

Education and research collaboration with Vietnam

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University of Bergen - Vietnam

Department of Biological Sciences (BIO)

Education: Master and PhD students
Participation in courses - lectures

NORAD: Nha Trang University

NUFU: Regional Institute Aquaculture 3, Nha Trang (RIA3)

Long and lasting
Collaboration
between University of
Bergen and Vietnam

Many PhD and
masters have been
trained.
High positions in the
universities and the
authorities.



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Long tradition of collaboration

- Late 1970's **Research vessel "BIEN DONG"**



University of Bergen (UoB)

- **NORAD 1998 - 2008** Diploma/MPhil in Fisheries Biology and Management
 - 10 Master students
 - Research Institute of Marine Fisheries, **Haiphong**
 - Regional Institute of Aquaculture, **Nha Trang**
 - University of Fisheries, **Nha Trang**
- **NUFU 2003–2011 in marine disciplines**
 - UiB De. of Biology, NORWAY
 - UiB, Dep. of Geophysics, NORWAY
 - Institute of Oceanography, Nha Trang, VIETNAM
- **8 PhD and 16 Masters** (Modelling and Biodiversity)
- **NORAD 2003-2011 Improving training/research capacity**
 - UiB, Department of Biology
 - Nha Trang University (NTU)
- **2 PhD, 2 Masters Norway and 2 Masters Vietnam** in fish health and nutrition.
- **QUOTA program** (Norwegian Government) **2006 -**
 - 1 PhD and 1 Master student (Norway)

NOTE: PhD students at IMR and NIFES are/have all been UoB students



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Ongoing activities at BIO ending 2018/19 -

NORHEAD:

Coastal management in a Changing Climate.

- 4 professors at BIO involved:
 - 2 PhD students in Norway
 - 1 post doctor in Norway (in periods), 1 in Vietnam
 - 2 professors lecturing in courses in Nha Trang
 - Supervisors for master students at Nha Trang University



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Experiences

- Courses – after finishing local responsibility.
Challenges for teaching - ?
 - Supervision of PhD, UoB – **progress - delays !**
 - Masters abroad : **Very difficult**
 - Practical issues
 - Economical issues
 - Administrative routines – major problems
- Supervisor UoB: Scientific responsibility, but not control of economy**
➡ Challenges at many levels.

Lessons learned:

Concrete and realistic plans, realistic expectations of outcome and time needed.

Knowledge about administrative routines (materials, running costs)

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Aquaculture - Fish health

AGENDA

- Aquaculture Vietnam – Norway
- Impact of fish health
- Partners involved

Examples

- Scientific collaboration, universities, institutes and **companies**
- From science to product, private sector in collaboration with university and/or institute



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Fish Health – Fish Immunology ASIA -Vietnam

Fish and shrimp diseases

Preventive measures

- Vaccine development – immunology
- Bacteriophages



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Examples of successful programs Fish health and vaccine development

I Education and Research:

- University of Bergen (N)
- Research Institute for Aquaculture No3 (VN) (RIA3)
- Nha Trang University (VN)
- NTU Centre for Aquatic Animal Health and Breeding Studies (VN)

II Vaccine research, development and licensing

- PHARMAQ (N)
- Can Tho University (VN)
- Hong My Hatchery (VN)

III Bacteriophages (ONGOING), Innovation Norway

- ACD Pharma, (N)
- University of Bergen (N)
- RIA3 (VN)



PHARMAQ



ACDPHARMA
INNOVATIONS IN AQUACULTURE



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Academic co-operation between Vietnam and Norway

Fish Health

University of Bergen
 Research Institute for Aquaculture No3
 Nha Trang University
 Can Tho University

Tran Vi Hich , Quyen Vu Dang Ha, Dung Nguyen Huu and Heidrun Inger Wergeland, 2013.
 Experimental Streptococcus iniae infection in barramundi (*Lates calcarifer*) cultured in Vietnam.
 International Journal of Aquatic Science: 4, 3-1

Dr.THESIS by TRAN VI HICH: STUDY ON THE IMMUNE RESPONSE OF BARRAMUNDI (*Lates calcarifer* Bloch 1790) TO *Streptococcus inia*

Nguyen Thi Thanh Thuy , Dung Huu Nguyen and Heidrun I. Wergeland 2013
 Specific humoral immune response and protection against *Vibrio parahaemolyticus* in orange-spotted grouper *Epinephelus coioides*. International Journal of Aquatic Science: 4, 24-35

Dr. THESIS by Nguyen Thi Thanh Thuy: STUDY ON THE IMMUNE RESPONSE OF ORANGE -SPOTTED GROUPER *Epinephelus coioides* (Hamilton, 1822) CULTURED IN KHANH HOA PROVINCE TO THE BACTERIA *Vibrio parahaemolyticus*

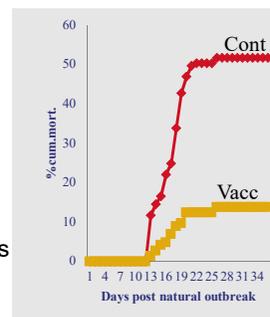
Nguyen Thi Thanh Thuy Director of Department of Aquaculture Biotechnology and Vaccination
Tran Vi Hich, Director Centre for Aquatic Animal Health and Breeding Studies



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Outcome: ALPHA JECT Panga 1 The first ever fish vaccine in Vietnam

- Reduce mortality caused by *E. ictaluri*
- Reduce antibiotics, resistance and residuals
- Improve food safety
- Improve environment
- Helps the farmers comply with international standards
- Can Tho University
- Vet Institute Ho Chi Minh City



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February – 2017 shrimp and fish farming, (Innovation Norway)



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At new places February 2017

A brave start →

Realize problems - We need to learn



Some are more experienced !



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Outcome of the projects

Transfer of knowledge Norway ↔ Vietnam

- Scientific training/education
- Scientific publications (national (10) and international (4) journals)
- **Technical skills, equipment and research methods**
 - Bacteriology, virology
 - Fish Immunology and fish vaccination
 - Database and project reports, new projects – competitive scientists
- RIA3 “Research group” and a **new laboratory in fish vaccination and biotechnology – a new pathogen challenge unit** built
- **Educated scientists – local knowledge/activities**
- Good references from researchers and farmers
- Good contact with authorities
- **ONGOING** supervise local **master** students in farmed aquatic animal health
- **NOW** – preparing and planning testing of new products for preventing diseases in farmed shrimp. **Much scientific work is done at RIA 3**
- **Outcome at RIA: Diagnostic tools**
 - New methods**
 - New preventive measures – product development to farmers**

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What is my outcome

- I have learned a lot: New species, pathogens, production and rearing systems.
- Other administrative routines, national regulations.

- **Different ways of using preventive disease measures**

What is possible to obtain – what can be done and how ?

REALISTIC and SIMPLE MEASURES

Generally

**Realistic and simple projects to start with –
Partner knowledge and trust – this take time
Ask - what do you/they need?**



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Education model

- Full time in Norway
 - Master: 2 years
 - PhD: 3 year
- **Many students are parents with small children at home!**
- **The education programs do not address this**
 - Travelling costs not available to go home at intervals
- **Sandwich models:**
 - Spend time at home - sampling etc.
 - Degree at home university if possible
 - At UoB : training, analyses.
- ➔ – Local knowledge, - already involved in local research
 - Increase chance for continuing within educated field



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This is us at UoB



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