



21st International Conference on Diseases of Fish and Shellfish

11 - 14 September 2023
Aberdeen, UK

Poster List

Alphabetical by surname of (first) presenting author

Poster Board	Theme	Title & Authors
1	Viruses and viral diseases	Comparing viral replication kinetics and pathogenicity of IHNV and VHSV in single and in co-infection in rainbow trout (<i>O. mykiss</i>) Dr Miriam Abbadí ¹ , Dr Andrea Marsella ¹ , Dr Lorena Biasini ¹ , Dr Francesco Pascoli ¹ , Dr Alessandra Buratin ¹ , Dr Anna Toffan ¹ ¹ Istituto Zooprofilattico Sperimentale delle Venezie, National Reference Laboratory for fish diseases, Padova, Italy
2	Diseases of uncertain aetiology	Phylogenetic reconstruction, histopathological characterization, and virulence determination of a novel fish pathogen, <i>Nocardia brasiliensis</i> Prof. Félix Acosta ¹ , Belinda Vega ¹ , Mr. Luis Monzón-Atienza ¹ , Antonio Gómez-Mercader ¹ , Pedro Castro ¹ , Prof Daniel Montero ¹ , Prof. Jorge Galindo-Villegas ² ¹ Grupo de Investigación en Acuicultura (GIA), Instituto Ecoaqua, Universidad de Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain, ² Department of Genomics, Faculty of Biosciences and Aquaculture, Nord University, Bodø, Norway
3	Viruses and viral diseases	Study of prophages in bacterial populations isolated from aquaculture facilities José Ramos-Vivas ^{1,2} , Aurelio Ocaña-Fuentes ² , Antonio Gomez-Mercader ¹ , Felix Acosta ^{1,2} ¹ Iu-ecoaqua University of Las Palmas De Gran Canaria, Telde, Spain, ² Research Group on Foods, Nutritional Biochemistry and Health, Universidad Europea del Atlántico, Santander, Spain
4	Bacterial diseases	Bacillus velezensis D-18 inhibits quorum sensing and biofilm formation of <i>Vibrio anguillarum</i> Luis Monzón-Atienza ¹ , Jimena Bravo ¹ , Antonio Gómez-Mercader ¹ , Daniel Montero ¹ , José Ramos-Vivas ^{2,3} , Felix Acosta Arbelo ¹ ¹ Grupo de Investigación en Acuicultura (GIA), Instituto Ecoaqua, Universidad de Las Palmas de Gran Canaria, Telde, Spain, ² Research Group on Foods, Nutritional Biochemistry and Health, Universidad Europea del Atlántico, Santander, Spain, ³ Department of Project Management, Universidad Internacional Iberoamericana, Campeche, Mexico
5	Bacterial diseases	Isolation and characterization of a new <i>Paenibacillus</i> strain with inhibitory effect against fish pathogens José Ramos-Vivas ^{1,2} , Aurelio Ocaña-Fuentes ² , Luis Monzón-Atienza ¹ , Felix Acosta Arbelo ¹ ¹ Grupo de Investigación en Acuicultura (GIA), Instituto Ecoaqua, Universidad de Las Palmas de Gran Canaria, Telde, Spain, ² 1Research Group on Foods, Nutritional Biochemistry and Health, Universidad Europea del Atlántico, Santander, Spain

6	Viruses and viral diseases	<p>Glass half full or half empty? - Salt treatment delivers both: persistence of carp edema virus and protection against reinfection</p> <p>Dr Mikolaj Adamek¹, Felix Teitge¹, Maria Zawisza², Anne-Carina Miebach¹, Hab. Verena Jung-Schroers¹, Prof Dieter Steinhagen, Dr Tomas Korytar³, Dr Hab Krzysztof Rakus²</p> <p>¹Fish Disease Research Unit, Institute for Parasitology, University of Veterinary Medicine Hannover, Hannover, Germany, ²Department of Evolutionary Immunology, Institute of Zoology and Biomedical Research, Faculty of Biology, Jagiellonian University, Krakow, Poland, ³Institute of Parasitology, Biology Centre of the Czech Academy of Sciences, České Budějovice, Czech Republic</p>
7	Fish and shellfish immunology (including vaccines and vaccination)	<p>New insights into the immunosuppression observed during carp edema virus-induced gill disease provided by proteomics and flow cytometry</p> <p>Dr Mikolaj Adamek¹, Dr Justin T.H. Chan², Dr Hab Mariola Dietrich³, Maria Zawisza⁴, Felix Teitge¹, Natalia Kodzik³, Dr Hab. Verena Jung-Schroers¹, Prof Magdalena Chadzinska⁴, Dr Alberto Falco⁵, Prof Andrzej Ciereszko³, Dr Hab Krzysztof Rakus⁴, Dr Tomas Korytar², Prof. Dieter Steinhagen¹</p> <p>¹Fish Disease Research Unit, Institute For Parasitology, University of Veterinary Medicine Hannover, Hannover, Germany, ²Institute of Parasitology, Biology Centre of the Czech Academy of Sciences, České Budějovice, Czech Republic, ³Institute of Animal Reproduction and Food Research of Polish Academy of Sciences, Olsztyn, Poland, ⁴Department of Evolutionary Immunology, Institute of Zoology and Biomedical Research, Faculty of Biology, Jagiellonian University, Krakow, Poland, ⁵Institute of Research, Development, and Innovation in Healthcare Biotechnology in Elche (IDiBE), Miguel Hernández University (UMH), Elche, Spain</p>
8	Diagnostics	<p>Use of environmental DNA-based diagnostics to detect multi-pathogen gill disease associated with carp edema virus infection in common carp</p> <p>Dr Mikolaj Adamek¹, Torben Krebs¹, Felix Teitge¹, Maria Zawisza², Gabi Bröcker¹, Anne-Carina Miebach¹, Prof Dieter Steinhagen¹, Dr Hab Krzysztof Rakus², Dr Hab Verena Jung-Schroers¹</p> <p>¹Fish Disease Research Unit, Institute for Parasitology, University of Veterinary Medicine Hannover, Hannover, German, ²Department of Evolutionary Immunology, Jagiellonian University, Krakow, Poland</p>
9	Myxozoa	<p>Evidence for biomineralization in myxozoan parasite spores</p> <p>Dr Stephen Atkinson¹, Dr Maria Muller^{1,3}, Dr Ben Americus¹, Dr Chris Russo¹, Dr Tamar Lotan², Dr Jerri Bartholomew¹</p> <p>¹Oregon State University, Corvallis, USA, ²University of Haifa, Haifa, Israel, ³Federal University of Sao Paulo, Sao Paulo, Brazil</p>
10	Bacterial diseases	<p>Characterization of extracellular products for Tenacibaculum dicentrarchi: composition and biological activity</p> <p>Dr Macarena Echeverría-Bugueño^{1,2}, Rute Irgang^{1,2}, Dr Ruben Avendaño-Herrera^{1,2,3}</p> <p>¹Universidad Andrés Bello, Viña del Mar, Chile, ²Centro FONDAP INCAR, Viña del Mar, Chile, ³Centro de Investigación Marina Quintay (CIMARQ), Quintay, Chile</p>
11	Bacterial diseases	<p>Exploration of knowledge available for tenacibaculosis and causative agents in Chilean salmon farming</p> <p>Dr Ruben Avendaño-Herrera^{1,2,3}, Dr Mónica Saldarriaga-Córdoba^{2,4}, Henry Araya-León^{1,2}, Rute Irgang^{1,2}</p> <p>¹Universidad Andrés Bello, Viña del Mar, Chile, ²Centro FONDAP INCAR, Viña del Mar, Chile, ³Centro de Investigación Marina Quintay (CIMARQ), Quintay, Chile, ⁴Universidad Bernardo O'Higgins, Santiago, Chile</p>
12	AMR in Aquaculture	<p>Antimicrobial dose optimization in Aquaculture</p> <p>Dr Farah Gonul Aydin¹</p> <p>¹Ankara University, Faculty of Veterinary Medicine, Dept. of Pharmacology and Toxicology, Ankara, Türkiye</p>

13	Nutrition and fish health	<p>Tryptophan accelerates anti-inflammatory mechanisms in a teleost chronic inflammation model</p> <p>Dr Rita Azeredo¹, Diogo Peixoto^{1,2}, Inês Duarte^{1,2}, Ana Ricardo^{1,2}, Dr Cláudia Aragão^{3,4}, Dr Marina Machado¹, Dr Benjamín Costas^{1,2} ¹Centro Interdisciplinar de Investigação Marinha e Ambiental (CIIMAR), Matosinhos, Portugal, ²Instituto de Ciências Biomédicas Abel Salazar (ICBAS), Porto, Portugal, ³Centro de Ciências do Mar (CCMAR), Faro, Portugal, ⁴Universidade do Algarve, Faro, Portugal</p>
14	Vaccines	<p>Genomic modification of a wild NNV reassortant strain: a potential live vaccine for sole</p> <p>Dr Lucía Vázquez-Salgado¹, Dr Sandra Souto¹, Dr José G Oliveira¹, Dr Isabel Bandín¹ ¹Departamento de Microbiología y Parasitología. Instituto de Acuicultura. Universidade de Santiago de Compostela, Santiago de Compostela, Spain</p>
15	Viruses and viral diseases	<p>Detection of different betanodavirus genotypes in wild fish from Galician coastal waters (NW Spain)</p> <p>Dr Lucía Vázquez-Salgado¹, Dr José G. Oliveira¹, Dr Carlos P. Dopazo¹, Dr Isabel Bandín¹ ¹Departamento de Microbiología y Parasitología. Instituto de Acuicultura. Universidade de Santiago de Compostela, Santiago de Compostela, Spain</p>
16	Vaccines	<p>An oral inactivated vaccine against nervous necrosis virus (NNV) elicits immune response in Senegalese sole juveniles</p> <p>Dr Carmen López-Vázquez¹, Dr José G. Oliveira¹, Dr Sandra Souto¹, Dr José Blanco-Méndez², Dr Asteria Luzardo-Álvarez², Ana Rianza³, Oscar González³, Ms Benedicta Padrones³, Dr Isabel Bandín¹ ¹Departamento de Microbiología y Parasitología. Instituto de Acuicultura. Universidade de Santiago de Compostela, Santiago de Compostela, Spain, ²Departamento de Farmacología, Farmacia y Tecnología farmacéutica. Universidade de Santiago de Compostela, Santiago de Compostela, Spain, ³Stolt Sea Farm, Santiago de Compostela, Spain</p>
17	Prophylaxis and treatment	<p>Antocyanins and grapevine shoots potential antivirals against the viral haemorrhagic septicaemia virus</p> <p>Dr Yulema Valero¹, Dr Natalia Moratalla-López², Dr Camen López-Vázquez³, Dr Gonzalo L. Alonso², Dr Isabel Bandín³ ¹Departamento de Biología Celular e Histología. Facultad de Biología. Universidad de Murcia, Murcia, Spain, ²Cátedra de Química Agrícola. ETSI Agrónomos y Montes. Universidad de Castilla-La Mancha, Albacete, Spain, ³Departamento de Microbiología y Parasitología. Instituto de Acuicultura. Universidade de Santiago de Compostela, Santiago de Compostela, Spain</p>
18	Immunostimulants, prebiotics and probiotics	<p>Impact of Pseudoalteromonas strains on the flat oyster Ostrea edulis</p> <p>Garance Leroy¹, Camille Jégou¹, Lucie Beaulieu³, Sandrine Baron², Yannick Fleury¹ ¹Laboratoire De Biotechnologie Et Chimie Marines EMR6076, Université de Bretagne Occidentale, Quimper, France, ²Agence Nationale de Santé et Sécurité, Laboratoire de Ploufragan, Ploufragan, France, ³Institut sur la Nutrition et les Aliments Fonctionnels, Université Laval, Québec, Canada</p>
19	AMR in Aquaculture	<p>Antibiotic resistance genes distribution among Vibrio spp. Isolates collected from Brazilian shrimp farms</p> <p>Mai-Lan Tran¹, Laëtitia Le Devendec², Antoine Culot^{3,4}, Pauline Gripon^{2,5}, Quentin Bruey³, Clarisse Techer³, Stephane Frouel³, Dr Patrick Fach¹, Eric Jouy², Dr Thierry Morin⁵, Michel Gautier⁴, Dr Sabine Delannoy¹, Sandrine Baron² ¹Anses - COLiPATH Unit & Genomics Platform IdentityPath, Maisons-Alfort, France, ²Anses - Mycoplasma, Bacteriology and Antimicrobial Resistance Unit, Ploufragan, France, ³Mixscience SAS, Bruz, France, ⁴Inrae - Laboratoire de Microbiologie d'Agrocampus Ouest, Institut Agro, STLO, Rennes, France, ⁵Anses - Virology, Immunology and Ecotoxicology of Fish, Plouzané, France</p>

