AQUA EXCEL 2020

AQUAculture infrastructures for EXCELlence in European fish research towards 2020 — AQUAEXCEL2020

D4.5c Distance learning training course 3

INRA, AquaTT, WUR

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 652831. This publication reflects only the view of the author, and the European Commission cannot be held responsible for any use which may be made of the information contained therein

Executive Summary

Objectives
To educate a new generation of aquaculture researchers and industry stakeholders who focus on sustainable exploitation of their new knowledge, skills and tools to advance an innovative European aquaculture sector. The set-up of the training courses will centre on fostering a culture of cooperation between all parties involved.

Rationale:
To foster and build the human capital of the European aquaculture sector, several goals are set by the Strategic Research and Innovation Agenda of EATiP to which AQUAEXCEL[2020] will contribute. All AQUAEXCEL[2020] training courses are multi-partner collaborations bringing together unique knowledge, tools and skills to create innovative modules. The training courses are state-of-the-art, transferring new knowledge and insights originating from the research and services carried out and created by AQUAEXCEL[2020], and building upon outputs, tools and achievements from FP7-AQUAEXCEL. AQUAEXCEL[2020] has included Distance Learning (DL) training courses as a more flexible education alternative which fits working professionals better, is accessible to more people and does not require travel by participants. The DL courses make use of a blend of delivery technologies such as video conferencing and recordings, message board forums and e-mail; and include practical exercises (models).

Main Results:
The third AQUAEXCEL[2020] DL training course entitled “Training in the Use of the Fish and Chips Tool” is provided by INRA, Laboratory of Fish Physiology and Genomic, Campus de Beaulieu, France with support from Wageningen University (WU). Administrative and promotional support was provided by AquaTT. The course aims to help participants to improve analysis and functional interpretation of transcriptomic data using the Fish and Chips tool. This DL training course is available online on an ongoing basis from December 2019. The teachers can be approached by email in case of questions. The course will run until the end of the AQUAEXCEL[2020] project.

Authors/Teams involved: Jérôme Montfort (INRA), Patrick Prunet (INRA), Isabelle Leguen (INRA), Geertje Schlaman (WU), Esther Nijkamp (WU), Rebecca Doyle (AquaTT), Marieke Reuver (AquaTT), Peadar O’ Raifeartaigh (AquaTT), John Bostock (UoS).

Contents

Introduction

AQUAEXCEL[2020] aims to foster a culture of cooperation between European aquaculture Research Infrastructures (RIs), the associated research community, the aquaculture industry and other relevant stakeholders, which will help develop a more efficient and attractive European aquaculture Research Area leading to a sustainable and globally competitive European aquaculture sector. One of AQUAEXCEL[2020]'s specific aims is to provide state-of-the-art unique training courses to educate a new generation of aquaculture researchers and industry stakeholders who focus on sustainable exploitation of their new knowledge, skills and tools to advance an innovative European aquaculture sector. Work package 4 of AQUAEXCEL[2020] has a dedicated task focused on training a new generation of aquaculture researchers and industry stakeholders.

Nine technical training courses in total are organised by different AQUAEXCEL[2020] partners offered to people within and outside the partnership. The courses focus on different aspects of aquaculture experimentation to foster a culture of cooperation between all parties involved. These training sessions aim to transfer new knowledge and insights originating from the research and services carried out and created by AQUAEXCEL[2020].

The third DL training course, and final overall training course, focuses on "Training in the Use of the Fish and Chips Tool" and is provided by INRA LPGP (Fish Physiology and Genomics Institute) Campus de Beaulieu, France with support from Wageningen University (WU, The Netherlands), and with administrative and promotional support by AquaTT (Ireland). The course is designed for people who want to improve analysis and functional interpretation of their transcriptomic data obtained in fish. Target audience includes postgraduate students, doctoral and post-doctoral researchers and others with a basic knowledge on genomic and gene expression.

This course aims to help researchers to improve analysis and functional interpretation of transcriptomic data using the Fish and Chips tool. Fish and Chips is a database containing public transcriptomic data related to fish species in various physiological conditions. The bioinformatic tool can be used to extract genes which would have similar expression patterns and thus could be characteristic of fish biological responses. By comparing data obtained in the researcher's experiment with data sets of microarrays or RNAseq obtained in various fish species, a common transcriptional signature can be found. Information given by samples of each experiment with a common signature is a powerful way to explore functional roles associated with these signatures. This training course presents the Fish and Chips tool and explains how to carry out such meta-analysis and interpret your set of genomic data.

This DL training course is available online on an ongoing basis from December 2019. The tutors can be approached by email in case of questions. The course will run until the end of the AQUAEXCEL[2020] project.

1. Distance Learning course 3

1.1 Pre-course activities

INRA developed a four-module training course to teach participants to use the Fish and Chips tool, including a case study (see Section 1.2 Course Activities for more information). More than one year before the final release of this Distance Learning training course, the course organisers made a preliminary schedule regarding which topics should be included in the course. This schedule was discussed and a final plan for the course content was agreed. INRA then worked with WU to set this dedicated course up (including learning outcomes per module) on WU's Learning Management System (LMS) Blackboard to host the teaching material. The video lectures were too big to be hosted directly by the Blackboard site and so were uploaded to YouTube using the "private" option (meaning that the files are only accessible for people who were provided with the direct link to the files) to ensure it would work smoothly and practically.

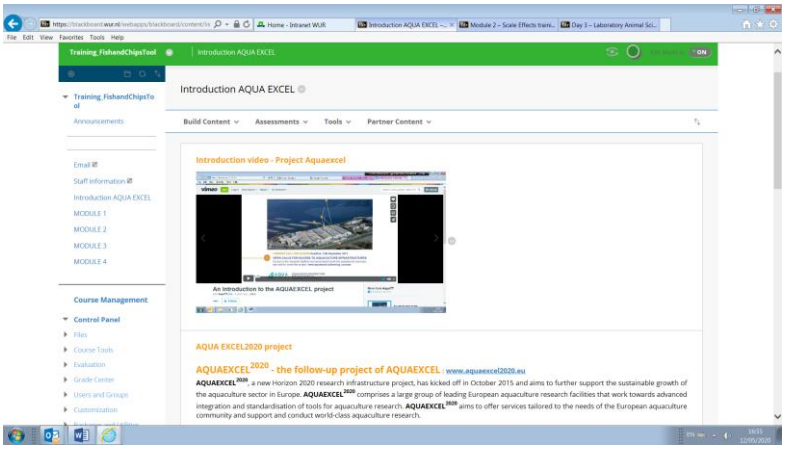


Fig 1: Image of Fish and Chip training course on BlackBoard Learning Management System.

