

Phylogenetic and Expression of Atp-Binding Cassette Transporter Genes in *Rasbora sarawakensis*

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ABSTRACT

The ATP-Binding Cassette transporters (ABC transporters) function in various physiological activity, allowing vertebrate to thrive even in polluted environment. The objective of this study is to discover ABC genes in *Rasbora sarawakensis*, a species endemic to Borneo and to understand the respective genes regulation. In this research, nine gene partial transcripts were isolated via RT-PCR and cloning approaches. Our study showed that most gene transcripts identified share high identities with conserved motif distributions across family. Further phylogenetic analysis revealed a clear divergence into three major functional clades (A2, E1, F1; D2; B4, B8, C2, G2). Expression profiles in six tissues (i.e., brain, eye, gill, intestine, muscle, and skin) revealed divergence that shed light on tissue-specific gene functional specialization, with highlight on B4, B8, and E1 which are

expressed in all six organs. The brain and eye were also found to express all ABC genes selected in this study. In conclusion, nucleotide profiles of these genes are comparable to the phylogenetic analysis and expression patterns across family. This study implies that an alternative vertebrate model organism can possibly complement the current zebrafish researches.

Keywords: ABC transporters, expression profiles, isolation, phylogeny, *Rasbora sarawakensis*

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