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Molecular cloning and expression of a cDNA encoding the luciferase from the firefly, *Hotaria unmunšana*

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To clone a cDNA encoding the luciferase of the firefly, *Hotaria unmunšana*, we have isolated the luciferase gene using RT-PCR with gene specific primers. Sequence analysis of the cDNA encoding the luciferase of *H. unmunšana* revealed that the 1,644 bp cDNA has an open reading frame of 548 amino acid residues. The deduced amino acid sequence of the luciferase gene of *H. unmunšana* showed 98.0% homology to that of *H. parvula*. Phylogenetic analysis further confirmed the deduced amino acid sequences of the *H. unmunšana* luciferase gene to belong to the same subfamily, Luciolinae. Southern blot analysis suggested possible presence of the *H. unmunšana* luciferase gene as a single copy and Northern blot analysis confirmed light organ-specific expression pattern at the transcriptional level. The cDNA encoding the luciferase of *H. unmunšana* was expressed as approximately 64 kDa band in baculovirus-infected insect cells and the recombinant baculovirus-infected cell extracts emitted luminescence in the luciferase activity assay.