

BIO-info 15/2011, 15. april 2011 [BIO: sakslister og møtereferater](#) [BIO-info arkiv](#)  
submission deadline to [bio.info@bio.uib.no](mailto:bio.info@bio.uib.no) is Wednesday 16:00

## Fra toppen!

Fastetiden snart over - for noen!

Selv om fastetiden i henhold til kirkekalenderen snart er over og det går mot påske, er det fare for at vi på instituttet må belage oss på at resten av året blir preget av trange økonomiske rammer. Som vi fryktet aksepterte ikke fakultetet vårt første budsjettutkast, og vi måtte ta en ny runde for å se gjennom hvor vi kunne stramme inn.

I det reviderte budsjettet har vi lett etter både inntektsmuligheter og reduserte utgifter, og vi har forsøkt å skjerme de viktigste studieaktivitetene og belønningspostene til forskningsgruppene. På denne måten er vel 6 mill. spart inn, og vi går nå mot et underskudd på (bare) 8 mill. NOK. Vi både håper og tror at dette er gjort på en måte som ikke går ut over kvaliteten på det arbeidet vi gjør, og at dette reviderte budsjettet blir godkjent av fakultetet.

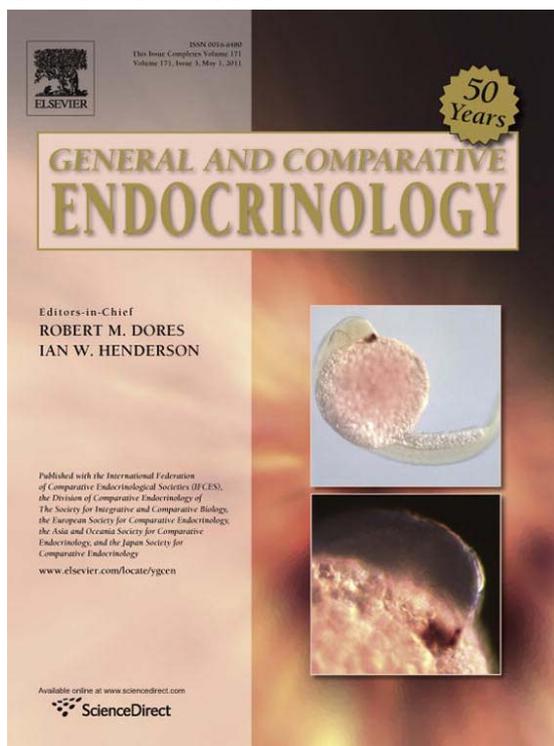
De nærmeste årene kan vi ikke forvente å se noen økning i rammebevilgningene fra myndighetene. Dermed er det desto viktigere at vi er flinke med å finne eksterne kilder til forskningsaktivitetene, som f.eks. kan støtte opp om PhD-stipendiater ved instituttet. Derfor er det gledelig å kunne melde at HI har invitert BIO med som partner i SFI-bevilgningen CRISP (Centre for Research-based Innovation in Sustainable fish capture and Pre-processing technology), der vi kan få finansiert to slike stipendiatstillinger.

God påske!

Hilsen Anders



## Ukens bilde



## Front cover

A new paper by Rita Angotzi et al. - *Involvement of Prop1 homeobox gene in the early development of fish pituitary gland* also became front cover of the last issue of General and Comparative Endocrinology. Congratulations!

You are invited to submit photos (electronically!) for "Ukens bilde". Please include a very short description and credit information. Picture can be of researchers / students in action, technology, organisms, field sites ... Please send your pictures to [bio.info@bio.uib.no](mailto:bio.info@bio.uib.no)

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### Siste nytt fra BIO

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#### Varselet til Mattilsynet trukket tilbake

Denne uken har Øivind Bergh, professor II ved BIO, meldt fra til instituttledelsen at han står bak varselet til Mattilsynet. Samtidig som han understreker at han ikke er kilden til Fiskarens oppslag 6. april, erkjenner han at grunnlaget for et slikt varsel ikke er til stede, og han ga torsdag denne uken Mattilsynet beskjed om at han trekker varselet tilbake. Øivind Bergh beklager det oppstyret saken har skapt i media, og sier at det ikke har vært hans hensikt å skade miljøet.

