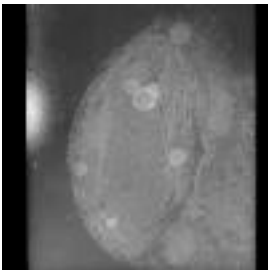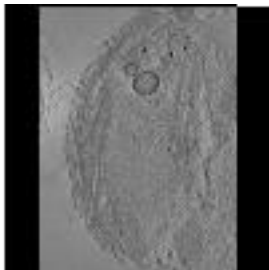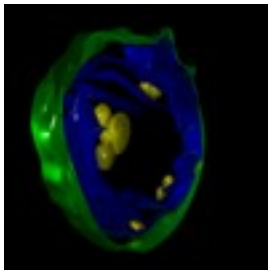# Cell Centered Database
University of California, San Diego
Maryann Martone

Microscopy Product #:3428 Phaeo23
For the most updated information, please visit
http://ccdb.ucsd.edu/CCDBWebSite/main?event=displaySum&mpid=3428

Image2D	Reconstruction	Segmentation

Project Information:

PROJECT_ID	P1576
PROJECT_NAME	Chloroplast Ultrastructure of Phaeocystis antarctica in High and Low Light Conditions
PROJECT_DESCRIPTION	The three-dimensional morphological rearrangements for two conditions that mimic light conditions for the Antarctic summer and winter were studied in Phaeocystis antarctica Karsten
LEADER	Tiffany Moisan
FUNDING_AGENCY	National Aeronautics and Space Administration
PROJECT_START_DATE	
PROJECT_END_DATE	
COLLABORATORS	Gina Sosinsky, Casey Buitenhuys, Mark Ellisman
PUBLICATION1	Moisan, T., Ellisman, M. H., Buitenhuys, C.W., Sosinsky, G. E., (2006) Differences in Chloroplast Ultrastructure of Phaeocystis antarctica in High and Low Light Conditions, Marine BIology, 149 (6) 1281-1290
PUBLICATION2	
PUBLICATION3	

Experiment Information -	
PURPOSE	To examine thylakoid membrane architecture under conditions of high light
TITLE	High light condition
EXPERIMENTER	Tiffany Moisan
EXPERIMENT_NAME	
EXPERIMENT_DATE	

Subject Information -	
GROUP_BY	Light level
SUBJECT_NAME	High light
FIXATION_METHOD_ID	
SCIENTIFIC_NAME	Phaeocystis antarctica
SPECIES	algae
STRAIN	Karsten
AGE	days
AGECLASS	6-8 generation cultured cells
ANIMAL_NAME	
LITTER_ID	
SEX	unspecified
VENDOR	
WEIGHT	grams

Tissue -	
ANATOMIC_LOCATION	
MICROTOME	Ultramicrotome
ORIENTATION	
THICKNESS	.25 um
TISSUE_PROD_STORAGE	
EXTERNAL_FILE_NAME	P1576_Phaeo1.xml
TISSUE_GROUP_TYPE	

Microscopy Product Information -	
MICROSCOPY_PRODUCT_ID	3428
IMAGE_BASENAME	Phaeo23
CREATE_DATE	
INSTRUMENT	JEOL 4000EX IVEM
MICROSCOPE_TYPE	IVEM
PLANE_COUNT	61
PRODUCT_TYPE	SINGLE TILT
PURL	
SESSION_NAME	
TELESCIENCE_SRB	P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428
X_RESOLUTION	nm/pixels
Y_RESOLUTION	nm/pixels
XSIZE	
YSIZE	

Protocol:

Culture conditions. Cultures of colonial P. antarctica (CCMP 1374) were grown semi-continuously for 5-8 generations in f/2 medium (Guillard and Ryther 1962) under continuous blue light at 4¿C at irradiances of 14 and 259 ¿mol quanta m-2 s-1.

Specific growth rate. Specific growth rate was estimated by a linear regression of loge transformed daily determinations of in vivo

fluorescence intensity (n=2) measured with a Turner Model 10 fluorometer.

Sample preparation for electron microscopy. P. antarctica colonies were fixed on ice with a 2% glutaraldehyde and 1.3% osmium tetroxide solution for 30 minutes and rinsed in distilled water. Cells were dehydrated through a series of ethanol: water washes (25:75, 50:50, 75:25, 95:5), three 100% ethanol washes and finally through three washes of 100% acetone. Cells were pelleted and fixed in an Epon resin. The fixation process lends itself to a breakup of the colonial matrix and we were able to examine P. antarctica individual colonial cells using electron tomography. Embedded samples were cut on a Reichert-Jung Ultracut E microtome, transferred to 50/50 mesh copper clam grids, and stained with uranyl acetate and lead citrate. After staining, 20 nm colloidal gold particles (Sigma-Aldrich Chemicals, St. Louis, MO) were added to both sides of the grid to serve as fiducial markers for aligning tilted images. Individual colonial cells were observed at low magnification at 80kV on a JEOL 100CX to determine specimen quality and to select suitable samples.

