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Molecular cloning and characterization of a novel chicken gene named *grni*

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ABSTRACT. The full-length cDNA sequence of a novel expressed sequence tag (GenBank accession No. HQ184338) that was differentially expressed during Newcastle disease virus (NDV) infection in chickens was cloned from the chicken spleen by a rapid amplification of cDNA ends assay. This gene was further analyzed using bioinformatic methods and named *grni*. The full-length cDNA sequence was 1698 bp without introns, locating between 104,691,934 and 104,693,618 in galGal4 on chromosome 2. The open reading frame (ORF) contained 261 bp and encoded a deduced protein of 86 amino acid residues. Furthermore, the encoded protein contained two transmembrane regions without signal peptides, indicating that this protein is located in the mitochondrial membrane. Moreover, its homologous protein was not identified. Real-time polymerase chain reaction was used to detect the dynamic mRNA expression of this gene in the spleen, thymus, bursa of Fabricius, and trachea of NDV-infected chickens. Results suggested that the gene was involved in the transcriptional response of chicken to NDV infection. To obtain a fusion protein and prepare rabbit anti-serum, the predicted ORF of this gene was expressed in *Escherichia coli*. The expression of

this gene at the protein level was further confirmed in the spleen, thymus, and bursa of Fabricius of NDV-infected chickens using Western blot analysis. In conclusion, a novel protein-coding gene named *grni* was successfully cloned and identified in chickens. Furthermore, this gene was found to be involved in the response of chickens to NDV infection.

Key words: Chicken; Novel gene; Sequence characterization; Transcript expression; Newcastle disease virus