Anders Goksøyr  
Instituttleder, BIO

#### Budsjettering av årets NFR-søknader

Administrasjonen har utarbeidet en [budsjetteringsmal](#) som dere kan bruke når dere skal sette opp søknadene deres. Denne er ment som et hjelpemiddel. Dersom du har behov for å beregne lønn utfra lønnstrinn kan du bruke denne [lønnssimulatoren](#).

Vi har også utarbeidet en liste over utstyr som, dersom det skal brukes i prosjektet, skal ha avskrivningskostnader inkludert i budsjettet. Listen finner du [her](#). Vi skrev i forrige bio-info, [info nr 14](#), om Forskningsrådet sine føringer for avskrivning.

Vi vil også arrangere et **internt møte om "best practice" for BIOs søkere**. Tidspunkt for dette blir **mandag 2 mai, kl 13-14, møterom K1**. Vi håper på denne måten å komme i dialog med alle BIOs søkere så tidlig som mulig. Det er også mulig å stikke innom kontoret til Anne, Heidi eller Solfrid dersom dere har små eller store spørsmål, så vil vi prøve å hjelpe så godt vi kan.

Internfristen blei i forrige bio-info satt til 1. juni, men på grunn av ferieavvikling i økonomiseksjonen ønsker vi å få budsjettene på plass i løpet av uke 21. Frist for innlevering av disse blir derfor **mandag 23. mai**.

#### Prøveforelesninger/Trial lectures Mikko Heino

BFS-fellow Mikko Heino will give the following trial lectures for professor tenure on

**Wednesday April 27**, Large Auditorium, Datablokken:

9.15-10.00: Evolutionary responses to environmental change (given topic)

12.15-13.00: The concept of Maximum Sustainable Yield (MSY) in fisheries science and management (chosen topic).



#### Behov for faglig påfyll? Les videre om Søknad om forskningstermin:

Det er nå klart for ny søknadsrunde om tildeling av forskningstermin. Instituttet skal oversende søknadene om forskningstermin i prioritert rekkefølge innen tirsdag 1. juni 2010 og internfristen til BIO fra den enkelte forsker settes til **onsdag 18. mai 2011**.

**Kriteriene** for prioritering av søknadene, **regler** for søknad om økonomisk støtte til dekning av merutgifter ved utenlandsopphold under forskningstermin samt **rundskriv** og **skjema** finner du [her](#). Dersom det også søkes om midler til økonomisk støtte ved utenlandsopphold under forskningstermin, må det gis en klar prosjekttale for utenlandsoppholdet, se også her kriteriene. Til informasjon kan det opplyses at fakultetsstyret har vedtatt å prioritere langtidsopphold ved utenlandske læresteder siden erfaringene tilsier at dette som oftest gir et større utbytte av forskningsterminen.

# BIO-info

## Nyheter fra Institutt for biologi

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### Endring i rutinene for betaling av trykking av doktoravhandlinger

På grunn av BIO sin stramme budsjettssituasjon, så blir det fra i år av en endring når det gjelder betaling for trykking av doktoravhandlinger. Instituttet dekker nå 20 kopier, bestilles det mer enn det, blir dette nå belastet forskningsgruppen. Ønsker man isteden at det skal belastes et prosjekt, må dette gis beskjed om ved bestilling. Kontaktperson ved instituttet er [Tommy Strand](#).

### Meld fra hvor du går... Melding om reise/Registration of travel

BIO has established an easy, [electronic system](#) for registering your work travels. The purpose is threefold:

- As an application for travel permit (no response = permit granted)
- Giving the administration an opportunity to offer better service when meeting enquiries by having an overview over employees travelling
- Making it possible to quickly find out if there are any BIO employees present in areas struck by hazards, riots etc, in order to contact them and find out if they need assistance

#### How to use the page:

- Travels to be reimbursed must be reported through this page
- Planned travels may be registered in advance; on the day of travel at the latest
- Travels cannot be registered after they have taken place
- Registered travels can be removed up to the day of travel
- The shortest registration is for one-day travels (departure date = return date)
- Departure date can be the same as return date for the previous travel

If the purpose is field work or cruise, [instructions for these activities](#) must be followed, such as handing in the field work form.

