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The mitochondrial genome of the little spotted kiwi

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ABSTRACT

The complete mitochondrial genome of the little spotted kiwi, *Apteryx owenii*, has been sequenced and submitted to GenBank (acquisition number GU071052). A method was first developed to extract pure mitochondrial DNA from one millilitre of fresh blood; as birds have nucleated erythrocytes/red blood cells. The mitochondrial DNA was extracted from the isolated intact mitochondria and the genome was amplified by long-range PCR as 1- 4kb overlapping fragments. These fragments then became templates for the second, short-range, overlapping PCR amplifications and subsequent DNA sequencing. This procedure was first trialled using two millilitres of chicken blood before being successfully applied to the kiwi blood. The complete mitochondrial genome of the little spotted kiwi is ~ 17,020bp long. The gene order is the standard avian gene order first reported for chicken mitochondrial DNA. Phylogenetic relationships show the kiwi is part of the Australasian ratite group with the emu and cassowary. This mitochondrial sequence has been used as part of a larger study of the relationships of other ratite birds (such as moa, emu, cassowary, rhea and ostrich) and the weakly flying tinamou of South America. The implication of this analysis is that the ancestral paleognath was probably flying and that flight was lost multiple times during ratite evolution.

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This thesis is proof that no matter how circuitous the path or how long the journey, you have to pursue your dreams. Life evolves naturally despite your plans, be confident, have faith in yourself and trust your instincts.

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*“Live as if you were to die tomorrow.
Learn as if you were to live forever.”* **Gandhi**

**Sylvia
Aunty Paulette**

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