



Curriculum Vitae Prof. Genciana Terova

Actual Position: Full Professor of Animal Science and Technology at the University of Insubria, Varese, Italy.

Education and Previous Academic Positions:

2000-2003 Research associate (University of Basilicata, Italy);
1995- 1998 - PhD in Animal Sciences (University of Basilicata, Italy);
1994 - Degree in Biological Sciences (University of Bari);
1990-1993 Research associate at the Agricultural University of Tirana, Albania.
1989 - Degree in Biology (University of Tirana, Albania).

Research Experiences Abroad:

2001- Research stage on immunoenzymatic technologies at the University of Sheffield, UK;
1998 - Research stage on fish nutrition at the Ohio State University, School of Natural Resources, Columbus, USA;
1995 - Research stage on fish nutrition at Fish Research Institute, Szarvas, Hungary;

Actual Research Interests: Research interests include nutrigenomics, metagenomics, animal welfare, and animal microbiotics. Teleost fish are the most frequently used animal models, but there are also other "small farmed animals". The goal of scientific research is to ascertain the effects on an animal's nutritional health and physiological performance of substituting alternative, more sustainable sources of proteins and lipids for marine-derived ones that are obtained naturally or through biotechnological processes. In order to achieve this, research are currently being conducted that involve the use of substitutes such proteins from plants, proteins from insects raised under a system of circular economies, proteins and lipids generated in bioreactors using industrial waste substrates, or proteins from autolyzed yeast (single cell proteins). The most commercially valuable fish species intended for human consumption are examined for protein metabolism, growth performance, and immunological response using physiological and molecular platforms. In order to achieve, within a biotechnological framework, a tuning through the diet of the gut microbiota itself, aimed at increasing performance and improving the health of the animals, the effects of raw material substitutions in the diet are therefore investigated at the level of the intestinal microbiome, through the use of techniques, such as High Throughput Sequencing of 16S rRNA.

Academic Activity: Lecturer of "Animal Biotechnology", and "Food Biotechnology" for the Bachelor degree course in "Biotechnology", at the University of Insubria, Varese, Italy. Lecturer of

“Transgenic Animals for Biotechnologies” for the Master degree course in “Biotechnologies for the Bio-based and Health Industry (BBHI)”, at the University of Insubria, Varese, Italy.

SCIENTIFIC PUBLICATIONS

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Scopus ID: <https://www.scopus.com/authid/detail.uri?authorId=6602956364>

RESEARCH GATE: https://www.researchgate.net/profile/Genciana_Terova

<https://www.scopus.com/authid/detail.uri?authorId=6602956364>

Prof. Terova has authored **136 articles** published in scientific international journals **during 1998-2023**, and 11 book chapters in English and Italian language.

According to SCOPUS database, she has an **H index of 36** (as of 26/05/2023) and her papers are cited in 3834 articles published in international journals indexed in SCOPUS database.

SCOPUS (as of 26/05/2023):

Scientific Publications (1998-2023):**136**

Total citations: **3834**

H index: **36**

RESEARCH PROJECTS (last 5 years)

Project: Horizon 2020 AquaIMPACT - Genomic and nutritional innovations for genetically superior farmed fish to improve efficiency in European aquaculture. Activity: DT-BG-04-2018. Call: H2020-BG-2018-1; Type of Action: IA; Number: 818367; 22 partners from 10 EU countries. Coordinator: Luke (Finland). **Duration:** 01/01/2019-01/01/2023; **Role:** Principal Investigator of the Italian Research Unit.

Project: **AGER II**, Fine Feed for Fish (4F), Coordinated by Università dell’Insubria. Funded by AGER (Banking foundations for agri-food research; <http://www.progettoager.it/>). Call "Acquacoltura". Rif. nr. 2016-01-01. **Duration:** 01/11/2016-01/11/2021. **Role:** Principal Investigator of the Research Unit.

