

**P001** Proteomic aspects of a cell wall glycoprotein of the red microalga *Porphyridium* sp.  
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The cells of the red microalga *Porphyridium* sp. are encapsulated in a cell wall of a mucilaginous polysaccharide complex composed of ten different sugars, proteins and a sulfate. A number of non-covalently associated proteins were resolved by SDS-PAGE. The most prominent protein detected was a 66-kDa glycoprotein, which tightly bound to the polysaccharide. Immunoassays revealed that the 66-kDa protein was specific to *Porphyridium* sp. Furthermore, the sequence of cDNA clone encoding the 66-kDa glycoprotein, detected in our in-house EST database of *Porphyridium* sp., revealed that this is a novel protein with no similarity to any protein in the public domain databases and our in-house EST database of the red microalga *Rhodella reticulata*. A search of the SCOP database revealed that the glycoprotein constitute a novel carbohydrate-binding domain for enzymes acting on sugars. In fact, the 66-kDa protein binds polysaccharides from red algae, but not from those of other origins tested. The 66-kDa protein is involved in the biorecognition of *Porphyridium* sp. by a *Cryptocodinium cohnii*-like dinoflagellate, which preys specifically on *Porphyridium* sp. but not on other red microalgae. Further investigations on the functional aspects of the glycoprotein are currently being carried by taking proteomic and gene-silencing approach.