AquaTT developed a promotional leaflet (Figure 2) to promote the Training Course "Training in the Use of the Fish and Chips Tool" and from the moment the course was available, the course announcement was widely distributed through several channels such as the AquaTT aquaculture mailing lists, the European Aquaculture Society (EAS) distribution channels, Federation of European Aquaculture Producers (FEAP) and European Aquaculture Technology and Innovation Platform (EATiP) distribution channels, EuroMarine (the European marine science network), the project website (Figure 3), the project Twitter account and the partners' channels. All Distance Learning courses are regularly promoted on the project Twitter account to keep stakeholders informed, and the website has an ongoing dedicated section with further information. Annex I shows the promotional leaflet.

Figure 2: Promotional leaflet for AQUAEXCEL2020 Training in the Use of the Fish and Chips Tool.

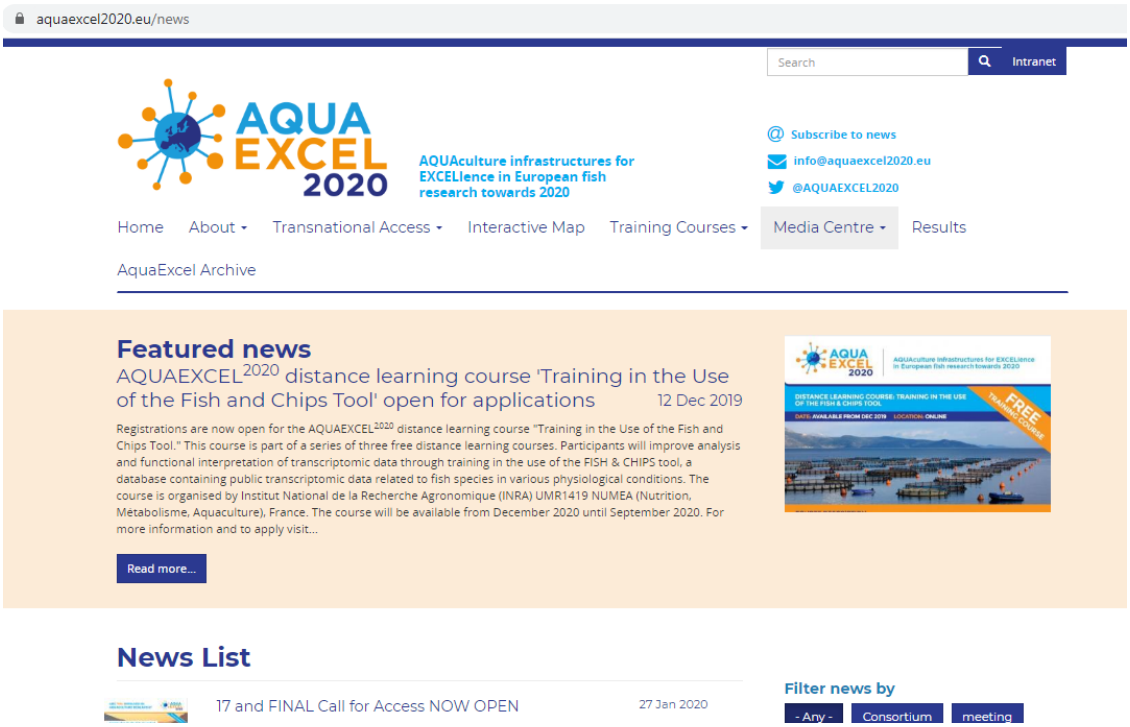


Figure 3: Screenshot of website promotion for Training in the Use of the Fish and Chip tool- https://www.aquaexcel2020.eu/index.php/news/aquaexcel2020-distance-learning-course-training-use-fish-and-chips-tool-open-applications

The application period of the course opened in December 2019 and applicants are required to complete a registration form (Annex 2) and a GDPR consent form and email both together with their CV to aquaexcel@aquatt.ie.

This course is designed for people who want to improve analysis and functional interpretation of their transcriptomic data obtained in fish. This includes postgraduate students, doctoral and post-doctoral researchers and others with a basic knowledge on genomic and gene expression.

Currently, (3 February 2020) 30 individuals have applied to participate in this training course.

1.2 Course activities

As with the other AQUAEXCEL2020 distance learning courses, a dedicated (web-based) Blackboard learning environment was created for this third distance learning course. Students and lecturers gain access to this online Blackboard system with individual logins provided by WU after registration by AquaTT. All of the course information is on Blackboard and is available on a continuous basis for the ongoing course. The Blackboard site provides a detailed overview of course activities. The Fish and Chips training course includes four modules (including one case study).

This course has a lecture structure with each module containing an explanatory video lecture. All lectures are presented by Dr. Patrick Prunet.

Module 1: What is metadata analysis?
This module is 5 slides long.
In this first section the main characteristics of metadata analysis are presented.

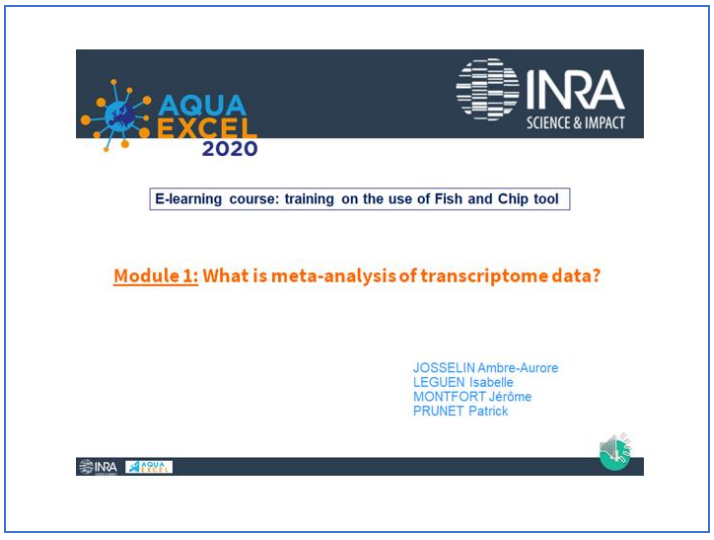


Figure 4: Screenshot of module 1 of Fish and Chip distance learning training course.

Module 2: Presentation of the Fish and Chip tool

This module is 40 slides long and explains how the Fish and Chip tool works and what type of information is provided by this tool.

Figure 5: Screenshot of module 2 of Fish and Chip distance learning training course.

Module 3: How to use Fish and Chip?

This module is 10 slides long. In this section, Dr. Prunet explains how to use the Fish and Chip tool on the web interface including how to enter your data, launch analyses and recover the results.

Figure 6: Screenshot of module 3 of Fish and Chips distance learning training course.

