

The Botigue lab for "Genomics of ancient crops and domestication" in the Centre for Research in Agricultural Genomics (CRAG) in Barcelona is offering a PhD position under the La Caixa Foundation INPhINIT Programme to work on the genomic analysis of archaeological dog remains from Europe spanning from the Neolithic up to the Roman Period with the goal to understand population dynamics within the continent and gene flow during that period.

#### DEADLINE

6 February 2019 (Incoming modality)

27 February 2019 (Retaining modality)

TITLE: Genomic analysis of archaeological dog remains from Europe.

#### PROJECT DESCRIPTION:

The European continent has played a major role in dog domestication. A recent genomic analysis of Neolithic dogs from Germany, though revealing genetic continuity, showed complex admixture patterns, including gene flow from a population similar to modern Indian dogs. Additionally, studies examining the mitochondrial genome of ancient and modern dogs have detected a replacement in Europe that took place some time between the Neolithic and the Middle Age. In the present project we plan to unravel this complex demographic scenario of prehistoric European dogs by analysing the genome of twenty ancient dog samples from the Iberian Peninsula and Germany from a period of over 4,000 years, spanning from the Neolithic up to the Roman Empire.

Analysis of the whole genome and the mitochondrial genome will be performed to determine the main demographic events that shaped dog populations during that period. Population structure and admixture will be studied in ancient dogs in the context of modern dog variation.

As a result, we will provide for the first time insights into the genetic structure, variability and admixture of dog populations in Europe over a period of 4 millennia, prior the generation of breeds. Results will elucidate demographic events surrounding dog prehistory in Europe and their relationship with humans migrating through the continent.

#### JOB POSITION DESCRIPTION

The dearth and the ambition of the current project are ideal for a PhD project. We are therefore looking for a highly motivated student seeking to pursue his doctoral studies and specialise in genomics and bioinformatics by analysing whole genome sequencing data, including that from archaeological samples. The student will receive extensive training in a broad range of skills, including theoretical population genetics and biostatistics. She will learn concepts such as population structure, admixture and adaptation, and be able to recognize the footprints these processes leave in the genome. Additionally, the student will also learn how to model demographic inference, acquiring knowledge on coalescent theory and computational simulations. In order to analyse genomic data, the student will learn how to use and develop her own bioinformatic tools.

This project is an international collaboration with researchers from the United States and Germany, so the student will have the opportunity to perform research stays abroad, increasing her network of peers at an early stage of her career and learning new skills from renowned population geneticists. Opportunities to assist international meetings and present

her research will also be granted throughout her PhD.

The PhD will be performed in CRAG'S Plant and Animal Genomics programme. During the first year of their studies, students receive teaching on state-of-the art technologies offered by the Core Units and Scientific Services of CRAG, such as genomics and next generation sequencing, proteomics, metabolomics, and bioinformatics. The student will also be able to attend internal and external seminars at CRAG and improve her oratory skills by giving seminars regularly.

By the end of her PhD, the student will have become a population geneticist specialised in the analysis of modern and ancient genomes with a strong computational background and a wide network of peers.

#### REQUIREMENTS

The doctoral fellowship programme INPhINIT "la Caixa" is devoted to attracting talented Early-Stage Researchers'of any nationality'who wish to pursue doctoral studies in Spanish or Portuguese territory.

The doctoral INPhINIT fellowships offer a highly competitive salary and complementary opportunities for training on transferrable skills (through the collaboration of leading entities such as Vitae and Oxentia), temporary stays in industry, incentives upon completion of the thesis, among other elements that make these fellowships some of the most attractive and complete in Europe.

#### CONTACT

For questions about the position and further information about the project, contact Laura Botigué, Email: [laura.botigue@cragenomica.es](mailto:laura.botigue@cragenomica.es)

#### HOW TO APPLY

Applications should be done using La Caixa INPhINIT online application system. Please follow the link below to obtain further information about the PhD position and how to access the online application system:

<https://obrasociallacaixa.org/en/investigacion-y-becas/programa-de-becas-de-posgrado/inphinit/programme-description>

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