Telomerase activity of Cassiopea jellyfish in relation to its life cycle stages

PG-18 **Telomerase activity of *Cassiopea* jellyfish in relation to its life cycle stages**

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The scyphistome of the jellyfish *Cassiopea* sp. forms vegetative buds, which detach from the scyphistome and metamorphose into polyps (scyphistomes). Once polyps are infected with zooxanthellae, they form medusae via strobilation. While the asexual reproduction cycle via asexual propagules seems to continue endless in a laboratory condition, medusae, which do sexual reproduction, might be mortal. The underlying mechanisms of this difference in the life span between the polyp and medusa stages are not understood.

Telomeres, the repetitive nucleotide sequences with associated proteins at the ends of eukaryotic chromosomes, generally become shortened during cell division and the length of teleomeres is considered to reflect the number of division that the cells have undergone. As the first step to understand the different life spans of the polyp and medusa stages of *Cassiopea* sp., we measured telomerase activity in polyps and young medusae using the stretch PCR method, which was designed to amplify DNA fragments with telomere sequence, $(TTAGGG)_n$. We found telomerase activity in tissues of aposymbiotic and symbiotic polyps, asexual propagules and young and adult medusae, though the success rate of detection varied between stages. This is consistent with our previous finding that the *Cassiopea* jellyfish has the 'vertebrate' telomere motif of $(TTAGGG)_n$. The optimal condition of telomerase assay for various stages of *Cassiopea* jellyfish were investigated and we are attempting to compare the telomerase activity at various stages of its life cycle quantitatively. We also attempted to confirm that the telomere sequence was located at the end of *Cassiopea* chromosome. Although the telomerase activity was detected in both polyp and medusa stages, further quantitative analyses of telomerase activity might reveal the underlying mechanisms of different life span of the polyp and medusa stages of the jellyfish.