

Genetic Divergence and Phylogenetic Relationships among
the Korean Fireflies, *Hotaria papariensis*, *Luciola lateralis*,
and *Pyrocoelia rufa* (Coleoptera: Lampyridae), using
Mitochondrial DNA Sequences

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Genetic divergence and phylogenetic relationships among the major Korean fireflies (*Hotaria papariensis*, *Luciola lateralis*, and *Pyrocoelia rufa*) were studied. A portion of mitochondrial COI (403bp) and 16S rRNA (490bp-504bp) genes were sequenced, and the GenBank-registered, homologous 16S rRNA sequences of Japanese fireflies were compared (27 species of Lampyridae, one of Lycidae, and one of Rhizophthalmidae). Greatest DNA and/or amino acid sequence divergence was found when *P. rufa*, belonging to the Lampyrinae was compared with *H. papariensis* and *L. lateralis*, both belonging to Luciolinae, confirming the current taxonomic status of the species. In the PAUP and PHYLIP analyses with 16S rRNA data, grouping of the two geographic samples of *H. papariensis* with *H. tsushimana* validate the use of generic name, *Hotaria*. Nevertheless, lack of sister-group relationship of the two geographic samples of *H. papariensis* renders further investigation on this group. Although the Korean and Japanese *L. lateralis* formed a strong monophyletic group, a substantial genetic differentiation was detected between them (2.9% of 16S rRNA gene sequence divergence). Finally, the geographic samples of Korean *P. rufa* strongly formed a group with Japanese *P. rufa*, warranting the use of generic name, *Pyrocoelia*, but the genetic distance observed between the Cheju-Island individual and all others requires further investigation on this subject. Summarized, this study supports the current taxonomic status of the Korean fireflies in that each respectively formed a strong monophyletic group with its own species or genus.