**Principal Investigator**

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Keywords: Vaccines, Adjuvants, Flagellin, Fish diseases, Immune system, Teleost, Microarrays, Trout, Viruses

**Candidate kills:**

Teamwork, motivation, communication, experience in laboratory practice, initiative, planning and organizing. Previous experience in virology cell culture, animal experimental functions (B and C) and molecular biology techniques will be positively considered.

**Formative Plan**

The candidate will be incorporated in a highly motivated group. The group investigates the mechanisms of the innate and adaptive immune response of fish and how they are modified during infection with different pathogens. This knowledge leads to the development of long-lasting mass vaccination systems using specific adjuvants.

The candidate will acquire a vast knowledge due to interactions with national and international research groups within fish immunology, virology and pathology. Our group will directly interact with national and international research groups. Additionally, our group is in close contact with reputed virologists and immunologists working on animal health, and once a month an international researcher visits the center to give a conference on virology/ immunology. The fellow would be academically associated to the Universidad Complutense de Madrid catalogued as Excellent International Campus through the “Master of Virology”. The pre-doctoral student would attend the Fish Immunology Workshop, held every year in Wageningen (Netherlands), where the most relevant international researchers in the field of fish immunology provide students with an updated overview of the fish immune system. Additionally, his/her participation in international conferences (The International Society of Fish and Shellfish Immunology, International Society of Developmental and Comparative Immunology, European Association of Fish Pathologists, etc.) to present his/her work will be encouraged. Moreover, attendance to courses related or complementary to the research project will be stimulated and incentivized. The predoctoral contract will be encouraged to make short-stays within other European laboratory partners. Furthermore, current collaborations with international companies, such as “Aquatic diagnostics“, will give to the predoctoral student a closer and a real vision of transferring of knowledge to industry, essential goal in research. For those reasons, we can assure, any fellow student associated to the project will be provided with the necessary training and resources to succeed in his/her scientific career, and to complete a Doctoral Thesis.

**Publications**

1. Docando F, Nuñez-Ortiz N, Gonçalves G, Díaz-Rosales P. (5/10). Bacillus subtilis. Expressing the

Infectious Pancreatic Necrosis Virus VP2 Protein Retains Its Immunostimulatory Properties and Induces a Specific Antibody Response. Front Immunol. 2022 Jun 1;13:888311. doi:

10.3389/fimmu.2022.888311. PMID: 35720351; PMCID: PMC9198257.

