

**Givnish et al. – American Journal of Botany – Appendix
S8. Partitions and models in Zingiberales analyses.**

Loci in subset	Best model	Site positions in matrix
<i>accD</i>	GTR+ Γ	1-2179
<i>atpB, atpA</i>	GTR+I+ Γ	3704-5212, 2180-3703
<i>atpE, rpoC1_exon1</i>	GTR+ Γ	5213-5625, 55290-55718
<i>ycf3_exon3, psbH, atpF_exon1, ndhJ, petA</i>	GTR+I+ Γ	87446-87606, 41970-42205, 5626-5769, 27675-28154, 29078-30040
<i>101, atpF_intron</i>	GTR+I+ Γ	165938-166111, 5770-6950
<i>rpl36, rpl16_exon2, infA, rps8, rpl14, atpF_exon2</i>	GTR+ Γ	50757-50870, 48473-48873, 13746-14009, 65893-66309, 46301-46675, 6951-7367
<i>ndhC, psbD, psbJ, atpH</i>	GTR+I+ Γ	20959-21321, 40536-41597, 42318-42440, 7368-7613
<i>atpI, petG, psbL, petL, psbZ, psbM, ycf3_exon1</i>	GTR+I+ Γ	7614-8372, 31270-31383, 42627-42743, 31384-31484, 43089-43277, 42744-42848, 85061-85186
<i>rps16_exon2, ccsA</i>	GTR+I+ Γ	69062-69297, 8373-9455
<i>cemA, ycf3_intron1, rpoC2</i>	GTR+I+ Γ	9456-10156, 85187-86106, 58455-62938
<i>clpP_exon1, rps11</i>	GTR+I+ Γ	10157-10245, 66310-66765
<i>43, clpP_intron1, 44</i>	GTR+ Γ	131998-132298, 10246-12088, 132299- 134145
<i>clpP_exon2, clpP_exon3</i>	GTR+I+ Γ	12089-12380, 13311-13745
<i>34, 47, clpP_intron2, 52, 63</i>	GTR+ Γ	122525-123392, 137582-138088, 12381- 13310, 141647-141668, 148427-149143
<i>64, matK</i>	GTR+ Γ	149144-149392, 14010-15650
<i>ndhA_exon1, ndhD, psbK, ndhG, ndhE, ndhA_exon2</i>	GTR+I+ Γ	15651-16203, 21322-22833, 42441-42626, 25400-25934, 22834-23139, 18155-18693
<i>ndhA_intron, 71</i>	GTR+ Γ	16204-18154, 153022-153331
<i>trnL-UAA_exon2, psbF, ndhB_exon1, ndhB_exon2</i>	GTR+I+ Γ	97308-97357, 41850-41969, 18694-19470, 20203-20958
<i>ndhB_intron, rpl2_intron, rpl2_exon1</i>	GTR+ Γ	19471-20202, 45156-45862, 44745-45155
<i>ndhF</i>	GTR+I+ Γ	23140-25399
<i>ndhH, ndhI</i>	GTR+I+ Γ	25935-27122, 27123-27674
<i>rps4, rpoC1_exon2, ndhK, rpoB, rps14, rps2</i>	GTR+I+ Γ	64645-65292, 56754-58454, 28155-29077, 51948-55289, 67141-67451, 62939-63678
<i>psaA, trnS-UGA_tRNA, psbN, petD, petB, psbB, psbC, psaB</i>	GTR+I+ Γ	31575-33827, 97902-97994, 42849-42980, 30709-31269, 30041-30708, 37587-39113, 39114-40535, 33828-36032
<i>86, petN, 87a</i>	GTR+ Γ	158188-158516, 31485-31574, 176689- 176760
<i>rbcL, psaC</i>	GTR+I+ Γ	43278-44744, 36033-36278
<i>psaJ, psaI, psbI</i>	GTR+ Γ	36390-36524, 36279-36389, 42206-42317
<i>psbA</i>	GTR+I+ Γ	36525-37586
<i>psbE, ycf3_exon2</i>	GTR+ Γ	41598-41849, 86107-86332
<i>psbT, trnV-UAC_exon2</i>	GTR+I+ Γ	42981-43088, 98967-99011
<i>rps12, rpl2_exon2</i>	GTR+ Γ	66766-67140, 45863-46300
<i>trnN-GUU_tRNA, trnG-UCC_tRNA, trnT-UGU_tRNA, trnW-CCA_tRNA, trnL-CAA_tRNA, rpl16_exon1, trnY-GUA_tRNA, trnH-GUG_tRNA, trnI- CAU_tRNA, trnF-GAA_tRNA</i>	GTR+ Γ	97518-97589, 94980-95050, 98067-98139, 99012-99085, 96377-96461, 46676-46685, 99086-99169, 95051-95126, 95127-95200, 93895-93967
<i>rpl16_intron, 2</i>	GTR+ Γ	46686-48472, 99494-99885
<i>rpl20, rps18</i>	GTR+ Γ	48874-49336, 69298-69956
<i>rpl32, rpl22, ycf1, 11</i>	GTR+ Γ	50164-50390, 49337-49834, 70475-77080, 102809-102920
<i>rpl23, 45S_rRNA, 90</i>	GTR	49835-50163, 88174-88277, 159364-159427

