CFA2.2 Course Title: New trends in aquaculture research

Modality: Advance Training Course
Dates: April 23-30, 2019
Duration:
Lectures: 20h
Laboratory: 0h
Location:
- Univ. Vigo: DOMAR Videoconference room TORRE-CACTI Building
- Univ. Santiago: Aula de Videoconferencia del Instituto de Acuicultura

Academic coordinators:

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José Luis Soengas	Universidade de Vigo	jsoengas@uvigo.es
Carlos Pereira Dopazo	Universidade de Santiago	carlos.pereira@usc.es

Lecturers:

Name	Institution	e-mail
Luisa Valente	Universidade de Porto	lvalente@icbas.up.pt
Marcos A. López Patiño	Universidade de Vigo	mlopezpat@uvigo.es
Jesús Míguez	Universidade de Vigo	jmmiguez@uvigo.es
José Luis Soengas	Universidade de Vigo	jsoengas@uvigo.es
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Manuel L. Lemos	Instituto Acuicultura-Universidade de Santiago	manuel.lemos@usc.es

General description:
The course describe ongoing research lines in aquaculture to provide students a general view of the present research in this field

Contents:
10 different lectures (2h each) given by recognized experts in specific research fields within aquaculture

Lectures

1	Luisa Valente	Circular economy applied to aquaculture
2	Marcos López Patiño	Stress and welfare in fish aquaculture
3	Jesús Míguez	Environmental cycles and circadian influence in fish
4	José Luis Soengas	Regulation of food intake in fish
5	Beatriz Novoa	Genomics applied to the immune response of marine organisms
6	Isabel Bandín Matos	Virulence mechanisms in fish viruses
7	Jesús Lamas Fernandez	Evaluation of the immune response in fish. What is relevant?
8	Jesús López Romalde	Emerging human enteric viruses. Studies in clinical and environmental samples
9	Antonio Pazos Castelos	Transcriptional response to biotoxins and resistance to xenobiotics in bivalve molluscs
10	Manuel L. Lemos	Bacterial virulence factors: application to the control of infectious diseases in aquaculture

Dates

	April 23	April 24	April 25	April 26	April 29	April 30
10:00-11:50	Luisa Valente	Jesús Míguez	Beatriz Novoa		Jesús Romalde	Antonio Pazos
12:10-14:00	Marcos A. López-Patiño	José Luis Soengas	Isabel Bandín	Manuel Lemos		Jesús Lamas

	Lecture from UVigo
	Lecture from USC

Teaching methodologies:
Lectures

Evaluation system:
Test exam

Briev CV of the lecturers:

Luisa Valente
Luísa Maria Pinheiro Valente holds a degree in Biology from the University of Porto since 1990, and a PhD in Biological Sciences from the Universidade de Trás-os-Montes e Alto Douro since 1999. She is Associated professor in ICBAS – University of Porto since 2003. Is member of the Directive Board of CIIMAR since 2016 where she leads the Biology, Aquaculture and Seafood Quality Research line (http://lanuce.ciimar.up.pt/). LV is also the director of the Animal Science Doctoral programme and the scientific coordinator of this programme in an Industrial setting (SANFEED - Sustainable Animal Nutrition and Feeding). Member of the boards of the European Aquaculture Society (EAS) and the

scientific committee for the International Symposium on Fish Nutrition and Feeding (ISFNF) since 2018. She participated in several research projects both national and international, including Co-operative projects with industrial partners. Supervision of many students including 10 concluded PhD thesis. Has over 100 publications in international journals. Close collaboration with industrial partners. Main research fields: Fish Nutrition; Sustainable Aquaculture; Environmental impact; Muscle growth regulation and flesh quality; Sensorial analysis and omega-3 levels for human consumption; Circular economy. http://orcid.org/0000-0002-2496-4854

