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**Genome size, GC percentage and 5mC level in the Indonesian coelacanth Latimeria menadoensis.**

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Abstract

The living fossil Latimeria menadoensis is important to understand sarcopterygian

evolution. To gain further insights into this fish species we studied its genome

size, GC% and 5mC level. The genome size and the GC% of the Indonesian coelacanth

seem to be very similar to those of the African coelacanth. Moreover the GC%, the

CpG frequency and the 5mC level of L. menadoensis are more similar to those of

fish and amphibians than to those of mammals, birds and reptiles and this is in

line with the hypothesis that two different DNA methylation and CpG shortage

equilibria arose during vertebrate evolution. Our results suggest that the genome

of L. menadoensis has remained unchanged for several million years, maybe since

the origin of the lineage which from lobe-finned fish led to tetrapods. These

data fit a conservative evolutionary landscape and suggest that the genome of the

extant crossopterygians may be a sort of evolutionarily frozen genome.

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