SELECTED PUBLICATIONS ON INDEXED SCIENTIFIC JOURNALS (last 5 years)

1. Bruno, A., Sandionigi, A., Panio, A., Rimoldi, S., Orizio, F., Agostinetto, G., Hasan, I., Gasco, L., **Terova, G.**, Labra, M. (2023). Aquaculture ecosystem microbiota at the water-fish interface: the case-study of rainbow trout fed with *Tenebrio molitor* novel feed formulation. BMC MICROBIOLOGY (under review).
2. Hasan, I., Rimoldi, S., Saroglia, G., **Terova, G.** (2023). Sustainable fish feeds with insects and probiotics positively affect freshwater and marine fish gut microbiota. *ANIMALS* 13(10), 1633; <https://doi.org/10.3390/ani13101633>
3. Torrecillas, S., Rimoldi, S., Montero, D., Serradell, A., Acosta, F., Fontanillas, R., Allal, F., Haffray P., Bajek A., **Terova, G.** (2023). Genotype x nutrition interactions in European sea bass (*Dicentrarchus labrax*): Effects on gut health and intestinal

4. Montero, D., Carvalho, M., **Terova, G.**, Fontanillas, R., Serradell, A., Ginés, R., Tuset, V., Acosta, F., Rimoldi, S., Bajek, A., Haffray, P., Allal, F., Torrecillas, S. (2023). Nutritional innovations in superior European sea bass (*Dicentrarchus labrax*) genotypes: implications on fish performance and feed utilization. AQUACULTURE. 572, 739486. <https://doi.org/10.1016/j.aquaculture.2023.739486>
5. Molinari, G.S., Wojno, M., **Terova, G.**, Wick, M., Riley, H., Caminiti, J.T., Kwasek, K. (2023). A Novel Approach in the Development of Larval Largemouth Bass *Micropterus Salmoides* Diets Using Largemouth Bass Muscle Hydrolysates as the Protein Source. ANIMALS, 13, 373. <https://doi.org/10.3390/ani13030373>
6. Rimoldi, S., Ceccotti, C., Brambilla, F., Faccenda, F., Antonini, M., **Terova, G.** (2023). Potential of shrimp waste meal and insect exuviae as sustainable sources of chitin for fish feeds. AQUACULTURE Vol. 567, 30 March 2023, 739256 <https://doi.org/10.1016/j.aquaculture.2023.739256>
7. Serradell, A., Montero, D., Fernández-Montero, Á., **Terova, G.**, Makol, A., Valdenegro-Vega, V.A.C., Acosta, F., Izquierdo, M.S., Torrecillas, S. (2022). Gills oxidative stress protection through the use of phytogenics and galactomannan oligosaccharides as functional additives in practical diets for European sea bass (*Dicentrarchus labrax*) juveniles. ANIMALS, 12, 3332. <https://doi.org/10.3390/ani12233332>
8. Ceccotti, C., Biasato, I., Gasco, L., Caimi, C., Bellezza Oddon, S., Rimoldi, S., Brambilla, F., **Terova, G.** (2022). How different dietary methionine sources could modulate the hepatic metabolism in rainbow trout? CURRENT ISSUES IN MOLECULAR BIOLOGY 44, 3238–3252. <https://doi.org/10.3390/cimb44070223>
9. Palomba, A., Melis, R., Biosa, G., Braca, A., Pisanu, S., Ghisaura, S., Caimi, C., Biasato, I., Bellezza Oddon, S., Gasco, L., **Terova, G.**, Moroni, F., Antonini, M., Pagnozzi, D., Anedda, R. (2022). On the compatibility of fish meal replacements in aquafeeds for rainbow trout. A combined metabolomic, proteomic and histological study. FRONTIERS IN PHYSIOLOGY. METABOLIC PHYSIOLOGY. 13:920289. 29 June 2022; <https://doi.org/10.3389/fphys.2022.920289>
10. Biasato, I., Rimoldi, S., Caimi, C., Bellezza Oddon, S., Chemello, G., Prearo, M., Saroglia, M., Hardy, R., Gasco, L., **Terova, G.** (2022) Efficacy of utilization of all-plant-based and commercial low-fishmeal feeds in two divergently selected strains of rainbow trout (*Oncorhynchus mykiss*): focus on growth performance, whole-body proximate composition, and intestinal microbiome. FRONTIERS IN PHYSIOLOGY. AQUATIC PHYSIOLOGY. May 2022 | Volume 13 | Article 892550. <https://doi.org/10.3389/fphys.2022.892550>
11. Biasato, I., Chemello, G., Caimi, C., Bellezza Oddon, S., Capucchio, M.T., Colombino, E., Schiavone, A., Ceccotti, C., **Terova, G.**, Gasco, L. (2022) Taurine supplementation in plant-based diets for juvenile rainbow trout (*Oncorhynchus mykiss*): effects on growth performance, whole body composition, and histomorphological traits. ANIMAL FEED SCIENCE AND TECHNOLOGY. Vol. 289, July 2022, 115314 <https://doi.org/10.1016/j.anifeedsci.2022.115314>
12. Ceccotti, C., Bruno, D., Tettamanti, G., Branduardi, P., Bertacchi, S., Labra, M., Rimoldi, S., **Terova, G.** (2022). New value from food and industrial wastes - bioaccumulation of omega-3 fatty acids from an oleaginous microbial biomass paired with a brewery by-product using black soldier fly (*Hermetia illucens*) larvae. WASTE MANAGEMENT 143, 95-104. ISSN 0956-053X. <https://doi.org/10.1016/j.wasman.2022.02.029>

