

# **Fish Immunology Workshop Wageningen University The Netherlands**

*Victoria Valdenegro*



AUSTRALIAN  
SEAFOOD  
COOPERATIVE  
RESEARCH CENTRE

## **Research Travel Grant 2011/705**

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ISBN: 978-1-925982-87-9

## **NON-TECHNICAL SUMMARY**

**PROJECT NO: RTG 2011/705 Fish Immunology Workshop, Wageningen University, The Netherlands**

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### **(PROJECT) OBJECTIVES OF RESEARCH TRAVEL GRANT**

Participate in Fish Immunology Workshop 2011 at Wageningen University, The Netherlands. April 17<sup>th</sup> – 21<sup>st</sup>, 2011.

### **NON TECHNICAL SUMMARY:**

This workshop has been organized annually for more than ten years. The program included presentations by world renowned experts in fish immunology such as Chris Secombes from the University of Aberdeen and Jan Rombout from the CBI, University of Wageningen, who has worked in fish immunology for several years particularly in topics including vaccination and mucosal immunity, including parasitic diseases. However, the most important opportunity this workshop offered were two sessions (afternoons) of hands-on practicals in humoral responses and assays in innate immunity, which provided advanced knowledge on the immune system of fish. As part of the workshop, participants were also encouraged to share their work as a poster and distribute a short abstract about their research.

### **OUTCOMES ACHIEVED TO DATE**

Attended the workshop, theoretical and practical sessions.

### **(PROJECT) OUTPUTS DEVELOPED AS RESULT OF TRAVEL GRANT**

Communicated my research achievements to the attendants of the workshop

I received training in specific and advanced immunological techniques which will be used in my PhD project.

I met with staff and students from different laboratories in Europe (Scottish Fish Immunology Research Centre, Aberdeen; National Veterinary Institute, Denmark; Cell biology and Immunology group, The Netherlands; Laboratory of Aquatic Pathobiology, Univ. of Copenhagen, Denmark; etc), talked about our research and possible future collaborations.

## **ABOUT THE PROJECT/ACTIVITY**

### **BACKGROUND AND NEED**

The main focus of my PhD project is to study the use of the mucosal immunoglobulin (Ig) response of Atlantic salmon as a mean to design an experimental vaccine against *Neoparamoeba perurans*, the causative agent of amoebic gill disease (AGD). AGD is the main disease affecting the salmon industry in Tasmania, and the development a vaccine against the pathogen is remains a very high priority for its control.

One of the general objectives of the workshop was to provide advanced theoretical and practical knowledge on the fish immune system. In particular, topics that were discussed include antibodies, innate immune receptors, the use of animals in experimental research, fish vaccination and adjuvants used in immunization. Additionally, practical sessions covered humoral response and innate immunity. All these concepts are closely related to the techniques which need to be implemented and conducted during my PhD project. Methods and theory learnt during the workshop significantly increased my knowledge about immune response and provided new tools to asses it.

### **RESULTS**

Increased knowledge of salmon immune response

Learned methods such as oxidative burst assay, nitric oxide, assay, phagocytosis assay, myeloperoxidase staining and the use of magnetic activated cell sorter, which provide new tools for my research.

## **INDUSTRY IMPACT**

### **PROJECT OUTCOMES (THAT INITIATED CHANGE IN INDUSTRY)**

Contact with professionals in the area, discussed my project with them, and received comments and feedback about the vaccine development.

### **SUMMARY OF CHANGE IN INDUSTRY**

*(What immediate changes might be expected for business/industry?)*

No immediate changes are expected for the industry, all the changes are likely to be in long term, hopefully as a result of my PhD project.

### **WHAT FUTURE AND ONGOING CHANGES ARE EXPECTED?**

*(What will be the impact?)*

The new skills learned at the workshop will be applied directly into my PhD project. The project in turn could potentially help develop a vaccine against AGD, which is the main disease affecting the Tasmanian salmonid industry. This could decrease considerably the production costs for the industry, by reducing the required fresh water treatments.