Module 4: A case study

This module is 10 slides long and contains a case study. This final section gives an example of transcriptomic metadata analysis using a real set of microarray data. Using this example, how to analyse these data with the Fish and Chip tool, how to extract new information from this set of data and what can be concluded after Fish and Chip analysis is presented.

Figure 7: Screenshot of module 4 of Fish and Chip distance learning training course.

1.3 Post-course activities

After completion of the course, participants were asked for feedback via an online survey (Figure 8), of which the results are given in Annex 5. These results will help the training course organisers to improve future AQUAEXCEL2020 training courses, and evaluate the need for future transcriptomic analysis courses. The results of this evaluation exercise were confidential and anonymous so participants could be honest in their comments. The survey was online and took about 5 minutes to complete.

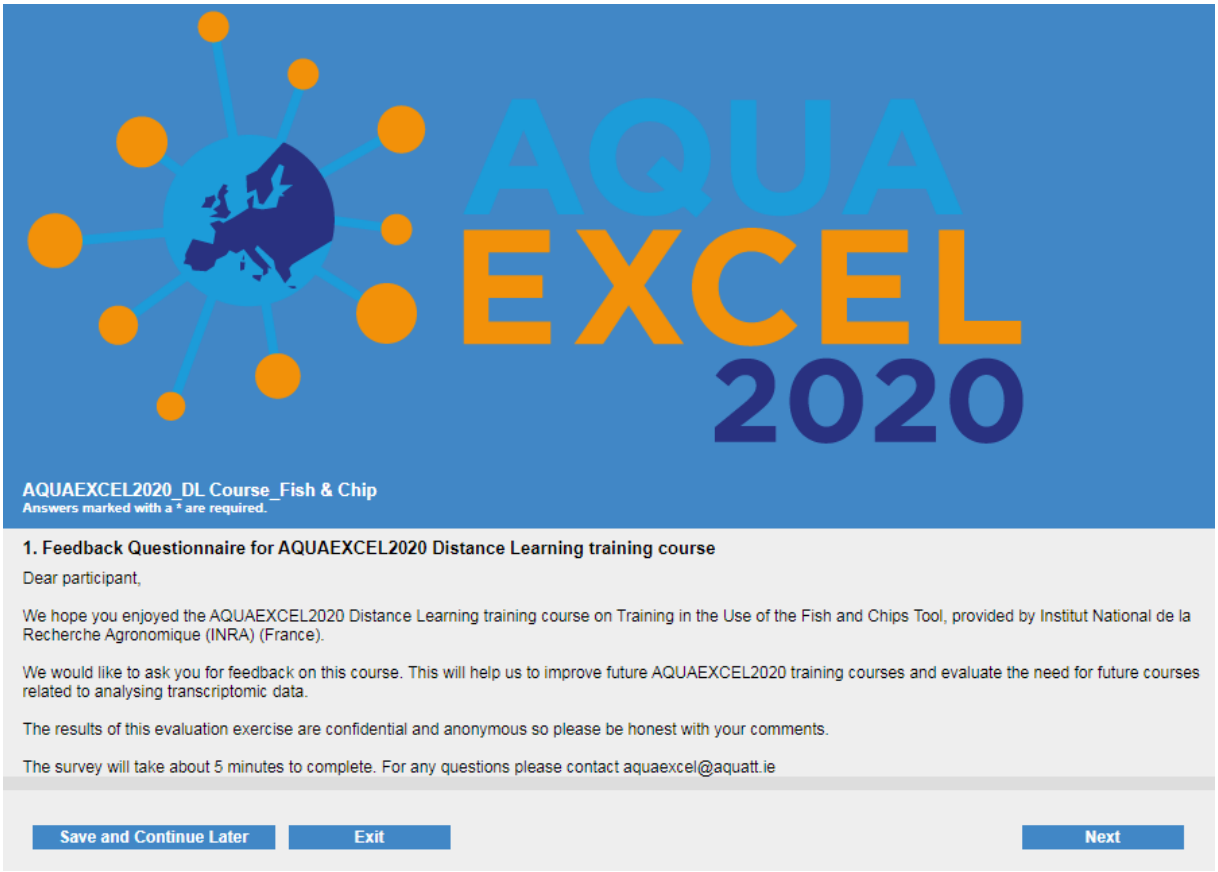


Figure 8: Print screen of welcome page of the online evaluation survey.

AquaTT organised pre- and post-course activities, such as finalising course design, developing promotional leaflets and practical information documents, assisting in the organisation, managing the registrations, publishing and promoting the training courses, as well as carrying out and analysing the evaluations. AquaTT also developed the deliverable report.

2. Conclusions

Most respondents heard about the course from colleagues (50%) and from the AQUAEXCEL2020 website (50%). The online feedback survey had 10 respondents at the time of writing, and all results are included in Annex 5.

The training course achieved the desired objectives of training participants in analysing and interpreting transcriptomic data. This is evident as the percentage of participants with strong knowledge increased from 10% before the course to 20% after the course. The number of respondents with some knowledge increased from 40% before the course to 70% after the course. Before the training course 40% of respondents had no knowledge of analysing and interpreting transcriptomic data. After the training course, no respondents selected the "no knowledge" option.

The respondents' feedback showed very positive results of the course. 90% agreed or strongly agreed that the procedure for registration was clear and simple and that the communication of the course (announcements, program, etc.) was good. 80% agreed or strongly agreed that the information leaflet about the course was informative and visually attractive and that the information before the start of the course was clear. 90% of respondents agreed or strongly agreed that they had no trouble getting access to the course material (i.e. logging in, etc.). Only 20% of respondents disagreed with the length of the training course. 80% of respondents said the course objectives were clear. 70% agreed that the digital setup of the course, on Blackboard, was clear and easy to use. This feedback shows that overall, the distance learning training course took the right approaches in design and promotion, but that there are some small improvements that could be made.

The training course achieved a very successful grade from the respondents, with 90% of participants awarding it a grade of either excellent or good. 60% of respondents said that the course material helped them to gain a better understanding of data management and 80% agreed the structure of the course was logical and easy to follow. 70% said that the structure of the lectures was clear. 70% of respondents said they would participate in a follow-up course in the future and 70% gave the course material a grade of excellent or good. 80% said they would recommend this training course to a fellow student or colleague. 80% also said that they or their institute would be interested in other transcriptomic data analysis and interpretation courses organised by INRA.

