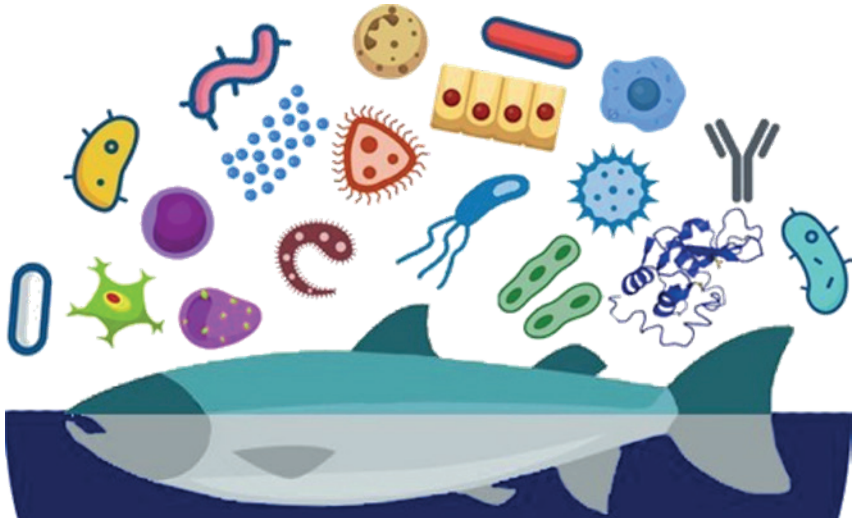


PROGRAMME

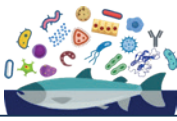


2nd International Symposium
MUCOSAL HEALTH
in **AQUACULTURE**

3-6 October, 2022
Madrid, Spain

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Schedule

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9:00-9:10	Welcome				
9:10-10:00	Keynote: Oriol Sunyer	9:00-9:50	Keynote: Margareth Øverland	9:00-9:50	Keynote: Laura Baldomà
10:00-11:00	Oral Presentations	9:50-11:05	Oral Presentations	9:50-11:05	Oral Presentations
11:00-11:30	Coffee break	11:05-11:30	Coffee break	11:05-11:30	Coffee break
11:30-13:00	Oral Presentations	11:30-13:00	Oral Presentations	11:30-12:45	Oral Presentations
13:00-14:30	Lunch	13:00-14:30	Lunch	12:45-13:15	Closing ceremony
14:30-15:20	Keynote: Paul Martin	14:30-16:30	Oral Presentations		
15:20-16:05	Oral Presentations				
16:05-16:30	Coffee break				
16:30-17:00	Oral Presentations	16:30-17:30	Poster session + coffee		



Monday 3

16:00-19:00 **Registration**

19:00 **Welcome cocktail**

Tuesday 4

9:00-9:10 **Welcome**

9:10-13:00 **MUCOSAL IMMUNE RESPONSES AND STRUCTURES**

Chairs: Lluís Tort and Carla Piazzon

9:10-10:00 **Keynote: Oriol Sunyer**

10:00-10:15 **The mucosal immune system asset of sea bass (*Dicentrarchus labrax*).**

Picchiatti, S.; Buonocore, F.; Miccoli, A.; Pianese, V.; Scapigliati, G.

10:15-10:45 **Phenotypic and functional characterization of B cell subsets in rainbow trout gills and skin.**

Herranz-Jusdado, J.G.; Morel, E.; Simón, R.; Díaz-Rosales, P.; Tafalla, C.

10:45-11:00 **IgT distribution in the gut of the Atlantic salmon (*Salmo salar* L.).**

Castro, P.L.; Barac, F.; Hansen, T.; Fjellidal, P.-G.; Hordvik, I.; Bjørgen, H.; Koppang, E.O.

11:00-11:30 **Coffee break**

11:30-11:45 **Modifications of mucosal and systemic antibody repertoire after nasal vaccination of rainbow trout with a live attenuated viral vaccine.**

Magadán, S.; Jouneau L.; Boudinot P.; Salinas, I.

11:45-12:00 **B-cells composition and distribution in the gills of the Atlantic salmon (*Salmo salar* L.), and possible reactions to vaccination.**

Barac, F.; Castro, P.L.; Hansen, T.; Fjellidal, P.-G.; Hordvik, I.; Bjørgen, H.; Koppang, E.O.

