CURRICULUM VITAE – Ottavia Benedicenti

1. Education and Training

Ph.D. Molecular Biology, University of Aberdeen, UK
October 2013 – November 2017

The topic of the PhD was related to 'Atlantic salmon immune response to *Paramoeba perurans* infestation (amoebic gill disease) and influence on host physiological status'. Throughout the PhD I worked proactively, successfully identifying and engaging with relevant colleagues to achieve objects, from the experimental design to the final analysis. Initiating collaborations with academic and industrial partners, flexibility, and the ability to deliver under pressure to tight deadlines and millstones are the key characteristics that I acquired during the PhD: I collaborated with four different laboratories in Aberdeen, one in Denmark, and a company in Texas, USA.

Statistical and Bioinformatics skills acquired:

- Advanced **R software** knowledge for statistical analysis and modelling for power analysis and graphics.
- **MiSeq analyses** of microbial community performing coding with Mothur.
- Advanced **bioinformatics skills for non-model organisms**: Competent integrating public databases such as NCBI, ENSEMBL, UniProt and Salmobase for searching different isoforms of the same gene; Software BioEdit and the Guidance2 server for multiple amino acid sequence alignment; MEGA v6 software to predict the best-fitting amino acid substitution model; Bayesian phylogenetic analysis with the software BEAST; software MatGAT to predict amino acid identity/ similarity between sequences; able to do genomic organisation and synteny analysis.

Strong laboratory skills acquired:

- *Gene expression analysis* [real time RT-PCRs (96 and 384 well plates), PCRs and nested PCRs], RNA extraction, cDNA synthesis, primer design, and assay optimisation.
- *Extraction of genomic DNA* from bacterial cells and *DGGE* for microbial community analysis.
- *Histology* for diagnostic purposes of gill diseases.
- *Cloning.*
- *Microscopy*.
- *Haematology* (white blood differential counts) of salmonids, with a strong expertise on fish blood cells and different staining methods.
- *Immunohistochemistry*, working both with both cryosections and paraffin-embedded sections.
- Measurements of stress related *hormone levels* in plasma (cortisol, glucose, and lactate).
- Maxwell advanced course to use UNIX platforms.
- Strong experience in working with fish: UK Home Office training and ethics, challenge experiments design and delivery (non-lethal blood sampling and perform i.p. injection for vaccination/ stimulation *in vivo*).

M.Sc. Biological Oceanography, GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel, Germany
October 2009 – November 2011
Level in national classification: **1.6**
Principal subjects/ occupational skills covered: Strong expertise in fish nutrition, Biogeochemistry, Fish ecology., **Modelling with MATLAB and R**.

B.Sc. Environmental Science – Management and Conservation of the Marine Environment, University of Genoa, Italy
December 2008
Level in national classification: **110/110**

2. Work experience

Dates:	***November, 2020 – to date***
Occupation or position held:	**Post-Doctoral Fellow**
Main activities and responsibilities:	The aim of the project is to better understand the role of the lungfish (*Protopterus spp.*) cocoon and its antimicrobial properties during the process of terrestrialization, together with the role of neutrophil extracellular traps (NETs) in lungfish skin.
Skills acquired:	Immunofluorescence, fluorescence *in situ* hybridization, LCM.
Name and address of the institute:	**University of New Mexico (USA),** under the supervision of Prof. Dr. Irene Salinas

Dates:	***December, 2017 – June, 2020***
Occupation or position held:	**Post-Doctoral Researcher**
Main activities and responsibilities:	The aim of the project was to establish the role of $IgD^{+}IgM^{-}$ B cells phenotypically and functionally characterization within the project: "Teleost mucosal B1-like lymphocytes at the crossroad of tolerance and immunity" in rainbow trout (*Oncorhynchus mykiss*).
Skills acquired:	Flow cytometry, antibody purification, western blot, leukocytes isolation, phagocytosis assay, proliferation assay, ELISA assay, ELISpot assay, apoptosis assay. **Affinity chromatography** using gravity columns and the ÄKTA start protein purification system (GE Healthcare Life Sciences).
Name and address of the institute:	**Animal Health Research Centre (CISA),** under the supervision of Prof. Dr. Carolina Tafalla