Intermediate voltage electron microscopy. Sections of 0.25 (high light condition) and 0.75 ¿m (low light condition) in thickness were cut, post-stained with uranyl acetate and lead citrate and examined at 400 kV on a JEOL 4000 intermediate voltage electron microscope. Tilt series consisting of 61 images (-60¿ to 60¿ at 2¿ tilt increments) were collected at either 12-15,000 magnification (low light condition) or 20-30,000 magnification (high light condition). Images were collected on film (Kodak 4489 electron image film) or on a Slow-Scan Cooled CCD camera (Fan et al. 2000). Sections were pre-irradiated before each tilt series in order to limit anisotropic specimen thinning during specimen examination (Luther 1992). The illumination was held constant using parallel electron beam conditions and the image was maximized for each exposure. A computer-controlled goniometer was used to accurately tilt the specimen. For tilt series acquired on film, digitization was accomplished using a Photometrics 1024 x 1024 Cooled CCD camera containing a 19-¿m2 pixel with sampling sizes of ~50-85 ¿m pixel-1.

Single-axis tilt series tomographic reconstruction methodology. Tilted images were aligned with each other by use of a set of common fiducial marks consisting of 20 nm colloidal gold beads. Reconstruction methods follow that those of Perkins et al. (1997). The common fiducial marks on each image of the tilt series were aligned using the program XFIDO. Alignment of the tilt series was initially calculated using a least-squares algorithm through the z-direction of the tilt series using the program SAXALIGN. After initial alignment, volumes were computed using either a standard r-weighted simple back projection algorithm or a Globus enabled parallelized version of this algorithm that considerably speeded up these computations (Smallen et al. 2000).

The 3D reconstruction is viewed and analyzed with ANALYZE AVW (Biomedical Imaging Resource, Mayo Clinic, http://www.mayo.edu/bir/Software/Analyze/Analyze.html). Individual thylakoids, pyrenoids, and chloroplast membranes were traced on the electron tomographic reconstruction using the program XVOXTRACE. The resolution of the organelles was estimated to be ~10 nm (based on detectability of features and pixel sampling criteria). All computations and graphics were performed on either Silicon Graphics or Sun workstations.

Image Type -	
SINGLE_TILT_IMAGE_SEQ_ID	5080
TILT_INCREMENT	2 degrees
SINGLET_DESC	Specimens were pre-irradiated prior to imaging.
SINGLE_TILT_NOTES	Specimens were pre-irradiated prior to imaging.
SINGLETILTIMAGESEQ_ID	5080
TILT_INCREMENT	2 degrees
RANGE_MAX	60 degrees
RANGE_MIN	-60 degrees
SINGLET_DESC	Specimens were pre-irradiated prior to imaging.
SINGLE_NOTES	Specimens were pre-irradiated prior to imaging.