- 12:00-12:15 **Goblet cells and mucins in fish gills: how does the mucus barrier respond in *Sparus aurata* upon *Sparicotyle chrysophrii* infection.**
Riera-Ferrer, E.; Estensoro, L.; Del Pozo, R.; Palenzuela, O.; Piazzon, M.C.; Sitjà-Bobadilla, A.
- 12:15-12:30 **Mucosal responses to *Yersinia ruckeri* infection in rainbow trout.**
Herranz-Jusdado, J.G.; Morel, E.; Ordás, M.C.; Martín, D.; Docando, F.; González, L.; Sanjuán, E.; Saura, M.; Díaz-Rosales, P.; Fouz, B.; Tafalla, C.
- 12:30-12:45 **Early mucosal immune responses in European seabass (*Dicentrarchus labrax*) following *Tenacibaculum maritimum* infection.**
Ferreira, I.A.; Guardiola, F.A.; do Vale, A.; Costas, B.
- 12:45-13:00 **Thermal contributions to mucosal tissue repair in fish.**
Barreda, D.R.; Soliman, A.M.; Haddad, F.; Semple, S.L.
- 13:00-14:30 **Lunch**
- 14:30-17:00 **MUCOSAL IMMUNE RESPONSES AND STRUCTURES. Continued**
Chairs: Beatriz Novoa and Oriol Sunyer
- 14:30-15:20 **Keynote: Paul Martin. Live imaging inflammation in skin repair and cancer in zebrafish.**
- 15:20-15:35 **Stressors and their effect on fish mucosal health.**
Tort, L.; Balasch, J.C.; Vallejos-Vidal, E.; Reyes-López, F.E.; Khansari, A.R.
- 15:35-15:50 **Atlantic salmon *Caligus rogercresseyi* resistant family exhibited high modulation of mucosal immunity than susceptible families.**
Valenzuela-Muñoz, V.; Gallardo-Escárate, C.; Nuñez-Acuña, G.; Valenzuela-Miranda, D.
- 15:50-16:05 **Mucosal immunity in invertebrates. The case of the mussel *Mytilus galloprovincialis*.**
Saco, A.; Novoa, B.; Figueras, A.



16:05-16:30

Coffee break

16:30-16:45

Integration of transcriptomics and proteomics improves the characterization of the role of mussel gills in a bacterial waterborne infection.

Saco, A.; Panebianco, A.; Blanco, S.; Novoa, B.; Diz, A.P.; Figueras, A.

16:45-17:00

Identifying natural bioactive peptides from the common octopus (*Octopus vulgaris*) skin mucus by-products using proteomic analysis.

Pérez-Polo, S.; Imran, M.A.S.; Dios, S.; Pérez, J.; Barros, L.; Carrera, M.; Gestal, C.

Wednesday 5

- 9:00•15:45** **EFFECT OF NUTRITION ON MUCOSAL HEALTH**
Chairs: Ignacio Fernández and Enric Gisbert
- 9:00•9:50** **Keynote: Margareth Øverland. Role of functional aquafeeds on mucosal immunity: from bioactive compounds to a resilient salmon.**
- 9:50•10:05** **Dietary silk fibroin improves the liver metabolism in skin wounded *Sparus aurata*.**
Albaladejo-Riad, N.; Espinosa-Ruiz, C.; Esteban, M.A.
- 10:05•10:20** **Health promoting feed additive improves skin and gill proteome response of infected fish.**
Arapí, E.A.; Cable, J.; Fernández-Alacid, L.; Nuez Ortín, W.; Ibarz, A.
- 10:20•10:35** ***Debaromyces hansenii* yeast modulates mucosal responses in GALT and GIALT of Atlantic salmon (*Salmo salar*, L.) exposed to acute hypoxia stress.**
Djordjevic, B.; Morales-Lange, B.; Gaudhaman, A.; Press, C.; Olson, J.; Mydland, L.T.; Mercado, L.; Imarai, M.; Castex, M.; Øverland, M.
- 10:35•10:50** **Dietary inclusion of fucoidan from sugar kelp (*Saccharina latissima*) modulates immune responses in distal intestine of Atlantic salmon (*Salmo salar*) pre-smolts.**
Morales-Lange, B.; Rocha, S.; Michalak, L.; Mydland, L.T.; Kathiresan, P.; Press, C.M.; Øverland, M.
- 10:50•11:05** **Bioactive compounds from Norway spruce as functional additive in aquafeeds: modulation of immune-related biomarkers in gut of Atlantic salmon pre-smolts.**
Rocha, S.; Morales-Lange, B.; Okbayohanese, D.T.; Lei, P.; Mydland, L.T.; Bengtsson, O.; Øverland, M.
- 11:05•11:30** **Coffee break**



