cultures: Conceptual, empirical and methodological issues

The aim of this dissertation was to examine the factors important in achieving success in cross-cultural business relationships, in this case between Russian buyers and Norwegian sellers of seafood. Emphasis was placed on exploring how cultural differences influence factors important in relationship satisfaction, how to attain the various factors, and how cultural differences are managed by buyers and sellers to achieve successful relationships. The findings reveal that while culture influences relationship satisfac-



tion, it does not necessarily affect the factors perceived as important for achieving relationship satisfaction; rather, it appears to influence the means of achieving the various factors. The findings reveal more or less unilateral adaptation by the Norwegian side to Russian business practices. This can be explained by the large power asymmetry between the partners and the Russians' lack of cultural sensitivity or awareness of cultural differences between them and their Norwegian partners. The study further addresses challenges that may be encountered by Westerners planning and conducting qualitative research in Russia. Page link to thesis: <http://hdl.handle.net/10037/7043>

School of Business and Economics
Faculty of Biosciences, Fisheries and Economics
22.1.2015



Ingrid Wiedmann

Philosophiae doctor

Potential drivers of the downward carbon and particle flux in Arctic marine ecosystems under contrasting hydrographical and ecological situations

Detailed predictions of the downward particulate organic carbon (POC) flux in future Arctic marine ecosystems are challenging due to the poor understanding of potential drivers of the flux. Short-term sediment traps, partly modified with gel-containing jars (gel traps), were deployed in the Barents Sea (BS) and in Adventfjorden, Svalbard, to determine the downward POC flux and the particle flux (≥ 0.05 mm equivalent spherical diameter ESDimage). In this way, it could be illustrated that a high downward POC flux in Arctic marine ecosystems may not only occur during the phytoplankton bloom, but may also be found in deep-mixed waters in the southern Barents Sea during a post bloom situation or during an autumn situation in an Arctic fjord influenced by glacial run-off. The study further points out that a high POC downward flux is not necessarily caused by large particles, but may also occur in form of small particles with a high POC: volume ratio. Page link to thesis: <http://hdl.handle.net/10037/8293>

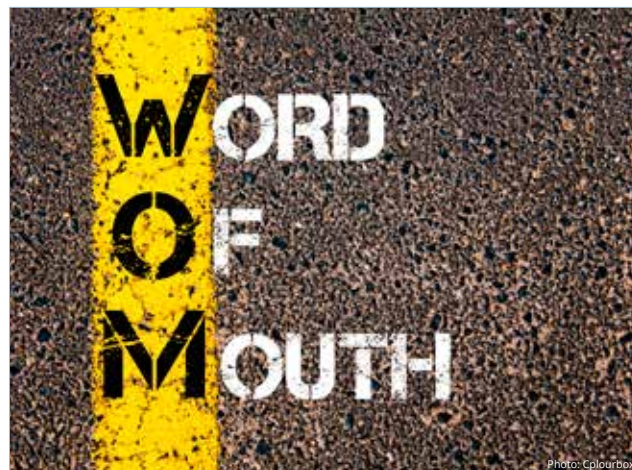
Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
13.11.2015

Anders Hauge Wien

Philosophiae doctor

Antecedents and consequences of word of mouth – Consumer evaluation context, individualism, personality and defense of Companies

Word of mouth (WOM) has an important impact on consumer behavior. Businesses worldwide are eager to understand the intricacies of the phenomenon, especially understanding how positive WOM can be stimulated and how negative WOM can be stopped. This dissertation presents four papers that extend the current knowledge on these issues. The results reveal that 1) different factors drive positive WOM intentions, depending on the context of the study, 2) high-individualism consumers are more willing than low-individualism consumers to transmit WOM in relation to satisfactory consumption experiences, when WOM is unsolicited and when the context involves high perceived social risk, 3) higher levels of extraversion result in greater social



consumer confidence, which again has a positive effect on WOM tendency, and 4) consumers use six different defense styles (advocating, justifying, vouching, stalling, trivializing and doubting) when defending companies against negative WOM. The study also highlights the different outcomes of the various defense styles and illustrates that this consumer phenomenon can be effective in preventing the spread of negative WOM or in mitigating its impact. Page link to thesis: <http://hdl.handle.net/10037/7873>

School of Business and Economics
Faculty of Biosciences, Fisheries and Economics
3.6.2015

Maja Wilhelmsen

Philosophiae doctor

“Light my fire” – Perspectives on Motivation, Helpfulness and Implementation of Guided Internet-based Cognitive Behavioral therapy

Implementation of internet-based cognitive behavioural therapy (ICBT) in treatment of depression within general practice is recommended. Better results have been shown when support is given. General practitioners (GPs) have shown positive attitudes towards ICBT, although it is rarely used. This thesis is based on two studies: a patient study and a GP study. In the patient study, a sense of relatedness was identified as important for motivation. The patients perceived as helpful that they felt like an active agent and had a trusted professional. In the GP study, GPs were provided with a training package and were asked to implement guided ICBT into regular care. GPs valued ICBT as a structured supplement and as a tool for enabling patients to become an active agent in their own health care. It was coherent with their role to recommend ICBT, but module follow-ups were difficult. Overall, the two studies showed that a theory-based online supplement is perceived as positive. However, it is also important that the therapeutic setting provides the opportunity to self-disclose and to develop a relationship with the GP built on engagement with the patient as a unique person. Page link to thesis: <http://hdl.handle.net/10037/7871>

Department of Community Medicine
Faculty of Health Sciences
13.2.2015

Anne Winther

Philosophiae doctor

Adolescents' lifestyle and bone health. The Tromsø Study, Fit Futures

Based on data from the population based survey Fit Futures, Winther and her colleagues compared the bone mass levels of Norwegian youths with an international reference and examined the relationship between lifestyle factors and bone mass. Despite the heavy burden of osteoporotic fractures in elderly Norwegians, youths have similar or probably higher bone density levels compared to age-matched European peers. Leisure time activities including intensive physical activities are important for bone health. There is a gender difference – the boys' skeletons seem more attributable to lifestyle than the girls'. Low muscle mass and lower physical activity levels have an adverse impact, especially in boys, while girls are protected by their higher natural fat mass. The cross-sectional study Fit Futures, which is part



of The Tromsø Study, included bone mass measurements, interviews and self-reported data. All first-year students at upper-secondary schools in the municipalities of Tromsø and Balsfjord in 2010/2011 were invited to participate. The participation rate was 93%.

Department of Health and Care Sciences
Faculty of Health Sciences
16.12.2015

Anna Wolleb

Philosophiae doctor

Syntactic representations in the bilingual mind: the role of executive function and pragmatics in cross-language priming

In this thesis, Wolleb investigates how syntactic forms are represented and accessed in the mind of bilingual children. In particular, she explored the role of executive control and pragmatics in the selection and use of these representations. She tested a group of Norwegian-English bilingual children and a group of Norwegian age-matched monolinguals in a priming paradigm and in a cognitive task (the Dimensional Change Card Sort, DCCS). Wolleb investigated word order in possessive constructions and dative alternation. These forms were chosen because they allow for different word orders, which vary depending on semantic and discourse factors. The different structures were elicited by means of a priming task (both within- and between-language) where children were first exposed to the alternating word orders (prime) and then had to describe a picture by selecting one of the two possible options (target). The goals are to show that priming within-language is stronger than priming between-language, arguably due to the involvement of an inhibitory mechanism, and to demonstrate that the access to the abstract syntactic representation is mediated by semantic and pragmatic factors. Page link to thesis: <http://hdl.handle.net/10037/8275>

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10.12.2015



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