



AQUA EXCEL

project news

www.aquaexcel.eu

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AQUAEXCEL (Aquaculture Infrastructures for Excellence in European Fish Research) is an EU FP7 project that aims to integrate key aquaculture research infrastructures across Europe in order to promote their coordinated use and development. Through collaboration with 17 partners and 23 facilities, **AQUAEXCEL** offers access to top class research infrastructures for both basic and applied research, giving aquaculture research groups the opportunity to utilise **AQUAEXCEL**'s facilities.

In this issue of Project News: Interview with **AQUAEXCEL** coordinator Marc Vandeputte (p1-2) Three researchers describe their experiences using the **AQUAEXCEL** open call to access aquaculture infrastructures (p2-3) The **AQUAEXCEL-ATOL** Ontology is now available online (p4) **AQUAEXCEL** launches new online aquaculture information tool (p4)



Marc Vandeputte, from INRA (France), is the coordinator of the AQUAEXCEL project. Here, he discusses the project's purpose and outlines the key role it plays in supporting European aquaculture research.

1. Why is it important that European aquaculture has a project such as AQUAEXCEL?

AQUAEXCEL is important because it will provide essential benefits to improve aquaculture research in the EU. One of its unique selling points is that all types of EU aquaculture systems and species are part of **AQUAEXCEL**, and that this project, as an infrastructure project, has much more coordination in its objectives than classical research projects.

The idea is to bring together very different infrastructures and to develop common ways of thinking and of conducting research, thus leading to a decompartmentalisation of EU aquaculture research, which is usually rather species-centered. It is also expected that transnational access to

AQUAEXCEL's unique set of infrastructures will help emerging research teams produce good research on aquaculture target species, as well as develop and strengthen collaboration networks, thus benefiting EU aquaculture research beyond the **AQUAEXCEL** project.

Another benefit will be the development of new methods and tools for more cost-efficient and applicable research. In a nutshell, **AQUAEXCEL** is here to improve aquaculture research capacities in the EU.

2. European aquaculture is perceived as having stagnated in comparison to other markets. Is this accurate? How can AQUAEXCEL contribute to addressing this issue?

Yes, European aquaculture has stagnated over the last 10 years, but this is not a question of market. The EU is still one of the major seafood markets in the world. The problem is more a question of political will to develop production, but this has to be done to the high standards of the EU, especially in terms of acceptable environmental impact and of fish welfare.

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The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) under grant agreement no 262336. This publication reflects the views only of the author, and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Production efficiency (producing more with fewer inputs) also has to be increased for evident sustainability and competitiveness issues. It is clear that all this requires high-level science and technology inputs, such as those **AQUAEXCEL** is helping to build. But science cannot do everything, we also need help from the EU and our governments to ensure that seafood products entering the EU also meet these high standards – creating what is called the “level playing field”.

3. A project such as AQUAEXCEL is helping to develop remote access capabilities for researchers, i.e. it reduces the need for researchers to be continuously on site. Can you explain this in more detail?

Most cultured fish species have a rather long culture cycle (typically 12-30 months to produce a marketable fish). Then, most production-oriented research has to work on a time scale which is wide enough to obtain results that are meaningful to production. Typically, experiments will last several weeks, often several months. During all this time experimental conditions have to be controlled and monitored, fish have to be appropriately fed, but measurements and collection of fish samples are only done at specific times, often only two or three times during an experiment.

In many cases most of the experimental time is just normal fish care, where the expertise of a researcher is not necessary. Using appropriate distance monitoring and control,

the time of the researcher is then better used, while still allowing the researcher to control the essential parameters of the experimental setting. Another benefit of such systems is to perform multi-site experiments, which can be highly relevant to evaluate the applicability of a feeding strategy or fish genotype in different experimental scales and conditions.

4. AQUAEXCEL is a transnational access programme that could be of huge interest to industry. Can you describe how industry might benefit from engaging with AQUAEXCEL? What is the current level of interaction with industry? Should it be higher?

By participating in the **AQUAEXCEL** transnational access program, industry can benefit from the highest competences and the best experimental structures available and for a very minor cost, as all costs of accessing the infrastructure are covered by the EU. This should raise the level of interest among industry representatives, but it is true that currently industry has made limited use of this possibility.

Maybe one cause is the requirement under the project to publicise results, which is normal in publicly-funded research. Clearly, industry should probably not use **AQUAEXCEL**'s transnational access program for applied research (testing Product A against Product B with commercial, non-disclosed formulae) but rather to explore new, more risky directions, where the benefits of working with the best EU research teams will be maximal.

