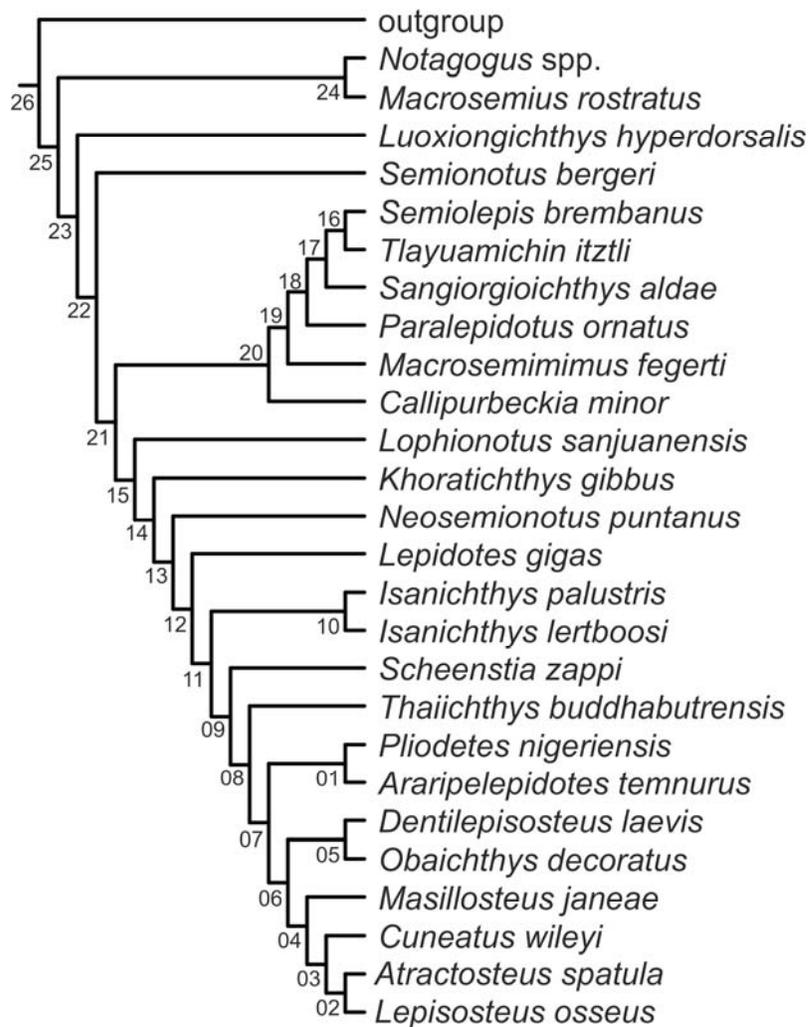


A NEW GINGLYMODI (ACTINOPTERYGII, HOLOSTEI) FROM THE
LATE JURASSIC – EARLY CRETACEOUS OF THAILAND, WITH
COMMENTS ON THE EARLY DIVERSIFICATION OF
LEPISOSTEIFORMES IN SOUTHEAST ASIA

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List of synapomorphies for one of the five most parsimonious trees.
The double arrows indicate unambiguous changes with the ACTRAN optimization. The
uniquely derived character changes are underlined for the clades discussed in the main text.



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node_26 --> node_25 (Ginglymodi)

1 0.500 0 --> 1
7 0.500 0 --> 1
18 1.000 0 --> 1
28 0.333 0 --> 2
32 0.250 0 ==> 1
34 0.500 1 ==> 0
40 0.333 0 --> 3
72 1.000 0 --> 1
75 1.000 0 ==> 1
86 1.000 0 --> 1
87 0.400 0 ==> 1
94 0.667 2 ==> 1

node_25 --> node_23

3 0.333 0 --> 1
12 0.250 0 ==> 1
37 0.286 0 --> 1
65 0.400 0 ==> 1
84 0.167 0 --> 1
89 0.400 0 ==> 2
90 0.600 2 ==> 0
100 0.286 0 --> 1

node_23 --> node_22

9 0.250 0 --> 1
62 0.143 0 --> 1
67 0.250 0 --> 1
95 0.333 1 ==> 0
103 0.250 0 ==> 1

node_22 --> node_21

79 0.200 0 --> 1
87 0.400 1 ==> 2

node_21 --> node_15

11 0.286 0 ==> 1
20 0.167 0 ==> 1
40 0.333 3 ==> 2
43 0.250 0 --> 1
47 1.000 0 --> 1
48 0.333 0 --> 1
54 1.000 0 --> 1

