Position Offered: UNIVERSITY GRADUATE Project: Generative Artificial Intelligence applied to the functional enrichmentof complex protein interaction networks and bipartite drug-protein target networks, especially for anti-tumor drugs

Technological and scientific fields: Computational biology; Artificial intelligence; New drug design; Advanced data analytics.

Location: Salamanca, Castilla y León, IBMCC (https://www.cicancer.org/)

Research Group/PI: Bioinformatics & Functional Genomics Group (Lab19), Dr. Javier De Las Rivas Sanz, http://bioinfow.dep.usal.es/

PROJECT SUMMARY

This project is based on the preliminary work of our group in developing a database on proteinprotein molecular interactions (PPis) called "APID Interactomes" (apid.dep.usal.es) (ref. PMIDs: 16845013, 27131791, 30715274); as well as a database called "GEDA" (Gene Expression and Drug Activity) of association between drugs (especially FDA-approved anti-cancer drugs) and their potential targets (human genes/proteins) based on the integrated analysis of transcriptomic and drug reactivity data of tumor cell lines (ref. PMIDs: 29459035, 32344870). Based on these bioinformatics resources, our main objective is to implement a "framework for biomedical knowledge graphs" that we intend to connect to sources of generative artificial intelligence ("large language models", LLM, available as "Ollama": ollama.com). For this implementation, we propose to follow a technical and scientific development scheme similar to that of "BioCypher" (biocypher.org) that manages to connect graph networks and knowledge-based relationships ("biomedical knowledge graphs") with LLM language models, using "biochatter" (biochatter.org).

PROFESSIONAL PROFILE

Minimum requirements:

- DEGREE in the "bio" field (Biology, Biotechnology, Pharmacy, etc.) or in Computer Sciences and Engineering and MASTER in Bioinformatics or in Computing or Data Science or Software Engineering.
- Mastery of Spanish and knowledge of English (at least intermediate level B1 or B2).

Merits to be considered:

The following will be valued: (i) Having scientific publications in the field of Bioinformatics; (ii) Having previous work experience in a Bioinformatics Group in the Biomedical field; (iii) Having a PhD in the field of Bioinformatics.

WHAT IS OFFERED

To work in Group with extensive experience in the field of Bioinformatics and Computational Genomics applied to studies in cancer and other diseases, using programming languages R and Python, as well as advanced AI technologies such as deep neural networks (DNN) and language models (LLM). All of this integrated with a TRAINING PLAN in DIGITAL COMPETENCES for the person hired with an estimated value of 140 ECTS over 4 years.

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

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