

Table S3.1 Maximum-likelihood parameter estimates for Elapidae neurotrophin-3

Model	Likelihood (t)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$
					B.E.B
M0 (One ratio)	-694.206382	0.49	= ω_0		-
M1 (Neutral)	-673.832213	0.43	P_0 : 0.578 ω_0 : 0.02 P_1 : 0.421 ω_1 : 1.0		-
M2 (Selection)*	-669.684563	0.92	P_0 : 0.511 ω_0 : 0.02 P_1 : 0.366 ω_1 : 1.0 P_2 : 0.121 ω_2 : 4.59 P_0 : 0.471 ω_0 : 0.0	P < 0.05	0 (PP \geq 0.99) 1 (P \geq 0.95)
M3 (Discrete)*	-669.242390	0.79	P_1 : 0.391 ω_1 : 0.67 P_2 : 0.137 ω_2 : 3.84	P << 0.001	-
M7 (beta)	-673.779182	0.42	p: 0.02013 q: 0.02583 p ₀ : 0.873 p: 0.082		-
M8 (beta and ω)*	-669.558752	0.84	q: 0.143 p ₁ : 0.126 ω : 4.18	P < 0.05	1 (PP \geq 0.99) 3 (P > 0.95)

Legend:**a:** dn/ds (weighted average)**b:** Significance of the model in comparison with the null model**c:** Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95* Models which allow $\omega > 1$

Table S3.2 Maximum-likelihood parameter estimates for Viperidae neurotrophin-3

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$
M0 (One ratio)	-787.105320	0.31	= ω_0		-
M1 (Neutral)	-768.396299	0.71	P_0 : 0.289 ω_0 : 0.001 P_1 : 0.710 ω_1 : 1.0		-
M2 (Selection)*	-768.396299	0.71	P_0 : 0.289 ω_0 : 0.001 P_1 : 0.499 ω_1 : 1.0 P_2 : 0.210 ω_2 : 1.0 P_0 : 0.250 ω_0 : 0.0	$P > 0.05^{N.S}$	0 (PP \geq 0.99) 0 (P \geq 0.95)
M3 (Discrete)*	-761.777562	0.41	P_1 : 0.264 ω_1 : 0.10 P_2 : 0.484 ω_2 : 0.80	$P \ll 0.001$	-
M7 (beta)	-763.149655	0.44	p: 0.18348 q: 0.22677 p ₀ : 0.999		-
M8 (beta and ω)*	-763.149658	0.44	p: 0.183 q: 0.226 p ₁ : 0.00001 ω : 1.0	$P > 0.05^{N.S}$	0 (PP \geq 0.99) 0 (P $>$ 0.95)

Legend:

a: dn/ds (weighted average)

b: Significance of the model in comparison with the null model

c: Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$

$P > 0.05^{N.S}$: Not significant at 0.05

Table S3.3 Maximum-likelihood parameter estimates for ‘non-front-fanged’ advanced snake neurotrophin-3

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$
					B.E.B
M0 (One ratio)	-744.714302	1.88	= ω_0		-
M1 (Neutral)	-741.684732	0.70	P ₀ : 0.292 ω_0 : 0.0 P ₁ : 0.707 ω_1 : 1.0		-
M2 (Selection)*	-731.444226	2.24	P ₀ : 0.239 ω_0 : 0.0 P ₁ : 0.370 ω_1 : 1.0 P ₂ : 0.390 ω_2 : 4.78 P ₀ : 0.343 ω_0 : 0.0	P << 0.001	3 (PP \geq 0.99) 2 (P \geq 0.95)
M3 (Discrete)*	-729.662821	2.60	P ₁ : 0.592 ω_1 : 2.93 P ₂ : 0.064 ω_2 : 13.44	P << 0.001	-
M7 (beta)	-741.689003	0.70	p: 0.01169 q: 0.00500 p ₀ : 0.561 p: 0.005		-
M8 (beta and ω)*	-731.500666	2.25	q: 0.005 p ₁ : 0.438 ω : 4.51	P << 0.001	4 (PP \geq 0.99) 5 (P > 0.95)

Legend:

a: dn/ds (weighted average)

b: Significance of the model in comparison with the null model

c: Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$

Table S3.4 Maximum-likelihood parameter estimates for Typhlopoidea neurotrophin-3

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$
					B.E.B
M0 (One ratio)	-744.714302	1.88	= ω_0		-
M1 (Neutral)	-741.684732	0.70	P ₀ : 0.292 ω_0 : 0.0 P ₁ : 0.707 ω_1 : 1.0		-
M2 (Selection)*	-731.444226	2.24	P ₀ : 0.239 ω_0 : 0.0 P ₁ : 0.370 ω_1 : 1.0 P ₂ : 0.390 ω_2 : 4.78 P ₀ : 0.343 ω_0 : 0.0	P << 0.001	3 (PP \geq 0.99) 2 (P \geq 0.95)
M3 (Discrete)*	-729.662821	2.60	P ₁ : 0.592 ω_1 : 2.93 P ₂ : 0.064 ω_2 : 13.44	P << 0.001	-
M7 (beta)	-741.689003	0.70	p: 0.01169 q: 0.00500 p ₀ : 0.561 p: 0.005		-
M8 (beta and ω)*	-731.500666	2.25	q: 0.005 p ₁ : 0.438 ω : 4.51	P << 0.001	4 (PP \geq 0.99) 5 (P > 0.95)