Dates:	***June, 2013 – September, 2013***
Occupation or position held:	**Student Researcher**
Main activities and responsibilities:	The aim of the project was to characterise the *Aeromonas salmonicida* Type III secretion system-effectors-mediated immune suppression in rainbow trout (*Oncorhynchus mykiss*).
Skills acquired:	Molecular biology (qRT-PCR), **cell culture**, immunology, and **microbiology** (bacterial culture and bacterial vaccine preparation).
Name and address of the institute:	**University of Berne (Switzerland),** under the supervision of Prof. Dr. Helmut Segner.

Dates:	***November, 2011 – September, 2013***
Occupation or position held:	**Student Researcher**
Main activities and responsibilities:	The aim of the project was the discovery of biomarkers for bacterial diseases in fish using zebrafish as a model.
Skills acquired:	Throughout the duration of the project I worked with **zebrafish** and **Atlantic salmon cell culture**. I developed strong experience working with **zebrafish embryos**, dechorionation, microinjections and exposure of embryos to different PAMPs (polyI:C, LPS), **zebrafish husbandry** and zebrafish breeding. I also gained an experience in maintaining different transgenic lines in zebrafish facilities.
Name and address of the employer:	**Fraunhofer Institute for Molecular Biology and Applied Ecology IME, Aachen (Germany)** under the supervision of Dr. Martina Fenske.

Dates:	***August, 2010 – September, 2010***
Occupation or position held:	**Internship as a part of the M.Sc.**
Main activities and responsibilities:	Internship in the aquaculture field.
Name and address of the University:	**Centre for Aquatic Biology and Aquaculture, University of California, Davis (USA),** under the supervision of Prof. Dr. Raul H. Piedrahita.

3. Personal skills and competences

- Demonstrating / teaching in different practical courses for undergraduate and postgraduate students.
- Participated in public engagement events for children in collaboration with the Aberdeen Science Centre.
- Member of the Health and Safety Committee of School of Biological Sciences as postgraduate student representative and I am able to write appropriate risk assessment for the laboratory work.
- Teaching of Bioinformatic course (Introduction to R and Microbial Community Analysis) as part of a cross-train between the New Mexico and Tanzanian STEM (Science, Technology, Engineering, Math) workforces to increase the participation and equality of women in STEM under a project proposal funded by the National Science Foundation (NSF), USA. A confirmation letter can be found at the following link: https://drive.google.com/file/d/1f11_fseAfHwGEYinrAK2XJ7RbGiAA5IY/view?usp=sharing
- Mentoring an undergraduate student at University of New Mexico.

Languages:

Italian (Native proficiency)
German (Professional working proficiency)
English (Professional working proficiency)
Spanish (Professional working proficiency)

4. Publications:

Benedicenti, O., Wang, T., Morel, E., Secombes, C.J., Soleto, I., Diaz-Rosales, P. & Tafalla, C. **2020**, "Type I Interferon Regulates the Survival and Functionality of B Cells in Rainbow Trout". *Frontiers in Immunology*, 11(1494). doi:10.3389/fimmu.2020.01494.

Benedicenti, O., Secombes, C. J., & Collins, C. **2019**, "Effects of temperature on *Paramoeba perurans* growth in culture and the associated microbial community", *Parasitology*, 146(4), 533-542. doi:10.1017/S0031182018001798.

Benedicenti, O., Collins, C., Wang, T., McCarthy, U. & Secombes, C.J. **2015**, "Which Th pathway is involved during late stage amoebic gill disease?", *Fish & Shellfish Immunology*, vol. 46, no. 2, pp. 417-425.