1. Nuñez-Ortiz N, Díaz-Rosales P, García JA, Serra CR, Enes P, Tafalla C, Gomez-Casado E. Immunostimulant properties of full-length and truncated Marinobacter algicola flagellins, and their effects against viral hemorrhagic septicemia virus (VHSV) in trout. Fish Shellfish Immunol. 2022 Sep;128:695-702. doi: 10.1016/j.fsi.2022.08.018. Epub 2022 Aug 16. PMID: 35981702.
2. Chinchilla B, Encinas P, Coll JM, Gomez-Casado E. Differential Immune Transcriptome and Modulated Signalling Pathways in Rainbow Trout Infected with Viral Haemorrhagic Septicaemia Virus (VHSV) and Its Derivative Non-Virion (NV) Gene Deleted. Vaccines (Basel). 2020 Jan 30;8(1):58. doi: 10.3390/vaccines8010058. PMID: 32019221; PMCID: PMC7158689.
3. Chinchilla B, Gomez-Casado E. Identification of the functional regions of the viral haemorrhagic septicaemia virus (VHSV) NV protein: Variants that improve function. Fish Shellfish Immunol. 2017 Nov;70:343-350. doi: 10.1016/j.fsi.2017.09.021. Epub 2017 Sep 5. PMID: 28882802.
4. Piazzon MC, Galindo-Villegas J, Pereiro P, Pérez-Sánchez J (AC). 6/10. Differential Modulation of IgT and IgM upon Parasitic, Bacterial, Viral, and Dietary Challenges in a Perciform Fish. Front Immunol. 2016 Dec 27;7:637. doi: 10.3389/fimmu.2016.00637. PMID: 28082977; PMCID: PMC5186763.
5. Chinchilla B, Encinas P, Estepa A, Coll JM, Gomez-Casado E. Transcriptome analysis of rainbow trout in response to non-virion (NV) protein of viral haemorrhagic septicaemia virus (VHSV). Appl Microbiol Biotechnol. 2015 Feb;99(4):1827-43. doi: 10.1007/s00253-014-6366-3. Epub 2015 Jan 16. PubMed PMID: 25592735.
6. Montero J, Gómez-Casado E, García-Alcázar A, Meseguer J, Mulero V. Flagellin from Marinobacter algicola and Vibrio vulnificus activates the innate immune response of gilthead seabream. Dev Comp Immunol. 2014 Nov;47(1):160-7. doi: 10.1016/j.dci.2014.07.003. Epub 2014 Jul 11. PubMed PMID: 25020195.
7. Chinchilla B, Encinas P, Estepa A, Coll J, Gomez-Casado E. Optimization of fixed-permeabilized cell monolayers for high throughput micro-neutralizing antibody assays: application to the zebrafish/viral hemorrhagic septicemia virus (vhsv) model. J Virol Methods. 2013 Nov;193(2):62732. doi: 10.1016/j.jviromet.2013.07.049. Epub 2013 Aug 6. PubMed PMID: 23928225.
8. Chinchilla B, Gomez-Casado E, Encinas P, Falco A, Estepa A, Coll J. In vitro neutralization of viral hemorrhagic septicemia virus by plasma from immunized zebrafish. Zebrafish. 2013 Mar;10(1):4351. doi: 10.1089/zeb.2012.0805. Epub 2013 Feb 27. PubMed PMID: 23445428.
9. Terron-Exposito R, Dudognon B, Galindo I, Quetglas JI, Coll JM, Escribano JM, Gomez-Casado E. Antibodies against Marinobacter algicola and Salmonella typhimurium flagellins do not crossneutralize TLR5 activation. PLoS One. 2012;7(11):e48466. doi: 10.1371/journal.pone.0048466. Epub 2012 Nov 14. PubMed PMID: 23155384; PubMed Central PMCID: PMC3498291.

**Research projects**

1. Investigators: Eduardo Gómez Casado, José Antonio García Cabrera. Vacunas orales contra IPNV en trucha basadas en esporas de *B. subtilis* y microparticulas de flagelina. PID2022-140624OR-I00.
2. Eduardo Gomez Casado (PP), Alejandro Brun Torres, Aitor Nogales, Pedro Sánchez Cordón. Medios activados con plasma nebulizados como tratamiento contra SARS-CoV-2, influenza y otros virus respiratorios. PAW4COVID (**CPP2021-008854**). 139.004,60 €. AGENCIA ESTATAL DE INVESTIGACIÓN (AEI).
3. Eduardo Gómez Casado (PI). Plasma frío a presión atmosférica: una terapia física para la gestión global del cáncer óseo pediátrico. Plasma4KidsCancer (**PLEC2022-009277**). 51.167,25 €. AEI
4. Investigators: Eduardo Gómez Casado (Principal investigator, PI), José A. García Cabrera, Noelia Núñez Ortiz. Reference: **AGL2017-85494-C2-2-R** . Title: Comparación de estrategias de vacunación oral en trucha contra IPNV. Alternativas de expresión antigénica e identificación de pathways transcriptómicos implicados. Funding entity: MICINN, 108.000 euros. Funding period: 01.01.2018-