Legend:

a: dn/ds (weighted average)

b: Significance of the model in comparison with the null model

c: Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$

Table S3.5 Maximum-likelihood parameter estimates for Boidae (Henophidia) neurotrophin-3

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$	B.E.B
M0 (One ratio)	-744.714302	1.88	= ω_0			-
M1 (Neutral)	-741.684732	0.70	P ₀ : 0.292 ω_0 : 0.0 P ₁ : 0.707 ω_1 : 1.0			-
M2 (Selection)*	-731.444226	2.24	P ₀ : 0.239 ω_0 : 0.0 P ₁ : 0.370 ω_1 : 1.0 P ₂ : 0.390 ω_2 : 4.78 P ₀ : 0.343 ω_0 : 0.0	P << 0.001	3 (PP \geq 0.99) 2 (P \geq 0.95)	
M3 (Discrete)*	-729.662821	2.60	P ₁ : 0.592 ω_1 : 2.93 P ₂ : 0.064 ω_2 : 13.44	P << 0.001		-
M7 (beta)	-741.689003	0.70	p: 0.01169 q: 0.00500 p ₀ : 0.561 p: 0.005			-
M8 (beta and ω)*	-731.500666	2.25	q: 0.005 p ₁ : 0.438 ω : 4.51	P << 0.001	4 (PP \geq 0.99) 5 (P > 0.95)	

Legend:

a: dn/ds (weighted average)

b: Significance of the model in comparison with the null model

c: Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$

Table S3.6 Maximum-likelihood parameter estimates for Scinciformata neurotrophin-3

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$	B.E.B
M0 (One ratio)	-744.714302	1.88	= ω_0			-
M1 (Neutral)	-741.684732	0.70	P ₀ : 0.292 ω_0 : 0.0 P ₁ : 0.707 ω_1 : 1.0			-
M2 (Selection)*	-731.444226	2.24	P ₀ : 0.239 ω_0 : 0.0 P ₁ : 0.370 ω_1 : 1.0 P ₂ : 0.390 ω_2 : 4.78 P ₀ : 0.343 ω_0 : 0.0	P << 0.001	3 (PP \geq 0.99) 2 (P \geq 0.95)	
M3 (Discrete)*	-729.662821	2.60	P ₁ : 0.592 ω_1 : 2.93 P ₂ : 0.064 ω_2 : 13.44	P << 0.001		-
M7 (beta)	-741.689003	0.70	p: 0.01169 q: 0.00500 p ₀ : 0.561 p: 0.005			-
M8 (beta and ω)*	-731.500666	2.25	q: 0.005 p ₁ : 0.438 ω : 4.51	P << 0.001	4 (PP \geq 0.99) 5 (P > 0.95)	

Legend:

a: dn/ds (weighted average)

b: Significance of the model in comparison with the null model

c: Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$

Table S3.7 Maximum-likelihood parameter estimates for Iguania neurotrophin-3

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$
M0 (One ratio)	-744.714302	1.88	= ω_0		-
M1 (Neutral)	-741.684732	0.70	P ₀ : 0.292 ω_0 : 0.0 P ₁ : 0.707 ω_1 : 1.0		-
M2 (Selection)*	-731.444226	2.24	P ₀ : 0.239 ω_0 : 0.0 P ₁ : 0.370 ω_1 : 1.0 P ₂ : 0.390 ω_2 : 4.78 P ₀ : 0.343 ω_0 : 0.0	P << 0.001	3 (PP \geq 0.99) 2 (P \geq 0.95)
M3 (Discrete)*	-729.662821	2.60	P ₁ : 0.592 ω_1 : 2.93 P ₂ : 0.064 ω_2 : 13.44	P << 0.001	-
M7 (beta)	-741.689003	0.70	p: 0.01169 q: 0.00500 p ₀ : 0.561 p: 0.005		-
M8 (beta and ω)*	-731.500666	2.25	q: 0.005 p ₁ : 0.438 ω : 4.51	P << 0.001	4 (PP \geq 0.99) 5 (P > 0.95)

Legend:

a: dn/ds (weighted average)

b: Significance of the model in comparison with the null model

c: Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$

Table S3.8 Maximum-likelihood parameter estimates for Anguimorpha neurotrophin-3

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$	B.E.B
M0 (One ratio)	-744.714302	1.88	= ω_0			-
M1 (Neutral)	-741.684732	0.70	P ₀ : 0.292 ω_0 : 0.0 P ₁ : 0.707 ω_1 : 1.0			-
M2 (Selection)*	-731.444226	2.24	P ₀ : 0.239 ω_0 : 0.0 P ₁ : 0.370 ω_1 : 1.0 P ₂ : 0.390 ω_2 : 4.78 P ₀ : 0.343 ω_0 : 0.0	P << 0.001	3 (PP \geq 0.99) 2 (P \geq 0.95)	
M3 (Discrete)*	-729.662821	2.60	P ₁ : 0.592 ω_1 : 2.93 P ₂ : 0.064 ω_2 : 13.44	P << 0.001		-
M7 (beta)	-741.689003	0.70	p: 0.01169 q: 0.00500 p ₀ : 0.561 p: 0.005			-
M8 (beta and ω)*	-731.500666	2.25	q: 0.005 p ₁ : 0.438 ω : 4.51	P << 0.001	4 (PP \geq 0.99) 5 (P > 0.95)	

