EURL training course 2013
Aarhus,
21/1-31/1 2013

Hosted by the European Union Reference Laboratory for Fish Diseases

Contents

General introduction

The training course took place at DTU National Veterinary Institute, Hangøvej 2, DK-8200 Aarhus N, 21/1-31/1 2013. The course was divided in two parts where one or both parts could be followed. Part 1 "Diagnostic procedures" took place 21/1-25/1 and 5 persons participated. Part two "Advanced bio-molecular techniques and bio-informatics" took place 28/1-31/1 and 13 persons participated. 1 person participated in both parts of the training course.

The overall purpose of the training course was to provide an opportunity for the NRLs to send employees for training in techniques relevant when working with fish diseases. Staff of the EURL provided this training, together with teachers from the Danish Veterinary and Food Administration; CLCbio, Denmark; FLI, Germany; and CVI, The Netherlands. Also, knowledge-sharing and discussions between participants and teachers were important parts of the courses.

Sampling and diagnostic procedures for surveillance of listed fish diseases

The 5-days course in "Sampling and diagnostic procedures for surveillance of listed fish diseases" was primarily based on practical work (hands on) in combination with theoretical presentations.

Day 1 was dedicated to a fish farm inspection.
As it is not possible to visit a fish farm after working in our laboratory it was decided to meet with the participants downtown in Aarhus and to drive to the FVO offices in Vejle, where we were received by Dr Korsholm. After the training course introduction by NJ Olesen and presentations on Danish surveillance plan for fish diseases held by Dr Korsholm, the participants visited a rainbow trout farm, Vingsted Dambrug, approx 25 km from Vejle. Here it was demonstrated how to inspect a farm and to collect relevant samples and taught how fish necropsy techniques are done in the field. All participants collected their own samples, which were brought back to the laboratory in Aarhus for further examination

On day 2 the participants were divided into two small groups. As an assignment each group received 4 blinded ampoules containing lyophilized putative fish pathogenic viruses to be identified during the course. The processing of fish samples collected the day before as well as opening and preparing the proficiency test ampoules was demonstrated before the participants were asked to do it themselves. Later, each group were introduced to basic cell culture work, and then produced their own flasks, 24-well trays, and 96-well plates for titration and immunoflourescence. The participants were then introduced to cell freezing- and thawing procedures followed by mycoplasma testing. Inoculation of diagnostic samples on cell cultures was also practised. The CPE of different viruses was shown and the participants practised reading of diagnostic trays. Quality assurance, contamination, cleaning and disinfection etc. was an integral part of the practical demonstrations.

On Day 3 ELISA techniques were addressed; each group designed and performed the practical testing in order to be able to identify the distributed virus isolates, following theoretical classroom teaching on methodologies, pitfalls and error findings.
The course was dialogue-based and sufficient time was given for discussion under way and for evaluation of test results.

On Day 4 real-time PCR and biomolecular techniques were targeted. Participants had the possibility to test two protocols for disease surveillance, testing the ampoules for VHSV and IPNV.
While the amplification process was running, each group received a collection of slides for studying characteristic IFAT results for listed disease pathogens and other relevant viruses.

On day 5 titration procedures were demonstrated and the participants were asked to read viral load on titration plates prepared in advance. Finally results sheet were filled in.
Production of medium, cell sensitivity tests and test of calf serum batch before general use in cell medium was discussed. In the end time was allocated for course evaluation.

The methods taught were primarily focused on the protocols given in EU legislation and on the OIE guidelines from the Manual of Aquatic Animal Diseases, and included how to select proper controls, the typical pitfalls, trouble shooting, etc. As get together, a joint dinner the second evening was included.

Advanced biomolecular techniques and bioinformatics.

The 4-day course in molecular techniques and bio-informatics was devoted to lectures on relevant topics, as well as theoretical exercises.
The course was built up so that it followed a logical progression from the basic techniques of PCR and real-time PCR, to sequencing of the PCR products, both by Sanger sequencing and next-generation sequencing and finally using the sequences for phylogeny and seeing presentations of real case-stories.

The participants started by learning about PCR and real-time PCR on the first day, followed by theoretical exercises. The lectures included information on the general theory behind the techniques, the use of controls, prevention of contamination of samples as well as suggestions for troubleshooting

The following day, the theory behind Sanger sequencing and next-generation was explained, as well as lectures on trouble-shooting and pitfalls concerning these techniques. It also included a lecture on the sequence analysis software Mainbench from the CLC-bio company.

On the third day, participants were introduced to other software used for sequence analysis and phylogenetic studies and lectures were given on phylogenetic theory. Later in the day the participants were introduced to some theoretical exercises where they got hands-on experience with the before-mentioned software for phylogenetic studies.

On the last day (day four) they were introduced to the www.fishpathogens.eu database, which facilitated a discussion on guidelines for use of the database. Furthermore, the participants were introduced to phylogenetic case stories on rhabdoviruses, herpesviruses and nodaviruses, respectively, as well as a lecture on molecular epidemiology.

Through lectures, exercises, discussions, and knowledge exchange between participants, the knowledge on molecular techniques, bio-informatics and troubleshooting related to these was increased.

As get together, an optional dinner event on day 2 was held.

Participants

Name	Country	Gen. Vir.	Mol. Tech.
Laura Valls	Spain	x	
Perla Tedesco	Italy	x	
Renate Johansen	Norway	x	
Susan Schares	Germany	x	
Mona Saleh	Austria		x
Ekaterina Mileva	Bulgaria		x
Tomáš Veselý	Czech Republic		x
Mihkel Mäesaar	Estonia		x
Tobia Pretto	Italy	x	x
Torfinn Moldal	Norway		x
Trude Marie Lyngstad	Norway		x
Britt Bang Jensen	Norway		x
Alf Dalum Frøyse	Norway		x
Anne Berit Olsen	Norway		
Hongan Duan	P.R.China		x
Zhou Yi	P.R.China		x
Vladimir Ivan Radosavljevic	Serbia		x

EURL training course "Sampling and diagnostic procedures for surveillance of listed fish diseases"

5-days course at the European Union Reference Laboratory (EURL) for Fish diseases, Hangøvej 2, DK-8200 Aarhus N, Denmark from 21/1-25/1, 2013.