20	AMR in Aquaculture	<p>Assessment of the diffusion of AMR in aquatic environments: specificity of freshwater fish farming*</p> <p>Dr Sandrine Baron¹, Laëtitia Le Devendec¹, Eric Jouy¹, Dr Claire Chauvin², Dr Sophie Le Bouquin² ¹Anses - Mycoplasmaology-Bacteriology and Antimicrobial resistance Unit, Ploufragan, France, ²Anses - Epidemiology, Health and Welfare Unit, Ploufragan, France <i>*Accompanying 5 slides in 5 minutes presentation as part of AMR Workshop</i></p>
21	AMR in Aquaculture	<p>One Health Approach applied to following up of antimicrobial resistance dissemination in freshwater fishfarms at the watershed level*</p> <p>Dr Sandrine Baron¹, Laëtitia Le Devendec¹, Emeline Larvor¹, Héloïse Duprey¹, Eric Jouy¹, Aurélien Tocqueville², Matthieu Gaumé², Pascal Gallot², Rodolphe Thomas³, Dr Sophie Le Bouquin³, Dr Claire Chauvin³ ¹Anses - Mycoplasmaology-Bacteriology and Antimicrobial resistance Unit, Ploufragan, France, ²Itavi - Service Aquaculture, Rouen, France, ³Anses - Epidemiology, Health and Welfare Unit, Ploufragan, France <i>*Accompanying 5 slides in 5 minutes presentation as part of AMR Workshop</i></p>
22	Diseases of public concern	<p>Fecundity of in vitro cultivated Anisakis pegreffii and its production of extracellular vesicles</p> <p>Harriet Nketiah Birikorang^{1,2}, Samantha Moretal Martinez³, Dr Hynek Mazanec², Dr Roman Kuchta², Dr Jerko Hrabar⁴, Dr Ivona Mladineo² ¹Erasmus Mundus Joint Masters Program, Ghent University and Universitat Autònoma de Barcelona, Gent, Belgium, ²Institute of Parasitology, Biology Centre Czech Academy of Sciences, Ceske Budejovice, Czechia, ³Servicio de Análisis, Investigación y Gestión de Animales Silvestres (SAIGAS), Facultad de Veterinaria, Universidad Cardenal Herrera-CEU, CEU Universities, C/ Tirant lo Blanc, Alfara del Patriarca, Valencia, Spain, ⁴Institute of Oceanography and Fisheries, Split, Croatia</p>
23	Aquatic animal welfare	<p>In vitro study with viperin as an antiviral effector in rainbow trout (Oncorhynchus mykiss) cells</p> <p>Felipe Bolgenhagen Schoninger¹, Rita Azeredo, Sergio Fernández-Boo, Carolina Tafalla, Lourenço Ramos-Pinto, Marina Machado ¹CIIMAR - Interdisciplinary Centre of Marine and Environmental Research, Porto, Portugal</p>
24	Viruses and viral diseases	<p>Updating of iridovirus prevalence within sturgeon farms in Northern Italy in the years 2021-2023</p> <p>Fabio Bondavalli¹, Dr Dasa Shleicherova^{1,2}, Davide Mugetti¹, Dr Paolo Pastorino¹, Dr Alessandro Dondo¹, Dr Marino Prearo¹ ¹Istituto Zooprofilattico Sperimentale Del Piemonte, Liguria E Valle D'aosta, Turin, Italy, ²DBIOS, Turin, Italy</p>
25	Emerging pathogens	<p>First identification of lactococcus petauri in pumpkinseed sunfish (Lepomis gibbosus) in Italy</p> <p>Fabio Bondavalli¹, Dr Silvia Colussi¹, Dr Paolo Pastorino¹, Dr Giuseppe Esposito¹, Tabata Bezzo Lufrio^{1,2}, Dr Anna Zanolli^{1,2}, Dr Marino Prearo¹ ¹Istituto Zooprofilattico Sperimentale Del Piemonte, Liguria E Valle D'aosta, Turin, Italy, ²DBIOS, Turin, Italy</p>
26	Myxozoa	<p>The myxozoan parasite Tetracapsuloides bryosalmonae is infecting wild salmonid populations in Lake Huron</p> <p>Montserrat Bonfante Malpica¹, Dr Cahya Fusianto¹, Dr Thomas Binder^{1,2}, Dr Bartolomeo Gorgoglione¹ ¹Michigan State University, East Lansing, United States, ²USGS Great Lakes Science Center, Millersburg, United States</p>
27	Bacterial diseases	<p>Genomic comparison of Francisella halioticida: focus on French isolates</p> <p>Helene Bouras^{1,2}, Yann Quesnelle², Suzanne Trancart², Jean-Louis Blin³, Manuel Savary⁴, Céline Zatylny-Gaudin¹, Maryline Houssin^{1,2} ¹University of Caen, Normandy, Caen, France, ²LABEO, Caen, France, ³SMEL, Blainville-sur-mer, France, ⁴CRC Normandy-North Sea, Gouville-sur-mer, France</p>

28	Fish and shellfish immunology (including vaccines and vaccination)	Efficacy of autogenous vaccine administrated by three routes against furunculosis by aeromonas salmonicida in large trout (Oncorhynchus mykiss) Dr Emmanuelle Moreau ¹ , Sloann Marie ¹ , Florine Bachelet ¹ , Lionel Pineau ¹ , <u>Dr Segolene Calvez</u> ¹ ¹ oniris, Inrae, Bioepar, Nantes, France
29	Aquatic animal welfare	Comparison of 4 slaughter methods for rainbow trout (oncorhynchus mykiss) with regard to animal protection Lucas Darmancourt ¹ , Lionel Pineau ¹ , <u>Dr Segolene Calvez</u> ¹ ¹ oniris, Inrae, Bioepar, Nantes, France
30	Aquatic animal welfare	Effects of physical or sensory enrichments on rainbow trout (oncorhynchus mykiss) welfare Baptiste Vecharde ¹ , Celine David ¹ , Guillaume Morgant ¹ , Violaine Colson ² , Lionel Pineau ¹ , <u>Dr Segolene Calvez</u> ¹ ¹ oniris, Inrae, Bioepar, Nantes, France, ² inrae, Lpgp, Rennes, France
31	Bivalve and crustacean diseases	Specificity of in situ Hybridisation assays used for the diagnosis of mollusc parasites of the genus Marteilia and Bonamia <u>Lydie Canier</u> ¹ , Bruno Chollet ¹ , Isabelle Arzul ¹ ¹ Ifremer, La Tremblade, France
32	Bivalve and crustacean diseases	PCR diagnosis of regulated mollusc diseases present in Europe <u>Lydie Canier</u> ¹ , Mathilde Noyer ¹ , Aurélie Nadeau ¹ , Delphine Serpin ¹ , Bruno Chollet ¹ , Céline Garcia ¹ , Isabelle Arzul ¹ ¹ Ifremer, La Tremblade, France
33	Environmental and toxicological diseases	Evaluation of pathological effects of mycotoxins and protective effect of Hericium erinaceus in zebrafish larvae <u>Dr Fabiano Capparucci</u> ¹ , Dr Davide Di Paola ¹ , Dr Sabrina Natale ¹ , Dr Claudio Gervasi ¹ , Dr Carmelo Iaria ¹ ¹ University of Messina, Messina, Italy
34	Fish and shellfish immunology (including vaccines and vaccination)	Phagocytosis based assay for an in vitro assessment of immunocompetence of the pen shell P. nobilis during Mass Mortality Events <u>Prof Francesca Carella</u> ¹ , Dr Patricia Prado ² , Dr José Rafael García-March ³ , Dr José Tena-Medialdea ³ , Dr Emilio Cortés Melendreras ⁴ , Prof Francisca Giménez Casaldueño ^{5,6} , Dr Antonia Feola ¹ , Prof Antonio Porcellini ¹ ¹ University of Naples Federico II, Napoli, Italy, ² IRTA, La rapita, Spain, ³ IMEDMAR-UCV, Valencia, Spain, ⁴ IMEM, Ramón Margalef Institute, Alicante, Spain, ⁵ Department of Marine Science and Applied Biology, Alicante, Spain, ⁶ Murcia University Aquarium, University of Murcia, Murcia, Spain
35	Nutrition and fish health	Effects of dietary methionine supplementation on European seabass (Dicentrarchus labrax) mucosal immunity and disease resistance against Tenacibaculum maritimum <u>Inês Carvalho</u> ^{1,2} , Dr Lourenço Ramos-Pinto ¹ , Prof Dr José Fernando Gonçalves ² , Dr Marina Machado ^{1,2} , Dr Carolina Tafalla ³ , Dr Benjamín Costas ^{1,2} ¹ Centro Interdisciplinar de Investigação Marinha e Ambiental (CIIMAR), Universidade do Porto, Avenida General Norton de Matos, S/N, 4450-208 Matosinhos, Portugal, ² Instituto de Ciências Biomédicas Abel Salazar (ICBAS), Universidade do Porto, Rua de Jorge Viterbo Ferreira 228, 4050-313 Porto, Portugal, ³ Centro de Investigación en Sanidad Animal, Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, Consejo Superior de Investigaciones Científicas (CISA-INIA-CSIC), 28130 Valdeolmos-Alalpardo, Madrid, Spain

36	Myxozoa	<p>Morphological, ultrastructural and phylogenetic description of two myxosporean parasites from the teleostean fish trisopterus luscus in the Portuguese Atlantic coast</p> <p>Graça Casal^{1,2}, Inês Santos², Catarina Araújo^{3,4}, Sónia Rocha^{2,4} ¹TOXRUN – Toxicology Research Unit, University Institute of Health Sciences, CESPU, Gandra, Portugal, ²School of Medicine and Biomedical Sciences (ICBAS), University of Porto, Porto, Portugal, ³Faculty of Sciences (FCUP), University of Porto, Porto, Portugal, ⁴i3S - Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal</p>
37	Myxozoa	<p>Preliminary study of a zschokkella sp. (myxozoa) infecting the gallbladder of the marine teleostean micropogonias furnieri in the Brazilian coast</p> <p>Graça Casal^{1,2}, Elsa Oliveira², Edilson Matos³, Sónia Rocha^{2,4} ¹TOXRUN – Toxicology Research Unit, University Institute of Health Sciences, CESPU, Gandra, Portugal, ²School of Medicine and Biomedical Sciences (ICBAS), University of Porto, Porto, Portugal, ³Carlos Azevedo Research Laboratory, Federal Rural University of Amazonia, Belém, Brazil, ⁴i3S - Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Porto, Portugal</p>
38	Gill Disease (AGD & CGD)	<p>NeoGiant, a natural alternative for Amoebic Gill Disease treatment</p> <p>Dr Sergio Caspe¹, Dr Nuno Silva, Dr Kim Thompson ¹moreun Research Institute, Edinburgh, United Kingdom</p>
39	Fish and shellfish immunology (including vaccines and vaccination)	<p>Evaluation of the immune response in betanodavirus-vaccinated gilthead seabream</p> <p>Juan Gemez-Mata¹, Rocio Leiva-Rebollo¹, Patricia Moreno¹, Isabel Bandin², Juan Jose Borrego¹, Alejandro Labella¹, Dr Dolores Castro¹ ¹Universidad de Málaga, Instituto de Biotecnología y Desarrollo Azul, IBYDA, Málaga, Spain, ²Universidade de Santiago de Compostela, Instituto de Acuicultura, Santiago de Compostela, Spain</p>
40	Myxozoa	<p>The immunomodulatory activities of the rainbow trout cathelicidin antimicrobial peptides in proliferative kidney disease</p> <p>Justin Tze Ho Chan¹, Michael Geißegger¹, Dr Jason Holland², Dr Astrid S. Holzer¹ ¹Division of Fish Health, Veterinary University of Vienna, Vienna, Austria, ²Scottish Fish Immunology Research Centre, University of Aberdeen, Aberdeen, UK</p>
41	Innovation in disease control	<p>Antimicrobial peptide Dicentracin shows prophylactic and therapeutic actions against NNV infections in European sea bass</p> <p>Laura Cervera^{1,2}, Marta Arizcun², Elena Chaves-Pozo², Alberto Cuesta¹ ¹University of Murcia, Murcia, Spain, ²COMU-IEO, CSIC, Mazarrón, Spain</p>
42	Viruses and viral diseases	<p>The susceptibility of shi drum to betanodavirus depends on the rearing densities</p> <p>Carolina Johnstone¹, José María García-Beltrán^{2,4}, Teresa Pérez-Sánchez¹, Fernando Méndez², Marta Arizcun², Alberto Cuesta³, Montse Pérez⁴, Elena Chaves-Pozo² ¹COMA-IEO, CSIC, Fuengirola, Spain, ²COMU-IEO, CSIC, Mazarrón, Spain, ³University of Murcia, Murcia, Spain, ⁴COV-IEO, CSIC, Vigo, Spain</p>
43	Viruses and viral diseases	<p>Cytotoxicity study of head-kidney leukocytes against nodavirus infection and novel perforins in sea bass (Dicentrarchus labrax)</p> <p>Miguel Ángel García-Álvarez¹, Elena Chaves-Pozo², Alberto Cuesta¹ ¹University of Murcia, Spain, ²COMU-IEO, CSIC, Mazarrón, Spain</p>

44	Fish and shellfish immunology (including vaccines and vaccination)	<p>Transcriptome analysis of immune-related genes after streptococcus iniae infected threadfin (eleutheronema tetradactylum)</p> <p>Dr Shih-Chu Chen^{1,2}, Dr Shun Maekawa^{1,2}, Dr Pei-Chi Wang^{1,2}</p> <p>¹Department of Veterinary Medicine, College of Veterinary Medicine, National Pingtung University of Science and Technology, Pingtung, Taiwan, ²International Degree Program of Ornamental Fish Technology and Aquatic Animal Health, International College, National Pingtung University of Science and Technology, Pingtung, Taiwan</p>
45	Parasitic diseases	<p>Prevalence of monogenean parasites in bogues (boops boops L., 1758.) On fish farms</p> <p>Slavica Čolak, Jana Paradžiković, Tomislav Šarić, Bosiljka Mustać, Bruna Petani, Ema Gagović, Danijel Mejdandžić, Matko Kolega, Relja Beck</p> <p>¹University of Zadar, Zadar, Croatia</p>
46	Fish and shellfish immunology (including vaccines and vaccination)	<p>Understanding the role of Chinook salmon PKR in the antiviral response during Viral Haemorrhagic Septicaemia Virus (VHSV) infection</p> <p>Lise Chaumont¹, Mathilde Peruzzi¹, Pierre Boudinot¹, Dr Bertrand Collet¹</p> <p>¹Université Paris-Saclay, INRAE, UVSQ, VIM, Jouy-en-Josas, France</p>
47	Host-parasite interactions	<p>Small-scale variability of the small-spotted catshark (Scyliorhinus canicula) parasite community: a case study along the Catalan coast (NW Mediterranean)</p> <p>Andrea Higuero¹, Dr Maria Constenla¹, Anna Soler-Membrives¹, Sara Dallarés¹</p> <p>¹Universitat Autònoma de Barcelona, (Cerdanyola del Vallès), Spain</p>
48	Parasitic diseases	<p>Development of IHC as support technique for the study of immune response of Senegalese sole against systemic amoebiasis: preliminary results</p> <p>Dr Maria Constenla¹, Dr Francesc Padrós¹, Dr Roberto Bermúdez², Dr Maria Isabel Quiroga²</p> <p>¹Universitat Autònoma De Barcelona, Barcelona, Spain, ²Universidade de Santiago de Compostela, Lugo, Spain</p>
49	Bacterial diseases	<p>First report of an Aeromonas salmonicida related mortality in Largemouth Black bass (Micropterus salmoides)</p> <p>Luana Cortinovis¹, Francesco Mazzanti², Elena Agostini¹, Marilena Boscarato¹, Amedeo Manfrin¹, Dr Tobia Pretto¹</p> <p>¹Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro, Italy, ²AllerAqua, Italia</p>
50	Bacterial diseases	<p>Characterization of a novel potential virulence factor in Vibrio anguillarum</p> <p>Batuhan Coskun¹, Dr Michaël Bekaert¹, Dr Sean Monaghan¹, Dr Andrew P. Desbois¹</p> <p>¹Institute Of Aquaculture, University of Stirling, Stirling, United Kingdom</p>
51	Bacterial diseases	<p>Tenacibaculum maritimum evading strategies against Senegalese sole (Solea senegalensis): an in vitro study</p> <p>Dr Benjamin Costas¹, Dr Mahmoud Mabrok¹, Dr Rita Azeredo¹, Dr Antonio Afonso¹</p> <p>¹Ciimar, Matosinhos, Portugal</p>
52	AMR in Aquaculture	<p>Implementation of a UK farmed trout passive antimicrobial resistance surveillance programme*</p> <p>Dr Athina Papadopoulou^{1,2}, Dr Nicola Coyle¹, Miss Niamh Langford³, Miss Eliot Stanton^{1,4}, Dr David Ryder¹, Mr Andrew Joseph^{1,2}, Dr Mickael Teixeira Alves¹, Dr Edel Light³, Dr David Verner-Jeffreys^{1,2}</p> <p>¹The Centre of Environment, Fisheries and Aquaculture Science, Weymouth, United Kingdom, ²UK FAO Reference Centre for Antimicrobial Resistance, Weybridge, UK, ³University of Surrey, UK, ⁴Veterinary Medicines Directorate, Weybridge, UK, ⁵University of Bristol, Bristol, UK, ⁶British trout Association, Kennington, UK</p> <p>*Accompanying 5 slides in 5 minutes presentation as part of AMR Workshop</p>

