A new interdisciplinary project to investigate the origin, domestication and early diffusion of Opium poppy

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Introduction

The project aims to reconstruct the origin, early dispersal and domestication process of *Papaver somniferum L.*, one of the most important plant species in human history.

Using archaeological material, as well as sampling of modern biodiversity kept in seed banks, this project involves several disciplines: archaeobotany, dating techniques, genomics, geometric morphometric methods (GMM), spatial analysis.

Methodology

An archaeological evidence-based project

- A database will compile all archaeological sites that have provided poppy seeds from the Neolithic to the end of the Iron Age (6000-50 cal BCE) in Europe and Southwestern Asia. Main participants: L. Martin (UNIGE, Switzerland); C. Callou and I. Baly, BBEES (MNHN-CNRS, France).

- AMS dating will be carried out directly on poppy seeds following a validated methodology (Salavert et al. 2020). Main participants: A. Zazzo and O. Trombret (LDR, MNHN); F. Thil, C. Hatte/C. Gauthier (LSCE).

Co-analysis of the genetic and GMM diversity of modern poppy and herbarium samples

- Current genetic diversity and population structure in varieties of wild/cultivated poppies will be analyzed. The genetic markers (SNPs) will be uncovered with Genotyping-by-Sequencing (GBS). Main participants: H.R. Oliveira (ICArEHB, Portugal); J. Utge/P. Verdu (P26M, Paris); F. Jabbour (ESEYB).

- GMM will be performed on seeds following the protocol validated in the AgriChange project (Jesus et al. 2021). The resulting model will be used to classify waterlogged poppy seeds from different sites across Europe from the Neolithic to the Roman/Medieval times. Main participants: F. Antolin/R. Soteras (DAI); L. Bouby/A. Evin (ISEM).

Main objectives

- Identify the geographical origin(s) of poppy including the location(s) of its wild progenitor(s) and of its domestication.

- Define a chronocultural framework for its early domestication process and dispersal from Prehistory to the end of the Iron Age (6000-50 cal BC).

- Provide genetic and morphometric characteristics on its history, dispersal and varietal diversification.

Team

**CALL FOR POPPY SEEDS!**

Seeds/capsules from earliest sites for a region/chrono-culture to produce up to 30 new radiocarbon dates to validate the chronological information of the sites compiled in the archaeological database.

Samples with numerous waterlogged seeds to analyse up to 15 archaeological sites with GMM.

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Did you find any errors or misinterpretations? Let me know and I'll do my best to correct them.