Only employees at BIO can use the electronic form. The form is found [here](#).

### BIO's internal web – new look

BIO's internal web page - <http://biologi.uib.no> - has a new design. We hope this new look will make it easier to navigate from the first page to find what you are looking for. On the internal web pages you will find information about who, what, where, HMS, the department council and BIO's standing committees, common resources, BIO-relevant IT info, BIO-INFO archive, travel registration etc etc. Check it out [here](#) and make it a favourite!

### Hoveddøren stenges kl. 12.00 onsdag 20. april

Onsdag 20. april vil hoveddøren til Thormøhlensgate 53A/B stenges kl. 12.00 pga påsken.

## Undervisningsnytt

### Gjennomføring av mastereksamen juni 2011; Election of members to the University Board 2011

#### Mastereksamenar juni 2011

1. juni 2011 er innleveringsfrist for masteroppgåva for studentar som vart tekne opp hausten 2009. Per i dag har vi 40 studentar med innleveringsfrist 1. juni 2011. Dei fleste ønskjer å gjennomføre eksamen i løpet av juni. Vi ber derfor alle rettleiarar om å starte planlegging av sensor og dato for sine masterstudentar, og gjerne avtale samkøyring med andre innan same fagfelt om bruk av felles sensor. Vi vil og ha behov for bisittarar, og håpar alle stiller seg positive til å gjere ein innsats for å få gjennomført vårens mastereksamenar!

### Siste nytt fra verden rundt oss

Retningslinjer for arbeidstid og overtid; Glenn Bristow in Vietnamese News Video;

#### Retningslinjer for arbeidstid og overtid

Rektor har sendt ut *Retningslinjer for registrering av arbeidstid og overtid for ansatte ved UiB*. Retningslinjene er drøftet med de tillitsvalgte, sist i Forhandlingsutvalget den 01.04.11, og trer i kraft straks.

Retningslinjene gjelder for alle ansatte ved UiB. De ansatte er inndelt i tre grupper; ansatte med fast arbeidstid, ansatte med variabel daglig arbeidstid og ansatte som er unntatt fra arbeidsmiljølovens kapittel 10 om arbeidstid. Den sistnevnte gruppen omfatter ansatte i ledende stilling og ansatte i såkalt "særlig uavhengig stilling". Retningslinjene regulerer hvilke ansatte som hører til hver av gruppene og hvordan registrering av arbeidstid og overtid skal skje innenfor hver gruppe. Oversendelsesbrevet fra rektor kan leses [her](#), mens selve retningslinjene finnes [her](#).

#### Election of members to the University Board 2011

The Central Election Committee announces:

Election of member and substitute members to the University Board for the term 2011.08.01 – 2012.07.31 representing temporary academic staff (group B). Deadline for candidate proposals: **Wednesday April 26**. Election dates: The election is held by electronic poll from **May 5 - May 11**. Read more in [Norwegian](#), in [English](#).

#### Norwegian Vietnamese cooperation on TV in Vietnam.

Khanh Hoa Province television reports on the Marine Biotechnology and Environment Conference, Nha Trang University, Nha Trang, Khanh Hoa Province, Vietnam, 25 Feb. 2011. Dr. Glenn A. Bristow and Dale Evensen, representing UiB. The conference had participants from through out Vietnam, as well as, Norway and the Czech Republic. Translations to both Norwegian and English are (slowly) coming. Watch the video [here](#)

#### Ledige stillinger for biologer

##### Assistant professor in fish and fisheries biology

The Fisheries and Aquatic Sciences Centre in Agrocampus Ouest (Rennes, France ; <http://halieutique.agrocampus-ouest.fr/>) proposes a permanent position for an assistant professor in fish and fisheries biology. Lectures and other learning activities will be focused on fish biology and ecology (knowledge, field studies and methods) with relation to the Ecosystem Approach to Fisheries. A lesser involvement on more generalist lectures on biology and ecology will be necessary.

Mer info finner du [her](#). Stillinger utlyst på BIO finner du nederst til høyre på instituttets [nettside](#).