53	Environmental and toxicological diseases	RNA-seq as an useful tool to study the impact of nanoplastics ingestion in fish Dr Alberto Cuesta ¹ , Dr Cristóbal Espinosa ¹ , Dr María A. Esteban ¹ , Dr Carmen González-Fernández ^{1,2} ¹ University of Murcia, Murcia, Spain, ² INRAE, Villeurbanne, France
54	Viruses and viral diseases	Nanoplastics might influence biological pathways that are essential for fish survival during NNV infection Dr Alberto Cuesta ¹ , Dr Carmen González-Fernández ^{1,2} ¹ University of Murcia, Murcia, Spain, ² INRAE, Villeurbanne, France
55	Viruses and viral diseases	Virological application of two novel brain cell lines from European eel and Senegalese sole Dr Yulema Valero ¹ , Dr Alberto Cuesta ¹ ¹ University of Murcia
56	Fish and shellfish immunology (including vaccines and vaccination)	How presence of substrate impacts the immune response of the Atlantic blue crab challenged with a pathogenic bacterium Ridardo Gálvez ¹ , José Meseguer ¹ , Dr Alberto Cuesta ¹ , Francisco A. Guardiola ¹ ¹ University of Murcia
57	Prophylaxis and treatment	Selective antibacterial role of Piscidin and Hecpudin peptides from gilthead seabream (<i>Sparus aurata</i>) against distinctive species of <i>Vibrio</i> JA Serna-Duque ¹ , IC Leal ² , JCR Cardoso ² , Dr Alberto Cuesta ¹ , DM Power ¹ , MA Esteban ¹ ¹ University of Murcia, ² University of Algarve, Faro, Portugal
58	Viruses and viral diseases	Transcriptomic characterization of rtp3 and herc4 genes and their potential role upon nodavirus infection Yulema Valero ¹ , Dr Alberto Cuesta ¹ ¹ University of Murcia
59	Viruses and viral diseases	Reassortant and parental nodavirus strains exhibit differential colonization of the ovary and testis of European sea bass in vitro Yulema Valero ¹ , Elena Chaves-Pozo ² , Dr Alberto Cuesta ¹ ¹ University of Murcia, ² COMU-IEO, CSIC, Spain
60	Immunostimulants, prebiotics and probiotics	Effects on gene expression of head-kidney leukocytes after incubation with different antimicrobial peptides from gilthead sea bream (<i>Sparus aurata</i>) Claudia Marín-Parra ¹ , Cristóbal Espinosa ¹ , Dr Alberto Cuesta ¹ , MA Esteban ¹ ¹ University of Murcia
61	Immunostimulants, prebiotics and probiotics	Impact of grapeseed extracts on immune response and disease resistance of European seabass (<i>Dicentrarchus labrax</i>) juveniles André Cunha ^{1,2,4} , Paulo Santos ^{1,2,4} , Mariana Hinzmann ¹ , Inês Ferreira ^{1,2,5} , Lourenço Ramos-Pinto ¹ , Tiago Aires ⁶ , Luís Conceição ³ , Marina Machado ¹ , Ana Gonçalves ^{3,4} , Benjamín Costas ^{1,2} ¹ Centro Interdisciplinar de Investigação Marinha e Ambiental - CIIMAR, Matosinhos, Portugal, ² Instituto de Ciências Biomédicas Abel Salazar, Porto, Portugal, ³ SPAROS, Lda, Olhão, Portugal, ⁴ GreenCoLab - Associação Oceano Verde, University of Algarve, Olhão, Portugal, ⁵ i3S - Instituto de Investigação e Inovação em Saúde, University of Porto, Porto, Portugal, ⁶ Sorgal, S.A., Aveiro, Portugal

62	Aquatic animal welfare	<p>Morphological characterization of preural fusions in Senegalese sole (<i>Solea senegalensis</i>)</p> <p>Andrea Durán¹, Ana Manuela De Azevedo Gomes¹, Ana Losada¹, Prof Carmen Bouza², Prof Sonia Vázquez¹, Prof M.I. Quiroga¹ ¹Departament of Anatomy, Animal Production and Veterinary Clinical Sciences, University of Santiago De Compostela, Lugo, Spain, ²Departament of Zoology, Genetics and Physical Anthropology; University of Santiago De Compostela, Lugo, Spain</p>
63	Parasitic diseases	<p>Preliminary investigation on Bluntnose Sixgill shark helminth fauna from the Strait of Messina (Italy, central Mediterranean Sea)</p> <p>Dr Giovanni De Benedetto¹, Dr Carmelo Iaria¹, Dr Teresa Bottari², Dr Fabiano Capparucci¹, Prof. Fabio Marino¹, Prof Gabriella Gaglio¹ ¹University of Messina, Messina, Italy, ²IRBIM CNR, Messina, Italy</p>
64	Vaccines	<p>Effectiveness of a novel pathogen inactivation platform (PITTM) to prepare inactivated whole-cell vaccines for aquaculture</p> <p>Dr Andrew Desbois¹, Dr Sreeja Lakshmi², Dr Daniel Horton¹, Dr Sean J. Monaghan¹, Prof Punnadath Preetham Elumalai³, Prof Cornelius Ssemakalu⁴ ¹Institute Of Aquaculture, University of Stirling, Stirling, United Kingdom, ²King NandhiVarman College of Arts and Science, Tamilnadu, India, ³Cochin University of Science & Technology, Kochi, India, ⁴Iraka Biotech (Pty) LTD, South Africa</p>
65	Bivalve and crustacean diseases	<p>Disease-free European Flat Oyster (<i>Ostrea edulis</i>) in the Belgian part of the North Sea: opportunities for restoration and sustainable aquaculture</p> <p>Tofael Ahmed Sumon¹, Isabelle Arzul², Thomas R.H. Kerkhove³, Annelies Declercq¹ ¹Laboratory of Aquaculture and Artemia Reference Center (ARC), Ghent University, Ghent 9000, Belgium, ²Adaptation et Santé des Invertébrés Marins (ASIM)-Ifremer-La Tremblade, France, ³Marine Ecology and Management (MARECO), Royal Belgian Institute of Natural Sciences (RBINS), Ostend, Belgium</p>
66	Immunostimulants, prebiotics and probiotics	<p>Oral delivery of <i>Bacillus subtilis</i> spores modulates mucus responses in rainbow trout</p> <p>Samuel Vicente-Gil¹, Gabriela Gonçalves², Dr Cláudia Serra^{2,3}, Dr Carolina Tafalla¹, Dr Patricia Díaz-Rosales¹ ¹Fish Immunology and Pathology Group, Animal Health Research Centre (CISA), National Institute for Agricultural and Food Research and Technology (INIA), Spanish Research Council (CSIC), Valdeolmos-Alalpardo, Madrid, Spain, ²Departamento de Biologia, Faculdade de Ciências, Universidade do Porto, Porto, Portugal, ³Centro Interdisciplinar de Investigação Marinha e Ambiental, Universidade do Porto (CIMAR/CIIMAR), Matosinhos, Portugal</p>
67	Immunostimulants, prebiotics and probiotics	<p>L-methionine modulates the functionality of IgM+ B cells in rainbow trout</p> <p>Dr Diana Martín¹, Dr M. Camino Ordás¹, Inês Carvalho^{2,3}, Dr Patricia Díaz-Rosales¹, Dr Marina Machado^{2,3}, Dr Benjamín Costas^{2,3}, Dr Carolina Tafalla¹ ¹Fish Immunology and Pathology Group, Animal Health Research Centre (CISA), National Institute for Agricultural and Food Research and Technology (INIA), Spanish Research Council (CSIC), Valdeolmos-Alalpardo, Madrid, Spain, ²Centro Interdisciplinar de Investigação Marinha e Ambiental (CIIMAR), Universidade do Porto, Matosinhos, Portugal, ³Instituto de Ciências Biomédicas Abel Salazar (ICBAS), Universidade do Porto, Porto, Portugal</p>
68	Host-parasite interactions	<p>Molecular characterisation of Ricin-B lectin Effector Proteins in <i>Saprolegnia parasitica</i></p> <p>Mariam D'ippolito¹, Dr Franzi Trusch ¹University of Aberdeen, Aberdeen, United Kingdom, ²Imperial College London, London, United Kingdom</p>
69	Viruses and viral diseases	<p>Perch rhabdovirus in pikeperch (<i>Sander lucioperca</i>) and European perch (<i>Perca fluviatilis</i>) in Swiss aquaculture facilities</p> <p>Dr Nicolas Diserens¹, Prof Dr Dipl. ECVF Heike Schmidt-Posthaus¹ ¹Institute for Fish and Wildlife Health, University of Bern, Bern, Switzerland</p>

70	Salmonid viral diseases	<p>Vertical transmission of ISAV in Atlantic salmon (<i>Salmo salar</i>) – no strong evidences</p> <p><u>Delphine Ditlecadet</u>¹, Kristine J Hébert¹, Jake A.K Elliott², Frank Powell³, Kim Bentley³, Andrew K Swanson², Amanda Borchardt², Nellie Gagné¹ ¹Fisheries and Oceans Canada, Moncton, Canada, ²Cooke Aquaculture Inc., Saint John, Canada, ³Kelly Cove Salmon Ltd, Saint George, Canada</p>
71	AMR in Aquaculture	<p>AMR in <i>Flavobacterium psychrophilum</i>: new resistance patterns in recent isolates from Denmark*</p> <p><u>Valentina Laura Donati</u>¹, Lone Madsen¹ ¹Section for Fish and Shellfish Diseases, National Institute of Aquatic Resources, Technical University of Denmark, Kgs. Lyngby, Denmark <i>*Accompanying 5 slides in 5 minutes presentation as part of AMR Workshop</i></p>
72	Diagnostics	<p>Droplet digital PCR assay for detection and quantification of <i>Philasterides dicentrarchi</i></p> <p>Dr José G. Oliveira¹, Dr Carmen López-Vázquez¹, Dr Rosa A. Sueiro², Dr Jesús Lamas³, Dr Jose M. Leiro², <u>Dr Carlos P. Dopazo</u>¹ ¹Departament of Microbiology and Parasitology. Institute of Aquaculture, Universidade de Santiago de Compostela, 15782 Santiago de Compostela, Spain, Santiago de Compostela, España, ²Department of Microbiology and Parasitology, Laboratory of Parasitology, Institute of Research in Chemical and Biological Analysis, University of Santiago de Compostela, 15782 Santiago de Compostela, Spain, Santiago de Compostela, España, ³Department of Functional Biology, Institute of Aquaculture, University of Santiago de Compostela, 15782 Santiago de Compostela, Spain, Santiago de Compostela, España</p>
73	Case reports	<p>Histopathological changes in case of mass mortality of juvenile farmed Atlantic sturgeon <i>Acipenser oxyrinchus</i></p> <p><u>Dr Karolina Duk</u>¹, Dr Elżbieta Terech-Majewska², Dr Patrycja Schulz¹, Dr Joanna Pajdak-Czaus², Iwona Piotrowska¹, Prof. Andrzej Krzysztof Siwicki¹ ¹National Inland Fisheries Research Institute, Poland, ²University of Warmia and Mazury in Olsztyn, Poland</p>
74	Myxozoa	<p>Exploring variability in the myxozoan mitogenome gene order: Evidence for rapid evolution within Myxozoa</p> <p><u>Dr Ivan Fiala</u>^{1,2}, <u>Vendula Branišová</u>², <u>Martina Lisnerová</u>¹ ¹Institute of Parasitology, Biology Centre, Czech Academy of Sciences, Ceske Budejovice, Czech Republic, ²Faculty of Science, University of South Bohemia, Ceske Budejovice, Czech Republic</p>
75	Diagnostics	<p>Internal positive control in duplex assays in qPCR/RT-qPCR diagnostic– what’s not to like?</p> <p><u>Nellie Gagné</u>¹, Dr Delphine Ditlecadet Delphine Ditlecadet¹, Kristine Hébert¹, Jean-René Arseneau¹ ¹Fisheries And Oceans Canada, Moncton, Canada</p>
76	Other	<p>Exploring plant-based lipids in shrimp feeds: A study into the effects of <i>Aster tripolium</i> inclusion on <i>Penaeus vannamei</i> health</p> <p><u>Ana Garcia</u>^{1,2}, Sergio Fernández-Boo¹, Allan Stensballe³, Kiron Viswanath⁴, Mette Thomsen⁵, Rui Rocha^{6,7}, Benjamín Costas^{1,2} ¹Interdisciplinary Centre of Marine and Environmental Research (CIIMAR), Matosinhos, Portugal, ²Institute of Biomedical Sciences Abel Salazar (ICBAS), Porto, Portugal, ³Aalborg University, Esbjerg, Denmark, ⁴Nord University, Bodø, Norway, ⁵Celabor, Chaineux, Belgium, ⁶Riasearch, Aveiro, ⁷University of Aveiro, Aveiro, Portugal</p>
77	Diagnostics	<p>Adaptation of antibiotic disc diffusion method for halophilic <i>Vibrio</i></p> <p>Treilles Michaël², Delphine Tourbiez¹, V. Duquesnel², J. Lefoulgoc², T. Barbeau², <u>Céline Garcia</u>¹ ¹Ifremer, La Tremblade, France, ²Qualyse, Champdeniers, France</p>

