Título de las prácticas (Title of the internship):

Artificial intelligence-based approaches to understand replication protein interactions and function

Descripción de las funciones del alumno (Description of the student´s tasks)

The student will combine AI-based protein folding algorithms (Alphafold Multimer) to predict key interactions established between replication protein to protect DNA integrity in stress conditions. Insight AI-based interaction models will be validated in the lab using molecular genetics and advanced genomics.

Requisitos (Prerequisites): *(indicar titulación y curso) (give Grade and academic year); otros requisitos adicionales (idiomas, informática, otros conocimientos, etc) (other aditional prerequitistes (languages, informatics, other knowledge, etc)*

It is recommended to complete the subjects of machine learning, and knowledge representation and acquisition. Knowledge of English language and basic protein biology is recommended.

Proyecto formativo (Training Project)

Module EXTERNAL PRACTICES. The fundamental goal of the external practices is to guide the student in applying his previously acquired knowledge to real tasks in a group work environment the realistically represents the work conditions the students will encounter in their future roles. In this way, the student will be able to get familiar with a working environment (work schedule, responsibility, attitude, organization, etc…), and with the adequate working methodology in professional reality, contrasting and applying the acquired academic knowledge.

Actividades a desarrollar en la práctica académica (Activities that will be performed in the academic internship):

1. Selection of biological questions related to DNA replication machineries to be approached using AI.
2. Review of the state of the art of scientific literature on the questions identified.
3. Run interaction models using different Alphafold multimer installations and extract biological insight.
4. Design and execution of molecular genetics and genomic experiments to test key hypothesis.
5. Discussion of the results.

Nº de plazas: (Nr. of places)	**1**
¿El alumno tendrá trato habitual con menores? (Has the student dealings with underage persons?)	**No**
Fecha de inicio: (Starting date)	**09 / 01 / 23**
Fecha de fin: (End date)	**31/07/2023 (hasta llegar a 280h)**
Horas semanales: (Weekly hours)	**20**
Horario jornada laboral:	**Flexible**

(Working hours)	
Importe Ayuda/Bolsa de estudio: **(Amount of fellowship /** **remuneration)**	**0 €/mes**
Tutor académico: (Academic tutor (UPM)) Email:	**Emilio Serrano Fernández** **emilio.serrano@upm.es**
Departamento tutor académico: **(Dept. of academic tutor)**	**Inteligencia Artificial**
Tutor empresa: **(External tutor)**	**Rodrigo Bermejo Moreno**
Email tutor empresa: **(Email external tutor)**	**rodrigo.bermejo@csic.es**
Departamento tutor empresa: **(Dept. of external tutor)**	**DNA replication and genome integrity maintenance group,** **Cellular and Molecular Biology department.**
Ubicación de la estancia de las **practicas** **(Location of the internship)**	**Margarita Salas Center for Biological Research (CIB-CSIC)**
ENTIDAD COLABORADORA: **(Collaborating Entity)**	**Margarita Salas Center for Biological Research (CIB-CSIC)**

Enviar por email a: OFICINA DE PRÁCTICAS ACADEMICAS EXTERNAS – ETSIAAB

secretaria.pei.etsiaab@upm.es – Secretarias: Visitación Pérez / Susana Pardo - Tfno: 913363686)