Course content
The 5-days course is primarily based on practical work (hands on) in combination with theoretical presentations.
This year the course will focus on the whole process that a sample should follow from inspection of farms with selection and sampling fish to finally report the test results. The listed diseases VHS, IHN, ISA and KHV will primarily be addressed.

Course responsible: Niels Jørgen Olesen.

Teachers:
Helle Frank Skall, PhD, DVM (hfsk@vet.dtu.dk). Topic: cell cultivation
Niels Jørgen Olesen, professor, PhD, DVM (njol@vet.dtu.dk). Topic: cell cultivation, and related procedures, ELISA
Torsten Snogdal Boutrup, PhD, DVM (tosb@vet.dtu.dk). Topic: fish pathology and farm visit
Susie Sommer Mikkelsen, PhD, Biologist (susmi@vet.dtu.dk). Topic: Real Time PCR
Niccoló Vendramin, DVM (niven@vet.dtu.dk) Topic: fish pathology and farm visit
Mette Eliassen, technician (meel@vet.dtu.dk**).** Topic: ELISA, titration, cell culture inoculation
Nicole Nicolajsen, technical engineer (nnic@vet.dtu.dk**).** Topic: IFAT
Maj Britt Christophersen, technician (mbch@vet.dtu.dk) Topic: Real Time PCR

General course objectives

I. The course aims to provide participants knowledge on the most used cell cultures available for diagnosis of important fish viruses. The course will focus on basic cell cultivation techniques, production of cells for different purposes (IFAT, diagnostic trays, titration etc.), freezing and thawing of cells, mycoplasma testing, cell susceptibility testing, inoculation of samples and subcultivation procedures, reading of cell cultures (including CPE) and virus titration

II. To provide knowledge to participants on the most used methods used for diagnosis of important fish pathogens. The course will focus on ELISA, immunofluorescence and PCR.

III. To understand the underlying principles of the tests and to critically review them in order to assess pitfalls and to correctly interpret them

Learning objectives

The course aim was to provide a forum where pre-knowledge, experience and examples can be discussed between participants and teachers, and hereby raise the awareness of pitfalls when using the various techniques. Focus will be on the viral fish diseases: VHS, IHN, IPN, SVC, EHN, KHV, ISA. Major goals :

- Maintain, cultivate, inoculate and read most used cell lines (BF-2, EPC, CCB and ASK) for diagnostic purposes.
- Freezing and thawing cells.
- Produce cells for different purposes, e.g. diagnosis, IFAT and virus titration.
- Inoculate and subcultivate diagnostic samples.
- Read diagnostic trays.
- Titrate virus.
- Design, perform and assess results of IFAT.
- Design, perform and assess results of ELISA.
- Application of Real Time RT-PCR for surveillance purposes.
- Be able to assess pitfalls and errors in test performances and designs.

Intended learning outcomes

- To increase the practical and theoretical knowledge of cell culture based, antibody based and biomolecular techniques used in fish virus diagnostics.
- To provide a forum for experience / knowledge sharing. Participant and teacher as well can have the occasion for fruitful discussion on relevant subjects addressed by the course.

Course description - Sampling and diagnostic procedures for surveillance of listed fish diseases

Course content

The 5-days course is primarily based on practical work (hands on) in combination with theoretical presentations.

This year the course focused on the whole process that a sample follows in surveillance activities for listed diseases.

The first day of the course all participants were guided through a fish farm visit. The trip was supervised by the Veterinary Authority who provided guidelines and protocols for a correct approach to sample collection procedures.

During the visit and the first afternoon an approach to sampling procedures for targeted surveillance purpose as well as for general pathology was demonstrated.

Starting from day 2, each group started processing the samples collected on the farm. This process included cell preparation, monolayer inoculation, and isolate identification.

All cell culture-based and immunochemical methods used for isolation and identification of these viruses were demonstrated and conducted by the participants themselves.

Participants were first introduced to basic cell culture work: 24-well plate preparation for diagnostic purposes as well as 96-well plates for titration and immunofluorescence and flasks maintenance was demonstrated. Cell freezing and thawing procedures followed by mycoplasma testing were demonstrated as well. Inoculation of diagnostic samples on cell cultures was practised. The CPE of different viruses was shown and the participants practised reading of diagnostic trays. Titration procedures were demonstrated for the participants and practised by themselves in titre calculation. Medium production, cell sensitivity tests and tests of calf serum batch before general use in cell medium were discussed.

Concerning ELISA, each group designed and performed the practical testing in order to be able to identify the distributed virus isolates, followed by theoretical classroom teaching on methodologies, pitfalls and error findings.

Moreover the application of novel validated real-time RT-PCR protocols suitable for surveillance were demonstrated and tried out by the participants.

The course was dialogue based and sufficient time was allocated for discussion underway and for evaluation of test results.

In addition each group received a collection of slides for studying characteristic IFAT results of listed disease pathogens and other relevant viruses.

Quality assurance, contamination, cleaning and disinfection etc. was an integral part of the practical demonstrations.

The taught methods primarily focused on the protocols given within EU legislation and OIE guidelines from the Manual of Aquatic Animal diseases, and include how to select proper controls, the typical pitfalls, trouble shooting, etc. In order to establish a nice social cooperation a joint dinner was included in the second evening.