### Forskning: utlysninger, nye satsinger og prosjekter

#### Marie Curie Individual Fellowships; Ny utlysning folkehelseprogrammet; Aprilnummer FunderFinder

##### 42 millioner til prosjekter på folkehelsefeltet ( FOLKEHELSE )

Utlysningen gjelder hele den tematiske bredden i Folkehelseprogrammets programplan.

**Søknadsfrist:** 08.06.2011 13:00 CET

[Les mer](#)

# BIO-info

## Nyheter fra Institutt for biologi

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### 2012 Call for the Marie Curie Individual Fellowships

(for Post docs and experienced researchers) published and Info meeting in Bergen

The European Commission has published a new call for the Marie Curie Individual Fellowships. The fellowships provide funding for a research stay for one to two years at a host institution in another European country or a country outside of Europe (Third Country).

Researchers with a PhD or at least four years of research experience are eligible. Funding comprises the salary of the fellow as well as a mobility allowance and a contribution to the research costs. There are calls for three different types of fellowships:

1. **Intra-European Fellowships** (IEF): Funding of a research stay in Europe (EU-Member State or Associated Country); [Link](#) to call
2. **International Incoming Fellowships** (IIF): Researchers of any discipline from non-European Third countries can finance their research stay in an EU Member State or Associated Country; [Link](#) to call
3. **International Outgoing Fellowships** (IOF): Funding of a research stay in a non-European Third Country (for example USA, Japan, Australia, etc) with a one-year reintegration phase in Europe; [Link](#) to call

The deadline for all three will be on August 11, 2011, 17:00 Brussels time. Researchers at UiB are invited to participate in our UiB information meeting on Marie Curie actions taking place June 16th from 10:00-13:00 at Vilvite. Please register [here](#).

Judith Lietjens from the UK Research Office (UKs national contact point for Marie Curie actions) will guide us through the different schemes (Individual fellowships and networking actions like Initial training networks, IRSES and IAPP) and show how to write a competitive application. You can also meet the staff from UiBs division of research management who help UiB researchers with EU proposals. Judith has also offered to have a look at draft proposals for the call. If you would like to use this option, please send an email with the title "MC proposal clinic" to [Anja Hegen](#).

### Aprilnummer FunderFinder

[Aprilnummeret av FunderFinder](#), Forskningsadministrativ avdelings informasjonsblad, er tilgjengelig for nedlastning – obligatorisk lesing for alle vitenskapelig ansatte!

Mer info om utlysninger inkl. løpende, dvs. uten frister finner du [her](#)

Husk å sende søknadsutkastet til [post@bio.uib.no](mailto:post@bio.uib.no) 1 uke i forveien (gjelder ikke mindre bevilgninger som legater og fonds).

## Kurs, møter, seminar og arrangement

[Publishing issues and information use for PhD-candidates](#), [Registration to the Researcher Grand Prix](#), [PhD Summer course at University of Aarhus](#); [FP7 Proposal Writing Course with Sean McCarthy](#); [Infomeeting EU 2012 calls](#); [Miljøaspekter relatert til havvind](#);

Mer info om kurs, møter, seminar og arrangement etc finner du [her](#).

### Publishing issues and information use for PhD-candidates

In May 2011 the University Library offers Ph.D. candidates at the Faculty of Mathematics and Natural Sciences a series of courses addressing publishing issues, advanced literature searching techniques and information management. More information [here](#).

You can sign up for individual plenary sessions and workshops. Please sign up on e-mail to [Diem Tran](#) before Thursday 28th of April, and note which sessions and workshops you would like to attend.

### Registration to the Researcher Grand Prix

All research assistants should consider applying for the [Researcher Grand Prix 2011](#) within May 2! Follow the link for more information on the criteria and the actual registration process. Researcher Grand Prix in Bergen will be held on Friday, September 23. In short, ten young researchers will take to the stage, with four minutes each to talk enthusiastically about their research. The audience and the elected judges from various scientific fields will decide on the best performance.

Recently it turned out that this year they are also planning the [national finale](#) of the Researcher Grand Prix. The national finale will take place at Den Nationale Scene here in Bergen, the week after the local finale.