Specimen Description -	
ANATOMICAL_DETAIL	5160
ATLAS_COORD	, ,
CELL_TYPE	algae

Specimen Description -	
STRUCTURE	chloroplast

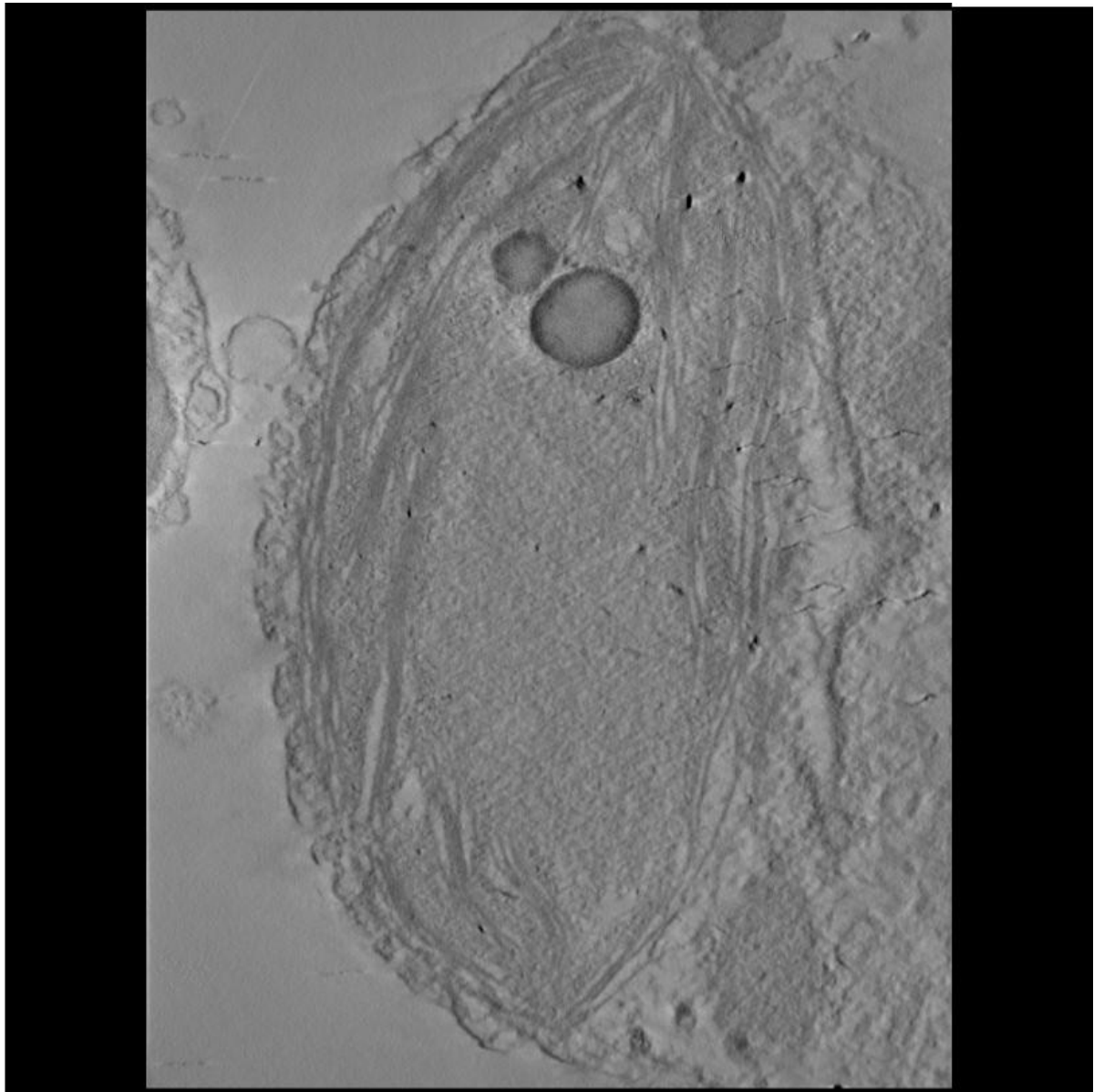| Electron Microscopy Product -	
EM_PRODUCT_ID	5161
ACCELERATING_VOLTAGE	400 KeV
EMBEDDING_MEDIUM	resin
MAGNIFICATION	20000
RECORDING_MEDIUM	Slow scan cooled 2K CCD camera
EM_NOTES	Check magnification before submitting; some high light conditions were taken at 30K