The AQUAEXCEL project is enabling researchers to access key aquaculture infrastructures throughout Europe. The third open call to access aquaculture research infrastructures has just closed. The first call received 16 applications, the second received 20 and the third received 25. Here, three researchers reveal how accessing the AQUAEXCEL open call has contributed to their own projects.



Dr Benjamín López Jimena
Servicios Centrales de Apoyo a la Investigación
Universidad de Málaga

Project: Mitigation of Pancreas Disease

Position: Post-doctoral Researcher

Aquaculture Infrastructure Accessed: Institute of Aquaculture, University of Stirling (UoS)

The **AQUAEXCEL** project ‘Mitigation of Pancreas Disease’ is very beneficial for me. It is a great opportunity for me to be able to work for three months with Dr Kim Thompson, Dr Tharangani Herath and Professor Sandra Adams from the Aquatic Vaccine Unit at the Institute of Aquaculture at Stirling University, where all research work and associated travel and subsistence are funded. Currently we are investigating the immune response of challenged and control rainbow trout fed with different types of diets. Furthermore, the viral load will be quantified in these conditions and several organs will be analysed from each fish.



Dr Simona Rimoldi
Department of Biotechnology and Molecular Sciences DBSM University of Insubria

Project: Nutrient Delivery

Position: Lead Researcher

Aquaculture Infrastructure Accessed: University of Las Palmas de Gran Canaria Feed Ingredients Testing Unit (ULPGC-FITU)

The **AQUAEXCEL** call was beneficial for my project because it permits me to have access to the FITU infrastructure where successful European projects have been conducted. The infrastructure was recently renewed, allowing complete automatization and control for research on juvenile nutrition. Moreover the infrastructure includes three wet labs with 170 tanks which permit the realisation of my study.



Dr Dalibor Štys
Alixander Pautsina
 Institute of Physical Biology
 University of South Bohemia
 in Ceske Budejovice

Project: 3D Monitoring of Fish Behaviour – 0016/02/08/23/A

Position: Lead researchers

Aquaculture Infrastructure Accessed: Nofima Centre for Recirculation in Aquaculture (NOFIMA NCRA)

The technology for a Microsoft Kinect-based tracker was successfully tested at aquarium scale in the summer of 2011. To use it at production scale needed testing on site. The NOFIMA recirculation unit seemed to be the best choice if one aims to have good proof of functionality in tanks of different scale. The AQUAEXCEL project enabled us to access the NOFIMA infrastructure (see images below).

We are testing the possibility to use the Microsoft Kinect game interface for control of fish behaviour. This control is crucial for the recirculation units primarily, since they are very vulnerable to infections, poisoning etc., which, in case of

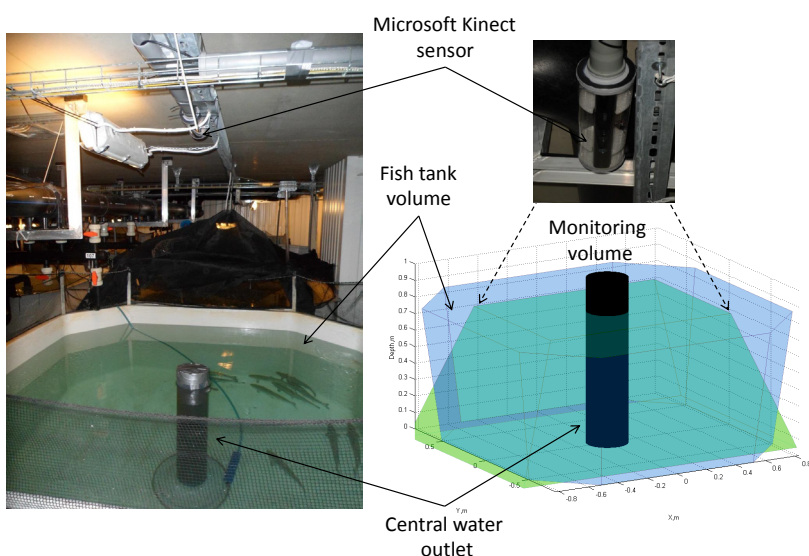
failures, quickly propagates throughout the whole system. Cultured fish itself is a perceptive sensor of water quality.

In aquarium conditions in freshwater it was possible to use Microsoft Kinect using the original software, just with recalibration of the depth image for the difference between refractivity index of air and water.