Researcher Grand Prix is a part of the Research Days which take place between September 23 – October 2. If you would like to participate in Research Days with other types of contribution, do read more on the university's [intranet](#). If you have any questions regarding the Researcher Grand Prix or the UoB's Research Days, please contact [Gro Malnes Øvrebø](#), the Communications Department : phone: 83813.

### PhD Summer course at University of Aarhus

The University of Aarhus offers a [summer course](#) in intellectual property management, communication, networking, fundraising, intercultural collaboration, entrepreneurship, team work and leadership skills. PhD students from outside Denmark who are admitted to the course will receive a subsistence stipend from the European Union of 532 Euro and have their travel costs reimbursed (up to an absolute maximum of 350 Euro). There are no tuition charges.

### EU 2012 calls: Exclusive insider knowledge infomeeting 24.5.2011

The EU office of the Research Council of Norway will offer a special service: Researchers at UiB can learn about the EU FP7 2012 calls on May 24<sup>th</sup> - that is 2 months before the official publication dates in July 2011!! The **meeting** will take place at **Vilvite** with several sessions to give researchers the opportunity to discuss the new calls with the NFR advisers. We offer sessions on **Marie Curie** and **ERC** and the collaborative programmes **Health, Food and Agriculture, Environment, Energy, ICT and SSH**. Should you be interested in other programmes, please contact us. Please click [here](#) for more information and [here](#) for registration.

### EU FP7 Proposal writing Course with Sean McCarthy

Sean McCarthy from [Hyperion Ltd.](#) will be in Bergen 6th May from 09:00-15:00 at Vilvite to hold the course "How to Write a Competitive Proposal for Framework 7".

First and foremost the course is a good and powerful tool to widen the EU Research Funding Schemes knowledge of new and established PIs and younger researchers. Sean McCarthy is a very enthusiastic speaker who motivates and educates effectively.

This course is recommended for Principle investigators and junior researchers, particularly those who have less experience in proposal writing. For younger researchers it is important to understand the need for and value of participation in collaborative research projects and the importance of internationalisation. Participation is free of charge and includes lunch and coffee. In short, the course will include:

- A Quick Overview of EU Framework 7
- Who's running Framework 7
- The Research Priorities in Framework 7
- The Funding Schemes
- Legal and Financial Rules in Framework 7
- How to Find the Best Partners
- How Proposal are Evaluated
- How to Write the 'Potential Impact' of the Proposal
- How to Write the 'Project Implementation'
- How to Streamline Proposal Writing

Here is the registration [link](#).

### Seminar på miljøaspekter

Arena NOW arrangerer seminar på miljøaspekter relatert til havvind. Seminaret er gratis og åpent for alle. [Mer info](#)

## Nye artikler

\*\*\*A full listing of BIO's ISI publications can be found on BIO's internal web pages. Click here for an [alphabetic listing for 2010](#). Click here for a [listing sorted by date](#) in ISI (most recent at the top).

Cardenas; Schander; Rapp; Mangel; Tadiso; Hordvik; Nilsen; Angotzi; Stefansson; Lanzen; Bratbak, Eilertsen, Sjøtun; Rojac-Garcia; Rønnestad

**Cardenas P**, Xavier J, Reveillaud J, **Schander C**, **Rapp HT**. Molecular phylogeny of the Astrophorida (Porifera, Demospongiae) reveals an unexpected high level of spicule homoplasy. *PLoS ONE* 6(4): e18318. doi:10.1371/journal.pone.0018318

### Abstract

Background: The Astrophorida (Porifera, Demospongiae) is geographically and bathymetrically widely distributed. Systema Porifera currently includes five families in this order: Ancorinidae, Calthropellidae, Geodiidae, Pachastrellidae and Thrombidae. To date, molecular phylogenetic studies including Astrophorida species are scarce and offer limited sampling. Phylogenetic relationships within this order are therefore for the most part unknown and hypotheses based on morphology largely untested. Astrophorida taxa have very diverse spicule sets that make them a model of choice to investigate spicule evolution.

