Call for a Full Professor position in Artificial intelligence and Data Science for Biology

A full professor position is open at the Laboratory for Computational and Quantitative Biology (LCQB), Institut de Biologie Paris Seine (IBPS), Sorbonne University (SU) with a starting date from September 2022.

Biology and medicine are overwhelmed by the production of massive amounts of omics (genomics, metagenomics, proteomics, metabolomics), imaging and structural data. These data are often heterogeneous and noisy, and specific questions in biological sciences call for the original combination of artificial intelligence (AI) and data-scientific methods with integrative approaches. Important examples are found across all life sciences, a non-exhaustive list includes:

1. Understanding the evolution of genomes, their functional organization and expression.
2. Understanding the genetics of complex diseases through genomic data (SNPs, transcriptomes, epigenetic modifications, genetic interactions, immunological repertoires, etc.) associated with a large number of patients and controls.
3. Ecology with massive sequencing (metagenomics, metatranscriptomics, etc.) of entire ecological populations (oceans, soils, human intestine, etc.) and inference of the composition of a population in terms of species, symbiotic interactions, competition between species, community functions.
4. Synthetic biology with its massive amounts of high-throughput data.
5. Evolutionary protein analysis for a reliable functional annotation of biomolecules.

The professor will create a new research team on one or more of the following themes: machine learning, deep learning and AI; methods, algorithms and probabilistic models applied to the analysis of multi-omic data; data science applied to biology; modeling of complex biological systems; models and methods for evolutionary genomics, population genomics and statistical genetics; methods for integrative multi-omics; data science analysis methods. (S)he is expected to develop and apply such advanced modeling and analysis methods towards a deeper, data-driven understanding of complex biological or biomedical processes, and thereby to reinforce and complement the research fields present in the lab.

The professor should be able to coordinate national and international collaborative programs. (S)he will have the opportunity to participate in the activities of several interdisciplinary institutes and initiatives of Sorbonne University, such as i-Bio (Initiative for Interdisciplinarity in Biology), SCAI (Sorbonne Center for Artificial Intelligence), and ISCD (Institute of Computing and Data Sciences). (S)he should be open to collaborations with experimental biologists. The candidate's past or/and current participation in multidisciplinary projects with biologists will be appreciated.

Teaching: The professor will contribute to the effort to adapt the existing bachelor's and master’s degree courses in life science to modern challenges in digital sciences and the processing of big data in biology. (S)he will help develop statistics courses to allow students to follow new developments in data analysis. (S)he will coordinate and run new courses at different levels of the Bachelor's degree, including introductory courses in data sciences and AI. At the Master's level, the "Bioinformatics and Modeling" (BMC Master) and "Systems Biology" (BIP Master) programs will be particularly concerned. (S)he will develop courses in modeling, machine learning and AI applied to bioinformatics and modeling in biology. (S)he will participate in the development of multidisciplinary training programs through research on the digital sciences for biology and health.

The LCQB will provide to the professor the necessary space for the development of a research team. (S)he will benefit from the laboratory's computing infrastructures (clusters and computers) as well as the technical support of the computer engineers who work for the teams. Financial assistance for the installation will be provided jointly by LCQB and IBPS as is usually done for any new team. In addition, the professor will be able to rely on the Biofoundry of Sorbonne University if required for his/her research in biology.

The i-Bio initiative (http://ibio.sorbonne-universite.fr/), whose mission is to promote the exploration of fundamental biological questions through multidisciplinary approaches, offers financial assistance (with a competitive start-up package) for the installation of new interdisciplinary research teams according to their scientific quality, their complementarity and interface with the research in biology carried out at the IBPS / IFM (Institut du Fer à Moulin). Given the structuring nature of this position, in research and teaching, for the development of AI / Bioinformatics / data analysis approaches at IBPS / IFM, in the UFR of Biology and more generally at SU, the applicant might be eligible to i-Bio funding.

Interested candidates should contact Pr. Alessandra Carbone (director of the LCQB) and Pr. Martin Weigt via e-mail: alessandra.carbone@sorbonne-universite.fr and martin.weigt@sorbonne-universite.fr for more information about the application, the selection procedure and the LCQB. They should contact Dr. Michel Labouesse (director of the IBPS) via e-mail: michael.labouesse@sorbonne-universite.fr for more information about the institute.