Introduction
The wall painting is located within what is believed to be part of a domestic structure in Karanis, a Greco-Roman site situated on the northern border of Fayoum, Egypt. The painting, a duomo fresco with areas that appear to have been painted successively, extends across three earthen and limestone slab walls. It is fairly illegible due to color loss and surface deterioration and appears to contain a striped pattern with geometric shapes. This may have represented an architectural design which covered the entire wall, or was created as a dado.

Objective
The goal of the project was to stabilize the wall painting for documentation purposes and to prepare it for reburying. The project had three main aims: first, to define the stratigraphy of the wall painting and document its current condition; second, to test conservation materials and implement a treatment to stabilize the painting for documentation, excavation, and reburying; and third, to design a reburying process. The main treatment concern is the delamination of the mud and straw plaster from the support wall, which has compromised the structural integrity of the wall painting.

Stratigraphy
Stratigraphy from the support wall up through to the paint layer:
- Limestone slabs with mud & straw mortar
- Mud plaster bulked with straw in one to two layers
- Lime plaster
- Maroon paint, black paint (stripes) grey wash
- Thin white lime plaster
- Green Paint

Documentation & Condition
The condition of the painting varies over the three walls. The following types of damage and deterioration phenomena were photographed and mapped on plastic sheets overlaid on printed digital images of the painting:
- Loss of mud plaster
- Loss of white plaster
- Loss of paint layer
- Flaking paint
- Cracks, both large structural cracks and fine networks of superficial cracks, generally associated structural stress points
- Areas of delamination
- Efflorescence on the surface of the paint, mud plaster layer, and support wall, largely associated with areas of loss, cracks, and lower and upper areas of the wall painting
- Black mold-like accretion.2 Identified as mold under the stereo-microscope
- Intentional scratches and gouges
- Holes
- Other: Deposits of particulate accumulation on the surface, as well as various types of accretions.
- salts were identified as a mixture of carbonates and sulphates. Carbonates were identified when efflorescence occurred with the addition of hydrochloric acid. After the solution had dried, the needle-like crystals of sulphates were seen under the microscope at 40x magnification.

Stabilization
Adhesive: A 5% solution of B-671 (lauroylmethacrylate) in ethanol and acetone was chosen to consolidate localized areas of friable plaster and paint based on its glass transition temperature at 50°C, 122°F, and performance during testing. A 10 -15% solution bulked with glass micro-balloons was used to secure the lime plaster to the mud plaster. This was applied with a micro-spatula and by injection.

Grout: The mud plaster delaminating from the limestone support wall was stabilized with a grout composed of slaked lime, clean sand, brick dust, and water (1:3:1:1.75). This mixture was chosen based on its performance during testing in the laboratory and on site. The grout was pressed into the gaps between the mud plaster and limestone with a small metal spatula. This effectively stabilized the delaminating mud plaster.

Grout Testing

Reburial
The reburying plan incorporated the use of a GSE NW1 nonwoven geotextile. The GSE Nonwoven Geotextile is made from polypropylene and is a stable needle punched fabric. The geotextile allows the wall painting to breath while providing a protective barrier against erosive elements. The textile was cut to fit the wall painting and lined with acid-free tissue paper to prevent against abrasion during reburying. It was labeled for proper installment.

Two reburying plans were presented to the archaeologists. In the end, Reburial Plan #2 was undertaken due to challenges of bringing in clean sand to the remote location and time constraints.

Reburial Plan #1: The ideal scenario for reburying the wall painting, relies on construction of a mud brick interior wall (approximately 336 mud bricks) and access to clean sand (approximately 2,837 kilograms of clean sand, or 56 bags (50 kg per bag)).

Reburial Plan #2: Should be undertaken if accessibility to clean sand and an interior mud brick support is not viable. The geotextile is to be laid against the wall and the trench filled with desert sand.

Future work
The reburying of the wall painting in trench 11 should be checked yearly to monitor the level of exposed geotextile and its deterioration. Exposed geotextile should be reburyed and visually compared against a small sample of geotextile in storage for signs of deterioration. Analyze the results of Hobo monitors placed on the site to gain a greater understanding of the fluctuations of temperature and relative humidity. Send samples of mold that were removed from the painting to an appropriate lab for proper identification.

Acknowledgements
UCLA/Reb Fayoum Project, UCLA/Getty Conservation Program, The Cotsen Institute of Archaeology, Professor Ellen Pearlstein, Professor William Wendrich, and Vanessa Muros