Legend:

a: dn/ds (weighted average)

b: Significance of the model in comparison with the null model

c: Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$

Table S3.9 Maximum-likelihood parameter estimates for crocodilian neurotrophin-3

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$ B.E.B
M0 (One ratio)	-744.714302	1.88	= ω_0		-
M1 (Neutral)	-741.684732	0.70	P_0 : 0.292 ω_0 : 0.0 P_1 : 0.707 ω_1 : 1.0		-
M2 (Selection)*	-731.444226	2.24	P_0 : 0.239 ω_0 : 0.0 P_1 : 0.370 ω_1 : 1.0 P_2 : 0.390 ω_2 : 4.78 P_0 : 0.343 ω_0 : 0.0	$P \ll 0.001$	3 (PP ≥ 0.99) 2 (P ≥ 0.95)
M3 (Discrete)*	-729.662821	2.60	P_1 : 0.592 ω_1 : 2.93 P_2 : 0.064 ω_2 : 13.44	$P \ll 0.001$	-
M7 (beta)	-741.689003	0.70	p: 0.01169 q: 0.00500 p_0 : 0.561 p: 0.005		-
M8 (beta and ω)*	-731.500666	2.25	q: 0.005 p1: 0.438 ω : 4.51	$P \ll 0.001$	4 (PP ≥ 0.99) 5 (P > 0.95)

Legend:

a: dn/ds (weighted average)

b: Significance of the model in comparison with the null model

c: Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$

Table S3.10 Maximum-likelihood parameter estimates for turtle neurotrophin-3

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$	B.E.B
M0 (One ratio)	-744.714302	1.88	= ω_0			-
M1 (Neutral)	-741.684732	0.70	P ₀ : 0.292 ω_0 : 0.0 P ₁ : 0.707 ω_1 : 1.0			-
M2 (Selection)*	-731.444226	2.24	P ₀ : 0.239 ω_0 : 0.0 P ₁ : 0.370 ω_1 : 1.0 P ₂ : 0.390 ω_2 : 4.78 P ₀ : 0.343 ω_0 : 0.0	P << 0.001	3 (PP \geq 0.99) 2 (P \geq 0.95)	
M3 (Discrete)*	-729.662821	2.60	P ₁ : 0.592 ω_1 : 2.93 P ₂ : 0.064 ω_2 : 13.44	P << 0.001		-
M7 (beta)	-741.689003	0.70	p: 0.01169 q: 0.00500 p ₀ : 0.561 p: 0.005			-
M8 (beta and ω)*	-731.500666	2.25	q: 0.005 p ₁ : 0.438 ω : 4.51	P << 0.001	4 (PP \geq 0.99) 5 (P $>$ 0.95)	

Legend:

a: dn/ds (weighted average)

b: Significance of the model in comparison with the null model

c: Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$

Table S3.11 Maximum-likelihood parameter estimates for mammalian neurotrophin-3

Model	Likelihood (l)	ω_0^a	Parameters	Sign. ^b	No. of Sites with $\omega > 1^c$	B.E.B
M0 (One ratio)	-744.714302	1.88	= ω_0			-
M1 (Neutral)	-741.684732	0.70	P ₀ : 0.292 ω_0 : 0.0 P ₁ : 0.707 ω_1 : 1.0			-
M2 (Selection)*	-731.444226	2.24	P ₀ : 0.239 ω_0 : 0.0 P ₁ : 0.370 ω_1 : 1.0 P ₂ : 0.390 ω_2 : 4.78 P ₀ : 0.343 ω_0 : 0.0	P << 0.001	3 (PP \geq 0.99) 2 (P \geq 0.95)	
M3 (Discrete)*	-729.662821	2.60	P ₁ : 0.592 ω_1 : 2.93 P ₂ : 0.064 ω_2 : 13.44	P << 0.001		-
M7 (beta)	-741.689003	0.70	p: 0.01169 q: 0.00500 p ₀ : 0.561 p: 0.005			-
M8 (beta and ω)*	-731.500666	2.25	q: 0.005 p ₁ : 0.438 ω : 4.51	P << 0.001	4 (PP \geq 0.99) 5 (P > 0.95)	

Legend:

a: dn/ds (weighted average)

b: Significance of the model in comparison with the null model

c: Number of sites with $\omega > 1$ under the Bayes empirical Bayes approach with a posterior probability (PP) more than or equal to 0.99 and 0.95

* Models which allow $\omega > 1$