31.12.2020

1. Investigators: Carolina Tafalla Piñeiro (PI), Eduardo Gómez Casado.: ParaFishControl-634429. Advanced Tools and Research Strategies for Parasite Control in European farmed fish. Funding entity: EU H2020, 195.050 euros. Funding period: 01.04.2015-30.03.2020
2. Investigators: Eduardo Gomez Casado (PI), Julio Coll Morales (PI). AGL2014-51773-C3-3. Buscando aplicaciones para la memoria innata ("trained immunity") en peces: inmunomoduladores, agentes terapéuticos y vacunas (TRAINEDFISH). Funding entity: MYCINN, 130.000€. Funding period: 01-012015 a 31-12-2017
3. Investigators: Julio Coll Morales (PI), Eduardo Gomez-Casado. E\_RTA2013- 00008-00-00. Title: HERPESVIRUS (KHV) EMERGENTE EN CARPAS EN ESPAÑA. PREVALENCIA Y MEJORAS EN TÉCNICAS DE DIAGNÓSTICO Y PREVENCIÓN DE PORTADORES ASINTOMÁTICOS. Funding entity: INIA, Ministerio de Industria y Competitividad, **100.000€** Funding period: 01-12-2014 a 01-12-2017 Financiación recibida (en euros).

**Congresses**

More than 90 communications to Conferences.

## **Patents**

1. Inventores/as (p.o): Eduardo Gómez Casado, Alejandro Brun, Sandra Moreno, Ana Megía, Daniel

Cortazar. **MEDIOS ACTIVADOS CON PLASMA PARA USO EN EL TRATAMIENTO DE ENFERMEDADES RESPIRATORIAS**. Número de solicitud: P202130439. Fecha de recepción: 13 mayo 2021, 18:31 (CEST). ION BIOTEC SL, INIA-CSIC.

1. Inventores/as (p.o. de firma): Eduardo Gómez Casado, Blanca Chinchilla Rodríguez. **POLIPÉPTIDOS VIRALES Y SU USO EN EL TRATAMIENTO DE DESÓRDENES PROLIFERATIVOS.** PONS Patentes y

Marcas Internacional. **Nº solicitud: P201730260**. Fecha de recepción: 27 febrero 2017, 15:46 (CET). INIA.

1. Inventores/as (p.o. de firma): Eduardo Gómez Casado, Blanca Chinchilla Rodríguez, Julio Coll. **USOS Y APLICACIONES DE UN ANTICUERPO MONOCLONAL PARA LA DETECCIÓN EN PEZ CEBRA**

**DE IgM TOTALES Y ESPECÍFICAS FRENTE ANTÍGENOS NATIVOS.** PONS Patentes y Marcas Internacional. Solicitud de Patente número 201530830. INIA **Contrato con Aquatic Diagnostics SL para su explotación.**

1. Inventores/as (p.o. de firma): Eduardo GÓMEZ CASADO. TÍTULO: **Uso de Flagelinas del género**  **Marinobacter como adyuvantes vacunales.** No DE SOLICITUD: **PCT/ES2010/070052** PAÍS DE PRIORIDAD: FECHA DE PRIORIDAD: 02/02/2010 ENTIDAD TITULAR: **INIA**. PAÍSES A LOS QUE SE HA EXTENDIDO: EUROPA, INDIA, EEUU.
2. Inventores/as (p.o. de firma): José Ángel MARTÍNEZ ESCRIBANO, Félix GIL DONES, Inmaculada GALINDO, Covadonga ALONSO MARTÍ, Bruno HERNÁEZ DE LA PLAZA, Eduardo GÓMEZ CASADO.

TÍTULO: **Sistema para producir péptidos y proteínas, multiméricos, y sus aplicaciones.** No DE SOLICITUD: **PCT/ES2008/070026 (WO/2009/103826)** PAÍS DE PRIORIDAD: FECHA DE PRIORIDAD: 14.03.2008. ENTIDAD TITULAR: **INIA.** EMPRESA/S QUE LA ESTA/N EXPLOTANDO: **INIAALTERNATIVE GENE EXPRESSION, SL.**