- 11:30•11:45 ***In vitro vs. in vivo* feed digestion and characterization for the development of an artificial fish intestine.**
Kortner, T.M.; Li, Y.; Løkka, G.; Chacon, M.A.; Tandler, A.; Koven, B.; Bitan, A.; Pavlovic, R.; Panseri, S.; Peggs, D.; Fontanillas, R.; Krogdahl, Å.; Gandolfi, F.
- 11:45•12:00 **Dietary dextran sodium sulphate and soy saponins as disruptors of intestinal homeostasis in gilthead seabream (*Sparus aurata*).**
Pereira, G.V.; Gonçalves, A.T.; Jacinto, R.; Dias, J.
- 12:00•12:15 **Fish on chips: developing a microfluidic intestine-on-chip system.**
Rodgers, M.L.; Nouri, A.; Wang, C.-M.; Steinel, N.C.; Millingan-McClellan, K.C.; Carrier, R.L.; Bolnick, D.I.
- 12:15•12:30 **Dietary *Debaryomyces hansenii* promotes the integrity and immune response of the gut in gilthead sea bream: and interactomic study.**
Sanahuja, I.; Firmino, J.P.; Reyes-López, F.E.; Ruiz, A.; Vallejos-Vidal, E.; Tort, L.; Tovar-Ramírez, D.; Gisbert, E.
- 12:30•12:45 ***In vitro* studies of enterohepatic lipid metabolism in fish.**
Siciliani, D.; Minghetti, M.; Ruyter, B.; Krogdahl, Å.; Kortner, T.M.
- 12:45•13:00 **Effect of different fish meal and fish oil dietary levels on skin mucosal immune activities of sea bass (*Dicentrarchus labrax*).**
Zouiten, D.; Debbia, A.; Abbassi, F.; Dhraeif, M.N.; Guerdelly, L.; Jabeur, C.; Azaza, M.S.
- 13:00•14:30 **Lunch**
- 14:30•15:45 **EFFECT OF NUTRITION ON MUCOSAL HEALTH. Continued**
Chairs: Ignacio Fernández and Enric Gisbert
- 14:30•14:45 **The potential role of bile salts in soybean meal-induced enteritis mitigation in rainbow trout (*Oncorhynchus mykiss*) fed soybean meal diets over a long-term feeding trial.**
Rubio-Benito, M.M.; Romano, N.; Overtug, K.; Kumar, V.

- 14:45-15:00 **Effect of dietary bile salts supplementation on gut microbiota and intestinal immune response in gilthead seabream.**
Ruiz-Hernández, A.; Andree, K.B.; Furones, D.; Holhorea, P.G.; Calduch-Giner, J.; Morais, S.; Viñas, M.; Pérez-Sánchez, J.; Gisbert, E.
- 15:00-15:15 **Global transcriptomic alterations induced by bile components in rainbow trout intestinal epithelial cell line, RTgutGC.**
Dhanasiri, A.K.S.; Løkka, G.; Krogdahl, Å.; Kortner, T.M.
- 15:15-15:30 **Functional feed improved skin health in Atlantic salmon (*Salmo salar*) challenged with *Tenacibaculum maritimum*.**
Gu, J.; Forberg, T.; AAsum, E.E.
- 15:30-15:45 **A yeast extract improves the efficiency of a processed animal protein diet in rainbow trout by modulating the gut response.**
Frohn, L.; Skiba-Cassy, S.; Terrier, F.; Aguirre, P.; Cervin, G.; Maman Haddad, S.; Bobe, J.; Klopp, C.; Costas, B.; Teixeira, C.; Peixoto, D.; Richard, N.; Pinel, K.
- 15:45-16:30 ENVIRONMENTAL EFFECTS ON MUCOSAL HEALTH**
Chairs: Benjamín Costas and Carlo Lazado
- 15:45-16:00 **Hagfish mucosa interaction with particles.**
Giacomin, C.E.; Founta, D.; Vlassopoulos, D.; Fischer, P.
- 16:00-16:15 **Water temperature and salinity as drivers of the Atlantic salmon mucosal immunity after sea lice infections: an evaluation from microbiome and transcriptome analyses.**
Núñez-Acuña, G.; Leal, Y.; Valenzuela-Muñoz, V.; Valenzuela-Miranda, V.; Gallardo-Escárate, C.
- 16:15-16:30 **Fish wear their immune systems on the outside – slimy barriers control growth and disease.**
Pittman, K.; Lazado, C.; Powell, M.; Andersen, L.; Merkin, G.; Okubamichael, M.
- 16:30-17:30 POSTER SESSION + COFFEE**