Glossary

AQUAEXCEL^{2020}: AQUAculture Infrastructures for EXCELlence in European Fish Research towards 2020

EAS: European Aquaculture Society

EATiP: European Aquaculture Technology and Innovation Platform

INRA: French National Institute for Agricultural Research

LPGP: Fish Physiology and Genomics Institute

LMS: Learning Management System

FEAP: Federation of European Aquaculture Producers

WUR: Wageningen University and Research

Document information

EU Project N°	652831	**Acronym**	AQUAEXCEL2020
Full Title	AQUAculture Infrastructures for EXCELlence in European Fish Research towards 2020		
Project website	www.aquaexcel2020.eu		

Deliverable	**N°**	D4.5c	**Title**	**Distance learning training course 3**
Work Package	**N°**	**4**	**Title**	**Integration, training, dissemination and cooperation**

Date of delivery	**Contractual**	M32	**Actual**	**M51**
Dissemination level	x	**PU Public, fully open, e.g. web**		
		CO Confidential, restricted under conditions set out in Model Grant Agreement		
		CI Classified, information as referred to in Commission Decision 2001/844/EC.		

Authors (Partner)	AquaTT, INRA, Wageningen UR			
Responsible Author	**Name**	Rebecca Doyle Marieke Reuver Patrick Prunet Geeretje Schlaman	**Email**	rebecca@aquatt.ie marieke@aquatt.ie patrick.prunet@inra.fr geertje.schlaman@wur.nl

Version log			
Issue Date	**Revision N°**	**Author**	**Change**

Annex 1: Promotional Leaflet

AQUA EXCEL 2020

AQUAculture Infrastructures for EXCELlence in European fish research towards 2020

DISTANCE LEARNING COURSE: TRAINING IN THE USE OF THE FISH & CHIPS TOOL

FREE TRAINING COURSE

DATE: AVAILABLE FROM DEC 2019 **LOCATION:** ONLINE

COURSE ORGANISER

INRA, Laboratory of Fish Physiology and Genomic, Campus de Beaulieu, France

COURSE TUTORS

Name: Jérôme Montfort
Position: Bioinformatic engineer, INRA LPGP, Rennes, France
Contact: Jerome.montfort@inra.fr

Name: Patrick Prunet
Position: Research director, Fish Endocrinologist, INRA LPGP, Rennes, France
Contact: Patrick.prunet@inra.fr

Name: Isabelle Leguen
Position: Research Scientist, Fish Physiologist, INRA LPGP, Rennes, France
Contact: Isabelle.leguen@inra.fr

PRACTICAL INFORMATION

Location:
Online Course. Full details on how to access will be provided after registration.

Format:
This training course will make use of a blend of delivery methodologies; the 4 modules will be visually and orally presented, guided through PowerPoint. The course includes a practical exercise in the form of a case study through which participants can practice their newly acquired knowledge of the FISH & CHIPS tool. Course tutors can be approached by email for any questions regarding the course or material and an online message board will give all participants the chance to interact and discuss FAQs.

Date & Time:
The course will be available online from December 2019 until September 2020.

Language of instruction & material:
English

Fees:
Course registration and attendance is free, thanks to European Commission Horizon 2020 funding. There are no further fees.

REGISTRATION

E-mail your registration request to **aquaexcel@aquatt.ie**, using the official registration form that can be downloaded from the **AQUAEXCEL2020** website: **aquaexcel2020.eu/training-courses/upcoming-training-courses-apply-now**

Please indicate the following in the subject: **AQUAEXCEL2020/DL_INRA_CHIP**. A separate GDPR Consent Form is also provided on the project website. The GDPR Consent Form must be completed by individuals applying for any **AQUAEXCEL2020** training course and should be attached to the training course registration.

@aquaexcel2020
www.aquaexcel2020.eu

Annex 2: Application form for training course

Registration Form for Distance Learning Training Courses

Title: Training in the use of the FISH and CHIP tool

Organiser(s): INRA, Laboratory of Fish Physiology and Genomic, Campus de Beaulieu, France

Format: This training course is composed of 65 slides, across 5 sections. It contains a case study where participants can practice their newly acquired knowledge of the FISH and CHIP tool.

Location: Online course. Full details on access will be provided after registration

Course attendance is free, thanks to European Commission H2020 funding.

To submit your registration request, please send the following to aquaexcel@aquatt.ie, with the following subject line: AQUAEXCEL2020 / DL_INRA_CHIP

- Completed Registration Form
- Completed and signed GDPR Consent From

Any questions about the course or application process should be sent to aquaexcel@aquatt.ie
We look forward to welcoming you to the course.

Contact details

Title:	
Surname:	
First Name(s):	
Email:	
Telephone:	
Date of Birth:	
Gender:	

Relevant information

Organisation Name:	
Organisation Type: • University • Research Institute • SME • Private Company • Other (please specify)	
Country:	
Your Position/Job Title:	

Highest Qualification: • PhD • DVM or equivalent • MSc or equivalent • BSc or equivalent • Other (please specify)	
Research Category: • Postgraduate • Postdoctoral • Expert • Technician • Other (please specify)	
Previous Relevant Experience:	
Additional Support:	

Please complete all sections of this form and email it to: aquaexcel@aquatt.ie, indicating in subject: AQUAEXCEL2020 / DL_INRA_CHIP

Annex 3: Course Tutors

Last name	First name	Email	Position	Affiliation
Montfort	Jérôme	Jerome.montfort@inra.fr	Bioinformatic engineer	INRA LPGP, Rennes, France
Prunet	Patrick	Patrick.prunet@inra.fr	Research director, Fish Endocrinologist	INRA LPGP, Rennes, France
Leguen	Isabelle	Isabelle.leguen@inra.fr	Research Scientist, Fish Physiologist	INRA LPGP, Rennes, France

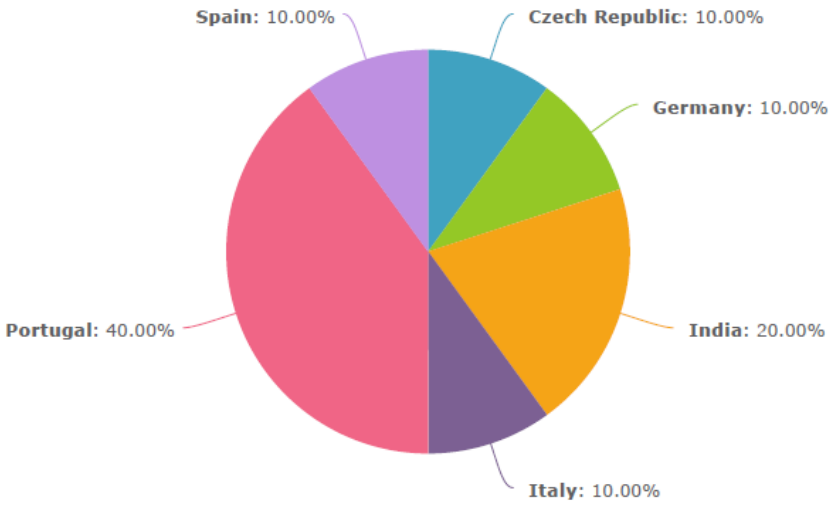
Annex 4: Participant List (status: February 2020)