78	Bivalve and crustacean diseases	<p>Dynamics of <i>Vibrio aestuarianus</i> in cockles in wild beds of Hauts-de-France</p> <p><u>Céline Garcia</u>¹, Aurélie Mesnil¹, Maude Jacquot¹, Delphine Tourbiez¹, Lionel Dégremont¹, Juliette Hocquet¹, Bruno Chollet¹, Delphine Serpin¹, Aurélie Nadeau¹, Mathilde Noyer¹, Frédéric Girardin¹, Antoine Meirland⁴, Morgane Ricard⁴, Mélanie Rocroy³, Marie-Agnès Travers² ¹Ifremer, La Tremblade, France, ²Ifremer, Montpellier, France, ³GEMEL, Saint-Valery-sur-Somme, France, ⁴CRPMEM Hauts-de-France, Boulogne sur Mer, France</p>
79	AMR in Aquaculture	<p>Preliminary study on potential impact of antibiotic use in oyster hatchery</p> <p><u>Céline Garcia</u>¹, Lionel Dégremont¹, Delphine Tourbiez¹, Samia Kalaidji², Stéphane Guesdon¹, Elise Mourouard¹, Frédéric Girardin¹, Coralie Lupo¹, Isabelle Arzul¹, Michaël Treilles³ ¹Ifremer, La Tremblade, France, ²Qualyse, La Rochelle, France, ³Qualyse, Champdeniers, France</p>
80	Fish and shellfish immunology (including vaccines and vaccination)	<p>Effect of water temperature on head kidney macrophages capacity to reduce bacteria</p> <p>Lorenzo Garcia, Luis Revuelta, <u>Dr Jose A. Garcia</u>¹ ¹Veterinary Faculty; Complutense University of Madrid, Madrid, Spain</p>
81	AMR in Aquaculture	<p>Understanding AMR dynamics and opportunities for interventions in freshwater aquaculture systems in northern Vietnam through the application of systems thinking*</p> <p><u>Maria Garza</u>¹, Tai Mai Van², Prof Van Phan Thi², Dr Andrew P. Desbois³, Dr Chadag V Mohan⁴, Dr Mehroosh Tak¹, Prof Barbara Häsler¹, Dr Lucy Brunton¹ ¹Royal Veterinary College, Hatfield, United Kingdom, ²Research Institute of Aquaculture no 1, Dinh Bang - Tu Son, Vietnam, ³Institute of Aquaculture, University of Stirling, Stirling, United Kingdom, ⁴WorldFish, Jalan Batu Maung, Batu Maung, Malaysia <i>*Accompanying 5 slides in 5 minutes presentation as part of AMR Workshop</i></p>
82	Mucosal Health	<p>Identifying natural bioactive peptides from the common octopus (<i>octopus vulgaris</i>) skin mucus by-products using proteomic analysis</p> <p>Sara Pérez-Polo, Md Abdus Sukur Imran, Sonia Dios, Jaime Pérez, Lorena Barros, Mónica Carrera, <u>Camino Gestal</u> ¹Instituto de Investigaciones Marinas (IIM- CSIC), Vigo, España</p>
83	Aquatic animal welfare	<p>Improving farmers' ability to predict anoxia and harmful algal blooms in aquaculture using in-situ and earth observation data</p> <p><u>Hege Gjesdal</u>¹, Maxime Paris¹, Nicolas Prost¹, Arthur Tre-Hardy¹, Charlotte Dupont¹ ¹Bioceanor, Nice, France</p>
84	Emerging pathogens	<p>Salmon gill poxvirus can infect salmon yolk sac larvae and cause severe infection of the skin</p> <p><u>Dr Mona Gjessing</u>¹, Marit Amundsen¹, Dr Haitham Tartor¹, Brit Tørud¹, Simon C Weli¹, Kristrún H Kristþórsdóttir² ¹Norwegian Veterinary Institute, Ås, Norge, ²VETAQ, Hafnarfjörður, Iceland</p>
85	Viruses and viral diseases	<p>Changes in haematopoietic organs in Atlantic salmon suffering from salmon gill poxvirus disease</p> <p><u>Dr Mona Gjessing</u>¹, Dr Ottavia Benedicenti¹, Dr Maria K Dahle, Dr Ole Bendik Dale¹ ¹Norwegian Veterinary Institute, Ås, Norge</p>

86	Host-parasite interactions	<p>Histopathology of Myxobolus lentisuturalis (Myxosporea: Myxobolidae) in farmed and wild gibel carp (Carassius auratus gibelio) from Croatia</p> <p>Prof Emil Gjurčević¹, Assistant Prof Krešimir Matanović¹, Dr Jessica Maria Abbate², Prof Fabio Marino³, Dr Mark Andrew Freeman⁴, Dr Árni Kristmundsson⁵</p> <p>¹Faculty of Veterinary Medicine, University of Zagreb, Zagreb, Croatia, ²Department of Veterinary Sciences, University of Messina, Messina, Italy, ³Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Messina, Italy, ⁴Institute of Ocean and Earth Sciences, University of Malaya, Kuala Lumpur, Malaysia, ⁵Institute for Experimental Pathology, University of Iceland, Reykjavik, Iceland</p>
87	Genomic approach related to fish pathology	<p>De novo nucleotide biosynthesis pathways in myxozoan (Cnidaria)</p> <p>Urvashi Goswami¹, Prof. Dorothée HUchon^{1,2}</p> <p>¹School of Zoology, Tel Aviv University, Tel Aviv, Israel, ²The Steinhardt Museum of Natural History and National Research Center, Tel Aviv University, Tel Aviv, Israel</p>
88	Case reports	<p>An outbreak of Aeromonas salmonicida subsp. salmonicida in largemouth bass (Micropterus salmoides) farmed in Italy</p> <p>Dr Giorgia Bignami¹, Dr Teresa Pirollo¹, Prof Maria Letizia Fioravanti¹, Prof Monica Caffara¹, Prof Andrea Gustinelli¹</p> <p>¹Dep. Veterinary Medical Sciences (DIMEVET) University of Bologna, Ozzano Emilia (BO), Italy</p>
89	Case reports	<p>Mortality outbreak in turbot (Psetta maxima) farmed in Italy</p> <p>Prof Andrea Gustinelli¹, Dr Giorgia Bignami¹, Prof Monica Caffara¹, Prof Francesco Quaglio², Prof Maria Letizia Fioravanti¹</p> <p>¹Dep. Veterinary Medical Sciences (DIMEVET) University of Bologna, Ozzano Emilia (BO), Italy, ²Dep. of Comparative Medicine and Nutrition University of Padua, Legnaro, Italy</p>
90	Bacterial diseases	<p>Mortalities outbreaks by Piscirickettsia salmonis in European sea bass (Dicentrarchus labrax) farmed in Italy</p> <p>Dr Giorgia Bignami¹, Dr Teresa Pirollo¹, Prof. Francesco Quaglio², Prof. Monica Caffara¹, Dr Giuseppe Scaturro³, Prof. Maria Letizia Fioravanti¹, Prof Andrea Gustinelli¹</p> <p>¹Dep. Veterinary Medical Sciences (DIMEVET) University of Bologna, Ozzano dell'Emilia, Italy, ²Department of Comparative Biomedicine and Food Science (BCA) University of Padova, Legnaro, Italy, ³Veterinary consultant, Gaeta, Italy</p>
91	Parasitic diseases	<p>Digenean trematodes in the digestive system of the great cormorant (Phalacrocorax carbo)</p> <p>Martina Gyöngy^{1,2}, Dr Lajos Juhász³, Dr Csaba Székely¹, Dr Cech Gábor¹</p> <p>¹Veterinary Medical Research Institute, Budapest, Hungary, ²University of Debrecen, Juhász-Nagy Pál Doctoral School, Department of Hidrobiologia, Debrecen, Hungary, ³University of Debrecen, Department of Nature Conservation, Zoology and Game Management, Debrecen, Hungary</p>
92	Fish and shellfish immunology (including vaccines and vaccination)	<p>Generation of a strain deficient in T6SS-effector EvpP from Edwardsiella piscicida and its susceptibility to host fish species</p> <p>Dr Jun-ichi Hikima¹, Mr. Takechiyo Sumiyoshi², Mr. Aki Nishihara³, Dr Tomoya Kono¹, Dr Masahiro Sakai¹</p> <p>¹University of Miyazaki Faculty of Agriculture, Miyazaki, Japan, ²University of Miyazaki Graduate School of Agriculture, Miyazaki, Japan, ³University of Miyazaki Interdisciplinary Graduate School of Agriculture and Engineering, Miyazaki, Japan</p>

93	Bivalve and crustacean diseases	Ornamental freshwater shrimp (<i>Neocaridina davidi</i>, Bouvier, 1904) as helminth host <u>Marton Hoitsy</u> ¹ , Árisz Ziszisz ¹ , Rafał Maciaszek ² ¹ University of Veterinary Medicine; Vet4Fish, Budapest, Hungary, ² Warsaw University of Life Sciences, Warsaw, Poland
94	Genomic approach related to fish pathology	GenomeFLTR: Filtering Reads Made Easy <u>Prof Dorothee Huchon</u> ¹ , Prof Tal Pupko ¹ ¹ Tel-Aviv University, Tel-aviv, Israel
95	Microbiomes in relation to fish pathology / health	Phylogenetic analysis of non-pathogenic salmonid-associated aliivibrios and description of eight novel species and three novel subspecies of genus <i>Aliivibrio</i> <u>Stanislav Iakhno</u> ¹ , Aud Kari Fauske ¹ , Camilla Skagen ¹ , Henning Sørsum ² ¹ Previwo AS, Oslo, Norway, ² Norwegian University of Life Sciences, Ås, Norway
96	Host-parasite interactions	Unusual chronic granulomatous oovitis in <i>Epinephelus marginatus</i> due to Philometrid infection <u>Dr Carmelo Iaria</u> ¹ , Dr Jessica Maria Abbate ¹ , Dr Giovanni De Benedetto ¹ , Dr Fabiano Capparucci ¹ , Dr Salvatore Monaco ² , Prof. Giovanni Lanteri ¹ , Prof. Fabio Marino ¹ ¹ University of Messina, Messina, Italy, ² Azienda Sanitaria Provinciale (ASP), Messina, Italy
97	Mucosal Health	Histomorphometry and immune status in atlantic salmon (<i>salmo salar</i>) fed different astaxanthin sources <u>S M Majharul Islam</u> ¹ , Florence Willora ¹ , Bisa Saraswathy ¹ , Mette Sørensen ¹ , Monica Brinchmann ¹ , Ioannis Vatsos ¹ Kim Thompson ² ¹ Faculty of Biosciences and Aquaculture, Nord University, Bodø, Norway, ² Aquaculture Research Group, Moredun Research Institute, Edinburgh, UK
98	Bivalve and crustacean diseases	Rearing density in a specific period determined <i>Francisella haliotica</i> infection of juvenile <i>Yesso scallops Mizuhopecten yessoensis</i> Yuichi Furumoto ¹ , <u>Dr Naoki Itoh</u> ¹ , Dr Makoto Kanamori ^{2,3} , Dr Masafumi Natsuike ³ , Dr Tomoyoshi Yoshinaga ¹ ¹ The University of Tokyo, Tokyo, Japan, ² Hokkaido Research Organization, Sapporo, Japan, ³ Hakodate Fisheries Research Institute, Hakodate, Japan
99	Nutrition and fish health	Feed formulation and testing in supporting fish homeostasis and performance in common aquaculture stressing events <u>Dr Francois Jegou</u> ¹ , Ivan Gavioli, Eduardo Urbinati ¹ Adm
100	AMR in Aquaculture	Addressing Antibiotic Usage and AMR Data Gaps in West African Aquaculture through the Fleming Fund Fellowship Programme* <u>Andrew Joseph</u> ¹ , Dr David Verner-Jeffreys ² , Eric Boyce Sawyerr ³ , Suliat Adeleke ¹ Centre for Environment Fisheries and Aquaculture Science, ² Centre for Environment Fisheries and Aquaculture Science, ³ Ghanaian Fisheries Commission, ⁴ Nigerian Federal Department of Veterinary and Pest Control Services <i>*Accompanying 5 slides in 5 minutes presentation as part of AMR Workshop</i>
101	Vaccines	Chitosan microsphere-based oral vaccine against the scuticociliate parasite <i>Miamiensis avidus</i> <u>Prof Sung-ju Jung</u> ¹ , Dr Su-Mi Shin ¹ , Dr Sajal Kole ¹ , Jin-Young Kim ¹ , Prof Jehee Lee ² ¹ Department of Aqualife Medicine, Chonnam National University, Yeosu, Republic of Korea, ² Department of Marine Life Sciences & Fish Vaccine Research Center, Jeju National University, Jeju, Republic of Korea

102	Fish and shellfish immunology (including vaccines and vaccination)	Massive production of recombinant hagfish antibody for passive immunization treatment for shrimp disease Prof Tae Sung Jung ^{1,2} , JS Kim ² , JH Kim ² , Seungbeom Hong ² ¹ Gyeongsang Natl. Univ., Jinju city, South Korea, ² EarwynBio Inc., Jinju city, South Korea
103	Aquatic animal welfare	Is it possible to anaesthetize sturgeons with a bolt gun in a manner that is appropriate for animal welfare? Dr Verena Jung-schroers ¹ , Gabi Bröcker ¹ , Dr Karina Klase ¹ , Prof Dr Dieter Steinhagen ¹ , Markus Sterneberg ¹ , Matthias Kempkes ² , Dr Matthias Lüpke ² , Dr Inga Wilk ³ , Dr Agnes Flamm ⁴ , Prof Hermann Seifert ² ¹ University of Veterinary Medicine Hannover, Fish Disease Research Unit, Hannover, Germany, ² University of Veterinary Medicine, Department of General Radiology and Medical Physics, Hannover, Germany, ³ Friedrich-Loeffler-Institute, Institute for Animal Welfare and Husbandry, Celle, Germany, ⁴ Official Laboratory of the Land of Hesse, Giessen, Germany
104	Diseases of wild and ornamental fish	Spinal curvature in forkbeards - and an anatomical peculiarity Dr Verena Jung-schroers ¹ , Dr Jannis Göttling ² , Felix Teitge ¹ , Laura Katharina Sieckmann ² , Dr Thomas Scheibe ² ¹ University of Veterinary Medicine Hannover, Fish Disease Research Unit, Hannover, Germany, ² Osnabrück Zoo GmbH, Osnabrück, Germany
105	Fish and shellfish immunology (including vaccines and vaccination)	Molecular cloning and characterization of galectin-9 gene from sevenband grouper (<i>Hyporhamphus septemfasciatus</i>) Kyung-Min Kang ¹ , Jong-Oh Kim ¹ , Myung-Joo Oh ² ¹ Pukyong National University, Busan, Republic of Korea, ² Chonnam National University, Yeosu, Republic of Korea
106	Parasitic diseases	Fish invasion with <i>Eustrongylides excisus</i> (Nematoda: Dioctophymatidae) in the Don river delta and the eastern part of the Taganrog Bay Dr Anna Kazarnikova ¹ , Yulia Stepanova ¹ , Gleb Gus'kov ¹ ¹ Federal Research Center The Southern Scientific Center Of The Russian Academy of Sciences, Rostov-on-Don, Russia
107	Genomic approach related to fish pathology	Determining transcriptomic response of kidneys of olive flounder to viral hemorrhagic septicemia virus infection using next-generation sequencing Dr Hyoung Jun Kim ¹ , Dr Jeong Su Park ² , Dr Se Ryun Kwon ³ , Dr Youngjin Park ⁴ ¹ National Institute of Fisheries Science, Gijanggun, Republic of Korea, ² Chungcheongnamdo Institute of Fisheries Resources, Boryeong, Republic of Korea, ³ Sunmoon University, Asan, Republic of Korea, ⁴ Sunmoon University, Asan, Republic of Korea
108	Fish and shellfish immunology (including vaccines and vaccination)	DNA vaccine dual-expressing VHS virus glycoprotein and C-C motif chemokine ligand 19 induces the expression of immune-related genes in zebrafish Dr Hyoung Jun Kim ¹ , Mr. Jin-Young Kim ² , Dr Jeong Su Park ³ , Dr Myoung Sug Kim ¹ , Dr Hye Sung Choi ¹ , Dr Mi Young Cho ¹ , Dr Se Ryun Kwon ⁴ ¹ National Institute of Fisheries Science, Gijang-gun, Republic of Korea, ² Chonnam National University, Yeosu, Republic of Korea, ³ Sunmoon University, Asan, Republic of Korea, ⁴ National Institute of Fisheries Science, Gijang-gun, Republic of Korea, ⁵ National Institute of Fisheries Science, Gijang-gun, Republic of Korea, ⁶ National Institute of Fisheries Science, Gijang-gun, Republic of Korea, ⁷ Sunmoon University, Asan, Republic of Korea
109	Bacterial diseases	Establishment of Epidemiological Cut-Off Values for <i>Vibrio harveyi</i> and <i>Lactococcus garvieae</i> Isolated from Aquatic Animals Dr Myoung Sug Kim ¹ , Dr Soo-Ji Woo ² , Dr Na Young Kim ¹ , Ms. Mi-Young Do ¹ , Dr Hyoung Jun Kim ¹ , Dr Mi-Young Cho ¹ ¹ NIFS, Gijang-gun, Republic of Korea, ² NIFS, Gangneung, Republic of Korea