Methodology/Principal Findings: With a sampling of 153 specimens (9 families, 29 genera, 89 species) covering the deep and shallow waters worldwide, this work presents the first comprehensive molecular phylogeny of the Astrophorida, using a cytochrome c oxidase subunit I (COI) gene partial sequence and the 59 end terminal part of the 28S rDNA gene (C1-D2 domains). The resulting tree suggested that i) the Astrophorida included some lithistid families and some Alecionidae species, ii) the sub-orders Euastrophorida and Streptosclerophorida were both polyphyletic, iii) the Geodiidae, the Ancorinidae and the Pachastrellidae were not monophyletic, iv) the Calthropellidae was part of the Geodiidae clade (Calthropella at least), and finally that v) many genera were polyphyletic (Ecionemia, Erylus, Poecillastra, Penares, Rhabdastrella, Stelletta and Vulcanella).

Conclusion: The Astrophorida is a larger order than previously considered, comprising ca. 820 species. Based on these results, we propose new classifications for the Astrophorida using both the classical rank-based nomenclature (i.e., Linnaean classification) and the phylogenetic nomenclature following the PhyloCode, independent of taxonomic rank. A key to the Astrophorida families, sub-families and genera incertae sedis is also included. Incongruences between our molecular tree and the current classification can be explained by the banality of convergent evolution and secondary loss in spicule evolution. These processes have taken place many times, in all the major clades, for megascleres and microscleres.

Andrew O. Shelton and **Marc Mangel**. Fluctuations of fish populations and the magnifying effects of fishing. *PNAS* doi/10.1073/pnas.1100334108

### Abstract

A central and classic question in ecology is what causes populations to fluctuate in abundance. Understanding the interaction between natural drivers of fluctuating populations and human exploitation is an issue of paramount importance for conservation and natural resource management.

Three main hypotheses have been proposed to explain fluctuations: (i) species interactions, such as predator-prey interactions, cause fluctuations, (ii) strongly nonlinear single-species dynamics cause fluctuations, and (iii) environmental variation cause fluctuations. We combine a general stochastic model with data from a global sample of fish species to assess how two of these hypothesis, nonlinear single-species dynamics and environmental variation, interact with human exploitation to affect the variability of fish populations. In contrast with recent analyses that suggest fishing drives increased fluctuations by changing intrinsic nonlinear dynamics, we show that single-species nonlinear dynamics alone, both in the presence and absence of stochasticity, are unlikely to drive deterministic fluctuations in fish; nearly all fish populations fall into regions of stable dynamics. However, adding environmental variation dramatically alters the consequences of exploitation on the temporal variability of populations. In a variable environment, (i) the addition of mortality from fishing leads to increased temporal variability for all species examined, (ii) variability in recruitment rates of juveniles contributes substantially more to fluctuations than variation in adult mortality, and (iii) the correlation structure of juvenile and adult vital rates plays an important and underappreciated role in determining population fluctuations. Our results are robust to alternative model formulations and to a range of environmental autocorrelation.

**Tadiso TM**, Krasnov A, Skugor S, Afanasyev S, **Hordvik I**, **Nilsen F**. Gene expression analyses of immune responses in Atlantic salmon during early stages of infection by salmon louse (*Lepeophtheirus salmonis*) revealed bi-phasic responses coinciding with the copepod-chalimus transition. *BMC Genomics*. 2011 Mar 7;12:141.

### Abstract:

**BACKGROUND:** The salmon louse (*Lepeophtheirus salmonis* Krøyer), an ectoparasitic copepod with a complex life cycle causes significant losses in salmon aquaculture. Pesticide treatments against the parasite raise environmental concerns and their efficacy is gradually decreasing. Improvement of fish resistance to lice, through biological control methods, needs better understanding of the protective mechanisms. We used a 21 k oligonucleotide microarray and RT-qPCR to examine the time-course of immune gene expression changes in salmon skin, spleen, and head kidney during the first 15 days after challenge, which encompassed the copepod and chalimus stages of lice development.

