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in hospice adaptation of photosynthetic membranes of Symbiodinium to rising seawater temperatures

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Symbiodinium is the photosynthetic endosymbiont of coral polyps. Rising seawater temperatures are associated with the mass expulsion of Symbiodinium from coral, the so-called “coral bleaching”events. Hard corals, such as Acropora cervicornis (staghorn coral), provide an important contribution to the coral reef ecosystem. Small angle neutron scattering (SANS) provides a unique perspective on actively metabolizing photosynthetic organisms and in particular the organisation of photosynthetic membranes within the cell[1].‘ Slavov et al.,[2] have provided a detailed structural hypothesis on the response of Symbiodinium to elevated temperatures and the need to provide relief from thermal stress by rearrangements of the photosynthetic membranes. Modelling of SANS data with a triple vesicle model based on literature understanding provides details of the structural rearrangements of the photosynthetic membranes of Symbiodinium. As well as providing as means to provide analysis of SANS curves from the environmentally important dinoflagellate Symbiodinium these results importantly show the utility of SANS as a structural tool in probing the response of photosynthetic organisms to environmental stress.

1.Y. Li, et al.„ Biochimica Et Biophysica Acta-Bioenergetics 1857 (1), 107-114 (2016).
2.C. Slavov et al., Biochimica et Biophysica Acta (BBA) - Bioenergetics 1857 (6), 840-847 (2016).

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