110	Viruses and viral diseases	<p>Open reading frame 150 – mode of action during cyprinivirus infection</p> <p>Dr Sandro Klafack¹ ¹Friedrich-loeffler-institut, Greifswald - Insel Riems, Germany</p>
111	Vaccines	<p>Impairing replication of CyHV3 for vaccine design</p> <p>Dr Sandro Klafack¹ ¹Friedrich-loeffler-institut, Greifswald - Insel Riems, Germany</p>
112	Prophylaxis and treatment	<p>Safety of levamisole, fenbendazole and ivermectin anthelmintic baths for juvenile carp (Cyprinus carpio)</p> <p>Dr Jitka Kolarova¹, Dr Alzbeta Stara¹, Dr Eliska Zuskova¹, Dr Josef Velisek¹ ¹University of South Bohemia In Ceske Budejovice, Faculty Of Fisheries And Protection Of Waters, Vodňany, Česko</p>
113	Microbiomes in relation to fish pathology / health	<p>Effect of RTGE gastroenteritis on the microbiota of rainbow trout intestine</p> <p>Dr Tiina Korkea-aho¹, Dr Riikka Holopainen¹, Tapio Kiuru², Dr Satu Viljamaa-Dirks¹ ¹Finnish Food Authority, Finland, ²Natural Resources Institute Finland, Finland</p>
114	Viruses and viral diseases	<p>The transcriptome of VHSV resistant and susceptible rainbow trout strains provides insight into immune response leading to different disease outcomes</p> <p>Torben Krebs¹, Clemens Falker-Gieske², Marek Matras³, Alberto Falco⁴, Michal Reichert³, Christian Lodder², Jens Tetens², Verena Jung-Schroers¹, Dieter Steinhagen¹, Mikolaj Adamek¹ ¹University of Veterinary Medicine Hannover, Hannover, Germany, ²Georg-August-University of Göttingen, Göttingen, Germany, ³National Veterinary Research Institute, Pulawy, Poland, ⁴Miguel Hernandez University, Elche, Spain</p>
115	Viruses and viral diseases	<p>Evaluation of alternative carp cell lines for in vitro studies on CyHV-3 pathobiology</p> <p>Santosh Lamichhane¹, Eric Leis², Dr Juan-Ting Liu¹, Dr Bartolomeo Gorogolione¹ ¹Fish Pathobiology and Immunology Laboratory, Dept, Pathobiology and Diagnostic Investigation/ Dept. Fisheries and Wildlife, East Lansing, United States, ²La Crosse Fish Health Center, U.S. Fish and Wildlife Service, Onalaska, United States</p>
116	Bacterial diseases	<p>Case study: Identifying Piscirickettsia salmonis in Scottish aquaculture</p> <p>Catherine Whitby¹, Silvia M. C. Soares¹, William Leigh¹, Mark J. Fordyce¹, Amanda Walker¹ ¹Marine Scotland, Aberdeen, Scotland</p>
117	Nutrition and fish health	<p>Tryptophan modulatory role in European Seabass (Dicentrarchus labrax) immune response to acute inflammation under stressful conditions</p> <p>Dr Marina Machado¹, Msc Diogo Peixoto^{1,2,3}, Paulo Santos¹, Ana Ricardo^{1,2}, Inês Duarte^{1,2}, Inês Carvalho^{1,2}, Dr Cláudia Aragão^{4,5}, Dr Rita Azeredo¹, Dr Benjamín Costas^{1,2} ¹CIIMAR - Interdisciplinary Centre of Marine and Environmental Research, Matosinhos, Portugal, ²ICBAS - Instituto de Ciências Biomédicas Abel Salazar, Porto, Portugal, ³INMAR - Instituto Universitario de Investigación Marina, Cádiz, Espanha, ⁴CCMAR - Centro de Ciências do Mar, Faro, Portugal, ⁵Campus de Gambelas, Faro, Portugal</p>

118	Case reports	<p>Multiple cutaneous soft tissue sarcomas with myxoid differentiation in reared sturgeons (<i>Acipenser gueldenstaedtii</i>)</p> <p>Prof Luciana Mandrioli¹, Dr Givevra Brocca², Dr Samuele Zamparo³, Dr Massimo Orioles⁴, Dr Anna Toffan⁵, Dr Tobia Pretto⁵, Prof Ranieri Verin⁶</p> <p>¹Department of Veterinary Medical Sciences, Alma Mater Studiorum University of Bologna, Bologna, Italy, ²Aquatic Diagnostic Services, Atlantic Veterinary College, University of Prince Edward Island, Charlottetown, Canada, ³Azienda agricola trocicoltura Erede Rossi Silvio, Sefro (MC), Italy, ⁴Department of Agricultural and Environmental Sciences, University of Udine, Udine, Italy, ⁵Istituto Zooprofilattico Sperimentale delle Venezie, Padova, Italy, ⁶Department of Comparative Biomedicine and Food Science (BCA), University of Padova, Padova, Italy</p>
119	Other	<p>Three-dimensional primary cultures and zebrafish model: two advanced preclinical platforms to predict chemotherapy outcome in sarcoma</p> <p>Dr Giacomo Misericocchi¹, Dr Silvia Vanni¹, Prof Luciana Mandrioli², Prof Annalisa Zaccaroni², Dr Federica Pieri³, Dr Roberto Casadei⁴, Dr Chiara Spadazzi¹, Dr Claudia Cocchi¹, Dr Chiara Calabrese¹, Prof Toni Ibrahim⁵, Dr Laura Mercatali⁵, Dr Chiara Liverani¹, Dr Alessandro De Vita¹</p> <p>¹Preclinic and Osteoncology Unit, Biosciences Laboratory, IRCCS Istituto Romagnolo per lo Studio dei Tumori (IRST) “Dino Amadori”, Meldola (FC), Italy, ²Department of Veterinary Medical Sciences, Alma Mater Studiorum University of Bologna, Italy, ³Pathology Unit, Morgagni-Pierantoni Hospital, Forlì, Italy, ⁴Orthopedic Unit, Morgagni-Pierantoni Hospital, Forlì, Italy, ⁵Osteoncology, Bone and Soft Tissue Sarcomas and Innovative Therapies Unit, IRCCS Istituto Ortopedico Rizzoli, Bologna, Italy</p>
120	Innovation in disease control	<p>Antimicrobial and antibiofilm activity of postbiotics obtained from <i>Bacillus pumilus</i> isolated from healthy seabream fed a microalgae-supplemented diet</p> <p>Jorge García-Márquez¹, Marta Domínguez-Maqueda¹, Dr Salvador Arijo¹, Dr Eduardo Martínez-Manzanares¹, Dr M.Á. Moriñigo¹, Dr M.C. Balebona¹</p> <p>¹Instituto Andaluz de Biotecnología y Desarrollo Azul (IBYDA), Universidad de Málaga, Ceimar-Universidad de Málaga, Malaga, Spain</p>
121	Immunostimulants, prebiotics and probiotics	<p>Biofilm regulation of shewanella pathogenic strains by extracellular products (ecps) of probiotic PDP11</p> <p>Olivia Pérez Gómez¹, Silvana Tapia Paniagua¹, Mari Carmen Balebona¹, Eduardo Martínez Manzanares¹, Miguel Angel Moriñigo¹</p> <p>¹Universidad de Málaga, Facultad de Ciencias, Departamento de Microbiología, Málaga, Spain</p>
122	Parasitic diseases	<p>Aspidogaster limacoides and <i>A. conchicola</i> (Trematoda: Aspidogastriidae) in freshwater fish and mollusks from the Korana and Mrežnica Rivers, Croatia</p> <p>Assistant Prof Krešimir Matanović¹, Dr Lucija Runje², Dr Krešimir Kuri³, Assoc. Prof. Jasna Lajtner⁴, Dr Valerija Benko¹, Prof. Emil Gjurčević¹</p> <p>¹Department for Biology and Pathology of Fish and Bees, University of Zagreb Faculty Of Veterinary Medicine, Zagreb, Croatia, ²Veterinary Station Remetinec, Zagreb, Croatia, ³Public Institution Aquatika-Freshwater Aquarium Karlovac, Karlovac, Croatia, ⁴Department of Biology, Faculty of Science, University of Zagreb, Zagreb, Croatia</p>
123	Prophylaxis and treatment	<p>Clomethiazole and Eugenol inhibit the replication of spring viraemia of carp virus (SVCV) and prevent cellular oxidative stress in vitro</p> <p>Sam Melrose¹, Irene Cano, Adele Cobb</p> <p>¹Cefas, Weymouth, United Kingdom</p>
124	Bivalve and crustacean diseases	<p>Role and shifts in <i>Crassostrea gigas</i> microbiome in response to <i>Vibrio aestuarianus</i> infections</p> <p>Adele Cobb¹, Samuel Melrose¹, Rose Kerr¹, Sarah Woodsford^{1,2}, Andrew Joseph¹, Matt Green¹, Richard Hazelgrove¹, Dr David Bass¹, Dr Kelly Bateman¹, Dr Frederico Batista¹</p> <p>¹Cefas, Weymouth, England, ²University of Exeter, Exeter, England</p>

125	Myxozoa	<p>Influence of temperature and cohabitation on the growth of the bryozoan <i>Fredericella sultana</i> in culture for transmission studies of myxozoan parasites</p> <p><u>Elea S. Miessen</u>¹, Justin Chan¹, Joana Pimentel-Santos¹, Astrid S. Holzer¹, Gema Alama-Bermejo¹ ¹University of Veterinary Medicine Vienna</p>
126	Viruses and viral diseases	<p>Diversity of piscine myocarditis virus (PMCV) lacks a consistent time-place association but displays increasing inter- and intra-host sequence variability</p> <p>Racheal Amono¹, Dr Turhan Markussen¹, Dr Vikash K. Singh², Ms. Sandra Radunovic¹, Dr Sunil K. Mor², Dr Øystein Evensen¹, <u>Dr Aase B. Mikalsen</u>¹ ¹Norwegian University of Life Sciences, Ås, Norway, ²University of Minnesota, St. Pauls, USA</p>
127	Nutrition and fish health	<p>The effect of <i>Lactiplantibacillus plantarum</i> R2 BiocenoI™ on gut microbiota, growth performance and health status of rainbow trout <i>Oncorhynchus mykiss</i></p> <p><u>Ivana Mikulíková</u>^{1,2}, Marija Radojičić², Hana Bandouchová^{1,2}, Jana Blahová¹, Ivana Papežíková^{1,2}, Hana Minářová^{1,2,3}, Zuzana Lepková¹, Ivona Toullová¹, Miroslava Palíková^{1,2} ¹University of Veterinary Sciences Brno, Brno, ²Mendel University in Brno, Brno, ³Veterinary Research Institute, Brno</p>
128	Diseases of public concern	<p>Microbiological risk assessment of <i>Anisakis</i> spp. in the Atlantic chub mackerel <i>Scomber colias</i> sold at Portuguese markets</p> <p>Dr Armine Asatryan^{1,2}, Dr Luis Filipe Rangel², Dr Maria Joao Santos^{2,3}, <u>Dr Ivona Mladineo</u>¹ ¹Institute of Parasitology BCAS, Czechia, ²CIIMAR, Porto University, Matosinhos, Portugal, ³CIIMAR, Department of Biology, Faculty of Sciences, Porto University, Porto, Portugal</p>
129	Other	<p>Towards developing an economic model for a health and welfare-oriented fish farm</p> <p>Maurice Glucksman¹, Dr Kim Thompson², Dr Francesc Padrós³, Dr Hamish Rodger⁴, <u>Dr Ivona Mladineo</u>⁵ ¹Centre for Advanced Spatial Analysis, University College London, London, UK, ²Moredun Research Institute, Pentlands Science Park, Penicuik, UK, ³Facultat de Veterinària, Universitat Autònoma de Barcelona, Barcelona, Spain, ⁴PatoGen AS, Ireland, ⁵Institute of Parasitology BCAS, Czechia</p>
130	Aquatic animal epidemiology	<p>Carp sleeping disease, an emerging issue in France</p> <p><u>Laetitia Montacq</u>¹, Stanislas Wetzel², Françoise Pozet³, Marine-Océane Guillermand⁴, Jéssabel Laithier⁴, Aurélien Tocqueville⁴, Doriana Flores⁵, Marine Baud⁵, Laurane Pallandre⁵, Rodolphe Thomas⁶, Jean-Christophe Haas⁷, Laurent Bigarré⁵, Sophie Le Bouquin-Leneveu⁶ ¹INRAE/ENVY - IHAP, Toulouse (31300), France, ²Clinique Vétérinaire du Clair Matin, Bourg-en-Bresse (01000), France, ³Laboratoire départemental d'analyses du Jura, Poligny (39802), France, ⁴ITAVI, Paris (75009), France, ⁵ANSES - VIMEP, Plouzané (29280), France, ⁶ANSES - EPISABE, Ploufragan (22440), France, ⁷AAPPMA de l'Ain, Divonne-les-Bains (01220), France</p>
131	Innovation in disease control	<p>Extracellular products of the probiotic <i>Shewanella putrefaciens</i> Pdp11 affect the regulation of the <i>Photobacterium damsela</i> subsp. <i>Piscicida aip56</i> gene</p> <p>Dr Marta Domínguez-Maqueda¹, Dr Jorge García-Márquez¹, Dr Cristóbal Espinosa-Ruiz², Dr M Ángeles Esteban², Dr Silvana T Tapia-Paniagua¹, <u>Dr Eduardo Martínez-Manzanares</u>¹, Dr M Carmen Balebona¹, <u>Dr Miguel Ángel Moriñigo</u>¹ ¹Departamento de Microbiología, Facultad de Ciencias, Instituto Andaluz de Biotecnología y Desarrollo Azul (IBYDA), Universidad de Málaga, Ceimar-Universidad de Málaga, Málaga, Spain, ²Departamento de Biología Celular e Histología, Facultad de Ciencias, Universidad de Murcia, Murcia, Spain</p>