Marcos López-Patiño

Associated professor of Physiology at the University of Vigo. Bachelor of Biological Sciences (Univ. Complutense de Madrid, UCM, 1997). He joined the Department of Animal Physiology, Faculty of Biology (UCM) to perform his Bachelor Thesis (1998) and doctorate (2004). In 2005 he joined the Department of Morphological Sciences of the Univ. Europea de Madrid (UEM), where he did mainly teaching work. Subsequently, he held a postdoctoral stay at the Boston University School of Medicine (Boston, MA, USA), where he remained from 2006 to 2008 supervised by Dr. I.V. Zhdanova. Dr. López Patiño returned to this same center later to make two new short stays (6 months in total). In June 2008, Dr. López Patiño joined the Fish Physiology research group of the University of Vigo headed by José Luis Soengas as a postdoctoral researcher (Program Isidro Parga Pondal of the Xunta de Galicia, 2008-2012) performing teaching and Research duties. Since 2014 he has been a professor at the University of Vigo. Since joining the Fish Physiology research group of the University of Vigo in 2008, his research has focused on the knowledge of regulatory mechanisms of fish intake, its interaction with the circadian system and the effect of stress on both. His teaching has been continuous since joining Univ. Vigo, at both undergraduate and postgraduate levels. He has supervised two Doctoral Thesis, four Bachelor Thesis (TFG), and five Master's Thesis (TFM). He has been a researcher in 12 projects obtained in competitive calls and principal investigator in one of them. He is co-author of 58 articles in scientific journals. His papers have received a total of 1200 citations. The h Index is 18. He is also co-author of two book chapters and scientific reviewer in different journals.

Jesús Míguez

Professor of Physiology at the Faculty of Biology, University of Vigo. Bachelor in Biology in 1987 at the University of Santiago de Compostela and PhD in 1993 at the same University. I carried out post-doctoral stays at the University of Strasbourg (France), in the unit associated with the CNRS-URA 1332 Neurobiologie des fonctions rythmiques et saisonnieres, under the direction of Dr. Paul Pevet, under a researcher contract in the Training and Mobility program of Researchers of the EU, for 24 months. He returned to the University of Santiago de Compostela in 1996 with a 12-month fellowship from the same EU program. In 1998 he joined the University of Vigo. My research since then has focused on the physiology of teleost fishes and their interest in aquaculture, developing the following lines: Rhythmic regulation of pineal and gastrointestinal melatonin synthesis in fish, Regulation of intermediary metabolism during osmotic adaptation and effects of Related hormones, Neuroendocrine and metabolic effects of environmental contaminants in fish, Mechanisms of the circadian system in teleost fish, Effects of nervous, endocrine and metabolic stress in teleost fishes and Neuroendocrine, metabolic and environmental regulation of fish food intake and interaction with stress. This line is the predominant one at present. He has participated in 8 national projects

(IP in 4), 10 regional projects and 2 from other organizations. This dedication to research has allowed him to publish 136 articles in SCI journals. His index h is 30 and has been cited 2800 times. It maintains habitual collaborations with national and international groups. He is a project evaluator in national agencies and a regular reviewer of SCI scientific journals in the field of aquatic toxicology and comparative endocrinology. Finally, he holds the position of Dean of the Faculty of Biology since September 2011.

