Description of Image Data

The image data on this CD-ROM includes both "raw" image data and the result of spectral image processing using two methods. The images are of a small section of leaf 28 verso of the palimpsest. This section includes both texts and significant damage from mold.

Standard Method

Images from our standard imaging method using the Kodak DCS 760 digital camera (Bayer color filter array, antialiasing filter removed) are contained in the directory:

1-RGB_data

data_strobe.tif: *obtained using xenon strobe illumination from a Nikon SB-29 flash unit*

data_tungsten.tif: *using two 45w tungsten lamps with diffusers on either side*

data_ultraviolet.tif: *obtained under longwave UV illumination (λ = 365 nm) from lamps on either side*

2-RGB_processed

processed_strobe.tif: *strobe image after linear contrast stretching to maximum and minimum gray values.*

processed_ultraviolet.tif: *LWUV image after local contrast stretching to equalize contrast across page.*

processed_pseudocolor.tif: *combination of color separations from the ultraviolet and tungsten images after local contrast stretching. The red separation of the tungsten image is the red channel of the new image; the blue separation of the ultraviolet image is the green and blue channels of the new image.*

Multispectral Imaging

Two directories with raw and processed multispectral images. The 16 raw images were collected with a *SenSys ™* scientific digital camera from the Photometrics division of Roper Scientific (http://www.roperscientific.com/). The wavelengths were selected with a liquid-crystal tunable filter from CRI (http://www.cri-inc.com/). The passband of the filter is nominally 10nm.

3-multispectral_data

All images EXCEPT the first were collected under tungsten illumination

00.tif -- UV illumination, no filter
01.tif -- tungsten illum., no filter
02.tif -- tungsten illum., 400 nm filter
03.tif -- tungsten illum., 425 nm filter
04.tif -- tungsten illum., 450 nm filter
05.tif -- tungsten illum., 475 nm filter
06.tif -- tungsten illum., 500 nm filter
07.tif -- tungsten illum., 525 nm filter
08.tif -- tungsten illum., 550 nm filter
09.tif -- tungsten illum., 575 nm filter
10.tif -- tungsten illum., 600 nm filter
11.tif -- tungsten illum., 625 nm filter
12.tif -- tungsten illum., 650 nm filter
13.tif -- tungsten illum., 675 nm filter
14.tif -- tungsten illum., 700 nm filter
15.tif -- tungsten illum., 800 nm filter

4-multispectral_processed_images

Images segmented using a Constrained Least Squares algorithm, so that the computed fractions lie in the range between 0 and 1.

fig_archie.tif: *fraction channel for Archimedes text*

fig_euchologion.tif: *fraction channel for Euchologion text*

fig_mold.tif *fraction channel for mold*

fig_parch.tif *fraction channel for parchment*

fig_error.tif *fraction channel for error (complement of the sum of the other four fraction channels*

028v6pbktk.tif: *pseudocolor combination of the separations for Archimedes text, mold, and parchment. The sum of the three separations is displayed in the red channel and the sums of the mold and parchment separations in the blue and green channels.*

028v6prktk.tif: *pseudocolor combination of the separations for Archimedes, mold, and parchment. The sum of the three separations is displayed in the blue channel and the sums of the mold and parchment separations in the green and red channels.*