132	Viruses and viral diseases	<p>Setting out zebrafish (<i>Danio rerio</i>) as a model to study nervous necrosis virus-host interaction</p> <p>Dr Patricia Moreno¹, Dr Daniel Alvarez-Torres², Maxence Frétau³, Manon Mehraz⁴, Dr Christelle Langevin⁴, Dr Julia Bejar⁵, Dr M. Carmen Alonso¹</p> <p>¹Universidad de Málaga, Instituto de Biotecnología y Desarrollo Azul, IBYDA, Departamento de Microbiología, Facultad de Ciencias, Malaga, Spain, ²Universidad de Málaga, Instituto de Biotecnología y Desarrollo Azul, IBYDA, Malaga, Spain, ³INRAE, Université Paris-Saclay, VIM, Jouy-en-Josas, France, ⁴INRAE, Université Paris-Saclay, IERP, Jouy-en-Josas, France, ⁵Universidad de Málaga, Instituto de Biotecnología y Desarrollo Azul, IBYDA, Departamento de Biología Celular, Genética y Fisiología, Facultad de Ciencias, Malaga, Spain</p>
133	Microbiomes in relation to fish pathology / health	<p>Effect of glyphosate on the microbiota of rainbow trout, <i>oncorhynchus mykiss</i></p> <p>Dr Laure Bellec², Dr Jessy Le Du - Carree¹, Dr Thierry Morin, Dr Lucile Durand³, Dr Marie-Anne Cambon-Bonavita³, Dr Morgane Danion¹</p> <p>¹Anses, Laboratoire de Ploufragan-Plouzané-Niort, Unité Virologie, immunologie et écotoxicologie des poissons, Infrastructure Nationale de Recherche EMERG'IN, Plouzané, France, ²Université de Bordeaux, Laboratoire EPOC, Équipe Écotoxicologie Aquatique, UMR CNRS 5805, INP Bordeaux, Pessac, France, ³Ifremer, Université de Bretagne Occidentale, CNRS, Laboratoire de Microbiologie des Environnements Extrêmes, Plouzané, France</p>
134	Case reports	<p>Hybrids of <i>Anisakis simplex</i> x <i>Anisakis pegreffii</i> and <i>Pseudoterranova decipiens</i> x <i>Pseudoterranova krabbei</i> in cod, <i>Gadus morhua</i> from Baltic Sea</p> <p>Dr Katarzyna Nadolna-Altyn¹, Dr Eng Sławomir Dąbrowski², MSc Eng Anna Bańkowska², Dr habilitated Beata Szostakowska³, Dr Joanna Pawlak¹, Prof. Magdalena Podolska¹</p> <p>¹National Marine Fisheries Research Institute, Gdynia, Poland, ²A&A Biotechnology, Gdańsk, Poland, ³Medical University of Gdańsk, Gdynia, Poland</p>
135	Case reports	<p><i>Contraecum osculatum</i> and <i>Pseudoterranova</i> sp. in the liver of salmon (<i>Salmo salar</i>) from Polish marine waters</p> <p>Dr Katarzyna Nadolna-Altyn¹, Dr Joanna Pawlak¹, Prof Magdalena Podolska¹, Dr Eng Adam M Lejk¹</p> <p>¹National Marine Fisheries Research Institute, Gdynia, Poland</p>
136	Case reports	<p>Sprat (<i>Sprattus sprattus</i>) as a transmitter of Anisakid nematodes to piscivorous predators in the Baltic Sea</p> <p>Dr Katarzyna Nadolna-Altyn¹, Dr Bastian Huwer², Dr Uwe Krumme³, MSc Richard Klinger⁴, Dr Stefan Neuenfeldt², Dr Jan Dierking⁵, Dr Joanna Pawlak¹, Dr Jane Behrens²</p> <p>¹National Marine Fisheries Research Institute, Gdynia, Poland, ²Technical University of Denmark, Kgs. Lyngby, Denmark, ³Thünen Institute of Baltic Sea Fisheries, Rostock, Germany, ⁴University of Hamburg, Hamburg, Germany, ⁵Geomar, Kiel, Germany</p>
137	Case reports	<p>Anisakidae nematodes in the liver of European flounder (<i>Platichthys flesus</i>) from the southern Baltic Sea</p> <p>Dr Katarzyna Nadolna-Altyn¹, Dr Marcin Kuciński², Zuzanna Mirny¹, Agnieszka Góra¹, Dr Joanna Pawlak¹</p> <p>¹National Marine Fisheries Research Institute, Gdynia, Poland, ²University of Gdańsk, Gdynia, Poland</p>
138	AMR in Aquaculture	<p>Antimicrobial resistance in aquatic and fecal bacteria from a Recirculating Aquaculture System and comparison with human clinical isolates*</p> <p>Joyshri Sarker¹, Aylar Saba Shirvan¹, Lionel Pineau¹, Céline David¹, Stéphane Corvec², Eric Batard³, Maria Ugarte-Ruiz⁴, Ségolène Calvez¹, Dr Nora Navarro-Gonzalez¹</p> <p>¹Oniris, INRAE, BIOEPAR, Nantes, France, ²Université de Nantes CHU Nantes Service de Bactériologie et des contrôles microbiologiques, INSERM, INCIT UMR 1302, Nantes, France, ³Nantes Université, Cibles et médicaments des infections et de l'immunité, IICiMed, UR 1155, Nantes, France, ⁴VISAVET Health Surveillance Centre. Universidad Complutense Madrid, Madrid, Spain</p> <p><i>*Accompanying 5 slides in 5 minutes presentation as part of AMR Workshop</i></p>

139	Bacterial diseases	Survival of 'Pasteurella atlantica gv. salmonicida' in seawater microcosms Thorvald Bø ² , Hanne Katrine Nilsen ¹ , Anne Berit Olsen ¹ , David Strand ¹ , Duncan Colquhoun ¹ ¹ Norwegian Veterinary Institute, Norge, ² University of Bergen, Norge
140	Fish and shellfish immunology (including vaccines and vaccination)	Lysozyme inhibitory effect of Edwardsiella piscicida Ivy and sensitivity of an ivy-deficient strain to host fish Aki Nishihara ¹ , Takechiyo Sumiyoshi ² , Dr Tomoya Kono ³ , Dr Masahiro Sakai ³ , Dr Jun-ichi Hikima ³ ¹ Interdisciplinary Graduate School of Agriculture and Engineering, University of Miyazaki, Miyazaki, Japan, ² Graduate School of Agriculture, University of Miyazaki, Miyazaki, Japan, ³ Faculty of Agriculture, University of Miyazaki, Miyazaki, Japan
141	Immunostimulants, prebiotics and probiotics	Effect of dietary selenium and zinc on the immune response in rainbow trout (Oncorhynchus mykiss) Hana Novotna ^{1,2,3} , Lubomir Pojezdal ¹ , Eva Postulkova ³ , Ivana Mikulikova ^{2,3} , Ivana Papezikova ^{2,3} , Miroslava Palikova ^{2,3} ¹ Veterinary Research Institute, Brno, Czech Republic, ² University of Veterinary Sciences Brno, Brno, Czech Republic, ³ Mendel University in Brno, Brno, Czech Republic
142	Bacterial diseases	Experimental infection with 'Pasteurella atlantica gv. Salmonicida' and Pasteurella skyensis in Atlantic salmon – virulence and pathology Anne Berit Olsen ¹ , Eirik Aamodt Nævdal ¹ , Dr Aslaug Ness ² , Torill Thoreby Jensen ¹ , Dr Hanne Katrine Nilsen ¹ , Dr Duncan J. Colquhoun ³ , Dr Sonal Patel ¹ ¹ Norwegian Veterinary Institute, Bergen, Norway, ² MSD Animal Health Innovation, Bergen, Norway, ³ Norwegian Veterinary Institute, Ås, Norway
143	Diagnostics	Are antibodies used in mammals validated in common teleosts species as immunohistochemical markers? Massimo Orioles ¹ , Claudio Murgia ² , Prof. Giovanni Pietro Burrari ² , Dr Marta Polinas ² , Dr Martina Penati ³ , Prof. Donatella Volpatti ¹ , Prof. Marco Galeotti ¹ , Prof Maria Filippa Addis ³ , Prof. Elisabetta Antuofermo ² ¹ University of Udine, Department of Agricultural, Food, Environmental and Animal Sciences, Udine, Italy, ² University of Sassari, Department of Veterinary Medicine, Sassari, Italy, ³ University of Milano, Department of Veterinary Medicine and Animal Science, Lodi, Italy
144	Diagnostics	Poster Withdrawn
145	Other	Effects of Parasites on Food Web Structure and Dynamics: New Ways to Improve Accuracy and Ecological Realism Tully Osmond ¹ , Prof Luke Holman ¹ , Dr Campbell Pert ² , Dr Douglas Speirs ³ , Prof Sonja Rueckert ⁴ , Dr Gavin Ballantyne ¹ ¹ Edinburgh Napier University, Edinburgh, Midlothian, ² Marine Scotland Science, Aberdeen, Aberdeenshire, ³ University of Strathclyde, Glasgow, Glasgow, ⁴ University of Duisburg Essen, Essen, Essen
146	Parasitic diseases	Bacteria isolated from fish infested with Ichthyophthirius multifiliis Dr Joanna Pajdak-Gzaus ¹ , Dr Elżbieta Terech-Majewska ¹ , Dr Patrycja Schulz ² , Prof Andrzej Krzysztof Siwicki ² ¹ University of Warmia and Mazury in Olsztyn, Olsztyn, Poland, ² National Inland Fisheries Research Institute, Olsztyn, Poland

147	Diseases of uncertain aetiology	Ultrastructurally diagnosed Mycoplasma-like organism in erythrocytes of anaemic cyprinid hybrids Iva Dyková ¹ , Miroslava Palíková ^{2,3} , Ivana Papežíková ^{2,3} , Lukáš Vetešník ^{1,4} ¹ Masaryk University, Brno, Brno, ² University of Veterinary Sciences Brno, Brno, ³ Mendel University in Brno, Brno, ⁴ Czech Academy of Sciences, Brno, Brno
148	Case reports	Individual approach to fish patients using imaging techniques and surgery Miroslava Palíková ^{1,2} , Ivana Papežíková ^{1,2} , Ivana Mikulíková ^{1,2} , Tomáš Doležal ² , Jiří Pikula ^{1,2} ¹ University of Veterinary Sciences Brno, Brno, ² Mendel University in Brno, Brno
149	Innovation in disease control	Effect of water treatment with CaviPlasma on survival of disease agents of fish Dr Ivana Papežíková ^{1,2} , Ivona Toulová ² , Věra Vaibarová ² , Ivana Mikulíková ^{1,2} , Hana Minářová ^{1,2,3} , Jan Mendel ⁴ , Miroslava Palíková ^{1,2} ¹ University of Veterinary Sciences Brno, Brno, Czech Republic, ² Mendel University in Brno, Brno, Czech Republic, ³ Veterinary Research Institute Brno, Brno, Czech Republic, ⁴ Czech Academy of Sciences, Brno, Czech Republic
150	Viruses and viral diseases	Pilot study of behavioural analysis in European sea bass (<i>Dicentrarchus labrax</i>) infected with VNNv Dr Francesco Pascoli ¹ , Dr Gaia Bacchin ¹ , Dr Alessandra Buratin ¹ , Dr Fabrizio Grieco ² , Dr Anna Toffan ¹ ¹ Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro (PD), Italy, ² Noldus Information Technology, Wageningen, The Netherlands
151	Emerging pathogens	Molecular detection of a novel cyprinid herpesvirus in koi carp closely related to cyprinid herpesvirus 3 (CyHV-3) Dr Miriam Abbadi ¹ , Dr Andrea Basso ¹ , Dr Lorena Biasini ¹ , Dr Tobia Pretto ¹ , Dr Luana Cortinovic ¹ , Dr Andrea Marsella ¹ , Dr Stefano Colorio ¹ , Dr Anna Toffan ¹ , Dr Francesco Pascoli ¹ ¹ Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro (PD), Italy
152	Case reports	First record of <i>Pseudoterranova decipiens</i> in sprat (<i>Sprattus sprattus</i>) from the Baltic Sea Dr Katarzyna Nadolna-Ałtyn ¹ , Dr Joanna Pawlak ¹ , Dr Marzenna Pachur ¹ ¹ National Marine Fisheries Research Institute, Gdynia, Poland
153	Case reports	Polish report of European eel infection with <i>Anguillicola crassus</i> 2014 - 2022 Dr Katarzyna Nadolna-Ałtyn ¹ , Dr Tomasz Nermer ¹ , Dr Joanna Pawlak ¹ , Piotr Pankowski ¹ , Karina Choma-Stolarek ¹ , Łukasz Giedrojć ¹ National Marine Fisheries Research Institute, Gdynia, Poland
154	Case reports	Diet composition and presence of zoonotic nematodes in the liver of Atlantic mackerel (<i>Scomber scombrus</i>) from southern Baltic Sea Dr Joanna Pawlak ¹ , Dr Katarzyna Nadolna-Ałtyn ¹ ¹ National Marine Fisheries Research Institute, Gdynia, Poland
155	Case reports	Nematode parasite infection of fourbeard rockling <i>Enchelyopus cimbrius</i> from the southern Baltic Sea Dr Joanna Pawlak ¹ , Dr Katarzyna Nadolna-Ałtyn ¹ ¹ National Marine Fisheries Research Institute, Gdynia, Poland
156	Case reports	Diet composition of whiting from the western Baltic Sea – potential links to their parasite fauna Dr Joanna Pawlak ¹ , Dr Katarzyna Nadolna-Ałtyn ¹ , Dr Uwe Krumme ² ¹ National Marine Fisheries Research Institute, Gdynia, Poland, ² Thünen Institute of Baltic Sea Fisheries, Rostock, Germany