Day 1 Monday	Day 2 Tuesday	Day 3 Wednesday	Day 4 Thursday	Day 5 Friday
9.00. Meeting at Radisson Blue hotel All trainees + NJOL, NIVEN, HFSK, TOSB Driving to Vejle by Bus **Coffee** **Course introduction (Njol)** and "**inspection of fish farms in Denmark**" by Henrik Korsholm (HEKOR) Introduction to the farm visit HEKOR Light lunch Farm visit (totally 2 hours estimated) including visiting, controlling water inlet, collecting fish, necropsy, samples storage etc.	**8.30-9.30** **Introduction to lab., course, assignment (Njol, Niven) each group will receive a PT consisting of 4 coded ampoules.** **I Session in the morning** **Group 1** Fish processing for viral examination. Homogenation, centrifugation and antibiotics treatment: MEEL HFSK **Group 2** Ampoules opening, resuspension, registrations NNIC and NIVEN **Coffee (10,45-11,00)** **Groups 2** Ampoules opening, resuspension, registrations NNIC and NIVEN **Group 1** Fish processing for viral examination. Homogenation, centrifugation and antibiotics treatment: MEEL HFSK	**8.30 – 12.00** **ELISA** **INTRODUCTION** **NJOL (MEEL, BIFU)** **Group 1 and 2** Design and start ELISA for ID of content in each of the vials (coating of trays done beforehand) MEEL and Birgitte. Washing, blocking and inoculation of following layers. Finishing staining and reading + photo MEEL and Birgitte **During incubation steps, both groups** will inoculate their respective plates with ampoule content resuspended the day before. MLAJ BELYN and HFSK. These plates will be read on Friday. **This part will be done in the morning in order to allow the PCR group to inoculate plates in the afternoon**	**8.30 – 12.00** **qPCR** **INTRODUCTION** **SUSMI (NIVEN MBCH, TRSU)** **Group 1 and 2** **Group 1 MBCH TRSU** will firstly perform nucleic acid purification and then MMix preparation **Group 2 SUSMI** first prepare MMix and then Purification	**8.30-12.00** **Inspection of inoculated cells** **Titer calculation HFSK (NIVEN)** Titer calculation will be demonstrated. Participants will be asked to read microtitre plates and to calculate their titres. **Collate all results (pictures of ELISA, pictures from Real Time RT-PCR etc)** Each group will present their results to all the others followed by common discussion
	Lunch (12.00 – 13.00)	**Lunch (12.00 – 13.00)**	**Lunch (12.00 – 13.00)**	**Lunch (12.00 – 13.00)**
Return at approx. 16:00	**RUNNING CELL CULTURE LABORATORY** **14.00 – 17.00** **Station A: Preparation of diagnostic cells, BF-2 and EPC 24 well plates MLAJ/CFDE** **+** **Station B: Mycoplasma test performing and reading HFSK** The mycoplasma test procedure will be demonstrated --- **Station C: Microscopy of cells and CPE (how should they look like, which media is used, etc) NJOL in fisk 2** **+** **Station D Freeze and thawing BELYN** The procedure for freezing of cells will be demonstrated. Each person will prepare their own cells for freezing.	**ELISA to be continued**	**qPCR machine to be loaded** **During incubation steps, both groups will read IFAT plates** (1 group MLAJ HFSK – microscope in fisk 1 /1 group - NJOL microscope in the basement). Groups will have to fill results sheet for IFAT **This part will be done in the morning in order to allow the PCR group to read plates in the afternoon** **PCR Results to be collected**	**13.00 - 14.30** **Evaluation** **Last minutes questions and Good Byes** Wrapping up of the course and questionnaire fill out (coffee at the tables).

Sampling and diagnostic procedures for surveillance of listed fish diseases

	Very low	Low	Average	Good	Very good
Teachers preparedness				1	4
Course relevance for you				3	2
Increase of your knowledge				1	4
Overall opinion of course				2	3

Evaluation scheme for Real Time PCR course

	Very low	Low	Average	Good	Very good
Teachers expertises			1		4
Teachers preparedness				2	3
Course relevance for you				1	4
Increase of your knowledge		1		1	3
Overall opinion of course				2	3

Evaluation scheme for ELISA course

	Very low	Low	Average	Good	Very good
Teachers expertises				2	3
Teachers preparedness				1	4
Course relevance for you				2	3
Increase of your knowledge				3	2
Overall opinion of course				2	3

Evaluation scheme for Cell culture course

	Very low	Low	Average	Good	Very good
Teachers expertises				1	4
Teachers prepardness				1	4
Course relevance for you:					
- Basic cell culture techiques				1	4
- Freezing/thawing of cells			2	2	1
- Mycoplasma testing		1		2	2
- Inoculation and subcultivation procedures				2	3
- Virus titration				2	3
- Reading of plates (CPE, toxic effect etc.)				3	2
- Production of cell culture medium	1		1	1	1

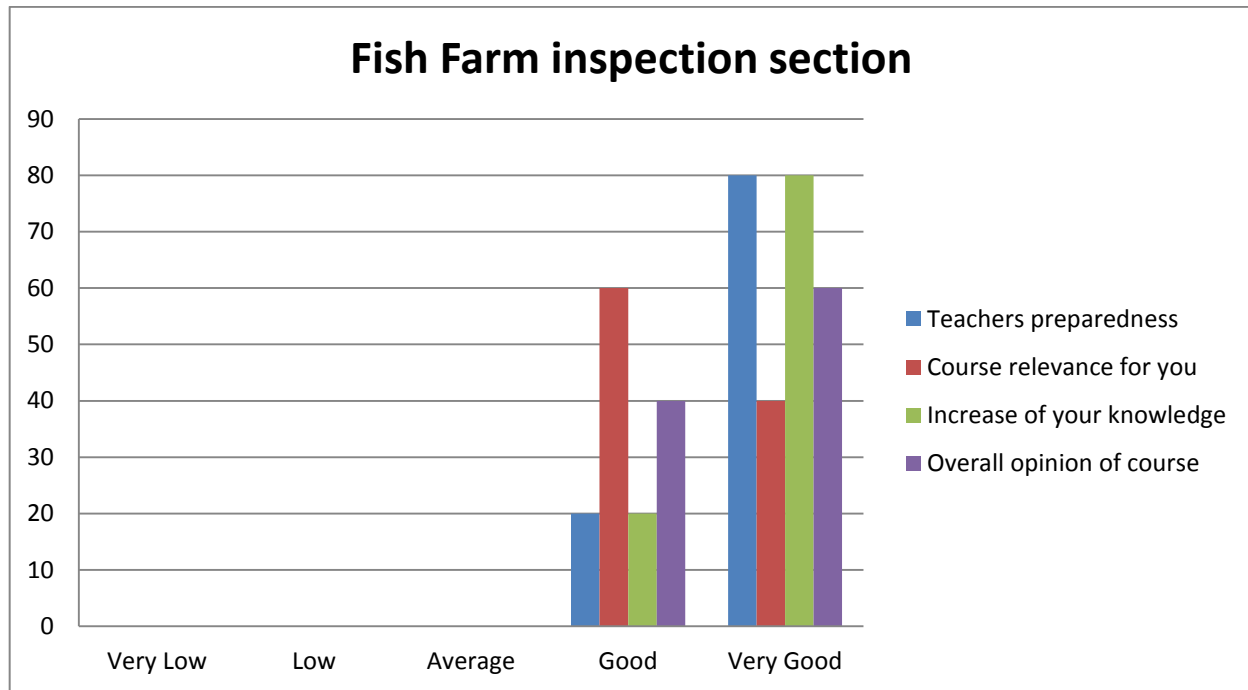|					
- Cell susceptibility test and serum test			1	2	2
- IFAT plates reading			2	2	1