José Luis Soengas

Professor of Physiology in the Department of Functional Biology and Health Sciences of the Faculty of Biology of the University of Vigo where I teach courses to undergraduate (Biology, Marine Sciences), Master (Aquaculture, Marine Biology) and PhD (Marine Science and Technology) students and coordinate the master program in Aquaculture. Bachelor of Biological Sciences in 1989 at the University of Santiago de Compostela and PhD (extraordinary prize) in Biological Sciences in 1994 at the same university. I have carried out pre- and post-doctoral stays at the University of Ottawa in Canada. In 1995 he joined the University of Vigo as a professor, where in 1998 formed the research group on fish physiology and its application in aquaculture (http://fisioloxiapeixes.webs.uvigo.es/) that has produced about 150 articles in JCR Science Edition journals (http://fisioloxiapeixes.webs.uvigo.es/en/publicaciones.html). Within the research lines of the group he has participated and supervised studies in different aspects related to feeding, energy metabolism, nutrition, osmoregulation, neuroendocrinology and stress response in fish. In the last 15 years his research focused mainly on the characterization in fish of nutrient sensor systems and their role in the control of food intake, as well as their interaction with the stress response. In this field he is a pioneer, and his research has wide repercussion. He has participated in 36 research projects: 2 European, 8 of the National R&D Plan (principal investigator in 5), 15 autonomic (principal investigator in 10) and 11 of other organisms (principal investigator in 9). The results of his research activity are reflected in: 1) 10 supervised doctoral theses (3 more under supervision), 5 of them awarded with international mention and 5 of them awarded with extraordinary prize, 2) Supervision of 4 postdoctoral researchers, 3) 162 peer-reviewed papers published (first or last author in 104) in SCI journals, of which 93 are Q1 in their respective SCI categories, 4) 3500-5000 citations, 5) h index = 35, 6) 1 book published, 4 book chapters and 170 communications to national and international conferences, 7)Collaborations with national and international research groups, 8) Evaluator of research projects for national and international agencies, 9) Academic Editor of 4 Q1 journals (American Journal of Physiology-Reg. Int. Comp. Physiol, PloS One, British Journal of Nutrition, and Frontiers in Physiology), 10) Regular reviewer of 62 different SCI scientific journals.

Beatriz Novoa

Professor of Research at the Marine Research Institute CSIC and head of the "Immunology and Genomics" group. Graduated in Biology in 1989 and PhD in Biology from the University of Santiago de Compostela in 1993. She has been a postdoctoral researcher at the University of Aberdeen (United Kingdom) and has completed her training as a researcher at the University of Maryland, University of Maine, University of Harvard and University of Pennsylvania (United States). She has published more than 190 scientific articles published in SCI journals, of which more than 80% correspond to journals included in the first quartile of its category, and 24 chapters of books / books. She has an H index of 43 (WoS). She has been Principal Investigator of national research projects

(National Plan, IP and coordinator of a Consolider project) and European projects. She has several research awards among which the Galician Academy of Sciences prize (1993) and the VI Jacumar Aquaculture Research Award (2006) stand out. She has been supervisor/co-supervisor of 16 Doctoral Theses and has also directed master's thesis. She also participates in PhD and Master's programs in collaboration with different Universities. She has organized international congresses and seminars and has participated in several scientific committees of international congresses. She is the author of lectures at numerous national and international conferences. She has been Deputy Coordinator of ANEP Livestock and Aquaculture Area of Spanish Ministry of Economy and Competitiveness (2012-2018). She is editor of the journal Fish and Shellfish Immunology and in 2016 she was named President of the International Society of Immunology of fish and molluscs. Her lines of research are focused on the study of the molecular basis of the immune response of fish and molluscs through gene expression analysis. She also studies inflammatory processes associated with human diseases using the zebrafish (*Danio rerio*) as a model

Isabel Bandín

Graduated in Biology from the University of Santiago in 1987. She obtained doctorate from the same university in 1992. Postdoctoral stay at the agricultural university of Wageningen (The Netherlands). At present associated professor of the University of Santiago de Compostela and co-director of the fish virology group of the Institute of Aquaculture together with Dr. Carlos P. Dopazo. The group is involved in thedevelopment and validation of new diagnostic methods, studies of molecular epidemiology, and study of virulence mechanisms of different viruses. She has been part of the research team of 14 projects and the leader of 5 projects and authored or co-authored more than 70 articles, mainly on fish virology. In addition, over the past 6 years she has been the Coordinator of the Interuniversity Master of Aquaculture of the 3 Galician universities at Santiago University.