13. Montero, D., Rimoldi, S., Torrecillas, S., Jorge Rapp, J., Moroni, F., Herrera, A., Gómez, M., Fernández-Montero, Á., **Terova, G. (2022)** Impact of polypropylene microplastics and chemical pollutants on European sea bass (*Dicentrarchus labrax*) gut microbiota and health. SCIENCE OF THE TOTAL ENVIRONMENT. Vol. 805. Article 150402. <https://doi.org/10.1016/j.scitotenv.2021.150402>
14. Bosi, A., Banfi, D., Moroni, F., Ceccotti, C., Giron, M.C., Antonini, M., Giaroni, C., **Terova, G. (2021)** Effect of partial substitution of fishmeal with insect meal (*Hermetia illucens*) on gut neuromuscular function in Gilthead sea bream (*Sparus aurata*). SCIENTIFIC REPORTS. 11:21788 <https://doi.org/10.1038/s41598-021-01242-1>
15. **Terova, G.**, Moroni, F., Antonini, M., Bertacchi, S., Pesciaroli, C., Branduardi, P., Labra, M., Porro, D., Ceccotti, C., Rimoldi, S. (2021) Using glycerol to produce European sea bass feed with oleaginous microbial biomass: effects on growth performance, fillet fatty acid profile, and FADS2 gene expression. FRONTIERS IN MARINE SCIENCE - AQUATIC PHYSIOLOGY. August 10, 2021, Volume 8, Article 715078. <https://doi.org/10.3389/fmars.2021.715078>
16. Moroni, F., Naya-Català, F., Piazzon, MC., Rimoldi, S., Calduch-Giner, J., Giardini, A., Martínez, I., Brambilla, F., Pérez-Sánchez, J., **Terova, G. (2021)** The effects of nisin-producing *Lactococcus lactis* strain used as probiotic on gilthead sea bream (*Sparus aurata*) growth, gut microbiota, and transcriptional response. FRONTIERS IN MARINE SCIENCE - MARINE FISHERIES, AQUACULTURE AND LIVING RESOURCES. Research Topic: "Understanding the Interplay Between Diet, Feed Ingredients and Gut Microbiota for Sustainable Aquaculture." April 12, 2021. Vol. 8, Article 659519. <https://doi.org/10.3389/fmars.2021.659519>
17. Fabiani, L., Saroglia, M., Galatà, G., De Santis, R., Fillo, S., Luca, V., Faggioni, G., D'amore, N., Regalbutto, E., Salvatori, P., **Terova, G.**, Moscone, D., Lista, F., Arduini, F. (2021). Magnetic beads combined with carbon black-based screen-printed electrodes for COVID-19: a reliable and miniaturized electrochemical immunosensor for SARS-CoV-2 detection in saliva. BIOSENSORS AND BIOELECTRONICS. 171: 112686 <https://doi.org/10.1016/j.bios.2020.112686>
18. Torrecillas, S., **Terova, G.**, Makol, A., Serradell, A., Valdenegro, V., Izquierdo MS., Acosta, F., and Montero, D. (2021). Dietary phytogenics and galactomannan oligosaccharides in low fish meal and fish oil-based diets for European sea bass (*Dicentrarchus labrax*) juveniles: effects on gill structure and health and implications on oxidative stress status. FRONTIERS IN IMMUNOLOGY – NUTRITIONAL IMMUNOLOGY. Research Topic: "Oral Immune-Enhancing Research in Fish" May 12, 2021. Vol. 12, Article 663106. <https://doi.org/10.3389/fimmu.2021.663106>
19. **Terova, G.**, Gini, E., Gasco, L., Moroni, F., Antonini, M., Rimoldi, S. (2021). Effects of full replacement of dietary fishmeal with insect meal from *Tenebrio molitor* on rainbow trout gut and skin microbiota. JOURNAL OF ANIMAL SCIENCE AND BIOTECHNOLOGY 12:30. pp 1-14. <https://jasbsci.biomedcentral.com/articles/10.1186/s40104-021-00551-9>
20. Rimoldi, S., Antonini, M., Gasco, L., Moroni, F., **Terova, G. (2021)**. Intestinal microbial communities of rainbow trout (*Oncorhynchus mykiss*) may be improved by feeding a *Hermetia illucens* meal/low-fishmeal diet. FISH PHYSIOLOGY AND BIOCHEMISTRY. 47(2), 365-380 <https://doi.org/10.1007/s10695-020-00918-1>
21. Huyben, D., Rimoldi, S., Ceccotti, C., Montero, D., Betancor, M., Iannini, F., **Terova, G. (2020)**. Effect of dietary oil from *Camelina sativa* on the growth performance, fillet fatty acid profile and gut microbiome of gilthead Sea bream (*Sparus aurata*). PEERJ 8:e10430 <http://doi.org/10.7717/peerj.10430>
22. Domínguez, D., Montero, D., Robaina, L., Hamre, K., **Terova, G.**, Karalazos, V., Izquierdo, M. (2020) Effects of graded levels of minerals in a multi-nutrient package on