What did you find good about the course:

- Very nice to see the whole process
- Learned a lot in a short time
- Hands on in the lab.
- Well prepared in the lab.
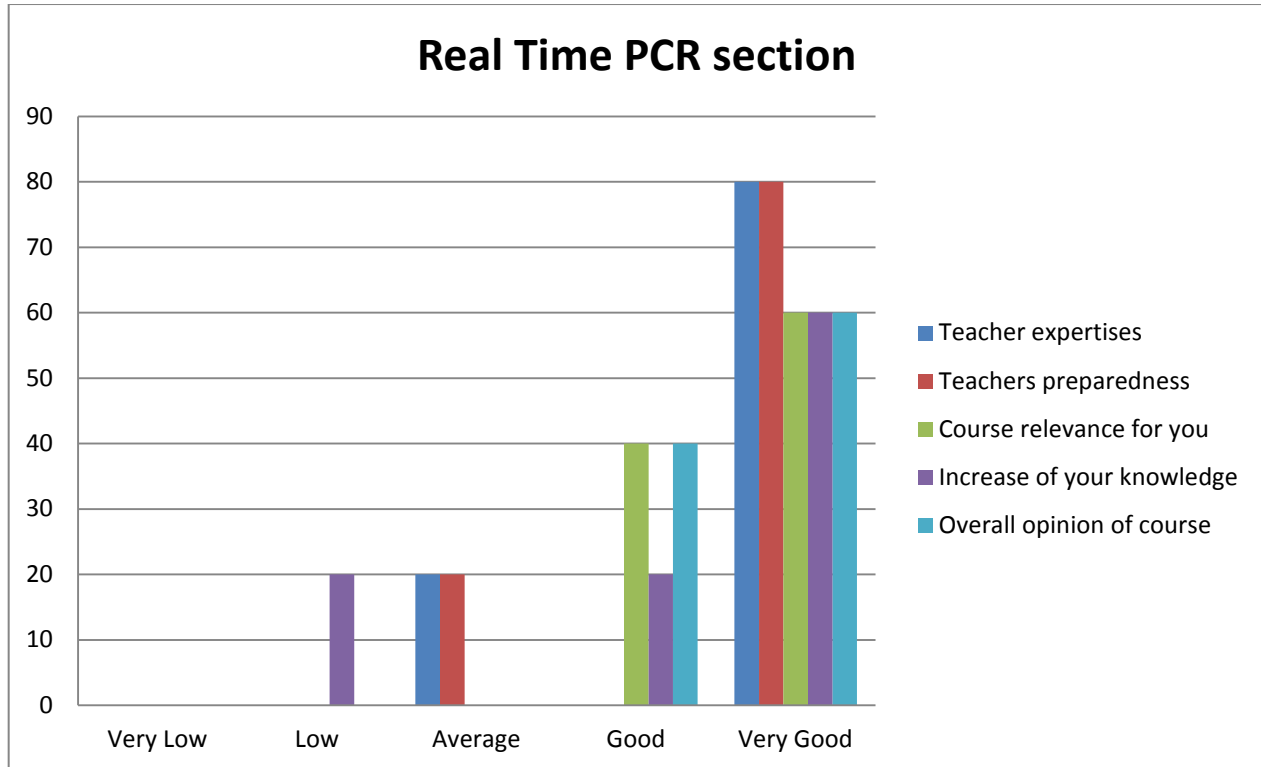
Suggestions for improvements
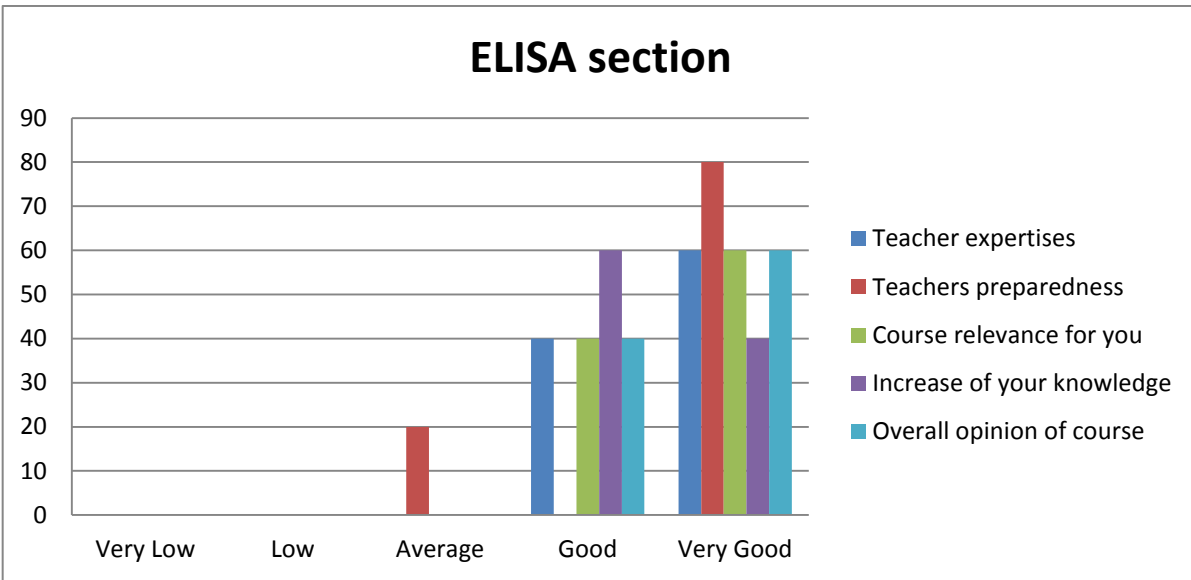Papers in advance of the course should have right dates