<i>rpl33</i> , 73	GTR+ Γ	50391-50756, 153500-153699
<i>rpoA</i> , <i>trnV-UAC_intron</i>	GTR+ Γ	50871-51947, 98254-98966
<i>ycf3_intron2</i> , <i>trnG-GCC_intron</i> , <i>rpoC1_intron</i>	GTR+I+ Γ	86333-87445, 94066-94931, 55719-56753
<i>rps3</i> , <i>rps15</i>	GTR+ Γ	63679-64644, 67452-67742
<i>rps7</i>	GTR+ Γ	65293-65892
<i>rps16_exon1</i> , 81, <i>trnG-GCC_exon1</i> , <i>trnS-GGA_tRNA</i> , <i>trnV-UAC_exon1</i> , <i>trnP-UGG_tRNA</i> , <i>trnV-GAC_tRNA</i> , <i>trnM-CAU_tRNA</i> , <i>trnR-UCU_tRNA</i>	GTR+I+ Γ	67743-67788, 155610-155627, 94043-94065, 97815-97901, 98212-98253, 97590-97663, 98140-98211, 97444-97517, 97743-97814, 67789-69061
<i>rps16_intron</i>	GTR+ Γ	69957-70474, 120768-120998, 120515-120767
<i>rps19</i> , 31, 30	GTR+ Γ	77081-85060, 158517-158998, 107102-107132, 157495-158187
<i>ycf2</i> , 88, 17, 85	GTR+ Γ	141669-141684, 87607-88173
53, <i>ycf4</i>	GTR+ Γ	88278-88398, 88399-89903, 89904-92754
5S_rRNA, 16S_rRNA, 23S_rRNA	GTR+I+ Γ	97664-97742, 92755-92793, 93640-93674, 96270-96304, 94932-94979, 120999-121023
<i>trnR-ACG_tRNA</i> , <i>trnA-UGC_exon1</i> , <i>trnA-UGC_exon2</i> , <i>trnI-GAU_exon2</i> , <i>trnG-GCC_exon2</i> , 32	GTR	92794-93639, 95243-96269
<i>trnA-UGC_intron</i> , <i>trnI-GAU_intron</i>	GTR+ Γ	96305-96376, 93748-93821, 96462-96498, 95201-95242, 93822-93894, 97358-97443, 97995-98066, 93675-93747
<i>trnK-UUUU_tRNA</i> , <i>trnD-GUC_tRNA</i> , <i>trnL-UAA_exon1</i> , <i>trnI-GAU_exon1</i> , <i>trnE-UUC_tRNA</i> , <i>trnL-UAG_tRNA</i> , <i>trnT-GGU_tRNA</i> , <i>trnC-GCA_tRNA</i>	GTR+I+ Γ	159718-159969, 93968-94042, 159615-159717
93, <i>trnM-CAU_tRNA</i> , 92	GTR+ Γ	96499-97307
<i>trnL-UAA_intron</i>	GTR+ Γ	99170-99493
1	GTR+ Γ	146558-146939, 99886-101450, 155822-156326
60, 3, 83	GTR+ Γ	102301-102581, 101451-102300, 102921-103811
9, 6, 12	GTR+ Γ	105843-106353, 167418-167826, 146940-147474, 102582-102808
14, 103, 61, 10	GTR+ Γ	167827-168502, 103812-105842
104, 13	GTR+ Γ	106354-106841, 144893-145532
15, 58	GTR+ Γ	144451-144635, 106842-107101
56, 16	GTR+ Γ	115442-116615, 114627-115364, 107133-109216
24, 22, 18	GTR+ Γ	109217-110926, 154353-154599
19, 76	GTR+ Γ	165175-165306, 138089-139258, 127346-128553, 110927-113014, 139615-141508
99, 48, 39, 20, 50	GTR+ Γ	113015-114626, 123393-123941
21, 35	GTR+ Γ	126824-127345, 115365-115441, 121024-122524, 131761-131997, 144225-144450
38, 23, 33, 42, 55	GTR+ Γ	116616-118998, 155200-155549
25, 79	GTR+ Γ	119758-120157, 118999-119226
28, 26	GTR+ Γ	119227-119757, 144636-144892, 154167-154352
27, 57, 75	GTR+ Γ	120158-120514
29	GTR+ Γ	123942-124683
36	GTR+ Γ	124684-126823
37	GTR+ Γ	128554-128699, 153332-153499, 139259-139614
40, 72, 49	GTR+ Γ	128700-131760
41	GTR+ Γ	134146-136077
45	GTR+ Γ	136078-137581
46	GTR+ Γ	147475-148426, 141509-141646
62, 51	GTR+ Γ	

54	GTR+ Γ	141685-144224
59	GTR+ Γ	145533-146557
65	GTR+ Γ	149393-149469
66, 96	GTR+ Γ	149470-149602, 161044-161551
67	GTR+ Γ	149603-151042
68	GTR+ Γ	151043-152492
69	GTR+ Γ	152493-152912
74, 70	GTR+ Γ	153700-154166, 152913-153021
77	GTR+ Γ	154600-154730
78	GTR+ Γ	154731-155199
80	GTR+ Γ	155550-155609
87b, 82	GTR+I+ Γ	176761-179545, 155628-155821
91, 84	GTR+ Γ	159428-159614, 156327-157494
89	GTR+I+ Γ	158999-159363
94, 95	GTR+ Γ	159970-160293, 160294-161043
107, 97	GTR+ Γ	168787-169561, 161552-163469
98	GTR+ Γ	163470-165174
100	GTR+ Γ	165307-165937
7_8, 102	GTR+ Γ	173164-176391, 166112-167417
106, 105	GTR+I+ Γ	168645-168786, 168503-168644
62a, 4_5	GTR+ Γ	176392-176688, 169562-173163