# Position Offered: UNIVERSITY GRADUATE

# Project: *Machine learning approach to identify correlates of disease severity in viral infections*

**Technological and scientific fields:** Artificial Intelligence, Data Analysis and Integration, High-Performance Computing through Servers

**Location:** Valdeolmos, Madrid, Centro de Investigación en Sanidad Animal (CISA) https://www.inia.es/unidades/Institutos%20y%20Centros/CISA/Pages/Home.aspx

**Research Group/PI:** New Strategies for Controlling Relevant Diseases in Animal Health (VACUVET)/ Noemí Sevilla Hidalgo

## PROJECT SUMMARY

Most viral diseases exhibit variable clinical outcomes due to differences in the virulence of the viral strain and/or the individual susceptibility of the host. Understanding the biological mechanisms and the complex interactions between the virus and the host that determine the clinical outcome of infections is the cornerstone of viral pathogenesis. Machine learning can be a powerful tool for determining viral pathogenesis, allowing the analysis of large amounts of complex data to identify meaningful patterns and relationships. This project proposes to use machine learning impartially to identify key factors in the pathogenesis of a viral infection. The CISA, with its level 3 biosafety containment (NCB3) facilities and the size of its animal facilities, enables infections of natural hosts with highly pathogenic viruses that are of great importance in Animal Health and Human Health (zoonotic). The objective of this project is to address, through Artificial Intelligence (AI) and the development of machine learning applied to in vivo viral infections, the massive analysis of data generated from infections of natural hosts and the identification of key parameters in the progression of a viral disease. This will allow us to understand and compare the pathogenesis and disease progression and will contribute to the development of more effective control measures.

## PROFESSIONAL PROFILE

### Minimum requirements:

- Graduate in Biology or Veterinary Medicine (average grade of 7 minimun)
- High proficiency in English

### Merits to be considered:

Previous work in level 3 biosafety containment facilities; knowledge of molecular biology techniques; experience with high-level programming languages such as Python and R; training in techniques applied to generative AI.

## WHAT IS OFFERED

The project offers training in machine learning models capable of predicting the severity of a viral infection, within the field of Artificial Intelligence. Various types of biological data (clinical, virological, cytometry, histopathological, etc.) will be analyzed using a remote-access computing server, encompassing the areas of Data Analysis and Integration and High-Performance Computing through servers. The training program includes 258 ECTS which encompass a master's degree in Bioinformatics and Biostatistics, two internships in other laboratories, and several courses on AI applications, among other things.

### Contract conditions:

Indefinite contract for a University Graduate associated with the Momentum Project of 4 years' duration according to Spanish science law. Gross annual salary (37.000 € - 41.000 €).

### Start of contract: before 31 December 2024

## PRINCIPAL INVESTIGATOR CONTACT

Email: sevilla@inia.csic.es

Phone: 916202300 ext 2240

momentum@csic.es | https://momentum.csic.es/

Financiado por la Unión Europea NextGenerationEU
GOBIERNO DE ESPAÑA MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES MINISTERIO PARA LA TRANSFORMACIÓN DIGITAL Y DE LA FUNCIÓN PÚBLICA
CSIC red.es
Plan de Recuperación, Transformación y Resiliencia
GENERACIÓN