### **WHAT BARRIERS ARE THERE FOR CHANGES TO OCCUR?**

The only barrier at the moment is time, which is needed for my research. The project has certain milestones (experimental trials) that need to be achieved before the vaccine can be developed.

### **IF NOT ALREADY HAPPENING, WHEN WILL THE CHANGES OCCUR?**

*(e.g. 2 businesses will adopt project findings and two more are expected to adopt findings within 12 months)*

It is likely that the conclusion of the project will occur in 2 years. Results from vaccine trials should be available by then.

### **WHAT IS THE LIKELIHOOD THAT THESE CHANGES WILL OCCUR?**

*(e.g. 50% chance that four businesses will adopt project findings)?*

If the vaccine is developed, there is a high chance (>70 %) that the companies will start using it.

### **WHAT BARRIERS ARE THERE TO ADOPTION OF THESE CHANGES AND WHAT ACTION COULD BE TAKEN TO OVERCOME THESE?**

*(e.g. to adopt project findings will require group training/sharing equipment/invest additional capital etc.)*

The only obstacles to adoption of the use of the vaccine is the time needed for my research into its development. Probably later on, the costs of it will have to be investigated.

## **COMMUNICATION OF PROJECT/EXTENSION ACTIVITIES**

### **WHAT IS THE OUTPUT THAT NEEDS TO BE COMMUNICATED?**

The main output will be the implementation of laboratory techniques learnt during the workshop.

### **WHO IS/ARE THE TARGET AUDIENCE/S?**

Mainly these new techniques will be shared with fellow research students at the University of Tasmania. It may also be transmitted to undergraduate students as part of practical provided by the research group. Additionally, the techniques can be also shared with other

collaborators in Australia such as CSIRO, SARDI, University of Queensland and Queensland museum.

### **WHAT ARE THE KEY MESSAGES?**

That the techniques learned are available, relatively easy to perform and applicable to various species. They can be used by different students in our centre and in other research institutions linked to our centre.

### **WHAT IS THE CALL TO ACTION?**

*(What is it you want people to do once you communicate the key message to them –i.e. what change of behaviour or action do you want them to take?)*

Start using new immunological techniques.

### **COMMUNICATION CHANNELS**

*(How can these messages be communicated and by who?):*

<i>Channel</i>	<i>Who by</i>	<i>When</i>
<i>Direct work in the laboratory, with potential establishment of methods</i>	<i>Victoria Valdenegro</i>	<i>Second semester 2011</i>
<i>Provide notes from workshop to other researchers and students</i>	<i>Victoria Valdenegro</i>	<i>As needed, during second semester 2011.</i>
<i>Help other students with implementation of methods for their projects</i>	<i>Victoria Valdenegro</i>	<i>Second semester 2011</i>
<i>Presentations of subjects covered in the workshop the Aquatic animal Health group</i>	<i>Victoria Valdenegro</i>	<i>Monday 2<sup>nd</sup> May 2011</i>

### **LESSONS LEARNED AND RECOMMENDED IMPROVEMENTS**

#### **WHAT IS YOUR FEEDBACK?**

*(e.g. What difficulties were experienced in undertaking this research and how did this affect the project, what improvements and/or considerations can be recommended for future projects in this area and what barriers are there to undertaking further research in this area and how could these be overcome?)*

No difficulties were experienced during the extent of the trip. The travel grant allowed me to attend this great training opportunity and network with other people working in the field. As a

Seafood CRC student I believe this type of training opportunities represent great advantages for present and future postgraduate students.

## **FURTHER ACTION REQUIRED IN REGARDS TO COMMERCIALISATION?** (e.g. IP protection, licensing, sales, revenues etc)

Not Applicable

## **ACKNOWLEDGEMENTS**

I would like to thank the Seafood CRC for providing funding for this training opportunity.

## **APPENDIX (IF APPLICABLE)**

Some photos from the Workshop