Course evaluation
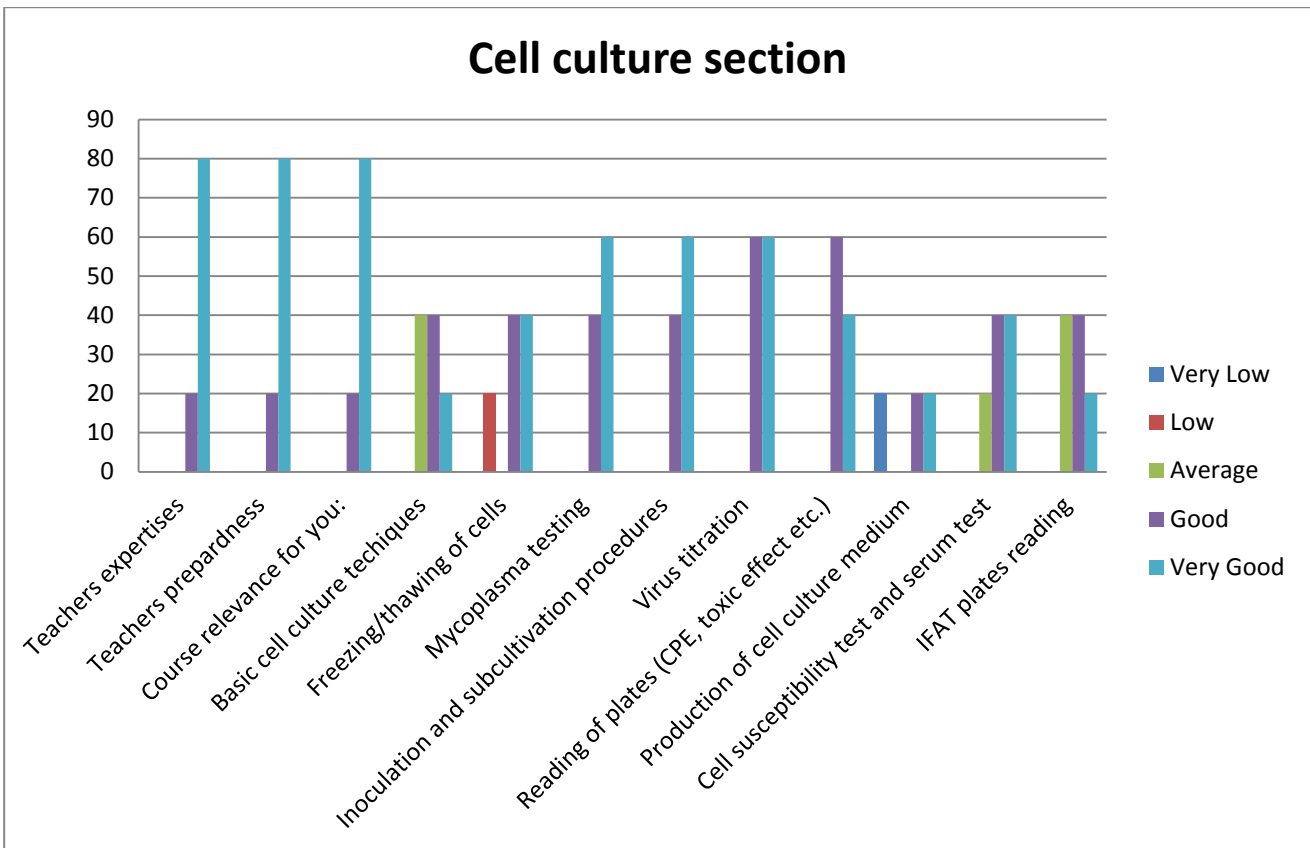Graphs 1-4 showing participant satisfaction level considering every section.

Fish Farm inspection section

Graph 1

Real Time PCR section

Graph 2

ELISA section

Graph 3

Cell culture section

Graph 4

EURL training course – Advanced Bio-Molecular techniques and bio-informatics

4-day course at the EURL Fish Diseases, DTU-Vet, Section for Fish Diseases, Hangøvej 2, DK-8200 Aarhus N, Denmark 28th to 31st January 2013.

Overall objective:
To increase the knowledge of molecular techniques and bio-informatic methods and tools used in fish diagnostics and research. Furthermore, the course was aimed at providing a forum for discussion of knowledge and experience between participants and teachers.

Learning aims:
The aim was to introduce the participants to the different molecular techniques involved in identifying pathogens of importance for diagnosis of fish diseases. Furthermore, the course participants should have gained knowledge on how to conduct troubleshooting, how to perform critical evaluation of their work as well as have gained a general knowledge of bio-informatic tools.

Course content:
Day one was focused on PCR and real-time PCR. It consisted of lectures on PCR and real-time PCR in general, troubleshooting, controls and validation of methods. Furthermore, participants performed theoretical exercises on the subjects they had been introduced to during the lectures.
Day two was focused on sequencing and next generation sequencing. The day consisted on lectures on the different subjects as well as a lecture on the CLC software.
Day three and day four were devoted to phylogeny, with day three focused on theory (alignments, trees, statistical methods) and exercises (using the computer programs the participants had been introduced to during the lectures), whereas day four was focused on case stories.
Through a combination of teaching, theoretical exercises, and discussions the participants increased their knowledge on molecular techniques and bio-informatics.