Thursday 6

9:00-11:05

HOST-MICROBIOME INTERACTIONS

Chairs: María Forlenza and M. Ángeles Esteban

9:00-9:50

Keynote: Laura Baldomà

9:50-10:05

Relationships between pond water and skin mucosal microbiomes in tilapia aquaculture.

McMurtrie, J.; Alathari, S.; Chaput, D.L.; Bass, D.; Delamare-Deboutteville, J.; Chadag, V.M.; Cable, J.; Temperton, B.; Tyler, C.R.

10:05-10:20

Assessing the effects of stocking density and reduced oxygen availability on skin microbiota and operational welfare indicators in gilthead sea bream (*Sparus aurata*).

Toxqui-Rodríguez, S.; Holhorea, P.G.; Naya-Català, F.; Calduch-Giner, J.A.; Sitjà-Bobadilla, A.; Piazzon, M.C.; Pérez-Sánchez, J.

10:20-10:35

Deciphering the role of sea lice microbiota and its potential for the development of an anti-microbiota vaccine.

Valenzuela-Miranda, D.; Valenzuela-Muñoz, V.; Nuñez-Acuña, G.; Gallardo-Escárate, C.

10:35-10:50

Effect of rearing conditions on the recruitment and resilience of Atlantic salmon's microbiota (*Salmo salar*) throughout its different developmental stages.

Venegas, L.; Lavoie, C.; Yañez, J.M.; Derome, N.

10:50-11:05

Beneficial effects of a marine multi-strain *Bacillus* consortium encapsulated in algae on mucosa microbiota modulation of Atlantic salmon *Salmo salar*.

Guidicelli, F.; Collipal, R.; Castillo, S.; Sánchez, R.; Leyton, P.; Le Ker, C.

11:05-11:30

Coffee break

11:30-12:45

ORAL VACCINATION STRATEGIES

Chairs: María Forlenza and M. Ángeles Esteban

11:30-11:45

Mucosal immunity effects of chitosan-nanoparticles: decyphering chaos.

Collado-González, M.; Esteban, M.A.

11:45-12:00

Plant virus-derived virus-like particles as delivery vehicle for DNA/RNA vaccination against spring viraemia of carp virus.

Goldman, M.R.G.; Cao, S.; Cornelissen, J.J.L.M.; Kormelink, R.; Forlenza, M.

12:00-12:15

Immune protection of tilapia orally vaccinated with a novel pH-responsive *Streptococcus agalactiae* vaccine.

Herath, T.; Phuoc, N.N.; Bashir, S.; Murdan, S.; Samsing, F.; Yousif, M.; Zadoks, R.N.

12:15-12:30

Recombinant *Bacillus subtilis* spores as vehicles for mass delivery of antigens against aquaculture pathogens.

Gonçalves, G.; Araújo, A.; Coutinho, F.; Pedrosa, N.; Curado, M.; Machado, M.; Costas, B.; Bonneville, L.; Serrano, M.; Carvalho, A.P.; Díaz-Rosales, P.; Oliva-Teles, A.; Couto, A.; Serra, C.R.

12:30-12:45

***Bacillus subtilis* expressing the infectious pancreatic necrosis virus VP2 protein retains its immunostimulatory properties and induces a specific antibody response.**

Docando, F.; Nuñez-Ortiz, N.; Gonçalves, G.; Serra, C.R.; Gómez-Casado, E.; Martín, D.; Abós, B.; Oliva-Teles, A.; Tafalla, C.

12:45-13:15

CLOSING CEREMONY

POSTERS

MUCOSAL IMMUNE RESPONSES AND STRUCTURES

P1.- The skin mucosal barrier of lumpfish *Cyclopterus lumpus* L.).