Benedicenti, O., Pottinger, T. G., Collins, C., & Secombes, C. J. **2019**, "Effects of temperature on amoebic gill disease development: Does it play a role?", *Journal of Fish Diseases*, 42(9), 1241-1258. doi:10.1111/jfd.13047

Benedicenti, O., Wang, T., Wangkahart, E., Milne, D.J., Holland, J.W., Collins, C. & Secombes, C.J. **2017**, "Characterisation of arginase paralogues in salmonids and their modulation by immune stimulation/ infection", *Fish & Shellfish Immunology*, vol. 61, pp. 138-151.

Bergh, P.V., Burr, S.E., **Benedicenti, O.**, von Siebenthal, B., Frey, J. & Wahli, T. **2013**, "Antigens of the type-three secretion system of *Aeromonas salmonicida* subsp. *salmonicida* prevent protective immunity in rainbow trout", *Vaccine*, vol. 31, no. 45, pp. 5256-5261.

Origgi, F.C., **Benedicenti, O.**, Segner, H., Sattler, U., Wahli, T. & Frey, J. **2017**, "*Aeromonas salmonicida* type III secretion system-effectors-mediated immune suppression in rainbow trout (*Oncorhynchus mykiss*)", *Fish & Shellfish Immunology*, vol. 60, pp. 334-345.

Perdiguero, P., Martín-Martín, A., **Benedicenti, O.**, Díaz-Rosales, P., Morel, E., Muñoz-Atienza, E., . . . Tafalla, C. **2019**, "Teleost IgD+IgM− B cells mount clonally expanded and mildly mutated intestinal IgD responses in the absence of lymphoid follicles", *Cell Reports*, 29(13), 4223-4235.e5. doi:https://doi.org/10.1016/j.celrep.2019.11.101

Wang, J., Wang, T., **Benedicenti, O.**, Collins, C., Wang, K., Secombes, C.J. & Zou, J. **2016**, "Characterisation of ZBTB46 and DC-SCRIPT/ZNF366 in rainbow trout, transcription factors potentially involved in dendritic cell maturation and activation in fish", *Developmental & Comparative Immunology*.

Heimroth, R.D., Casadei, E., **Benedicenti, O.,** Amemiya, C.T., Muñoz, P. & Salinas, I. **2021,** "The lungfish cocoon is a living tissue with antimicrobial functions", **submitted** in *Science Advances.*

International Conferences:

- **19th International Conference on Diseases of Fish and Shellfish** (Porto, Portugal, September 2019). Poster.
- **3rd International Conference of Fish and Shellfish Immunology** (Gran Canaria, Spain, 2019). Presentation.
- **18th International Conference on Diseases of Fish and Shellfish** (Belfast, UK, September 2017). Presentation.
- **2nd International Conference of Fish and Shellfish Immunology** (Portland, USA, June 2016). Presentation.
- **4nd Meeting of the 'International Gill Health Initiative'** (Stirling, UK, June 2016).
- **9th International Symposia on Fish Parasite** (ISFP, Valencia, Spain September 2015). Presentation.
- **13th International Society of Developmental and Comparative Immunology** (ISDCI, Murcia, Spain, July 2015). Presentation.
- **PharmaQademy** (Inverness, UK, September 2014). **Invited speaker**.
- **11th International Congress on the Biology of Fish** (Edinburgh, UK, August 2014). Poster.
- **2nd Meeting of the 'International Gill Health Initiative'** (Oslo, Norway, May 2014). Presentation.
- **AQUA 2012** (Prague, Czech Republic, September 2012). Presentation.
- **42nd European Marine Biology Symposium** (GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel, Germany. August 2007).

Awards providing money for research and travel:

- FSBI travel award (2015), £ 500
- BSI travel award (2015), £ 300
- ISDCI travel award (2015), £ 300
- MarCRF studentship for PhD (2013), £ 73,520