Annex 5. Survey results

Summary Report

AQUAEXCEL2020_DL Course_Fish & Chip

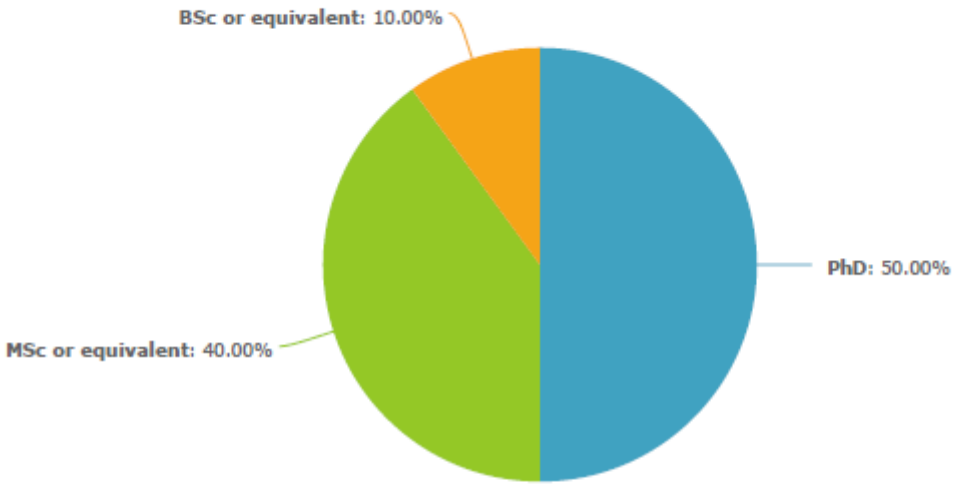
1. Your country of residence:



2. Your institution:

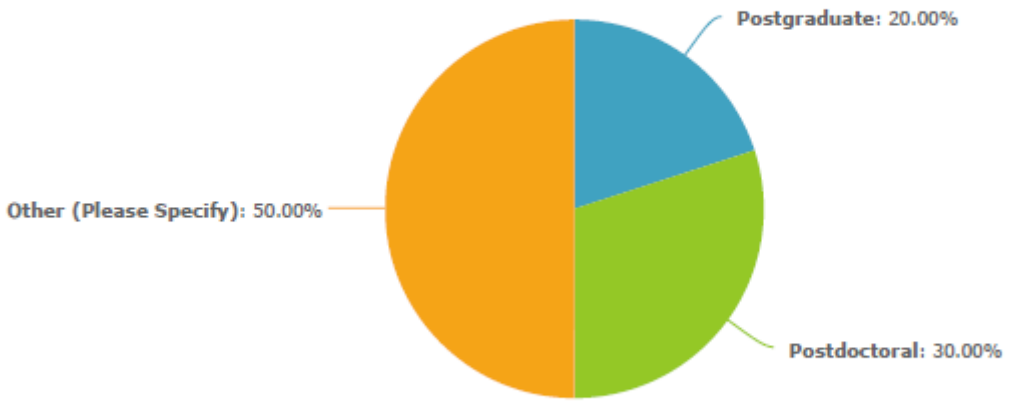
Count	Response

3. Your highest qualification:



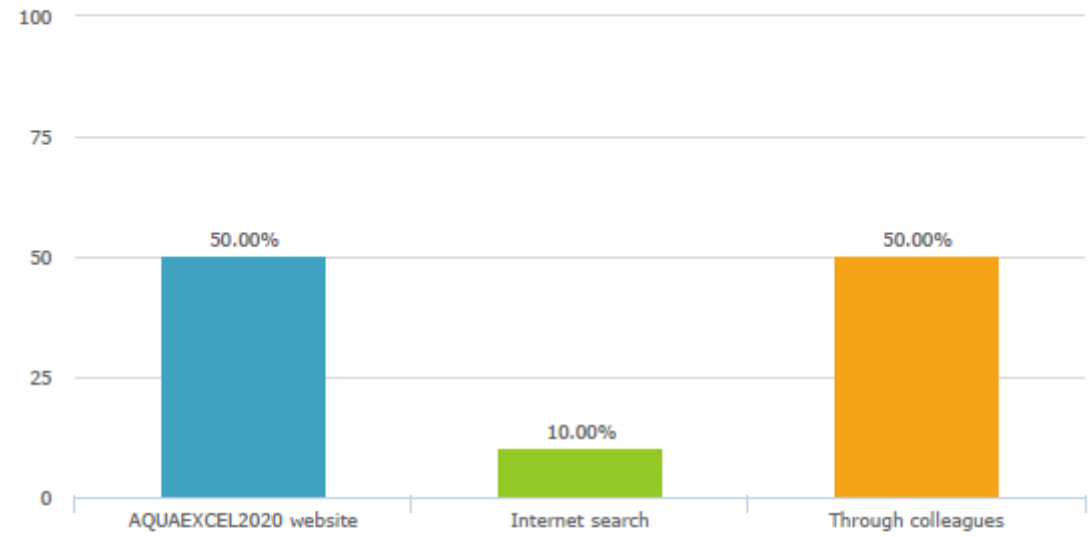
PhD	50.00%		5
MSc or equivalent	40.00%		4
BSc or equivalent	10.00%		1
		Total Responses	10
		Skipped	1

4. Your current research category:



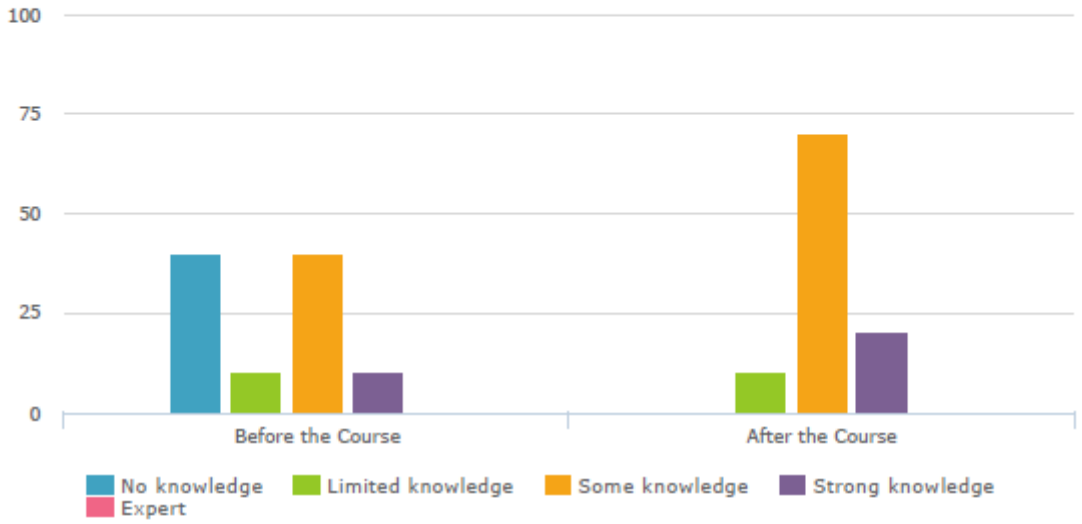
Postgraduate	20.00%		2
Postdoctoral	30.00%		3
Expert	0.00%		0
Technician	0.00%		0
Assistant Professor	10.00%		1
DOCTORAL	10.00%		1
PhD student	10.00%		1
PhD Student	10.00%		1
Researcher	10.00%		1
		Total Responses	10
		Skipped	1

