

## PAINT LIKE AN EGYPTIAN

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### Introduction

Initiated in 2016, Paint like an Egyptian is a large scale and transdisciplinary research project consisting of the material and technical study of Ancient Egypt wall paintings from the Theban Necropolis, located on the west bank of the Nile, opposite Luxor, which includes the Valleys of the Kings (Fig 1), and the Queens, as well as the Tombs of the Nobles. So far, a dozen of tomb chapels dating of the 18th, 19th and 20th dynasties, among which are those of the pharaohs Thutmose III (KV34) and Amenhotep II (KV35) have been investigated in situ, in a systematic way, through the same panel of analytical and imaging techniques (Fig 2-3). The serial approach adopted in Paint like an Egyptian, aims to collect as much information as possible, regarding the materiality and the making processes of wall painting in Ancient Egypt.



Fig. 1 The Valley of the Kings is an ancient royal burial ground on the west bank of the Nile River near Luxor, Egypt, serving as the necropolis for pharaohs and nobles of the New Kingdom period (c. 1550–1070 BCE).

### Methodology

A mobile laboratory equipped with non-invasive and complementary scientific methods has been especially implemented to perform the data and images acquisition campaigns directly inside the burials. The analytical and imagery methods applied to the project include photogrammetry, hyperspectral imagery, digital microscopy and X-ray fluorescence spectrometry in scanning mode (MA-XRF).



Fig. 2 Data acquisition campaigns in the tombs of the pharaohs Thutmose III (KV34) and Amenhotep II (KV35) conducted in 2024

### Research axes

- Comparing the pigments, fillers, binders and coatings used by ancient Egyptian painters and draughtsmen from different periods (18th, 19th and 20th dynasties), active in the Theban Necropolis
- Documenting the implemented sequences of work from the preparation of the wall substrates to the final top layers, as well as possible changes undergone
- Finding out relevant objective criteria for the diagnosis of altered surfaces
- Characterizing the degradation behavior of specific pigments, such as Orpiment and Realgar



Fig. 3 Tomb of Nebamon and Ipouki (TT181), detail in visible light (left) and under UV light (right)

### Partial results

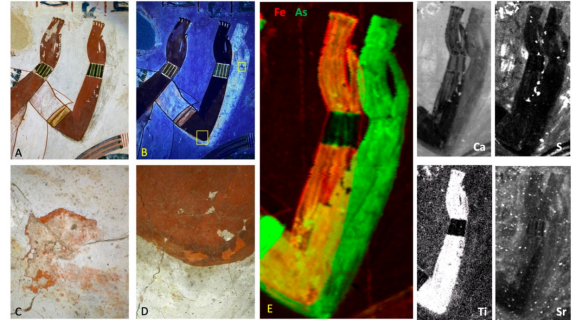


Fig. 4. Tomb of Menna (TT69). A: Visible picture. B: UV fluorescence picture. C and D: macro-photographs showing the colour of the first painting. E: MA-XRF study on an area of 12,8 x 22,8 cm, scanned with a dwell time of 0.33 s/pixel and a step size of 1.0 mm. All distribution images are corresponding to the number of counts in the X-ray K-lines of the elements.

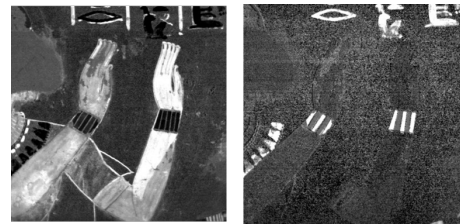


Fig. 5. Hyperspectral images showing the distribution of Hematite from first derivative at 585nm (left) and the distribution of Egyptian blue from first derivative at 850nm (right)

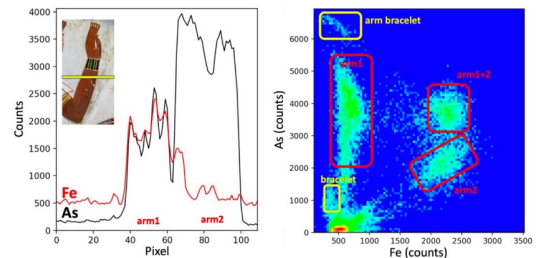


Fig. 6. As and Fe distributions in Menna's arm. A: XRF analysis along a line through the arm showing the evolution of FeK and AsK lines (data from the MA-XRF in Fig 4). B: Scatterplot of Fe-K vs As-K lines showing their relative proportions in the different parts of the painting

### To be continued

The next yearly acquisition campaign, which is planned for this autumn, will take place in the tomb of Tutankhamun (KV 62) and in the tomb of Nefertari (wife of Ramses II, QV 66). The generated data and images will enrich the scientific documentation already gathered on the wall painting materials and techniques in the ancient Egyptian Theban Necropolis.

### References

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