Course responsible: Susie Sommer Mikkelsen

Teachers:
Heike Schütze, Dr. rer. nat. FLI, Insel Riems, Germany, Heike.Schuetze@fli.bund.de
Marc Engelsma, Dr.ir. Central Veterinary Institute of Wageningen, UR Lelystad, The Netherlands, Marc.Engelsma@wur.nl
Anna Schönherz, Aarhus University, Denmark, PhD student.
Susie Sommer Mikkelsen, PhD, DTU Vet, Denmark, Molecular Biologist, Phd, susmi@vet.dtu.dk
Kim Madsen, M.Sc., Key Account Manager, CLC, kmadsen@clcbio.com

Program

28/1	29/01	30/1	31/1
Welcome - Section 1 PCR	**Section 2 Sequencing**	**Section 3 NGS**	**Section 6 Fish virus appl:**
9:00-9:30 Registration and presentation of course **9:30-10:00 Presentation of participants** **10:00-10:45 PCR part 1** Conventional and RT Dr. Schütze **10:45-11:15 Coffe** **11:15-12:00 PCR part 2** Real time PCR & troubleshooting Dr. Schütze	**9:00-10:00 Sequencing Theory (ABI)** Dr. Schütze **10:00-10:30 coffee** **10:30-12:00 CLC Software** (Mainbench + NGS) Kim Madsen, CLC	**9:00-9:45 Software-1** (Blast + Bio Edit) Dr. Schütze **9:45-10:30 Software -2** Dr. Engelsma **10:30-11:00 coffee** **11:00-12:00 Introduction on phylogeny concepts** Dr. Engelsma	**9:00-9:45 Fishpathogen:eu** Dr. Mikkelsen **9:45-10:30 Fish Rhabdovirus** Dr. Schütze **10:30-11:00 Coffee break** **11:00-11:45 Fish Herpesvirus** Dr. Engelsma
12:00 – 13:00 Lunch	**12:00 – 13:00 Lunch**	**12:00 – 13:00 Lunch**	**12:00 – 13:00 Lunch**
Section 1 PCR	**Section 3 NGS**	**Section 4 Phylogeny**	**Section 6 - Goodbyes**
13:00-13:45 PCR Laboratory Setup Dr. Mikkelsen **13:45-14:30 Advanced PCR 1** controls in PCR Dr. Engelsma **14:30-15:00 Coffee** **15:00-15:45 Adv PCR 2** Validation of PCR assays Dr. Engelsma **15:45-17:00 Practical activities**	**13:00-14:00 Sample preparation for NGS** Dr. Schönherz **14:00 14:30 Coffee** **14:30-15:30 NGS theory part 1** Dr. Mikkelsen **15:30-16:30 NGS part 2** Anna Schönherz	**13:00-14:00 Phylogeny** Advantages of this analysis Dr. Schütze **14:00-14:30 coffee** **14:30-16:30 Practical activities**	**13:00-13:30 Fish Nodavirus** Dr. Vendramin **13:30-14:00 Molecular Epidemiology** Dr.Olesen **14:00-15:00 General discussion and course evaluation** **15:00 Cakes and Goodbyes**

Evaluation scheme for the PCR section

	Very low	Low	Average	Good	Very good
Teachers expertises				3	6
Teachers preparedness			1	4	8
Course relevance for you				5	8
Increase of your knowledge			3	3	7
Overall opinion of course				5	8

Evaluation scheme for the sequencing section

	Very low	Low	Average	Good	Very good
Teachers expertises				3	10
Teachers preparedness				2	11
Course relevance for you				6	7
Increase of your knowledge				6	7
Overall opinion of course				4	9

Evaluation scheme for NGS section

	Very low	Low	Average	Good	Very good
Teachers expertises				3	10
Teachers preparedness				2	11
Course relevance for you			1	6	7
Increase of your knowledge				5	8
Overall opinion of course				5	8

Evaluation scheme for phylogeny section (day 3)

	Very low	Low	Average	Good	Very good
Teachers expertises				2	11
Teachers preparedness				2	11
Course relevance for you			1	4	8
Increase of your knowledge			1	3	9
Overall opinion of course				3	10

Evaluation scheme for phylogeny section (day 4)

	Very low	Low	Average	Good	Very good
Teachers expertises			1	1	11
Teachers preparedness			1		12
Course relevance for you			2	3	8
Increase of your knowledge			3	3	7
Overall opinion of course			1	3	9

What did you find good about the course:

- Well-planned lectures (Not too short, not too long, but very informative)
- Reasonably structured days (easy to obtain knowledge)
- Extremely friendly collective (teachers, students, lab workers)
- Much useful information
- Very well organized, very good expertise and preparedness of teachers and as usually very friendly colleagues
- Practical orientation and giving us excess and suggestions on usefull programs to work with
- I think the course was scientifically very good, and it really increased my understanding and knowledge about sequencing and phylogeny of viruses
- The courses are useful for our jobs
- The teachers expertises, well preparedness, their patience give us deep impression. The course is well organised.
- That it was not too "compact". (plenty of time for each presentation, not overambitious).
- NGS: Good for me, but some thought it became very fast very technical, esp. If you were not too familiar with the methods in detail.
- Well prepared and very nice teachers. The programs demonstrated fitted perfectly with what I had used before/learned. Good space/breaks in between, Excellent timing.

Suggestions for improvements:

- More pratical work (better to confirm knowledge)
- Might be good to perform more advanced course as well where you can go into topic more deeper
- Very interesting course as theoretical, just minor improvements as mentioned
- More pratice
- Keep it continuing please
- Non. Very nice course indeed.
- The information about practicalities should really be improved; there was a lot of confusion about the dates, and the coordinator did not send consistent and corrected information
- More practical laboratory work or demonstration of experiment if possible
- Better information of times and dates! It was not good to have to buy expensive plane tickets because we were not sure when the course was, exactly.
- Agree on which software to use before, so we could