5. How did you hear about this course?



AQUAEXCEL2020 website	50.00%		5
AQUAEXCEL2020 Twitter	0.00%		0
Internet search	10.00%		1
Through colleagues	50.00%		5
		Total Responses	10
		Skipped	1

6. How would you rate your knowledge of analysing and interpreting transcriptomic data?

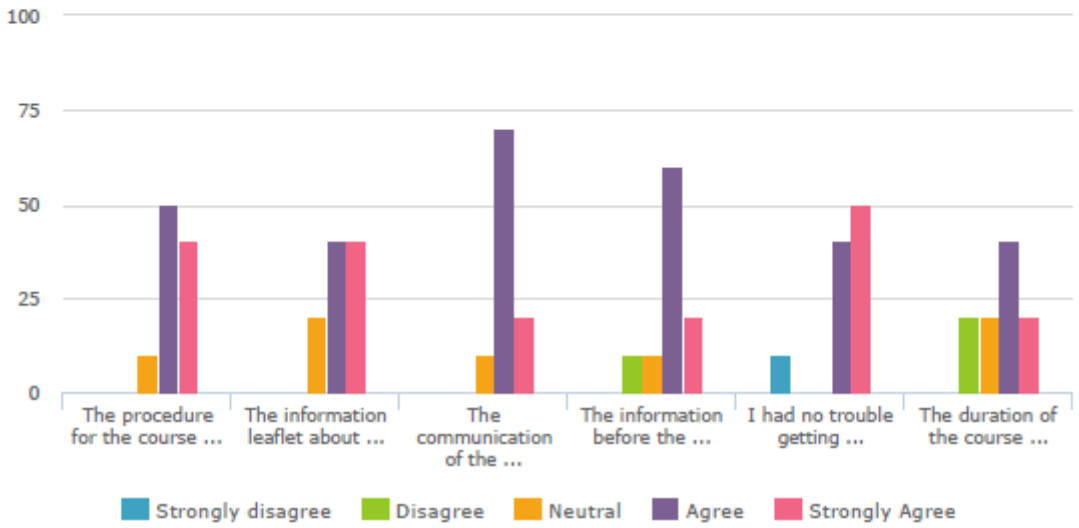


	No knowledge	Limited knowledge	Some knowledge	Strong knowledge	Expert	Responses
Before the Course	**4** 40.00%	**1** 10.00%	**4** 40.00%	**1** 10.00%	**0** 0.00%	10
After the Course	**0** 0.00%	**1** 10.00%	**7** 70.00%	**2** 20.00%	**0** 0.00%	10

Total Responses	10
Skipped	1

7. Please read the following statements and indicate how they correspond to your experience of the course organisation.

Page 14 / 2



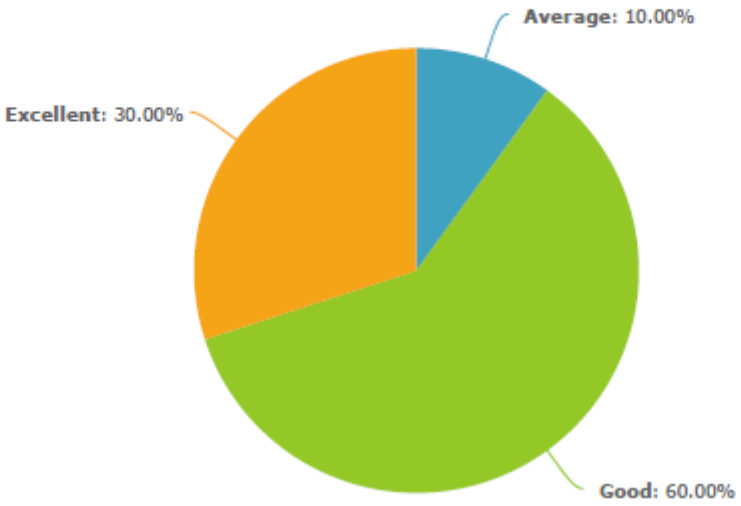
	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Responses
The procedure for the course registration was clear and simple.	**0** 0.00%	**0** 0.00%	**1** 10.00%	**5** 50.00%	**4** 40.00%	10
The information leaflet about the course was informative and visually attractive	**0** 0.00%	**0** 0.00%	**2** 20.00%	**4** 40.00%	**4** 40.00%	10
The communication of the course (announcements, program, etc.) was good.	**0** 0.00%	**0** 0.00%	**1** 10.00%	**7** 70.00%	**2** 20.00%	10

The information before the start of the course was clear.	**0** 0.00%	**1** 10.00%	**1** 10.00%	**6** 60.00%	**2** 20.00%	10
I had no trouble getting access to the course material (i.e. logging in, etc.)	**1** 10.00%	**0** 0.00%	**0** 0.00%	**4** 40.00%	**5** 50.00%	10
The duration of the course was good	**0** 0.00%	**2** 20.00%	**2** 20.00%	**4** 40.00%	**2** 20.00%	10

