

琉球大学学術リポジトリ

群体性サンゴ2種の異なる発生段階におけるテロメア長について

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論文タイトル

Telomere lengths of two colonial corals at different developmental stages

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要約

If we can estimate coral age using soft tissue, it would provide a useful tool for population biology or aging studies on corals. In this study, I investigated whether telomere length can be used to estimate coral age. Telomeres are tandem repeated sequence at the eukaryotic chromosome ends that protect the DNA from end-to-end fusion and oxidative stress. Telomeres shorten with cell divisions in cell lines that lack telomerase activity. Negative correlations between telomere lengths and age were reported in some vertebrate. I estimated the telomere lengths of two colonial corals, *Galaxea fascicularis* and *Acropora digitifera* using single telomere length analysis (STELA) and terminal restriction fragment (TRF) analysis, respectively. Telomere lengths of sperm, planula larvae and adult polyps showed no significant difference in *G. fascicularis*. This result suggested that telomere length is maintained during development and that estimating the age of the coral based on telomere length may not be possible in *G. fascicularis*. Conversely, a significant difference was observed in the mean TRF length among sperm, planulae, and polyps. The mean TRF length was longest in sperm and shortest in polyps from adult colonies. This result suggested that the telomere length decreases during development and might be useful for estimating coral age in *A. digitifera*. These different results indicated that there is species specificity of telomere dynamics among colonial corals, and this difference might be due to difference of lifespan of these two species. In *A. digitifera*, the mean TRF length of branches at the center of a table-form colony tended to be longer than that of peripheral branches, although the difference was not significant. This suggests that not only chronological age of polyps but also the cell proliferation rate influence the telomere length of the polyps and that it is not simple to estimate coral age based on telomere length.