**RESULTS:** Large scale and highly complex transcriptome responses were found already one day after infection (dpi). Many genes showed bi-phasic expression profiles with abrupt changes between 5 and 10 dpi (the copepod-chalimus transitions); the greatest fluctuations (up- and down-regulation) were seen in a large group of secretory splenic proteases with unknown roles. Rapid sensing was witnessed with induction of genes involved in innate immunity including lectins and enzymes of eicosanoid metabolism in skin and acute phase proteins in spleen. Transient (1-5 dpi) increase of T-cell receptor alpha, CD4-1, and possible regulators of lymphocyte differentiation suggested recruitment of T-cells of unidentified lineage to the skin. After 5 dpi the magnitude of transcriptomic responses decreased markedly in skin. Up-regulation of matrix metalloproteinases in all studied organs suggested establishment of a chronic inflammatory status. Up-regulation of putative lymphocyte G0/G1 switch proteins in spleen at 5 dpi, immunoglobulins at 15 dpi; and increase of IgM and IgT transcripts in skin indicated an onset of adaptive humoral immune responses, whereas MHC1 appeared to be down-regulated.

**CONCLUSIONS:** Atlantic salmon develops rapid local and systemic reactions to *L. salmonis*, which, however, do not result in substantial level of protection. The dramatic changes observed after 5 dpi can be associated with metamorphosis of copepod, immune modulation by the parasite, or transition from innate to adaptive immune responses.

**Tadiso TM**, Lie KK, **Hordvik I**. Molecular cloning of IgT from Atlantic salmon, and analysis of the relative expression of  $\tau$ ,  $\mu$ , and  $\delta$  in different tissues. *Vet Immunol Immunopathol*. 2011 Jan;139(1):17-26.

### Abstract

**Background:** In the present study, IgT genes of Atlantic salmon were cloned and characterised. Analysis of our sequence data as well as ESTs reported to the databases revealed three distinct IgT heavy chain sub-variants in salmon, as opposed to two of IgM and IgD. The IgT sub-variants in salmon are 76-80% identical to each other, and 75-82% identical to the reported rainbow trout

sequences, whereas the similarity to the orthologous molecules in zebrafish, grass carp, mandarin fish, and grouper is 25-41%. The heavy chains of both secreted and membrane anchored forms of salmon IgT include four constant Ig domains,  $\tau$ 1- $\tau$ 4. This parallels the IgM heavy chains in elasmobranch fish and higher vertebrates, but differs from IgM in teleost fish where the membrane anchored form include only three constant Ig domains,  $\mu$ 1- $\mu$ 3. The similarity between  $\tau$ 1 and  $\mu$ 1 in salmon is relatively high (52%) when compared to the remaining part of the molecules ( $\tau$ 2- $\tau$ 4 and  $\mu$ 2- $\mu$ 4 are 13-24% similar). To compare  $\tau$ ,  $\mu$  and  $\delta$  expressions in different tissues (head kidney, thymus, spleen, gill, skin, hind gut, brain and muscle) of Atlantic salmon, RT-qPCR assays were designed and evaluated. The analyses revealed that IgM transcripts are most abundant (up to 200 times more than IgD) followed by IgT (up to 20 times more than IgD) in most tissues. Highest expression of IgM, IgT, and IgD was in head kidney and spleen.

**Anna Rita Angotzi**, Sutada Mungpakdee, **Sigurd Stefansson**, Rune Male, Daniel Chourrout: Involvement of Prop1 homeobox gene in the early development of fish pituitary gland. General and Comparative Endocrinology

**Abstract:**

When mutated in mammals, paired-like homeobox Prop1 gene produces highly variable pituitary phenotypes with impaired regulation of Pit1 and eventually defective synthesis of Pit1-regulated pituitary hormones. Here we have identified fish prop1 orthologs, confirmed their pituitary-specific expression, and blocked the splicing of zebrafish prop1 transcripts using morpholino oligonucleotides. Very early steps of the gland formation seemed unaffected based on morphology and expression of early placodal marker pitx. Prop1 knock-down reduced the expression of pit1, prl (prolactin) and gh (growth hormone), as expected if the function of Prop1 is conserved throughout vertebrates. Less expectedly, lim3 was down regulated. This gene is expressed from early stages of vertebrate pituitary development but is not known to be Prop1-dependent. In situ hybridizations on prop1 morphants using probes for the pan pituitary gene pitx3 and for the hormone gene markers prl, gh and tshb, revealed abnormal shape, growth and cellular organization of the developed adenohypophysis. Strikingly, the effects of prop1 knock-down on adenohypophysis morphology and gene expression were gradually reversed during late development, despite persistent splice-blocking of transcripts. Therefore, prop1 function appears to be conserved between mammals and fish, at least for the mediation of hormonal cell type differentiation via pit1, but the existence of other fish-specific pathways downstream of prop1 are suggested by our observations.