Raw 2D Image

Raw Low Resolution 2D Image -

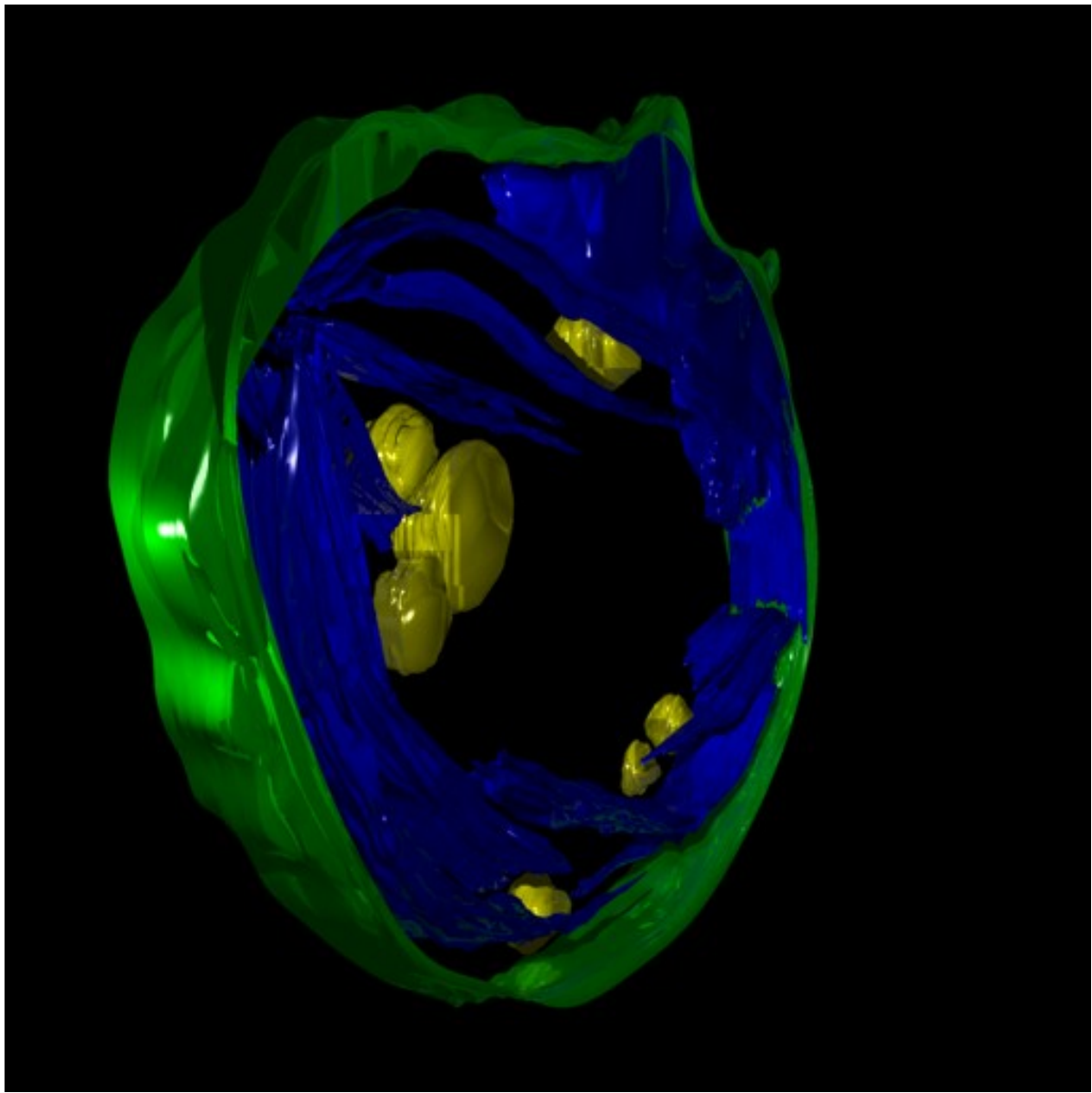| Raw 2D Image -	
IMAGE2D_ID	5122
BIT_DEPTH	14 bit
IMAGE_DESC	Zip file containing compressed unaligned digitized 2D data in suprim format (*.f.gz) along with the fiducial mark file generated by xfido (.fido) and a file containing the angles for each image generated by saxalign (.ang)
IMAGE_FILE_FORMAT	Suprim
IMAGE_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_img.jpg
RAW_DATA_FILE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_img.zip
THUMBNAIL_DESC	Zero tilt image through a 0.25 um section of blue green algae exposed to high light conditions imaged on an intermediate voltage electron microscope at 400 KeV. Contrast is reversed and adjusted compared to original data. While spots are colloidal gold particles applied to the surface to server a fiduciary cues. Full resolution data can be viewed by clicking on the Neuroinformatica link.
THUMBNAIL_FILE	P1576/phaeo23_img_thmb.jpg
X_SIZE	1024 pixels
Y_SIZE	1024 pixels
NOTES	Check the magnification and pixel resolution before submission.

Reconstruction

Reconstruction Image -

Reconstruction -	
RECONSTRUCTION3D_ID	5140
ALIGNMENT_METHOD	manual
ALIGNMENT_PROGRAM	xfido
CROPPING_COORDINATE1	,
CROPPING_COORDINATE2	,
IMAGE_MAP_FILE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_img_map.jpg
RECON_ALGORITHM	R-weighted back projection
RECON_DESC	Tar file containing volume in Analyze 7.5 format. File contains both .hdr and .img file. This file was resectioned obliquely to flatten out the section in the XY plane so it is degraded slightly in resolution from the original volume.
RECON_PROGRAM	Suprim
RECON_TYPE	single tilt electron tomography
VOLUME_DIMENSION	600, 810, 88
VOLUME_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_vol.zip
VOXEL_SCALE	, ,
RECONSTRUCTION_IMAGES_ID	5140
RECON_IMAGE_DESC	Computed slice through a tomographic reconstruction of the chloroplast and thylakoid membranes from a blue green algae grown in high light conditions.
RECON_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_vol.jpg
VOLUME_THUMBNAIL	P1576/phaeo23_vol_thmb.jpg
ANIMATION_FILE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_vol.mov
ANIMATION_FILE_FORMAT	Quicktime
ANIMATION_DESC	Animation through computed slices of the tomographic reconstruction of blue green algae grown in high light conditions.