Ytteborg, E.; Lazado, C.C.; Noble, C.; Hansen, R.I.; Johansen, L.J.

P2.-Alteration of mucosal skin and antimicrobial host-response of hepcidin, piscidin, and defensin genes in iron-overload fish (*Sparus aurata*).

Serna-Duque, J.A.; Espinosa-Ruiz, C.; Esteban, M.A.

P3.-Identifying natural bioactive peptides from the common octopus (*Octopus vulgaris*) ink using proteomic analysis.

Imran, M.A.S.; Carrera, M.; Pérez-Polo, S.; Pérez, J.; Barros, L.; Dios, S.; Gestal, C.

P4.-Mucosal vaccination of fish: a whole body approach.

Gunter, C.J.; Langevin, C.; Wichgers Schreur, P.; Forlenza, M.

P5.-Polyethylene-glycol and alginate as delivery matrix components – Effects on the intestinal tract and inflammatory response of juvenile rainbow trout (*Oncorhynchus mykiss*).

Just, P.N.; Köllner, B.; Müller, C.; Slater, M.J.

P6.-The direct exposure of cortisol to mucosal surfaces does not modulate immune-related genes in fish.

Tort, L.; Vallejos-Vidal, E.; Khansari, A.R.; Balasch, J.C.; Reyes-López, F.E.

P7.-Exogenous hydrogen sulphide regulates Atlantic salmon mucosal immune defences.

Alipio, H.R.; Carletto, D.; Nicolaysen, I.; Albaladejo-Riad, N.; Stiller, K.; Lazado, C.C.

P8.-Identification and characterization of the CXCL9-11/CXCR3 chemokine axis in Atlantic salmon.

Valdés, N.; Espinoza, D.; Pareja, C.; Imarai, M.

P9.-Role of immunoglobulin T on tilapia immunity.

Velázquez, J.; Rodríguez, A.; Cruz, L.; Pérez-Bernal, M.; Valdivia, O.; Herrera, F.; Cabrera, Y.; Estrada, M.P.; Carpio, Y.

P10.-Mackerel in tomato sauce and seaweed fly larvae – do marine side streams in feed affect intestinal health in rainbow trout (*Oncorhynchus mykiss*)?

Warwas, N.; Roques, J.A.C.; Xie, X.; Berdan, E.; Veide Vilg, J.; Pavia, H.; Undeland, I.; Hinchcliffe, J.; Montjouridès, M.; Sundh, H.; Jönsson, E.; Langeland, M.; Sundell, K.

P11.-Amoebic gill disease in Atlantic salmon: pathophysiology, immunity and treatment.

Furtado, F.; Carletto, D.; Breiland, M.W.; Strand, D., Gjessing, M.; Timmerhaus, G.; Pittman, K.; Pedersen, L.F., Lazado, C.C.

P12.-Structural and immunological characterization of the rainbow trout (*Oncorhynchus mykiss*) bursa

Herranz-Jusdado, J.G.; Morel, E.; Fernández, L.; Díaz-Rosales, P.; Tafalla, C.

P13.-Characterization of skin B cell responses to red mark syndrome in rainbow trout (*Oncorhynchus mykiss*)

Herranz-Jusdado, J.G.; Morel, E.; Díaz-Rosales, P.; Schmidt, J.G.; Tafalla, C.

EFFECT OF NUTRITION ON MUCOSAL HEALTH

P15.-Modulatory effects of dietary tryptophan supplementation on European seabass gut during acute and chronic inflammatory scenarios.

Machado, M.; Peixoto, D.; Costas, B.; Azeredo, R.

P16.-Natural compounds as nutritional strategies to improve gut health in gilthead seabream exposed to acute stress.

Costas, B.; Pereira, S.; Gonçalves, A.T.; Pinto, W.; Lourenço-Marques, C.; Barata, M.; Pousão-Ferreira, P.; Conceição, L.E.C.; Soares, F.

P17.-Skin mucus associated biomarkers (SMABs) and antibacterial activity to study functional diets in fish in a quick and minimally-invasive way.

Fernández-Alacid, L.; Sanahuja, I.; Nuez-Ortín, W.G.; Ibarz, A.

P18.-Effect of dietary phylloquinone supplementation on intestinal microbiota of Senegalese sole (*Solea senegalensis*).

Acosta, M.I.; Quiroz-Guzmán, E.; Tovar-Ramírez, D.; Roberto, V.; Gavaia, P.J.; Fernández, I.