Allen, M. J., **A. Lanzen**, **Bratbak G.** (2011). "Characterisation of the coccolithovirus intein." Marine Genomics 4(1): 1-7.

**Abstract**

The identification of inteins in viral genomes is becoming increasingly common. Inteins are selfish DNA elements found within coding regions of host proteins. Following translation, they catalyse their own excision and the formation of a peptide bond between the flanking protein regions. Many inteins also display homing endonuclease function. Here, the newly identified coccolithovirus intein is described and is predicted to have both self-splicing and homing endonuclease activity. The biochemical mechanism of its protein splicing activity is hypothesised, and the prevalence of the intein among natural coccolithovirus isolates is tested.

**Eilertsen, M.**, K. M. Norderhaug, **Sjötun K.** (2011). "Does the amphipod fauna associated with epiphytes on kelp (*Laminaria hyperborea*) change with depth?" Marine Biology Research 7(3): 224-234.

**Abstract**

The present study showed a differential composition of amphipod fauna on red algae with different morphology. The stipes of *Laminaria hyperborea* are covered with epiphytes, of which red algae constitute a main group. A rich invertebrate fauna dominated by gastropods and amphipods is associated with the epiphytes. The algae may function as a habitat providing refuge against wave action and predation, or as food. The study was carried out on the southwest coast of Norway. Common epiphytic red algae of different morphology with associated amphipods were sampled at

three different depths at three localities with kelp forest (*L. hyperborea*). Although the total amphipod densities increased with habitat size, the distribution of amphipods on the selected epiphytes differed. *Ptilota gunneri* is repeatedly feather-branched with a complex branching pattern and has high densities of small amphipods, dominated by *Jassa falcata* and species from the family Stenothoidae. The filamentous epiphyte *Polysiphonia elongata* had low densities with dominance of Caprellidea species. Densities of amphipods associated with *P. elongata* increased with depth. The amphipod distribution was patchy on *Delesseria sanguinea* and *P. gunneri* in relation to station and depth.

**Rojas-Garcia, C. R., S. Morais, Rønnestad I.** (2011). "Cholecystokinin (CCK) in Atlantic herring (*Clupea harengus* L.) - Ontogeny and effects of feeding and diurnal rhythms." Comparative Biochemistry and Physiology a-Molecular & Integrative Physiology **158**(4): 455-460.

### Abstract

Neural and alimentary cholecystokinin (CCK) levels in Atlantic herring, *Clupea harengus*, were analyzed from hatching to 40 days after hatching (DAH). The head compartment representing the neural pool was quantitatively dominant (>80% of the total CCK content) while the digestive tract pool represented 6-10%. During ontogeny the CCK level in whole larvae increased almost 15-fold from 0 to 40 DAH, being particularly marked from 14 to 20 DAH. Larvae of 24 to 26 DAH were examined for potential occurrence of a circadian rhythm and to analyze the effects of feeding. Fed and fasted larvae were significantly different, where fed larvae showed higher CCK levels. There were large fluctuations in CCK levels analyzed at 3 h intervals without an apparent diurnal pattern. Shorter sampling intervals of 1 h in the morning when lights were switched gradually on and food was offered to the larvae demonstrated a marked drop in the relative gut CCK levels and a concurrent increase in the CCK carcass to gut ratio, 1 h after introduction of food followed by a return to prefeeding levels after 2 h. This response probably results from a release and re-synthesis of CCK in the gut after initiation of feeding. Taken together, these results support earlier reports that CCK participates in the regulation of digestive processes in herring larvae, but CCK does not seem to have a circadian rhythm independent of feeding. (C) 2010 Elsevier Inc. All rights reserved.