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Bryophytes provide new perspectives on a photosynthesis enhancing organelle

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Pavillon Charles-Eugène-Marchand, salle Hydro-Québec (1210)

Abstract:

Rubisco, the enzyme responsible for carbon fixation, has a relatively low turnover rate and is competitively inhibited by atmospheric oxygen, causing it to perform poorly in environments where CO₂ is scarce. Some photosynthetic organisms have overcome these limitations through CO₂-concentrating mechanisms (CCMs), which enhance photosynthesis by increasing the concentration of CO₂ around Rubisco. In certain algae and hornworts, the CCM is organized around a membraneless organelle, the pyrenoid, where Rubisco is concentrated. While pyrenoids in the green alga *Chlamydomonas* have been studied extensively, much less is known about the pyrenoids of hornworts, the only land plants to possess these organelles. In this seminar, I will present my work identifying candidate CCM-related proteins in hornworts and demonstrate their cellular localization using confocal microscopy. I will also discuss the biophysical properties of hornwort pyrenoids and ongoing efforts to uncover the mechanisms underlying pyrenoid biogenesis.

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