P19.-Gut and skin morphology, stress resistance and skin wound healing in European seabass fed with or without plant-based feed additives.

Gregus, Z.; Esteban, M.A.; Steiner, T.

P20.-Benefits of dietary lyso-phospholipids on intestinal function: deep analyses of proteinteractome.

Ibarz, A.; Sanahuja, I.; Nuez-Ortin, W.G.; Fernández-Alacid, L.

P21.-Partial or total replacement of live food regimes in the early rearing of the gilthead seabream (*Sparus aurata* L.): effects on growth, intestinal morphology and transcriptional profiles.

Picchiatti, S.; Franchi, G.; Carbone, V.; Teske, J.; Miccoli, A.; Pianese, V.; Scapigliati, G.; DeWolf, T.

P22.-RTGill-W1 cell line as a model of gill for assess the antioxidant and iron chelating activity of synthetic peptides.

Pombett, Y.; Román, T.; Beltrán, D.; Ramírez, F.; Guzmán, F.; Mercado, L.

P23.-Immuno-modulatory effects in graded levels of a dietary marine protein hydrolysate fed to meagre juveniles submitted to acute stress.

Reis, B.; Pinto, W.; Lourenço-Marques, C.; Barata, M.; Soares, F.; Pousão-Ferreira, P.; Conceição, L.E.C.; Costas, B.

ENVIRONMENTAL EFFECTS ON MUCOSAL HEALTH

P24.-Antibiotic resistant genes in Bangladeshi fish aquaculture ponds.

Bell, A.G.; Cable, J.; Temperton, B.; Tyler, C.R.

P25.-Climate change impacts fish nasal immunity.

Lazado, C.C.; Krasnov, A.; Albaladejo-Riad, N.; Johansen, L.H.; Ytteborg, E.

P26.-Environmental salinity regulates barrier function in rainbow trout skin.

Doyle, D.; Carney Almroth, B.; Sundell, K.; Simopoulou, N.; Sundh, H.

P27.-Programming immunity and disease resistance against *Yersinia ruckeri* by embryonic temperature manipulations in Atlantic salmon (*Salmo salar*).

Malik, M.S.; Burgerhout, E.; Krasnov, A.; Lazado, C.C.

P28.-Stress condition induced by high stocking densities suppress protective immunity in *Salmo salar* gills.

Oliva, M.; Ramírez, F.; Salazar, C.; Valenzuela, C.; Mercado, L.

P29.-Bacteria isolated from scallop larvae with reduced susceptibility to infection by a pathogenic *Vibrio* display bioactivity with probiotic potential.

Muñoz-Cerro, M.; Mercado, A.; Lira, G.; Rojas, R.; Brokordt, K.; Schmitt, P.

P30.-Exposure of zebrafish (*Danio rerio*) to an environmentally relevant concentration of antibiotics impairs the intestinal complement pathway and increases susceptibility to diseases.

Pereiro, P.; Rey-Campos, M.; Figueras, A.; Novoa, B.

P31.-Biological performance of Atlantic cod is impaired at increased seawater temperature.

Ytteborg, E.; Falconer, L.; Lazado, C.C.; Krasnov, A.; Hansen, Ø.J.; Hjøllø, S.S.; Johansen, L.H.

HOST-MICROBIOME INTERACTIONS

P32.-Understanding skin and gill microbiomes in cultured tilapia for disease prediction.

Debnath, S.C.; Temperton, B.; Mohan, C.V.; Delamare-Deboutteville, J.; Tyler, C.R.

ORAL VACCINATION STRATEGIES

P33.-Immunostimulant and antiviral properties of full-length and truncated *Marinobacter algicola* flagellins in rainbow trout intestinal epithelial cells.

Núñez-Ortiz, N.; Díaz-Rosales, P.; García, J.A.; Serra, C.R.; Enes, P.; Tafalla, C.; Gómez-Casado, E.

P34.-Modulatory effects of bacteriocinogenic and non-bacteriocinogenic lactic acid bacteria of aquatic origin on rainbow trout intestinal epithelial cells.

Contente, D.; Díaz-Rosales, P.; Feito, J.; Díaz-Formoso, L.; Docando, F.; Borrero, J.; Hernández, P.E.; Poeta, P.; Muñoz-Atienza, E.; Cintas, L.M.; Tafalla, C.

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