Manuel Lemos

Professor of microbiology at the University of Santiago de Compostela. He is a graduate (1982) and PhD (1989) in biological sciences from the University of Santiago de Compostela. He held predoctoral and postdoctoral stays in the United States (Oregon Health & Science University) and England (National Collection of Type Cultures, London). He is part of the group of pathology in aquaculture of the USC, a competitive reference group recognized by the Xunta de Galicia, in which he directs a research group dedicated to the characterization of virulence factors in bacterial pathogens of fish. He has addressed the detailed analysis of iron transport mechanisms, especially in the fish pathogens Vibrio anguillarum, Photobacterium damselae and Aeromonas salmonicida, identifying several new siderophores (Vancrobactin, Piscibactin, Acinetobactin, Amonabactin) in the pathogens mentioned, as well as the outer membrane proteins that act as receptors. It has also deepened in other mechanisms of virulence, especially in those encoded by mobile genetic elements, with genomic and proteomic approximations. Currently the group that manages is trying to use all this knowledge for the development of new vaccines and treatments against bacterial infections in aquaculture. He is the author of a hundred publications in journals indexed in the SCI and several book chapters. It has an h index of 28 and has received more than 2,500 citations. He has participated in 17 research projects as Principal investigator and in 13 others as a researcher. On the other hand, he is usually required as a project evaluator of the national Plan by the State research agency in the area of livestock and aquaculture. In addition, he participates regularly as

referee in many international journals, both in microbiology and fish pathology fields. He has recognized 5 Six-year periods of research, as well as 6 five-year periods of teaching and he has supervised 10 doctoral theses, as well as 10 undergraduate theses, and several end of Master and Grade works.

Jesús L. Romalde

Professor of Microbiology in the Department of Microbiology and Parasitology of the University of Santiago de Compostela. Bachelor (1987) and PhD (1992) in Biological Sciences at the University of Santiago de Compostela, he has performed research stays at the Institute Pasteur (Paris, France), University of Guelph (Canada) and the Baylor College of Medicine (Houston, TX, USA). Prof. Romalde has been involved in research in microbiology of aquatic organisms for more than 25 years, including different aspects of bacterial and viral pathogens. He has published more than 200 articles in JCR Science Edition journals, participated in 38 R&D projects financed by public calls (national and European) and presented lectures at international meetings. He has directed 16 Ph.D. theses. Between 2012 and 2014, he holded the position of Vice-rector for Degrees and Teaching and Research Staff, and from 2017 is the head of Department of Microbiology and Parasitology of the University of Santiago de Compostela (Spain).

Antonio Pazos

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Professor of the Department of Biochemistry and Molecular Biology of the University of Santiago de Compostela (USC). Graduated in Pharmacy from the USC in 1989 and Doctor in Pharmacy from the USC in 1993. After completing his doctoral thesis Antonio J. Pazos has made a postdoctoral stay at the Laboratoire de Biologie et Biotechnologies Marines of the Université de Caen (France) with a post-doctoral fellowship from the European Union (Marie Curie research training grants). He has been a beneficiary of Program I3 (Program to encourage the incorporation and intensification of research activity in the Autonomous Community of Galicia). He has participated in 19 regional, 9 national, and 5 European research projects. He has directed 4 doctoral theses and published 31 articles in JCR journals (934 citations and index h of 15 in Google Scholar, 709 citations and index h of 12 in Scopus;). He is the author of more than 60 communications to congresses and has participated in the organization of 2 international congresses (17th International Pectinid Workshop and Physiomar 12 International Meeting). The main objective of the research of Antonio J. Pazos is to help solve the problems posed by the culture of marine bivalves, as a means to contribute to the development of aquaculture. The main lines of research are: improvement of the productivity of the aquaculture of marine bivalves (breeder conditioning, gametogenic development, fixation and metamorphosis); to mitigate the impact of toxic tides on aquaculture and bivalve mollusc fisheries (study of biotoxin removal mechanisms in bivalve molluscs); application of molecular biology and "omics" technologies to aquaculture of bivalve molluscs. ORCID: https://orcid.org/0000-0001-8226-6731. Scopus Author ID: 7006526802. ResearcherID: O-6315-2018

Jesús Lamas

Professor of Immunology at the University of Santiago de Compostela. With nearly 30 years of experience in the field of fish immunology, Professor Lamas has extensive experience in everything related to histopathology, immunology, vaccination, host-pathogen relationship in fish farming. In

recent years he works in coordination with a parasitology group in Aquaculture, to find prevention strategies (vaccination) against high-risk diseases in the culture of turbot.