

B27

**Molecular Cloning and Characterization of cDNA Encoding
the Luciferase from the Firefly, *Pyrocoelia rufa***

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To clone cDNA encoding the luciferase of the firefly, *Pyrocoelia rufa*, we have synthesized cDNA library and isolated the luciferase gene using RACE-PCR with gene specific primers. Sequence analysis of the cDNA encoding the luciferase of *P. rufa* was carried out. The 1647 bp cDNA has an open reading frame of 548 amino acids and the deduced product was a predicted MW of 60 kDa. The luciferase gene of *P. rufa* showed 98 % homology to that of *P. miyako*. Furthermore, the phylogenetic analysis using the nucleotide sequence was performed to investigate phylogenetic relationships between the firefly luciferase genes known so far. To identify the luciferase gene in the *P. rufa* genome, genomic DNA was digested with restriction enzymes and hybridized with labelled luciferase gene. The tissue-specific expression of luciferase gene was confirmed by Northern blot analysis, indicating that luciferase gene is specifically expressed in the firefly light organ.