Page 15 / 25

Total Responses	10
Skipped	1

8. Which overall grade would you award the course organisation?

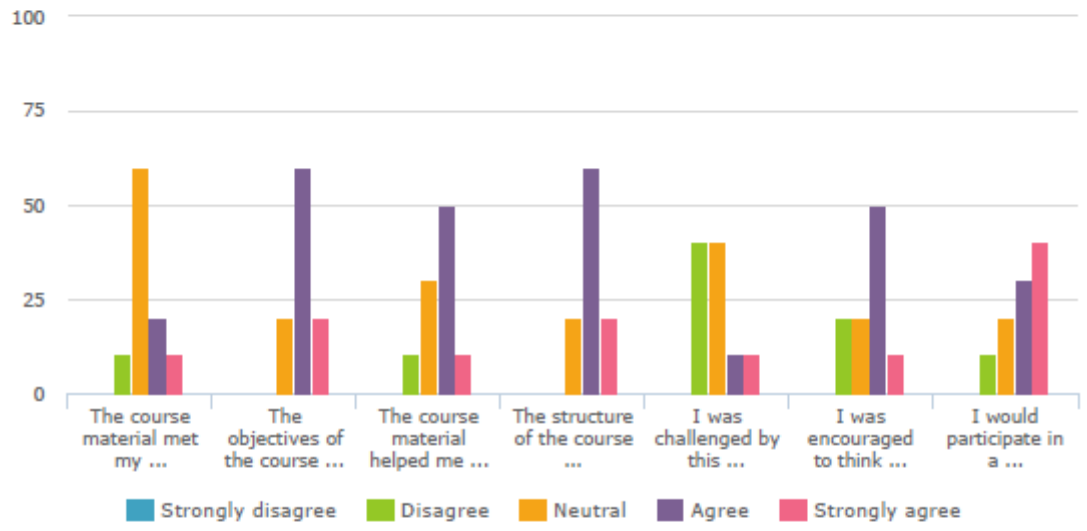


Poor	0.00%		0
Below Average	0.00%		0
Average	10.00%		1
Good	60.00%		6
Excellent	30.00%		3
		Total Responses	10
		Skipped	1

9. Please read the following statements and indicate how they correspond

Page 16 /

to your experience of the course:

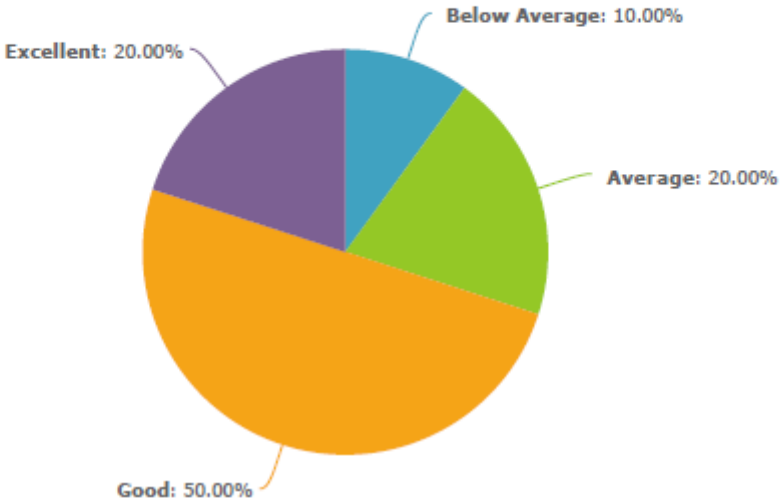


	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Responses
The course material met my expectations.	**0** 0.00%	**1** 10.00%	**6** 60.00%	**2** 20.00%	**1** 10.00%	10
The objectives of the course were clear.	**0** 0.00%	**0** 0.00%	**2** 20.00%	**6** 60.00%	**2** 20.00%	10
The course material helped me gain a better understanding of data management	**0** 0.00%	**1** 10.00%	**3** 30.00%	**5** 50.00%	**1** 10.00%	10

The structure of the course was logical and easy to follow.	**0** 0.00%	**0** 0.00%	**2** 20.00%	**6** 60.00%	**2** 20.00%	10
I was challenged by this course.	**0** 0.00%	**4** 40.00%	**4** 40.00%	**1** 10.00%	**1** 10.00%	10
I was encouraged to think about the subject matter.	**0** 0.00%	**2** 20.00%	**2** 20.00%	**5** 50.00%	**1** 10.00%	10
I would participate in a follow-up course in the future.	**0** 0.00%	**1** 10.00%	**2** 20.00%	**3** 30.00%	**4** 40.00%	10

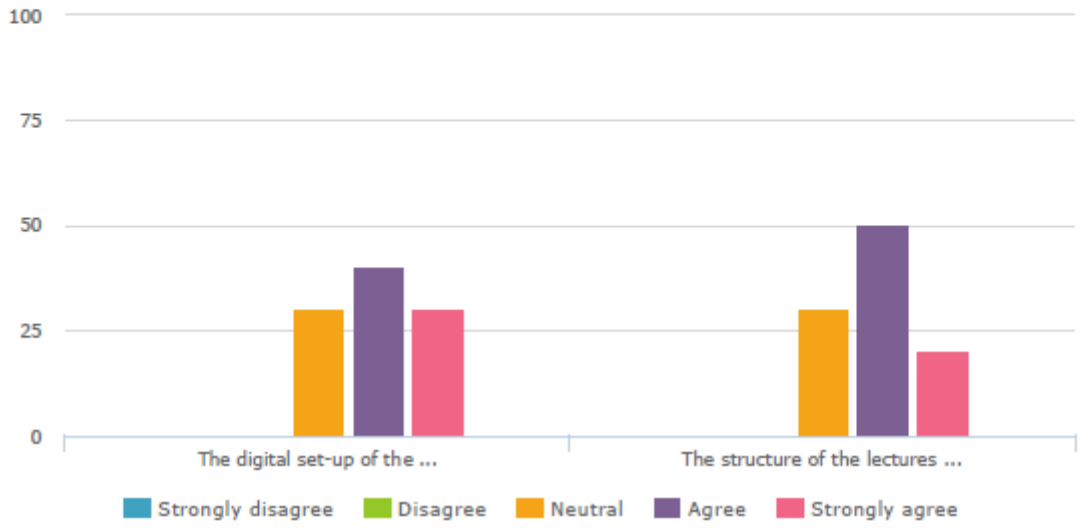
Total Responses	10
Skipped	1

10. Which overall grade would you award the course material?



Poor	0.00%		0
Below Average	10.00%		1
Average	20.00%		2
Good	50.00%		5
Excellent	20.00%		2
		Total Responses	10
		Skipped	1

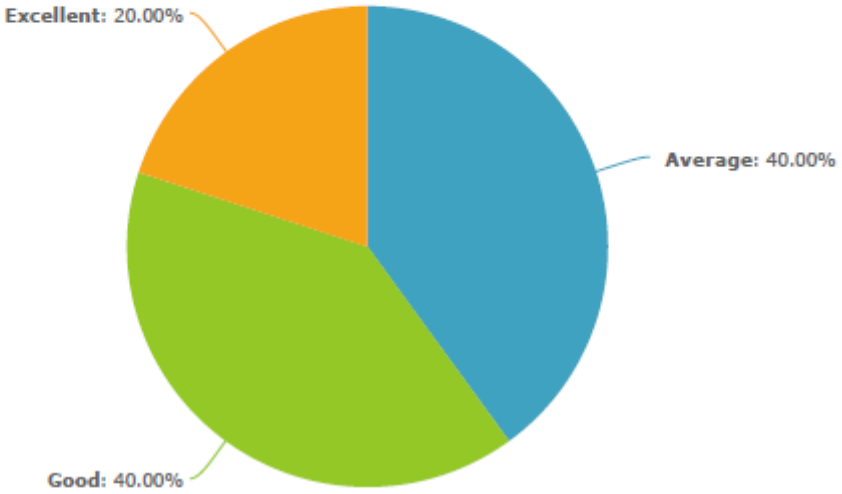
11. Please read the following statements and indicate how they correspond to your experience of the online course



