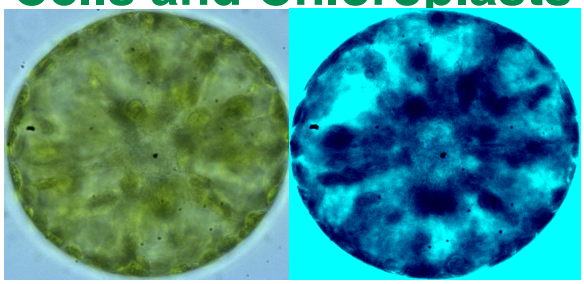
Cells and Chloroplasts

Eremosphaera viridis

Cells and Chloroplasts



Brightfield

467 nm (blue)
(to highlight chloroplasts)

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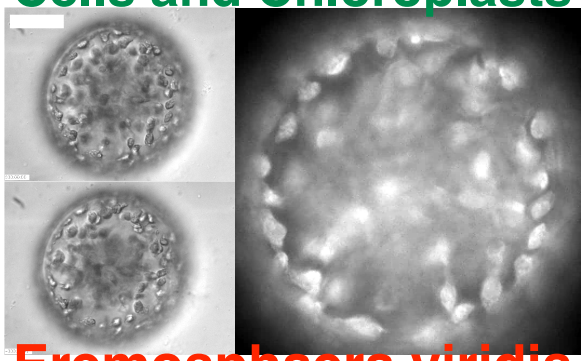

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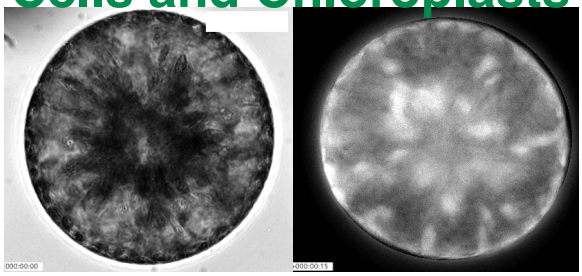

High light intensities cause the chloroplasts to move to the center of the cell to protect the nucleus.

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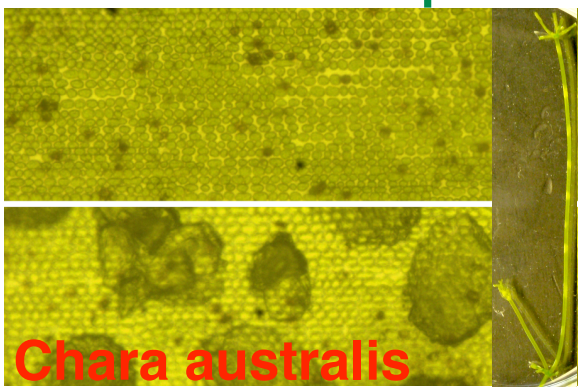
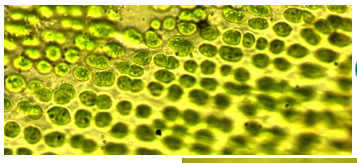
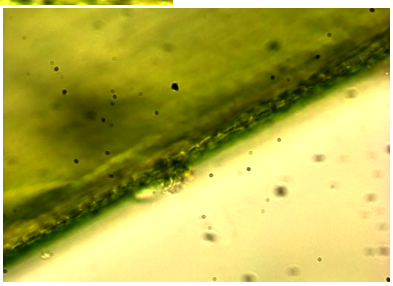


Cells and Chloroplasts

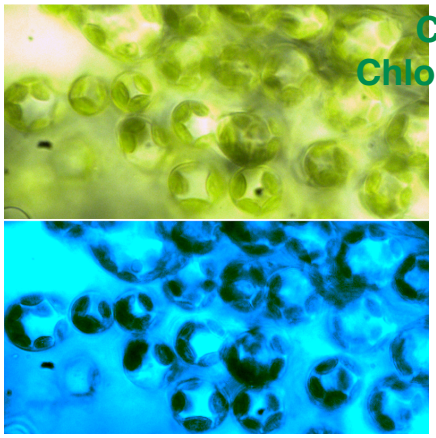


Cytoplasmic movement behind the peripheral sheath of chloroplasts probably serves to move photosynthate products throughout the cell.



Chara australis

Cells and Chloroplasts



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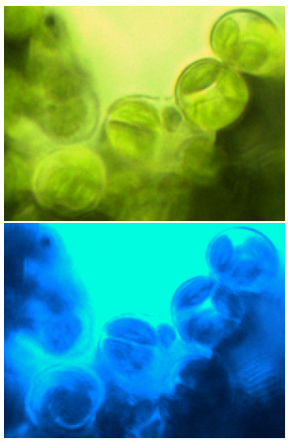
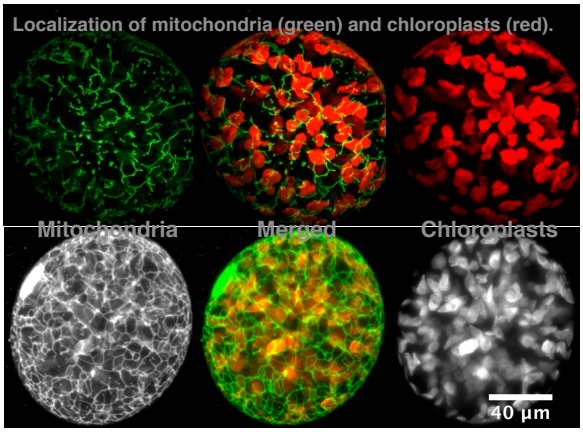
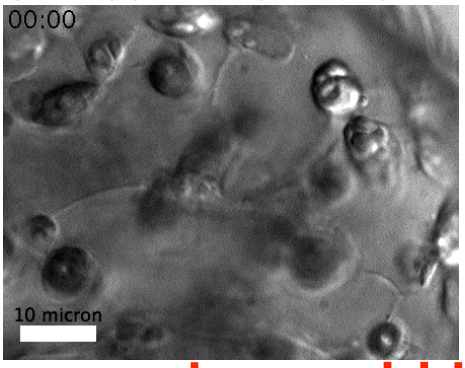
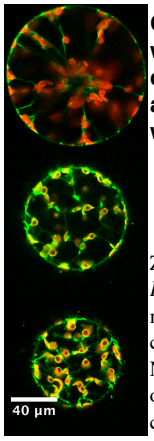




