

Molecular characterization of MHCI α gene from *Rana dybowskii* and its response to LPS

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Abstract

Immune tissue associated with the major histocompatibility complex (MHC) is widely present in vertebrates highly polymorphic gene cluster. However, available published data about how amphibians MHCI genes react to pathogen infections are very few. The present study reports MHCI molecule in *Rana dybowskii*, and its differential expression in immunologically relevant tissues post-infection with lipopolysaccharide (LPS). The results showed that cDNA sequence of MHCI α contained 1047bp nucleotides encoding putative 348 amino acids. The phylogenetic analysis exhibited its evolutionary conservation within amphibians and formed a different clade with vertebrates. Moreover, quantitative reverse transcription PCR analyses demonstrated that the MHCI gene was transcribed in the seven tested tissues, and analysis of immunologically relevant tissues of MHCI gene from the infected *Rana dybowskii* exhibited differential transcriptional activities. The expression of MHCI in the heart, liver, spleen, lung, kidneys, skin and muscular reached peak levels at 72, 24, 48, 12, 12, 12 and 72h post-infection(hpi), respectively. These findings indicate that MHCI is an indispensable part of the immune system. This is one of the first studies to investigate MHCI α in *Rana dybowskii* and can provide the foundation for further study of the immune function of MHC molecules in anti-infection.

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Molecular characterization of MHCI\selectlanguage{greek} \selectlanguage{english}gene from *Rana dybowskii* available at <https://authorea.com/users/312654/articles/443211-molecular-characterization-of-mhci%CE%B1-gene-from-rana-dybowskii-and-its-response-to-lps>

Primer name	Primer sequence(5'-3')	Size(bp)
Primers for cloning		
MHCI- α -F1	CGGGGTACCCGGGTCTCGGATAAAGGAT	988
MHCI- α -R1	TCAGGCTTTCGGGTTG	
MHCI- α -F2	ATGGAGCTCTGTCTGCTCA	
MHCI- α -R2	CGCTCGAGCGGTCCCCTACTCTATGTATTCT	
Primers for qRT-PCR		
MHCI-q-F	GTCTCATCTGGCTCGTCC	227
MHCI-q-R	ATCCGTACTGCTGATACCC	
β -actin-F	AAGAATGAGGGCTGGAACA	176
β -actin-R	GTGCGTGACATCAAGGAGAAGC	

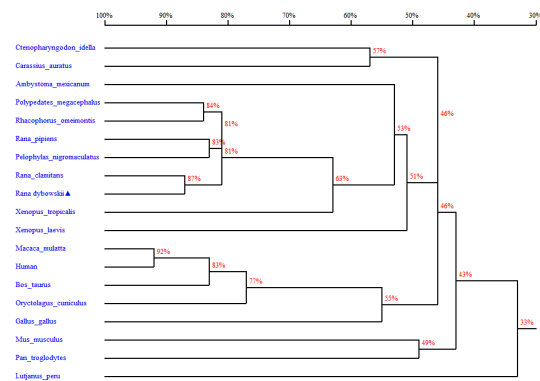


Figure 1

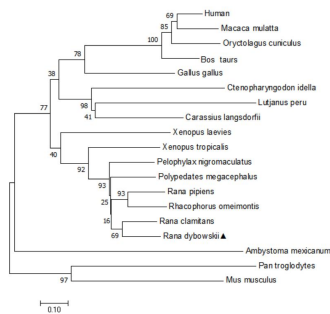


Figure 2