157	Other	<p>Elevated levels of biliary PAH metabolites and liver lesions in flounder <i>Platichthys flesus</i> from the southern Baltic Sea</p> <p>Prof Magdalena Podolska¹, Wiesława Rucińska¹, Dr Joanna Pawlak¹, Dr Katarzyna Nadolna-Ałtyn¹, Łukasz Dziemian¹, Dr Karolina Duk² ¹National Marine Fisheries Research Institute, Gdynia, Poland, ²National Inland Fisheries Research Institute, Żabieniec, Poland</p>
158	Fish and shellfish immunology (including vaccines and vaccination)	<p>Effect of 2-bromopalmitate and verteporfin on viral replication and persistence in EPC cells</p> <p>Estela Tebar¹, Ainhoa Gómez-Quintanilla¹, Dr Miguel Saceda¹, Dr Luis Perez¹ ¹Instituto de Investigación Desarrollo e Innovación en Biotecnología Sanitaria de Elche, Universidad Miguel Hernandez (IDiBE - UMH), Elche, Spain</p>
159	Bivalve and crustacean diseases	<p>Population dynamic of epicaridean bopyrid <i>anuropodiona amphindra</i> parasitizing <i>iridonia speciosa</i> in the eastern Adriatic sea</p> <p>Dr Mirela Petrić¹, Anamarija Paradinović², Željka Trumbić¹ ¹University of Split, Department of Marine Studies, Split, Croatia, ²Association for Nature, Environment and Sustainable Development Sunce, Split, Croatia</p>
160	Parasitic diseases	<p>First report of <i>philometroides sanguineus</i> (nematoda: philometridae) in farmed goldfish (<i>carassius auratus</i>) in Italy</p> <p>Teresa Pirollo¹, Perla Tedesco¹, Alessia Cantori¹, Monica Caffara¹, Enea Tentoni², Lorenzo Tarocchi², Maria Letizia Fioravanti¹, Andrea Gustinelli¹ ¹University of Bologna, Ozzano dell'Emilia, (BO), Italy, ²APA-CT s.r.l., Forlì, (FC), Italy</p>
161	Parasitic diseases	<p>Sodium percarbonate and peracetic acid application affects the diagnostics of <i>ichthyophthirius multifiliis</i> in rainbow trout (<i>oncorhynchus mykiss</i>) via real-time PCR</p> <p>Dr Lubomir Pojezdal¹, Dr Hana Novotna^{1,2}, Dr Katerina Matejickova¹, Ing. Jitka Motlova¹ ¹Veterinary Research Institute, Brno, Czech Republic, ²University of Veterinary Sciences, Brno, Czech Republic</p>
162	Bacterial diseases	<p>Prevalence of gill epitheliocystis in Atlantic salmon reared in freshwater flow-through and recirculation hatcheries</p> <p>Dr Petra Quezada-Rodriguez¹, Dr Richard Taylor¹, Dr Jamie Downes, Fintan Egan³, Dr Samantha White², Prof Barbara Nowak⁴, Dr Neal Ruane², Dr James Wynne¹ ¹The Commonwealth Scientific and Industrial Research Organisation (CSIRO), Hobart, Australia, ²Marine Institute, Oranmore, Ireland, ³Marine Institute, Newport, Ireland, ⁴University of Tasmania, Launceston, Australia</p>
163	Nutrition and fish health	<p>Immunomodulatory effects of dietary tryptophan supplementation in gilthead seabream (<i>Sparus aurata</i>)</p> <p>Dr Lourenço Ramos-Pinto^{1,2,3}, Paulo Santos^{1,2}, Dr Bruno Reis^{1,2,3,4}, Diogo Peixoto^{1,2,5}, Dr Francisco Guardiola⁶, Dr Luis Conceição³, Dr Jorge Dias³, Dr Antonio Afonso², Dr Gonzalo Martínez-Rodríguez⁷, Dr Juan Miguel Mancera⁵, Dr Tomé Silva³, Dr Benjamín Costas^{1,2} ¹ICBAS, Porto, Portugal, ²CIIMAR, Matosinhos, Portugal, ³SPAROS, Olhão, Portugal, ⁴SORGAL, Ovar, Portugal, ⁵INMAR, Spain, ⁶Campus Mare Nostrum, Spain, ⁷ICMAN-CSIC, Spain</p>
164	Aquatic animal welfare	<p>Characterization of bacteria in commercial probiotics used for aquaculture in Bangladesh to assess concerns over safety</p> <p>Ibrahim Rashid^{1,2}, Dr Amaya Albalat¹, Dr Andrew P. Desbois¹ ¹University of Stirling, Stirling, United Kingdom, ²Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur-1706, Bangladesh</p>
165	Parasitic diseases	<p>Surveillance of <i>gyrodactylus</i> parasites in salmonids in the river tornionjoki</p> <p>Marjukka Rask¹, Tiina Korkea-aho¹, Petra Heikkinen¹, Ville Vähä², Hanna Kuukka-Anttila¹ ¹Finnish Food Authority, Finland, ²Natural Resources Institute Finland, Finland</p>

166	Prophylaxis and treatment	<p>Efficacy of dietary praziquantel against important monogeneans infections in Mediterranean farmed fish</p> <p>Dr George Rigos¹, Dr Ioannis Petropoulos², Kostantinos Tzokas², Nikolaos Katribouzas², Dr Dimitra Kogiannou¹, Dr Eleni Golomazou³</p> <p>¹Hellenic Centre For Marine Research, Institute of Marine Biology, Biotechnology and Aquaculture (IMBBC), Hellenic Centre for Marine Research (HCMR), 46.7 km Ave Athens-Sounio, Anavyssos 19013, Greece, ²Avramar Aquaculture SA, 19,3 km Leoforos Markopoulou, Paiania 19002, Greece, ³Department of Ichthyology and Aquatic Environment - Aquaculture Laboratory, School of Agricultural Sciences, University of Thessaly, Fytokou str., Volos 38446, Greece</p>
167	Myxozoa	<p>Life cycle dynamics of a myxosporean parasite (Cnidaria, Myxozoa) infecting the urinary bladder of reared zebra seabream <i>Diplodus cervinus</i></p> <p>Dr Sónia Rocha^{1,2}, Tiago Almeida², Florbela Soares³, Hugo Ferreira³, Cátia Marques³, Pedro Pousão³, Catarina Araújo^{1,4}, Graça Casal^{2,5}, Maria João Santos^{4,6}, Luís Filipe Rangel^{4,6}</p> <p>¹Instituto de Investigação e Inovação em Saúde (i3S), University of Porto, Porto, Portugal, ²School of Medicine and Biomedical Sciences (ICBAS), University of Porto, Porto, Portugal, ³IPMA, Aquaculture Research Station, Olhão, Portugal, ⁴Faculty of Sciences, University of Porto (FCUP), Porto, Portugal, ⁵TOXRUN – Toxicology Research Unit, University Institute of Health Sciences, CESPU, Gandra, Portugal, ⁶Interdisciplinary Centre of Marine and Environmental Research (CIIMAR), University of Porto, Matosinhos, Portugal</p>
168	Myxozoa	<p>Myxosporean diversity parasitizing thicklip grey mullet <i>Chelon labrosus</i> in a Portuguese estuary</p> <p>José Guimarães¹, Ana Machado^{1,2}, Graça Casal^{1,3}, Ângela Alves¹, Maria João Santos^{2,4}, Sónia Rocha^{1,5}</p> <p>¹School of Medicine and Biomedical Sciences (ICBAS), University of Porto, Porto, Portugal, ²Interdisciplinary Centre of Marine and Environmental Research (CIIMAR), Matosinhos, Portugal, ³TOXRUN – Toxicology Research Unit, University Institute of Health Sciences, CESPU, Gandra, Portugal, ⁴Faculty of Sciences (FCUP), University of Porto, Porto, Portugal, ⁵Instituto de Investigação e Inovação em Saúde (i3S), University of Porto, Porto, Portugal</p>
169	Bacterial diseases	<p>Artificial infection of Japanese medaka <i>Oryzias latipes</i> with <i>Edwardsiella piscicida</i> by the immersion method</p> <p>Dr Masahiro Sakai¹, Aki Nishihara, Takechio Sumiyashi, Koushiro Arakawa, Dr Tomoya Kono, Dr Jun-ichi Hikima</p> <p>¹University of Miyazaki, Miyazaki, Japan</p>
170	Aquatic animal epidemiology	<p>Are Chondrichthyes also important hosts for <i>Anisakis</i> spp. Life cycle? The case in the south coast of Portugal</p> <p>Prof MJ Santos^{1,2}, Dr Daniel Ruiz¹, Dr Adriana Paiva¹, Dr António Labela¹, Dr Matilde Santos², Dr Gonçalo Silva², Dr Sofia Graça Aranha³, Dr Dias Ester², Dr Luis Filipe Rangel²</p> <p>¹CIIMAR, Biology Department, Faculty of Sciences, Porto University, Porto, Portugal, ²CIIMAR, University of Porto, Matosinhos, Portugal, ³CCMAR, Algarve University, Faro, Portugal</p>
171	Diseases of public concern	<p>Occurrence of <i>Anisakis</i> spp. In the Atlantic chub mackerel <i>Scomber scombrus</i>, off the Portuguese Atlantic coast, and its anisakiosis risk</p> <p>Dr Jorge Saraiva^{1,2}, Dr Fernando Atroch^{1,2}, Prof Maria João Santos^{1,2}</p> <p>¹CIIMAR, University of Porto, Matosinhos, Portugal, ²CIIMAR, Faculty of Sciences, University of Porto, Porto, Portugal</p>
172	Climate change and diseases	<p>Climatic changes and interference in host-parasite interaction</p> <p>Dr Fernando Atroch^{1,2}, Prof Maria João Santos^{1,2}</p> <p>¹CIIMAR, Biology Department, Faculty of Sciences, University of Porto, Porto, Portugal, ²CIIMAR, University of Porto, Matosinhos, Portugal</p>

173	Immunostimulants, prebiotics and probiotics	<p>European seabass (<i>Dicentrarchus labrax</i>) immune status and response after dietary supplementation with algae-derived compounds</p> <p>Paulo Santos^{1,2,4}, André Cunha^{1,2,4}, Mariana Hinzmann¹, Inês Ferreira^{1,2,5}, Lourenço Ramos-Pinto¹, Tiago Aires⁶, Luis Conceição³, Rita Azeredo^{1,2}, Ana Teresa Gonçalves³, Benjamin Costas^{1,2}</p> <p>¹Centro Interdisciplinar de Investigação Marinha e Ambiental, University of Porto, Terminal de Cruzeiros do Porto de Leixões, Av. General Norton de Matos s/n, 4450-208, Portugal, ²Abel Salazar Institute of Biomedical Sciences, University of Porto (ICBAS), Rua de Jorge Viterbo Ferreira 228, 4050-313, Portugal, ³SPAROS Lda., Área Empresarial de Marim, Lote C, 8700-221, Portugal, ⁴GreenCoLab – Associação Oceano Verde, Universidade do Algarve, Campus de Gambelas, Ed. 2, Gab. 2.1, 8005-139, Portugal, ⁵i3S, Instituto de Investigação e Inovação em Saúde, University of Porto, Rua Alfredo Allen 208, 4200-135, Portugal, ⁶SORGAL S.A., EN 109- Lugar da Pardala 3880-728, Portugal</p>
174	Diagnostics	<p>Influence of sea temperature on biochemical profile of greater amberjack <i>seriola dumerili</i> (risso, 1810)</p> <p>Dr Slavica Čolak¹, Ivan Župan¹, Lav Bavčević¹, Bosiljka Mustač¹, Bruna Petani¹, Danijel Mejdandžić², Mario Milin², Tomislav Šarić¹, Josip Barišić³</p> <p>¹University of Zadar, Zadar, Croatia, ²Cromaris d.d., Zadar, Croatia, ³WellFish Diagnostics, Paisley, Scotland</p>
175	Emerging pathogens	<p>New filo-, hanta- and rhabdoviruses detected in farmed European perch (<i>Perca fluviatilis</i> Linnaeus, 1758)</p> <p>Prof Dr Heike Schmidt-Posthaus¹, Prof Dr Torsten Seuberlich²</p> <p>¹Institute for Fish and Wildlife Health, University of Bern, Bern, Switzerland, ²Division of Neurological Sciences, University of Bern, Bern, Switzerland</p>
176	Aquatic animal epidemiology	<p>How sustainable is stocking of Atlantic trout, e.g. in presence of Proliferative Kidney Disease?</p> <p>Dr Helena Saura Martinez¹, Dr Gary Delalay¹, Prof Dr Heike Schmidt-Posthaus¹</p> <p>¹Institute for Fish and Wildlife Health, University of Bern, Bern, Switzerland</p>
177	Bacterial diseases	<p>Influence of <i>Flavobacterium psychrophilum</i> gill infection on immune parameters of rainbow trout (<i>Oncorhynchus mykiss</i>)</p> <p>Patrycja Schulz¹, Krzysztof Kazuń¹, Barbara Kazuń¹, Joanna Pajdak-Czaus², Karolina Duk¹, Andrzej Siwcki²</p> <p>¹National Inland Fisheries Research Institute, Olsztyn, Polska, ²University of Warmia and Mazury, Olsztyn, Polska</p>
178	Genomic approach related to fish pathology	<p>Comparative Genome and Infectivity Analysis of the Fish Pathogenic Oomycetes from the Genus <i>Saprolegnia</i></p> <p>Magdalena Scislak¹, Dr Kypher Shreves^{1,2}, Dr Debbie McLaggan¹, Prof. Pieter van West¹</p> <p>¹University of Aberdeen, Aberdeen, United Kingdom, ²OTAQ, Aberdeen, United Kingdom</p>
179	Nutrition and fish health	<p>Interactions of predominantly plant-based feeding and handling stress on the expression of selected immune markers in rainbow trout (<i>oncorhynchus mykiss</i>)</p> <p>Dr Henrike Seibel¹, Finn-Thorbjörn Fichtner-Grabowski, Marvin Suhr, Dr Alexander Rebl, Prof. Dr Stéphanie Céline Hornburg</p> <p>¹Fraunhofer IMTE, Büsum, Germany, ²Christian-Albrecht-University Kiel, Kiel, Germany, ³Christian-Albrecht-University Kiel, Kiel, Germany, ⁴Research Institute for Farm Animal Biology, Dummerstorf, Germany, ⁵Christian-Albrecht-University Kiel, Kiel, Germany</p>
180	Myxozoa	<p>The first diagnosis of <i>Myxobolus lentisuturalis</i> a highly pathogenic muscle-infecting parasite of gibel carp (<i>Carassius auratus gibelio</i>) in Hungary</p> <p>Nadhirah Syafiqah Suhaimi^{1,2}, Graciela Colunga-Ramírez^{1,2}, Dr Boglárka Sellyei¹, Dr Gábor Cech¹, Dr Kálmán Molnár¹, Dr Csaba Székely¹</p> <p>¹Veterinary Medical Research Institute, Budapest, Hungary, ²Hungarian University of Agricultural and Life Sciences, Doctoral School of Animal Biotechnology and Animal Science (Agricultural Science), Gödöllő, Hungary</p>