Segmentation

Segmentation Image -

Segmentation -	
SEGMENTED_OBJECT_ID	5221
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy2
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5221
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5223
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy26
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5223
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3

Segmentation -	
	363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5227
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy6
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3 363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5227
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3 363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5229
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy8
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3 363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5229
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.

Segmentation -	
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5235
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	unk6
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5235
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5222
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy25
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5222
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the

Segmentation -	
	nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5220
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy13
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5220
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5238
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	unk9
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5238
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular

Segmentation -	
	structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5224
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy3
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5224
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5211
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_DESC	thylakoid membranes
OBJECT_NAME	ThySend
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5211

Segmentation -

SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5215
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy1
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5215
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5218
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy10b
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg

Segmentation -	
SEGMENTED_OBJECT_ID	5218
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3 363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5210
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_DESC	thylakoid membranes
OBJECT_NAME	Thy12
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3 363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5210
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3 363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5212
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	bigthynorth
OBJECT_TYPE	surface

Segmentation -	
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5212
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5214
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	pyrenoid
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5214
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5216
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy10

Segmentation -	
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5216
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5217
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy10a
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5217
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5219
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0

Segmentation -	
OBJECT_NAME	thy11
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5219
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5226
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy5
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5226
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5228
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none

Segmentation -	
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy7
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5228
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5230
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thyNend
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5230
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5232
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y

Segmentation -	
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	unk2
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5232
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5236
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	unk7
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5236
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5225
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.

Segmentation -	
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	thy4
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5225
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5237
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	unk8
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5237
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5231
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file

Segmentation -	
	required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	unk1
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5231
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5234
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	unk4
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5234
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5213
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with

Segmentation -	
	the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	mem1
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5213
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg
SEGMENTED_OBJECT_ID	5233
DISPLAY_IMAGE_DESC	Segmentation of a tomographic reconstruction of a chloroplast from a blue green algae exposed to high light conditions. The chloroplast membrane is shown in green and the thylakoid membranes in blue. Unknown structures with some resemblance to lipid droplets are shown in yellow.
DOWNLOADABLE_FILE_DESC	Tar file containing the original trace file (phaeo23.trace), along with the surface files for each object (*.synu) and the Viewdata file required to view them using Synu.
IS_MANUAL	Y
LABELING_RANK	none
NUMBER_OF_OBJECT	0
OBJECT_NAME	unk3
OBJECT_TYPE	surface
SEGMENTED_OBJ_2D_IMAGE	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.jpg
SEGMENTED_OBJECT_ID	5233
SEGMENT_PERSON_NAME	Casey Buitenhuys
SEG_DESC	Manual segmentation of thylakoid membranes and other cellular structures using Xvoxtrace 2.9, followed by surfacing using the nuages algorithm and Synu.
SEG_FILE_NAME	/telescience/home/CCDB_DATA_USER.portal/P1576/Experiment_3363/Subject_61/Tissue_75/Microscopy_3428/phaeo23_seg.tar
THUMBNAIL	P1576/phaeo23_seg_thmb.jpg

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ACKNOWLEDGEMENT

Data used from the CCDB should be appropriately referenced, including both the author of the data and the CCDB. If the data were from a published study, the reference is included in the database record. The following reference should be cited for the CCDB:

Martone, M. E., Gupta, A., Wong, M., Qian, X., Sosinsky, G., Ludaescher, B., and Ellisman, M. H. A cell centered database for electron tomographic data. J. Struct. Biology 138: 145-155, 2002.

In addition, the support for the Cell Centered Database should be included in the acknolwedgement section of any publication: The Cell Centered Database is supported by NIH grants from NCRR RR04050, RR RR08605 and the Human Brain Project DA016602 from the National Institute on Drug Abuse, the National Institute of Biomedical Imaging and Bioengineering and the National Institute of Mental Health, and NSF grants supporting the National Partnership for Advanced Computational Infrastructure NSF-ASC 97-5249 and MCB-9728338.

Maryann Martone