

### A. Site-selection for avian opsins

Gene	lnL M7	np	lnL M8	np	LRT 7-8	p-value	lnL M8a	np	LRT 8a-8	p-value	$\omega$	
<i>RH1</i>	-7281.893	95	-7259.274	97	45.238	0.000	-7269.845	96	21.142	0.000	0.061	**
<i>RH2</i>	-8492.132	93	-8473.652	95	36.959	0.000	-8474.673	94	2.041	0.153	0.080	
<i>OPN1sw1</i>	-5772.490	65	-5769.586	67	5.808	0.055	-5769.697	66	0.223	0.637	0.041	*
<i>OPN1sw2</i>	-3695.364	27	-3695.367	29	0.000	1.000	-3695.594	28	0.453	0.501	0.050	*
<i>OPN1lw</i>	-2472.949	33	-2472.952	35	0.000	1.000	-2472.648	34	0.000	1.000	0.024	*
<i>TMT</i>	-2850.553	35	-2850.394	37	0.320	0.852	-2850.392	36	0.000	1.000	0.220	*
<i>TMT2</i>	-4682.709	97	-4678.257	99	8.904	0.012	-4678.322	98	0.130	0.719	0.118	
<i>OPN3</i>	-3619.953	89	-3617.762	91	4.381	0.112	-3617.821	90	0.119	0.730	0.101	*
<i>PIN</i>	-12231.617	81	-12191.501	83	80.231	0.000	-12202.455	82	21.908	0.000	0.230	**
<i>VA</i>	-8654.677	91	-8634.321	93	40.713	0.000	-8641.777	92	14.912	0.000	0.265	**
<i>RGR</i>	-7439.267	97	-7421.642	99	35.251	0.000	-7434.286	98	25.288	0.000	0.148	**
<i>RRH</i>	-6693.016	97	-6673.678	99	38.677	0.000	-6680.310	98	13.264	0.000	0.155	**
<i>OPN5</i>	-8232.778	93	-8225.471	95	14.616	0.001	-8226.468	94	1.995	0.158	0.112	
<i>OPN4x</i>	-11033.939	97	-11012.902	99	42.074	0.000	-11022.799	98	19.794	0.000	0.171	**
<i>OPN4m</i>	-7206.853	93	-7200.398	95	12.911	0.002	-7201.795	94	2.796	0.095	0.203	

### B. Site-selection for avian melanin-based plumage coloration genes

Gene	lnL M7	np	lnL M8	np	LRT 7-8	p-value	lnL M8a	np	LRT 8a-8	p-value	$\omega$	
<i>MC1R</i>	-4933.893	45	-4932.207	47	3.371	0.185	-4931.955	46	0.000	1.000	0.065	*
<i>TYR</i>	-14405.107	97	-14378.035	99	54.143	0.000	-14384.898	98	13.725	0.000	0.209	**
<i>TYRP1</i>	-9591.835	83	-9578.852	85	25.966	0.000	-9579.190	84	0.677	0.411	0.078	
<i>OCA2</i>	-15119.542	79	-15094.068	81	50.947	0.000	-15110.967	80	33.797	0.000	0.196	**
<i>ASIP</i>	-5477.254	83	-5447.139	85	60.231	0.000	-5459.776	84	25.275	0.000	0.429	**

### C. Site-selection for mammalian opsins

Gene	lnL M7	np	lnL M8	np	LRT 7-8	<i>p</i> -value	lnL M8a	np	LRT 8a-8	<i>p</i> -value	$\omega$	
<i>RHI</i>	-18060.196	251	-18060.200	253	0.000	1.000	-18056.699	252	0.000	1.000	0.064	*
<i>OPN1sw1</i>	-17626.250	199	-17605.265	201	41.971	0.000	-17607.898	200	5.266	0.022	0.178	**
<i>OPN1lw</i>	-20776.122	253	-20769.910	255	12.424	0.002	-20766.851	254	0.000	1.000	0.135	
<i>OPN3</i>	-14209.085	127	-14171.960	129	74.251	0.000	-14185.161	128	26.402	0.000	0.310	**
<i>RGR</i>	-15640.311	155	-15634.514	157	11.596	0.003	-15633.702	156	0.000	1.000	0.193	
<i>RRH</i>	-16299.456	165	-16286.261	167	26.391	0.000	-16295.620	166	18.717	0.000	0.273	**
<i>OPN5</i>	-11367.748	163	-11360.527	165	14.441	0.001	-11361.359	164	1.664	0.197	0.089	
<i>OPN4m</i>	-26002.747	169	-25972.711	171	60.072	0.000	-25981.877	170	18.333	0.000	0.239	**