Chloroplasts and Cytoplasmic strands (some containing mitochondria)

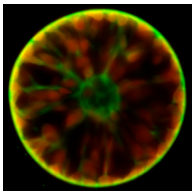


Eremosphaera viridis

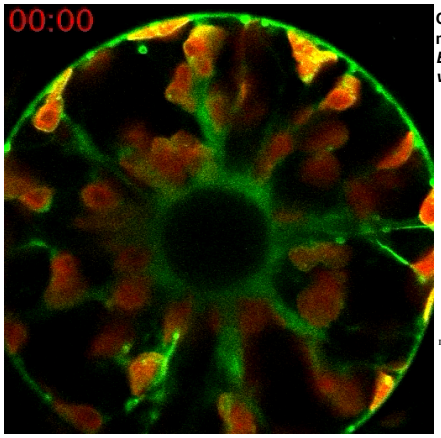


Chloroplasts do not exist in isolation within the cell. In *Eremosphaera viridis*, chloroplasts (red) are often closely associated with mitochondria (imaged with MitoFluorGreen).

Mitochondria also exist at unique locations: peri-nuclear in the case of *Eremosphaera viridis*.



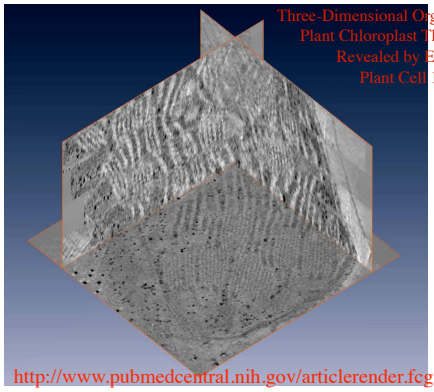
Z-sections of *Eremosphaera viridis* from medial (top image) to cortical (bottom image). Note that mitochondria often interconnect chloroplasts.



Chloroplasts and mitochondria in *Eremosphaera viridis.*

During high light-induced chloroplast movements to the center of the cell, mitochondria remain at the periphery. So, the two organelles are not co-localized in an obligatory fashion in *Eremosphaera viridis*.

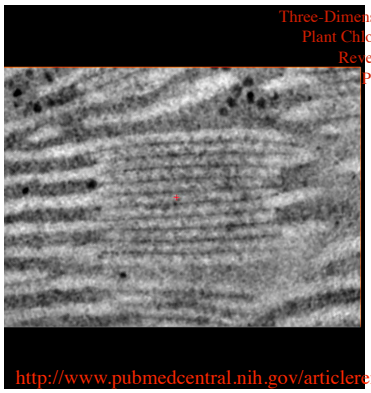
The Structure of Chloroplasts



Three-Dimensional Organization of Higher-Plant Chloroplast Thylakoid Membranes Revealed by Electron Tomography. Plant Cell 17:2580-2586 (2005)

http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1197436

The Structure of Chloroplasts



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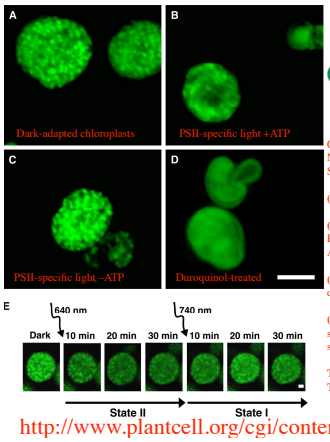


Confocal Microscopy of Structural Alterations in Native Hydrated De-Enveloped Chloroplasts during State Transitions.

(A) Dark-adapted chloroplasts.

(B) and **(C)** Dark-adapted chloroplasts subjected to PSII-specific light in the presence (B) or absence (C) of ATP.

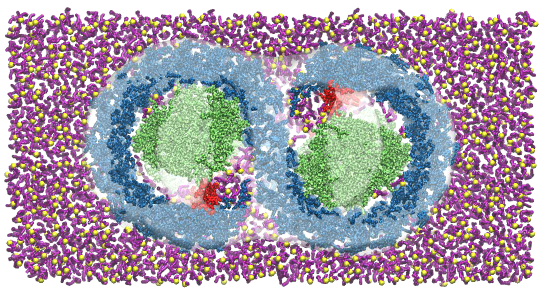
(D) Dark-adapted chloroplasts treated with 1 mM duroquinol, in the dark. Bar = 5 μm.

(E) Time-lapse series of dark-adapted chloroplasts subjected first to PSII-specific light and then to PSI-specific light.

Thylakoid Membrane Remodeling during State Transitions in Arabidopsis.

http://www.plantcell.org/cgi/content/short/tpc.107.055830v1

Reaction Centers and Light-Harvesting Complexes within the Chloroplast Membrane



Jen Hsin, James Gumbart, Leonardo G. Trabuco, Elizabeth Villa, Pu Qian, C. Neil Hunter, and Klaus Schulten. Protein-induced membrane curvature investigated through molecular dynamics flexible fitting. Biophysical Journal, 97:321-329, 2009. (PMC: 2711417)