node_15 --> node_14

15 0.167 0 --> 1
21 0.333 0 --> 1
34 0.500 0 ==> 1
43 0.250 1 --> 2
103 0.250 1 ==> 2

node_14 --> node_13

13 0.200 1 ==> 0
32 0.250 1 --> 2
99 0.400 2 ==> 0

node_13 --> node_12

10 0.333 1 ==> 0
17 0.333 0 ==> 1
30 0.200 0 ==> 1
37 0.286 1 ==> 2
38 0.500 0 ==> 1
100 0.286 1 --> 0

node_12 --> node_11

11 0.286 1 ==> 0
32 0.250 2 --> 1

node_11 --> node_09

15 0.167 1 --> 0
29) 0.500 0 --> 1
62 0.143 1 --> 0
77 0.500 0 ==> 1
90 0.600 0 --> 1

node_09 --> node_08

16 0.333 0 ==> 1
43 0.250 2 ==> 1
58 0.500 0 --> 1
66 0.600 0 ==> 4
71 0.500 0 --> 1

78 0.500 0 --> 1
80 0.250 1 ==> 2
node_08 --> node_07
2 0.333 0 --> 1
11 0.286 0 --> 2
18 1.000 1 --> 2
39 0.250 0 --> 1
48 0.333 1 --> 0
53 0.667 0 --> 2
55 1.000 0 --> 1
65 0.400 1 --> 0
67 0.250 1 ==> 0
74 1.000 0 --> 1
87 0.400 2 ==> 0
89 0.400 2 ==> 1
96 0.333 0 ==> 1
98 0.667 1 ==> 0
101 0.500 0 --> 1
103 0.250 2 --> 1

node_07 --> node_01

9 0.250 1 --> 0
17 0.333 1 ==> 0
23 0.250 0 --> 1
29 0.500 1 --> 0
61 0.333 0 ==> 2
68 1.000 1 ==> 2

node_01 --> *Araripelepidotes temnurus*

8 0.222 0 ==> 1
11 0.286 2 --> 1
32 0.250 1 ==> 2
35 0.143 0 ==> 2
37 0.286 2 ==> 0
39 0.250 1 --> 0
45 0.500 0 ==> 1
52 0.750 1 ==> 0
66 0.600 4 ==> 3
90 0.600 1 --> 0
103 0.250 1 --> 2

node_01 --> *Pliodetes nigeriensis*

42 0.308 0 ==> 2
80 0.250 2 ==> 1
100 0.286 0 ==> 1

node_07 --> node_06

6 1.000 0 ==> 1
12 0.250 1 ==> 0
24 1.000 0 ==> 1
44 0.333 0 --> 2
46 0.333 0 ==> 1
58 0.500 1 --> 0
62 0.143 0 --> 1
65 0.400 0 --> 2
71 0.500 1 --> 0
73 1.000 0 ==> 1
90 0.600 1 ==> 3
94 0.667 1 --> 0
99 0.400 0 ==> 1

node_06 --> node_04

11 0.286 2 --> 0
19 1.000 0 ==> 1
42 0.308 0 ==> 2
45 0.500 0 ==> 1
50 1.000 0 --> 1
57 1.000 0 ==> 1
58 0.500 0 --> 2
59 1.000 0 ==> 1
74 1.000 1 --> 2
80 0.250 2 ==> 0
81 0.667 2 ==> 1
83 1.000 0 ==> 1
85 1.000 0 --> 1
101 0.500 1 --> 0