- Gilthead sea bream (*Sparus aurata*) fed a plant-based diet. AQUACULTURE NUTRITION 26:1007–1018. <https://doi.org/10.1111/anu.13057>
23. **Terova, G.**, Ceccotti, C., Ascione, C., Gasco, L., Rimoldi, S. (2020) Effects of partially defatted *Hermetia illucens* meal in rainbow trout diet on hepatic methionine metabolism. ANIMALS 10(6), 1059. <https://doi.org/10.3390/ani10061059>
 24. Molinari, G.S., McCracken, V.J., Wojno, M., Rimoldi, S., **Terova, G.**, Kwasek, K. (2020) Can intestinal absorption of protein be improved through early exposure to plant-based diet? PLOS ONE. 15(6): e0228758. <https://doi.org/10.1371/journal.pone.0228758>
 25. Rimoldi, S., Gini, E., Koch, J.F.A., Iannini, F., Brambilla, F., and **Terova, G.** (2020). Effect of hydrolyzed fish protein and autolyzed yeast as substitutes of fishmeal in the gilthead sea bream (*Sparus aurata*) diet, on fish intestinal microbiome. BMC VETERINARY RESEARCH. 16:118. <https://doi.org/10.1186/s12917-020-02335-1>
 26. Rimoldi, S., Torrecillas, S., Montero, D., Gini, E., Makol, E., Valdenegro, V., Izquierdo, M., **Terova, G.** (2020). Assessment of dietary supplementation with galactomannan oligosaccharides and phytogenics on gut microbiota of European sea bass (*Dicentrarchus labrax*) fed low fishmeal and fish oil based diet. PLOS ONE 15(4): e0231494. <https://doi.org/10.1371/journal.pone.0231494>
 27. Gasco, L., Acuti, G., Bani, P., Dalle Zotte, A., Danieli, P.P., De Angelis, A., Fortina, R., Marino, R., Parisi, G., Piccolo, G., Pinotti, L., Prandini, A., Schiavone, A., **Terova, G.**, Tulli, F., Roncarati, A, 2020. Insect and fish by-products as sustainable alternatives to conventional animal proteins in animal nutrition. ITALIAN JOURNAL OF ANIMAL SCIENCE. 19:1, 360-372. <https://doi.org/10.1080/1828051X.2020.1743209>
 28. Kwasek, K., Wojno, M., Iannini, F., McCracken, V.J., Molinari, G.S., **Terova, G.** (2020) Nutritional programming improves dietary plant protein utilization in zebrafish *Danio rerio*. PLOS ONE (3):e0225917. <https://doi.org/10.1371/journal.pone.0225917>