181	Viruses and viral diseases	Infectious salmon anemia outbreak in farmed Atlantic salmon (<i>Salmo salar</i> L.) in Iceland, first detection of an ISAV HPRdel variant Heiða Sigurðardóttir ¹ , Thorunn Soley Bjornsdottir ¹ , Samuel Casas Casal ¹ , Arni Kristmundsson ¹ ¹ Institute For Experimental Pathology At Keldur, Reykjavík, Iceland
182	Diseases of uncertain aetiology	Heart pathology in Atlantic Salmon (<i>Salmo salar</i> L.) in Scotland: a case study Dr Silvia Soares ¹ , Jonathan Oladjins, Mark Fordyce, David Bradley ¹ Marine Scotland, Aberdeen, United Kingdom
183	Vaccines	Recombinant salmonid novirhabdovirus as vaccine vectors to protect Senegalese sole against viral encephalopathy and retinopathy Dr Sandra Souto ¹ , Emilie Mérour ² , Alain Le Coupance ² , Annie Lamoureux ² , Julie Bernard ² , Michel Brémont ² , Jean K. Millet ² , Stéphane Biacchesi ² ¹ Departamento de Microbiología y Parasitología. Instituto de acuicultura. Universidad De Santiago De Compostela, Santiago De Compostela, Spain, ² Université Paris-Saclay, INRAE, UVSQ, Virologie et Immunologie Moléculaires, Jouy-en-Josas, France
184	Viruses and viral diseases	Ionic liquids as novel compounds with applications in the prevention of viral diseases in fish Rodrigo Varela-Hoyos ¹ , Juan J Parajó ² , Josefa Salgado ² , Carmen López-Vázquez ¹ , Isabel Bandín ¹ , Dr Sandra Souto ¹ ¹ Departamento de Microbiología y Parasitología. Instituto de acuicultura. Universidad De Santiago De Compostela, Santiago de Compostela, Spain, ² NAFOMAT Group, Applied Physics and Particle Physics Department, Universidad de Santiago de Compostela, Santiago de Compostela, Spain
185	Viruses and viral diseases	Occurrence of lymphocystis disease virus (LCDV) in Platichthys flesus from the South Baltic Magdalena Stachnik ¹ , Katarzyna Nadolna-Altyn ² ¹ National Veterinary Research Institute, Puławy, Poland, ² National Marine Fisheries Research Institute, Gdynia, Poland
186	Viruses and viral diseases	First detection and phylogenetic analysis of piscine orthoreovirus 3 (PRV-3) in salmonid fish from Poland Magdalena Stachnik ¹ , Marek Matras ¹ , Ewa Borzym ¹ , Joanna Maj-Paluch ¹ , Michał Reichert ¹ ¹ National Veterinary Research Institute, Poland
187	Diseases of wild and ornamental fish	Virological studies of wild salmon (<i>Salmo salar</i>) from the South Baltic Magdalena Stachnik ¹ , Katarzyna Nadolna-Altyn ² ¹ National Veterinary Research Institute, Poland, ² National Marine Fisheries Research Institute, Gdynia, Poland
188	Environmental and toxicological diseases	Effects of levonorgestrel on the hypothalamus-pituitary-gonad (HPG) and hypothalamus-pituitary-thyroid (HPT) axes in common carp (<i>Cyprinus carpio</i>) Dr Christoph Steinbach ¹ , Ilka Lutz, Marie Šandová ¹ , Michal Pech ¹ , Eva Šálková ¹ , Adam Bořk ¹ , Heike Schmidt – Posthaus ³ , Olga Valentová ¹ , Hana Kocour Kroupová ¹ ¹ Faculty of Fisheries and Protection of Waters, South Bohemian Research Centre of Aquaculture and Biodiversity of Hydrocenoses, University of South Bohemia in České Budějovice, Zátíší 728/II, 389 25, Vodňany, Czech Republic, ² Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB), Müggelseedamm 310, 12587, Berlin, Germany, ³ Institute for Fish and Wildlife Health, Department of Infectious Diseases and Pathobiology, University of Bern, Länggassstrasse 122, 3012 Bern, Switzerland
189	Bacterial diseases	eDNA screening for “<i>Pasteurella atlantica</i>” in Norwegian aquaculture David A. Strand ¹ , Jannicke Wiik-Nielsen ¹ , Saima Mohammad ¹ , Hanne Nilsen ¹ , Bjarte Langhelle ² , Snorre Gulla ¹ , Duncan Colquhoun ¹ ¹ Norwegian Veterinary Institute, Ås, Norge, ² Åkerblå, Region Vest, Norway

190	Viruses and viral diseases	Multiplex PCR assay for simultaneous detection of three important viruses in tilapia Dr Win Surachetpong ¹ , Ms. Tharinthon Prasartset ¹ ¹ Faculty Of Veterinary Medicine, Kasetsart University, Bangkok, Thailand
191	Bacterial diseases	Bacterial Diseases in Intensively Cultured Giant Snakehead in Thailand: Identification, Characterization, and Antibiotic Susceptibility Dr Win Surachetpong ¹ , Dr Tuchakorn Lertwannakarn ¹ , Dr Theeraporn Pulpipat ¹ ¹ Faculty Of Veterinary Medicine, Kasetsart University, Bangkok, Thailand
192	Case reports	New histopathological observations in cases of Moritella viscosa septicemia Julie Christine Svendsen , Synne Grønbech ¹ The Norwegian Veterinary Institute, Ås, Norway
193	Immunostimulants, prebiotics and probiotics	Effect of b-glucans on rainbow trout (Oncorhynchus mykiss) IgM+ B cells Dr Diana Martín ¹ , Dr M. Camino Ordás ¹ , Dr Patricia Diaz-Rosales ¹ , Carlos Zarza ² , Dr Carolina Tafalla ¹ ¹ Fish Immunology and Pathology Group, Animal Health Research Centre (CISA), National Institute for Agricultural and Food Research and Technology (INIA), Spanish Research Council (CSIC), Valdeolmos-Alalpardo, Madrid, Spain, ² Skretting Aquaculture Innovation, 4016, Stavanger, Norway
194	Fish and shellfish immunology (including vaccines and vaccination)	Characterization of B cell responses in rainbow trout (Oncorhynchus mykiss) experimentally exposed to red mark syndrome (RMS) Dr Juan Germán Herranz-Jusdado ^{1,2} , Dr Esther Morel ¹ , Dr Niels Lorenzen ³ , Dr Diana Martín ¹ , Dr Rocío Simón ¹ , Dr Jacob Günther Schmidt ³ , Dr Carolina Tafalla ¹ ¹ Fish Immunology and Pathology Group, Animal Health Research Centre (CISA), National Institute for Agricultural and Food Research and Technology (INIA), Spanish Research Council (CSIC), Valdeolmos-Alalpardo, Madrid, Spain, ² Skretting Aquaculture Innovation, Stavanger, Norway, ³ Section for Fish and Shellfish Diseases, National Institute of Aquatic Resources, Technical University of Denmark, Kgs. Lyngby, Denmark
195	Vaccines	Development of an immersion mucoadhesive nanovaccine to enhance vaccine efficacy against Aeromonas veronii in red tilapia (Oreochromis sp.) Dr Pimwarang Sukkarun ² , Dr Sirikorn Kitiyodom ² , Dr Anurak Bunnoy ³ , Dr Teerapong Yata ² , Dr Kim Thompson ¹ , Prof Channarong Rodkhum ² , Prof Nopadon Pirarat ² ¹ Moredun Research Institute, Penicuik, UK, ² Chulalongkorn University, Bangkok, Thailand, ³ Kasetsart University, Bangkok, Thailand
196	Other	European Virus Archives-Global boosts research in aquaculture Dr Anna Toffan ¹ , Dr Miriam Abbadi ¹ , Dr Alessandra Buratin ¹ , Dr Lorena Biasini ¹ , Dr Francesca Ellero ¹ , Dr Marilena Carrino ¹ ¹ Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro, Padova, Italia
197	Nutrition and fish health	Dietary beta-glucans supplementation effects on fish after experimental infection Ivona Toulová ¹ , Ivana Mikulíková ^{1,2} , Hana Bandouchová ^{1,2} , Hana Minářová ^{1,2,3} , Ľubomír Pojezdal ³ , Eva Poštulková ² , Ivana Papežíková ^{1,2} , Miroslava Palíková ^{1,2} ¹ University of Veterinary Sciences Brno, Brno, ² Mendel University in Brno, Brno, ³ Veterinary Research Institute, Brno

198	Microbiomes in relation to fish pathology / health	<p>Modulation of gilthead seabream gill microbiota by Sparicotyle chrysophrii infection</p> <p>Maria del Socorro Toxqui Rodriguez^{1,2}, Enrique Riera Ferrer¹, Dr Itziar Estensoro¹, Raquel Del Pozo¹, Dr Oswaldo Palenzuela¹, Prof Jaime Pérez-Sánchez², Prof Sitjà-Bobadilla Ariadna¹, Dr M. Carla Piazzon¹</p> <p>¹Fish Pathology group, IATS, CSIC, Ribera de Cabanes, Spain, ²Nutrigenomics and Fish Growth Endocrinology Group, IATS, CSIC, Ribera de Cabanes, Spain</p>
199	Bacterial diseases	<p>Unexpected associated bacteria with Crassostrea gigas juveniles during mortality events</p> <p>Audrey Caro¹, Arthur Cousson¹, Fabien Rieuvilleneuve¹, Juliette Pouzadoux², Cécile Roques¹, Marie-Agnès Travers², Eve Toulza², Marie-Charlotte Cheutin¹, Sébastien Duperron³, Florian Voron⁴, Sébastien Mas⁴, Patrice Got¹, Yannick Guéguen¹</p> <p>¹MARBEC, Montpellier, France, ²IHPE, Montpellier, France, ³MCAM MNHN, Paris, France, ⁴OSU OREME, Montpellier-Sète, France</p>
200	Diseases of public concern	<p>Larvicidal activity of water extracts of selected herbs and spices against L3 larvae of Anisakis pegreffii</p> <p>Dr Željka Trumbić¹, Dr Jerko Hrabar², Dr Vida Šimat¹</p> <p>¹University of Split, Split, Croatia, ²Institute of Oceanography and Fisheries, Split, Croatia</p>
201	Genomic approach related to fish pathology	<p>Developing stable transformation for saprolegnia parasitica</p> <p>Israt Jahan Tumpa¹, Franz Trusch², Kypher Shreves¹, Debbie McLaggan¹, Pieter van West¹</p> <p>¹University of Aberdeen. Aberdeen Oomycete Laboratory, The International Centre of Aquaculture Research and Development, Institute of Medical Sciences, Foresterhill, Aberdeen AB25 2ZD, UK, ²Imperial College London, Barkoulas Lab, Department of Life sciences, Faculty of Natural Sciences, SW7 2AZ, London, UK</p>
202	Vaccines	<p>Production and characterization of chimeric recombinant nanostructured proteins to be used as antigens in a prototype vaccine against Piscirickettsia salmonis</p> <p>Dr Jose Gallardo-Matus¹, Dr (c) Paula Valenzuela-avilés¹, Dr Luis Mercado¹, Dr Débora Torrealba¹</p> <p>¹Pontificia Universidad Católica De Valparaíso, Valparaíso, Chile</p>
203	Diagnostics	<p>Diagnostic methods for identifying Aphanomyces astaci, the crayfish plague agent</p> <p>Dr Tiina Korkea-aho¹, Sirpa Heinikainen¹, Dr David Strand², Jussa-Pekka Virtanen¹, Dr Satu Viljamaa-Dirks¹</p> <p>¹Finnish Food Authority, Finland, ²Norwegian Veterinary Institute, Norway</p>
204	Bacterial diseases	<p>A study on the in-vitro instability and the replication functions of the virulence plasmid pPHDP70 of Photobacterium damsela subsp. Piscicida</p> <p>Soraya Fraga-Pampín¹, Ana Vences¹, Alba V. Barca¹, Carlos R. Osorio¹</p> <p>¹Instituto de Acuicultura. Universidade de Santiago de Compostela, Santiago de Compostela, Spain</p>
205	Parasitic diseases	<p>Description of a novel Saprolegnia (Oomycota) species from Lake Velence in Hungary</p> <p>Viktória Verebélyi¹, Noémi Erdei¹, Tímea Hardy¹, Prof Edit Eszterbauer¹</p> <p>¹Veterinary Medical Research Institute, Budapest, Hungary</p>

206	AMR in Aquaculture	<p>Antimicrobial resistance surveillance in imported ornamental fish*</p> <p>Dr Athina Papadopoulou^{1,2}, Dr Nicola Coyle¹, Miss Isobel Smith^{1,3}, Miss Niamh Langford^{1,2}, Dr Ben Maskrey¹, Dr Mickael Teixeira Alves¹, Dr Edel Light^{2,4}, Dr David Verner-Jeffreys^{1,2}</p> <p>¹Centre of Environment, Fisheries and Aquaculture Science, Weymouth, United Kingdom, ²UK FAO Reference Centre for Antimicrobial Resistance, Weybridge, UK, ³University of Surrey, Surrey, UK, ⁴Veterinary Medicines Directorate, Weybridge, UK</p> <p><i>*Accompanying 5 slides in 5 minutes presentation as part of AMR Workshop</i></p>
207	Bacterial diseases	<p>Elucidating the dynamics and transmission potential of the aquatic pathogen Renibacterium salmoninarum in Rainbow trout</p> <p>Alejandra Villamil Alonso¹, Giulia Zarantonello¹, Niccolò Vendramin¹, Lone Madsen¹, Tine Moesgaard Iburg¹, Argelia Cuenca¹</p> <p>¹Technical University of Denmark, Kgs. Lyngby, Denmark</p>
208	Myxozoa	<p>Documentation of an outbreak of kudoa lutjanus in commercially farmed chicken grunt (parapristipoma trilineatum)</p> <p>P. -C. Wang^{1,2}, L. -W. Cheng^{1,3}, S. -C Chen^{2,3}</p> <p>¹Southern Taiwan Fish Disease Research Center, College of Veterinary Medicine, National Pingtung University of Science and Technology., Pingtung/Neipu, Taiwan, ²International Degree Program of Ornamental Fish Technology and Aquatic Animal Health, International College, National Pingtung University of Science and Technology, Pingtung/Neipu, Taiwan, ³Department of Veterinary Medicine, College of Veterinary Medicine, National Pingtung University of Science and Technology, Pingtung/Neipu, Taiwan</p>
209	Bacterial diseases	<p>Case Study: The resurgence of Aeromonas salmonicida in Scottish Aquaculture</p> <p>Catherine Whitby¹, Silvia Soares¹, William Leigh¹, Alison Garden¹, Laura Kessack¹, David Bradley¹</p> <p>¹Marine Scotland Science, Aberdeen, Scotland, UK</p>
210	Fish and shellfish immunology (including vaccines and vaccination)	<p>Time-course proteomic analysis of the early response induced by a DNA vaccine against viral haemorrhagic septicaemia (VHS) in rainbow trout</p> <p>Dr Dagoberto Sepúlveda¹, Jeong In Yang¹, Dr Niels Lorenzen¹, Jeong In Yang¹</p> <p>¹National Institute of Aquatic Resources, Technical University of Denmark, Kongens Lyngby, Denmark</p>
211	Fish and shellfish immunology (including vaccines and vaccination)	<p>Transcriptome analysis of Pacific abalone (Haliotis discus hannai) challenged with polyriboinosinic polyribocytidylic acid (poly I:C)</p> <p>Seung Hyun Yoo¹, A-Reum Lee¹, Gun-Do Kim^{1,2}, Jong-Oh Kim^{1,2}</p> <p>¹School of Marine and Fisheries Life Science, Pukyong National University, Busan 48513, Republic of Korea, ²Department of Microbiology, Pukyong National University, Busan 48513, Republic of Korea</p>