



Characterization of the complete mitochondrial genome of the Rock pigeon, *Columba livia* (Columbiformes: Columbidae)

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ABSTRACT. The rock pigeon (*Columba livia*), or Rock dove, is a member of the bird family Columbidae. We mapped the complete mitochondrial genome of the Rock pigeon. The mitochondrial genome of this species is a circular molecule of 17,229 bp in length, encoding a standard set of 13 protein-coding genes, two ribosomal RNA genes, and 22 transfer RNA genes, plus a putative control region, demonstrating a structure very similar to that of other birds. As found in other vertebrates, most of these genes are coded on the H-strand, except for NADH dehydrogenase subunit 6 (*nad6*) and eight tRNA genes (Gln, Ala, Asn, Cys, Tyr, Ser(UCN), Pro, Glu). The AT skew and GC skew of the whole genome, protein-coding genes, tRNA, rRNA, and the control region were calculated for the complete mitochondrial genomes of 30 avian species, representing 29 orders. All protein-coding genes initiated with ATG, except for *cox1* and *nad5*, which began with GTG. One extra nucleotide 'C' was present in NADH dehydrogenase subunit 3 (*nad3*). All tRNA gene sequences have the potential to fold into typical

cloverleaf secondary structures. Within the control region, conserved sequences were identified in three domains. Although the conserved blocks, such as ETAS1, ETAS2, CSB1, CSB1-like, and boxes C, D, E, and F, are readily identifiable in the *C. livia* control region, the typical origin of H-strand replication (O_H), CSB2 and CSB3 could not be detected. These results provide basic information for phylogenetic analyses of birds, especially Columbiformes species.

Key words: Mitochondrial genome; Rock pigeon; *Columba livia*; Columbiformes