We have developed a watertight envelope for Microsoft Kinect and tested its performance in 1m broad tanks filled with salt water. Clearly, the Kinect camera was able to monitor most of the tank by the infrared sensor. We obtained interesting information about the night behaviour of the fish. The main drawback lies now in the performance of the camera, where the low-cost solution used in the game device had many interfering features.

The project is still ongoing and it is likely that at the end of it we shall have ready all the software tools needed for analysis of the image as well as of the fish behaviour. Also, all technical details of camera and computer setting will be known. As a next step it would be necessary to select a more appropriate infrared illumination source and different infrared-sensitive camera. The tool shall then be ready for standard use in fish culturing places.

3D Monitoring of Fish Behaviour



The fourth Call for Access will open on the 21st December with a deadline of the 15th March 2013.

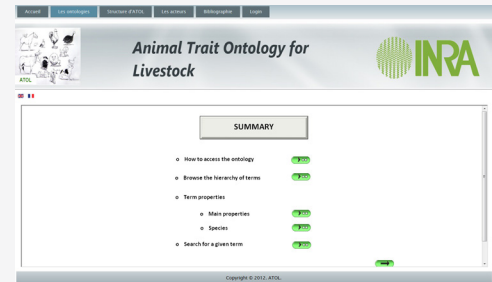
Applicants are advised to read the guidelines carefully and properly address all the questions on the application form. Detailed discussion with the manager of the host infrastructure and/or collaborating scientists whilst preparing the proposal is strongly recommended. The ethical implications of the work must also be considered thoroughly for any experiments involving animals (fish). It is not sufficient to report that the experimental work has been approved by one or both of the organisations involved. Applicants are also advised to allow at least three months between the deadline for applications and the planned start date for the project.

Further details and the application form can be found at http://www.aquaexcel.eu/call_for_access

The AQUAEXCEL-ATOL Ontology is now available online along with a supporting tutorial.

An ontology is a formal description of a domain's symbolic knowledge, constituted of concepts and relations. It hinges on the notion of genericity (phenotypic traits), as opposed to data specificity (phenotype). Annotating data stored in databases by ontologies make possible their automatic interpretation. The goal of the AQUAEXCEL-ATOL ontology is to define and organise livestock traits, with a focus on the main types of fish production (meat, feed and fertility) in accordance with societal priorities (animal welfare, product quality). This ontology will be a reference for semantic search tools in order to improve queries on

bibliographic resources about livestock animal phenotypes. Making homogeneous database annotation, it opens the possibility for meta-analysis and modelling.



To access the ontology, please visit

<http://www.atol-ontology.com/index.php/fr/les-ontologies-fr/visualisation-fr>

To access the tutorial for using the ontology, please visit

<http://www.atol-ontology.com/index.php/fr/les-ontologies-fr/tutorial-webprotege-fr>

Aquaexcel Launches New Online Aquaculture Information Tool

The AQUAEXCEL Aquaculture Research Infrastructure Map is now available online.

The AQUAEXCEL Aquaculture Research Infrastructure Map is an integrated online infobase listing all aquaculture research infrastructures in Europe and associated countries, including non-AQUAEXCEL partners. The infobase will grow to be a viable European aquaculture research infrastructure directory and a powerful tool to identify European facilities, genetic and human resources, and to promote mutual collaboration.

"This resource is an important output of the AQUAEXCEL project. It will make information about aquaculture research institutes available in a user-friendly, searchable way," explains Marc Vandeputte, AQUAEXCEL Coordinator. "I think the interface is well-designed and easy to use compared to other such directories. We hope to have feedback on this to continuously improve it, and I really believe it will be an efficient tool to identify and build new collaborations. One important point is that we invite any EU research infrastructure to register and give information to be visible with all others. I am very happy to see that several research infrastructures outside the AQUAEXCEL project have already registered. I am also convinced that this resource has to remain alive after the end of the project, and we will do our best to make it sustainable."

FOR MORE DETAILS ABOUT THE AQUAEXCEL PROJECT CONTACT:

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To add your Research Infrastructure to the AQUAEXCEL online infobase, go to:

<http://www.aquaexcel.eu/rimap> or go to www.aquaexcel.eu and select the interactive map from the menu (please note that the system is best viewed in Mozilla Firefox or Google Chrome)

1. Click on "Register to map"
2. Complete your details and submit
3. You will be sent a confirmation e-mail with your login details
4. Complete the fields
5. Send an e-mail to marieke@aquatt.ie who will check and publish the information

For more information please check out

www.aquaexcel.eu