	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Responses
The digital set-up of the course, on Blackboard, was clear and easy to use.	**0** 0.00%	**0** 0.00%	**3** 30.00%	**4** 40.00%	**3** 30.00%	10
The structure of the lectures was clear.	**0** 0.00%	**0** 0.00%	**3** 30.00%	**5** 50.00%	**2** 20.00%	10

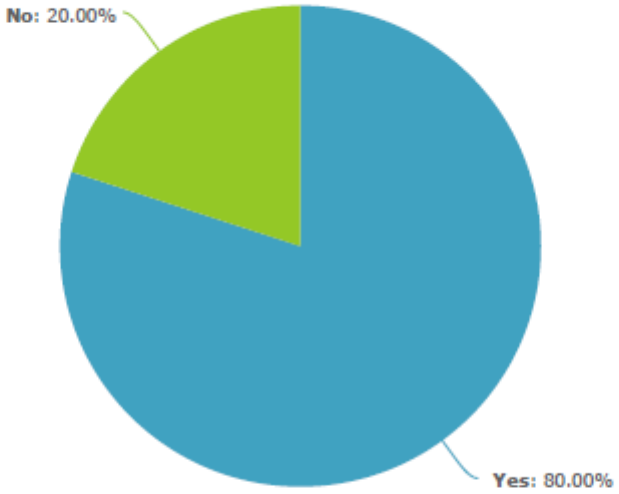
Total Responses	10
Skipped	1

12. Which overall grade would you give for your experience of the course being an online distance learning course



Poor	0.00%		0
Below Average	0.00%		0
Average	40.00%		4
Good	40.00%		4
Excellent	20.00%		2
		Total Responses	10
		Skipped	1

13. Would you recommend this course to a fellow student/colleague?



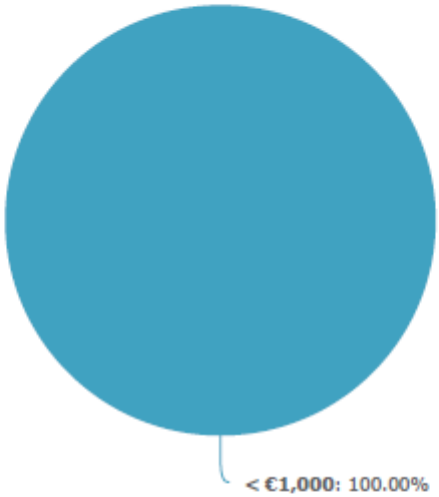
Yes	80.00%		8
No	20.00%		2
		Total Responses	10
		Skipped	1

14. Please describe your learning experience in "Twitter" style (280 characters or less):

Count	Response
1	Earlier I don;t have any knowledge about FISH & chIP tool. But now I have a good idea about this. Hopefully I will use this knowledge in designing of post-doctoral research project.
1	Not efficient.
1	Quick and easy course to get basic ideas on transcriptomic dataset analysis

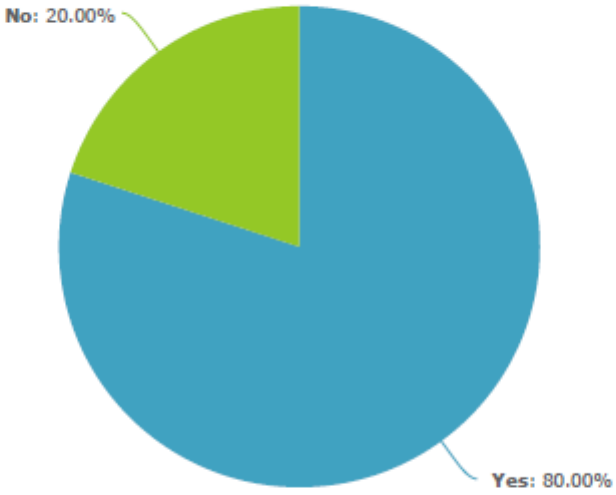
Total Responses	3
Skipped	8

15. This Training in the Use of the Fish and Chips Tool course was subsidised by the EC. What would be the maximum amount you/your company could afford to pay for a similar course?



< €1,000	100.00%		9
< €1,500	0.00%		0
< €2,000	0.00%		0
< €2,500	0.00%		0
< €3,000	0.00%		0
		Total Responses	9
		Skipped	2

16. Would you or your institute be interested in other transcriptomic data analysis and interpretation courses organised by INRA?



Yes	80.00%		8
No	20.00%		2
		Total Responses	10
		Skipped	1

17. Any other suggestions or feedback (Optional)

Count	Response
1	I was disappointed as there was no practical exercises or exame to be done. I found that the course was very basic and did not improve my knowledge in the area. The quality of the sound over the slides was poor.
1	I will request you for few more lectures.
1	Please if possible make video conferences for the classes with the registered persons.

Total Responses	3
Skipped	8

Annex 6: Check list

Deliverable Check list (to be checked by the "Deliverable leader")

	Check list		Comments
BEFORE	I have checked the due date and have planned completion in due time		*Please inform Management Team of any foreseen delays*
	The title corresponds to the title in the DOW		*If not please inform the Management Team with justification*
	The dissemination level corresponds to that indicated in the DOW		
	The contributors (authors) correspond to those indicated in the DOW		
	The Table of Contents has been validated with the Activity Leader		*Please validate the Table of Content with your Activity Leader before drafting the deliverable*
	I am using the AQUAEXCEL2020 deliverable template (title page, styles etc)		*Available in "Useful Documents" on the collaborative workspace*
The draft is ready			
AFTER	I have written a good summary at the beginning of the Deliverable		*A 1-2 pages maximum summary is mandatory (not formal but really informative on the content of the Deliverable)*
	The deliverable has been reviewed by all contributors (authors)		*Make sure all contributors have reviewed and approved the final version of the deliverable. You should leave sufficient time for this validation.*
	I have done a spell check and had the English verified		
	I have sent the final version to the WP Leader, to the 2nd Reviewer and to the Project coordinator (cc to the project manager) for approval		*Send the final draft to your WPLeader, the 2nd Reviewer and the coordinator with cc to the project manager on the 1st day of the due month and leave 2 weeks for feedback. Inform the reviewers of the changes (if any) you have made to address their comments. Once validated by the 2 reviewers and the coordinator, send the final version to the Project Manager who will then submit it to the EC.*