download.
- Information ahead of course was confusing, e.g. dates. Difficult to order airplane tickets and hotel, etc.
- Bio edit demo a bit confusing but managed in the end.
- A bit more time to practice with the programs. My impression with CLC was very superficial. Should have had more practice. Maybe too superficial knowledge given on some subjects.
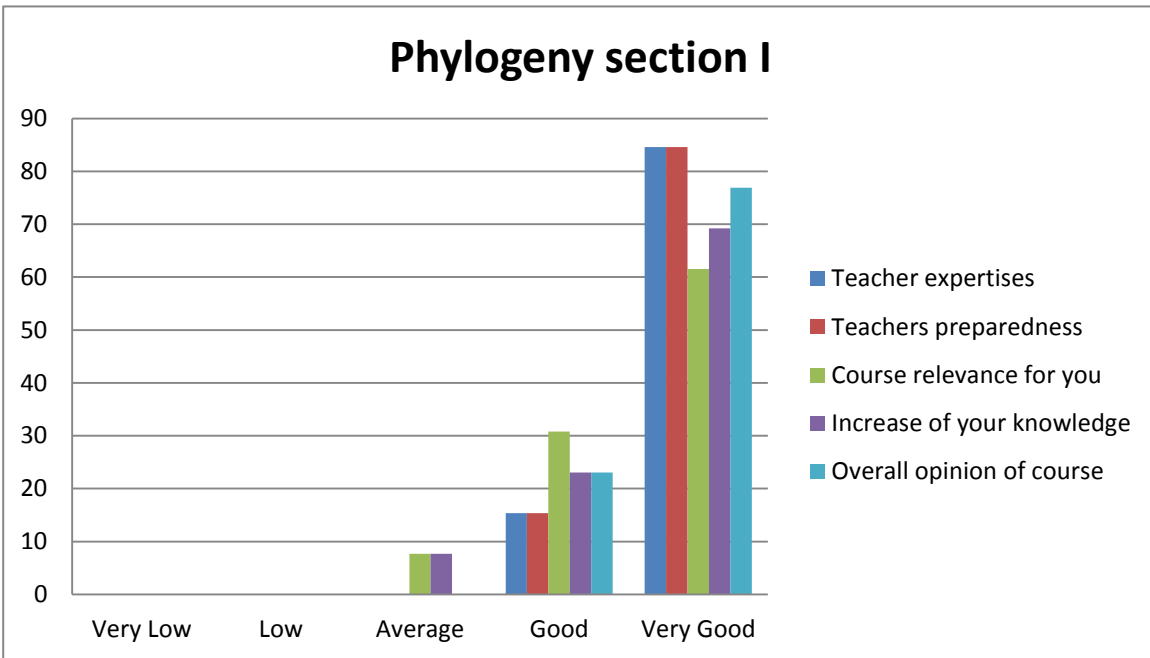
Course evaluation
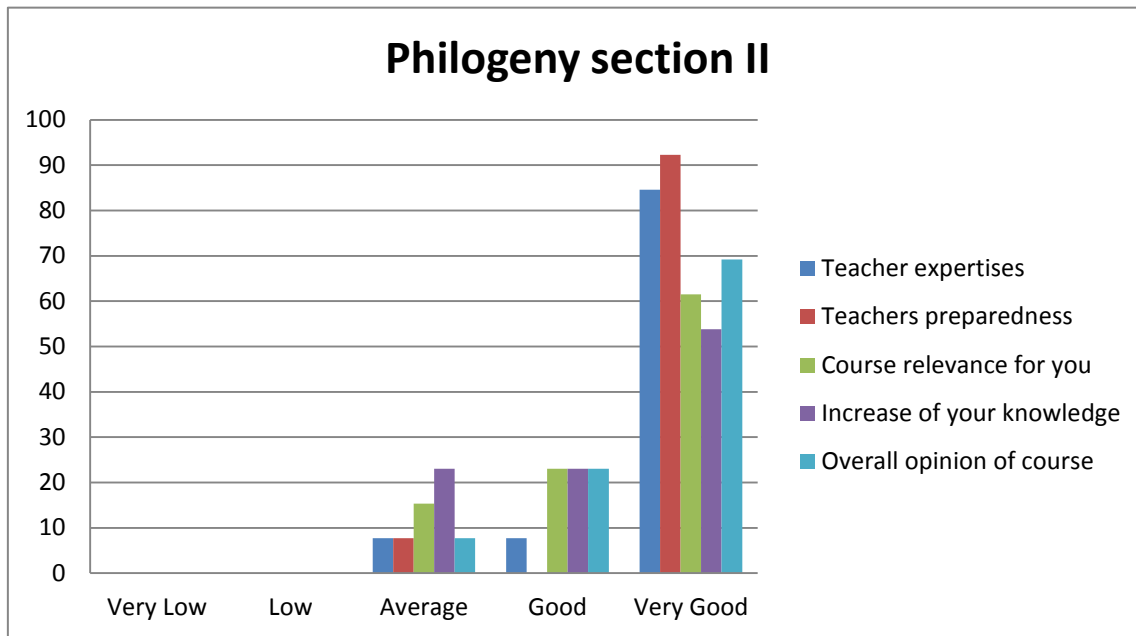Graphs 5-8 showing participant satisfaction level considering every section.

