

**Table S3.** Characteristics of genes included show the AIC weights supporting the best model for each entry.

Genes	Length (bp)	Variable sites	Parsimony informative sites	Best Model
A2AB	504	197	136	HKY+I+G
CNR1	469	258	118	GTR+I+G
GHR	650	470	346	GTR+I+G
IRBP	541	330	252	SYM+I+G
BRCA1	573	498	413	HKY+I+G
vWF	477	301	219	HKY+I+G
ATP7A	596	346	237	HKY+I+G
Crem	437	269	187	SYM+G
RAG2	438	272	193	HKY+G
Concatenated data set	4685	2941	2101	GTR+I+G