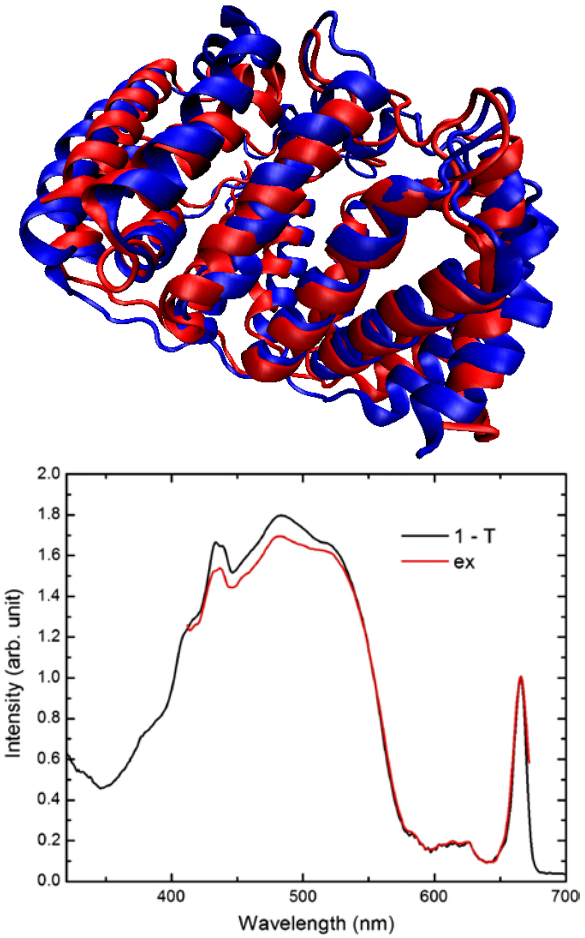
Dinoflagellates harvest light to prevent coral bleaching



Top: Overlay of PCP crystal structures from Amphidinium (x-ray, blue) and Symbiodinium (homology modeling, red). **Bottom:** Fluorescence excitation and absorption spectra of Symbiodinium PCP showing 95% efficiency in peridinin-Chl *a* transfer.

Scientific Achievement

Characterization of the peridinin-chlorophyll a-protein light-harvesting complex in *Symbiodinium* dinoflagellates and comparison of its structure and properties to that in *Amphidinium carterae*.

Significance and Impact

With the detailed 3-D structure of the complex, we can now study the molecular factors that contribute to highly efficient light harvesting by the organism and better understand how the organism inhibits coral bleaching.

Research Details

- Homology modeling, using the identified gene and protein sequences, plus the PCP template from *A. carterae,* helps us predict the 3-D structure of Symbiodinium PCP
- Quantum chemistry calculations enable us to predict excitation energy transfer rates and efficiencies in native and biohybrid complexes.

J. Jiang, H. Zhang, Y. Kang, D. Bina, C. S. Lo, R. E. Blankenship, *BBA-Bioenergetics*, **1817**, 983-989 (2012).

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