PCR section

Graph 5

NGS section
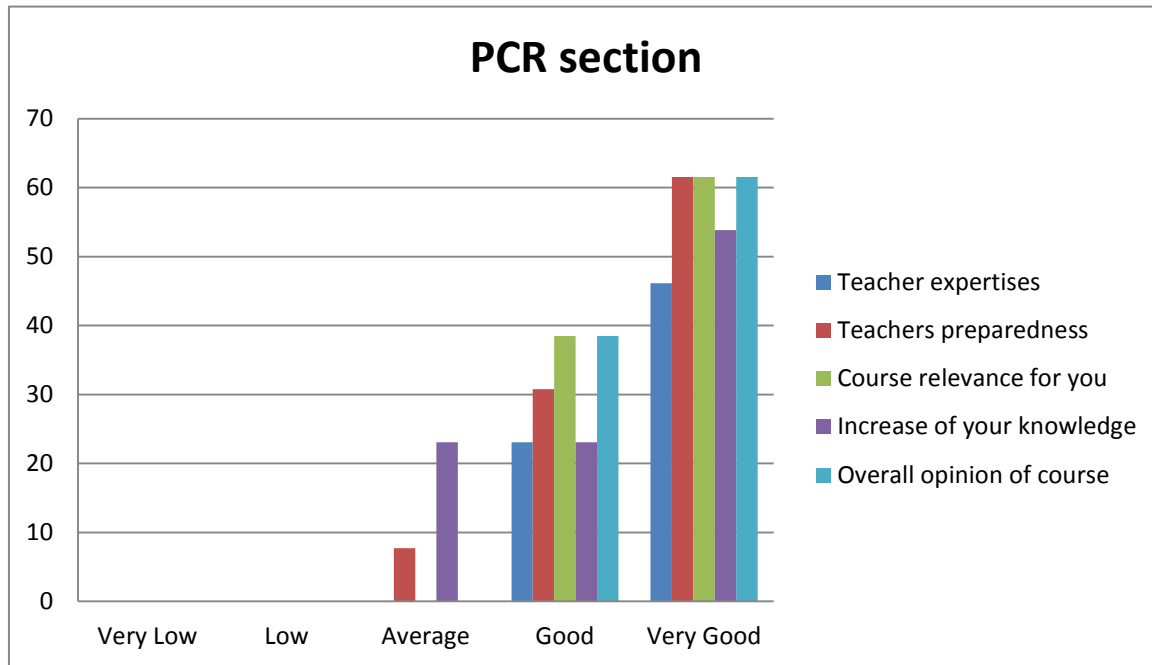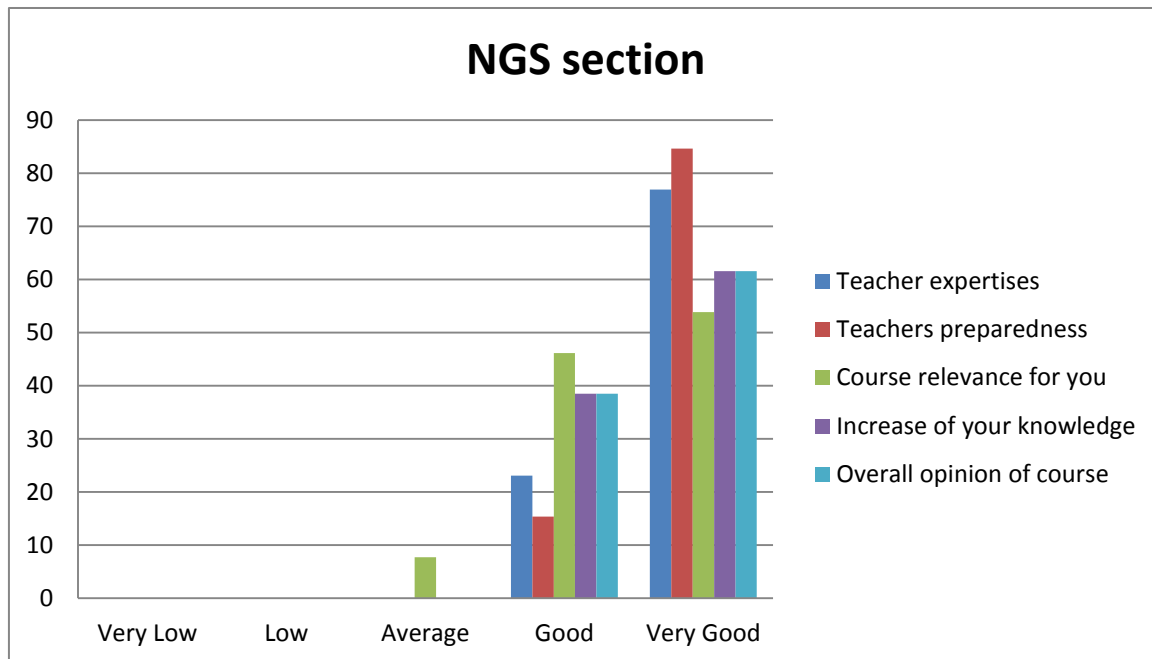
Graph 6

Graph 7

Graph 8

Closing remarks

The EURL training course 2013 was, based on the feedback from the participants, regarded as a success. The possibility to give financial support to participants made it possible to provide training to laboratories where the lack of funding usually makes it hard to find the resources to participate in such training courses. This way of funding the training courses therefore holds the possibility to increase the expertise in all laboratories within the EU. Unfortunately in 2013 the courses were not funded specifically and we therefore reduced the cost by withdrawing daily allowances, and by giving no reimbursement for hotels or flight tickets. We thereby managed to keep the cost within our budget for the EURL Fish Diseases. The consequences, however, were that only 1 week before the diagnostic course we received 10 cancellations after the course had been fully organised, demanding a lot of preparation for rather few participants. Only few cancellations were received for the course on Advanced bio-molecular techniques and bio-informatics.

Due to these financial issues we have decided that we in future will organise the annual training courses in autumn and thereby knowing in advance if the courses will be funded or not.

This year in the course on Sampling and diagnostic procedures for surveillance of listed fish diseases we decided to demonstrate the whole process from inspection and sampling fish at a fish farm to final reading and interpretation of results, giving a holistic view and large span of topics that according to the evaluation schemes were well received.

DTU-Vet is acknowledged for offering training course facilities for free.

Dr Henrik Korsholm, Veterinary and Food Administration, is deeply acknowledged for organizing the office and field visit and for teaching how to organize and implement surveillance and eradication programs and how to inspect and sample on fish farms.

Heinrich Wemming, Vingsted Dambrug is acknowledged for his hospitality and for providing all information and facilites needed during the farm visit.

Dr. Heike Schütze, FLI, Insel Riems, Germany, and Marc Engelsma, Central Veterinary Institute of Wageningen, UR Lelystad, The Netherlands, are deeply acknowledged for their very enthusiastic and excellent lectures, which demanded a lot of preparation and work.

Anna Schönherz, Aarhus University, Denmark, and Kim Madsen, M.Sc., Key Account Manager, CLC, are both acknowledged for their excellent presentations and contributions.

Finally all laboratory technicians and scientists in the fish diseases unit of DTU-VET are deeply acknowledged for delivering excellent teaching and training and help with practical issues.

Aarhus, Tuesday, 26 March 2013
Niels Jørgen Olesen, Niccoló Vendramin, Susie Sommer Mikkelsen
EURL Fish Diseases