3-4-15. Molecular Cloning, Expression and Functional Assay of a cDNA Encoding a Serine Protease from the Firefly, *Pyrocoelia rufa*

Kwang Sik Lee, Seong Ryul Kim, Hung Dae Sohn and Byung Rae Jin

College of Natural Resources and Life Science, Dong-A University

Serine proteases are major insect gut enzymes involved in digestion of dietary proteins. Here, we describe the molecular cloning and characterization of a cDNA encoding a putative member of the serine protease gene family from a cDNA library of the firefly, *Pyrocoelia rufa*. Sequence analysis of the cDNA encoding the serine protease of *P. rufa* revealed that the 771 bp cDNA has an open reading frame of 257 amino acid residues. The deduced protein sequence of the serine protease gene of *P. rufa* was aligned to the insect serine proteases. The protein sequence of *P. rufa* serine protease shows the six-conserved cysteine residues to form the three-cysteine bonds typically present in invertebrate serine proteases. Northern blot analysis revealed that the *P. rufa* serine protease gene is expressed in mid gut. The cDNA encoding the serine protease of *P. rufa* was expressed as approximately 26 kDa band in baculovirus-infected insect cells and the serine protease secreted from the recombinant baculovirus-infected cells showed strong activity in the protease assay.