102 0.500 0 ==> 1
node_04 --> node_03
13 0.200 0 ==> 1
41 0.333 0 --> 1
44 0.333 2 --> 0
49 1.000 0 ==> 1
76 (0.600 0 ==> 3
node_03 --> node_02
4 0.500 0 ==> 1
8 0.222 0 ==> 2
20 0.167 1 ==> 0
28 0.333 2 ==> 1
33 1.000 0 ==> 1
62 0.143 1 --> 0
64 0.200 0 ==> 1
66 0.600 4 ==> 1
node_02 --> *Atractosteus spatula*
44 0.333 0 --> 2
node_02 --> *Lepisosteus osseus*
43 0.250 1 ==> 2
48 0.333 0 --> 1
node_03 --> *Cuneatus wileyi*
48 0.333 0 ==> 2
61 0.333 0 ==> 1
node_04 --> *Masillosteus janeae*
56 0.286 0 ==> 1
61 0.333 0 ==> 2
66 0.600 4 ==> 0
67 0.250 0 ==> 1
103 0.250 1 --> 2
node_06 --> node_05
4 0.500 0 ==> 1
5 1.000 0 ==> 1
8 0.222 0 ==> 2
22 1.000 0 ==> 1
28 0.333 2 --> 0
40 0.333 2 --> 3
43 0.250 1 --> 0
48 0.333 0 --> 1
84 0.167 1 ==> 0
node_05 --> *Dentilepisosteus laevis*
13 0.200 0 ==> 1
20 0.167 1 ==> 0
23 0.250 0 ==> 1
35 0.143 0 ==> 2
node_05 --> *Obaichthys decoratus*
17 0.333 1 ==> 0
26 1.000 0 ==> 1
43 0.250 0 --> 2
62 0.143 1 --> 0
node_06 --> *Thaiichthys buddhabutrensis*
8 0.222 0 ==> 1
28 0.333 2 ==> 0
35 0.143 0 ==> 2
37 0.286 2 ==> 1
84 0.167 1 ==> 0
node_09 --> *Scheenstia zappi*
7 0.500 1 ==> 2
9 0.250 1 ==> 0
30 0.200 1 ==> 0
41 0.333 0 ==> 1
56 0.286 0 ==> 2
79 0.200 1 ==> 0
82 0.500 0 ==> 1
88 0.333 0 ==> 1
97 0.250 1 ==> 0
node_11 --> node_39
39 0.250 0 ==> 1
56 0.286 0 --> 1
84 0.167 1 --> 0
89 0.400 2 --> 0

node_10 --> *Isanichthys lertboosi*
80.222 0 ==> 1
32 0.250 1 --> 2
61 0.333 0 ==> 2

node_10 --> *Isanichthys palustris*
13 0.200 0 ==> 1
42 0.308 0 ==> 2
64 0.200 0 ==> 1
89 0.400 0 --> 1

node_12 --> *Lepidotes gigas*
3 0.333 1 ==> 0
20 0.167 1 ==> 0
21 0.333 1 --> 0
36 0.333 1 ==> 0
42 0.308 0 ==> 2
79 0.200 1 ==> 0
102 0.500 0 ==> 1

node_13 --> *Neosemionotus puntanus*
2 0.333 0 ==> 1
43 0.250 2 --> 0
44 0.333 0 ==> 2
64 0.200 0 ==> 1
80 0.250 1 ==> 2

node_14 --> *Khoratichthys gibbus*
78 0.500 0 ==> 1
100 0.286 1 ==> 2

node_15 --> *Lophionotus sanjuanensis*
35 0.143 0 ==> 2
38 0.500 0 ==> 1
42 0.308 0 ==> 1
79 0.200 1 --> 0
80 0.250 1 ==> 2
82 0.500 0 ==> 1

node_21 --> node_49 (*Callipurbeckiidae*)
12 0.250 1 ==> 0
23 0.250 0 --> 1
28 0.333 2 --> 0
37 0.286 1 --> 0
41 0.333 0 --> 1
42 0.308 0 ==> 4
51 0.500 0 --> 1
56 0.286 0 ==> 1

node_20 --> *Callipurbeckia minor*
32 0.250 1 ==> 2
77 0.500 0 ==> 1
84 0.167 1 --> 0
103 0.250 1 ==> 2

node_20 --> node_19
15 0.167 0 --> 1
61 0.333 0 ==> 2
81 0.667 2 --> 1
94 0.667 1 ==> 0
97 0.250 1 ==> 0
100 0.286 1 --> 0

node_19 --> *Macrosemimimus fegerti*
8 0.222 0 ==> 2
11 0.286 0 ==> 1
14 1.000 0 ==> 1
21 0.333 0 ==> 2
30 0.200 0 ==> 1
36 0.333 1 ==> 0
89 0.400 2 ==> 0

node_19 --> node_18
42 0.308 4 ==> 1
76 0.600 0 --> 1
87 0.400 2 --> 1
99 0.400 2 --> 0

node_18 --> *Paralepidotus ornatus*
2 0.333 0 ==> 1
16 0.333 0 ==> 1
20 0.167 0 ==> 1

56 0.286 1 ==> 2
76 0.600 1 --> 2
90 0.600 0 ==> 1
95 0.333 0 ==> 1
node_18 --> node_17
7 0.500 1 ==> 0
35 0.143 0 --> 2
65 0.400 1 ==> 0
67 0.250 1 ==> 0
100 0.286 0 --> 1
node_17 --> *Sangiorgioichthys aldae*
15 0.167 1 --> 0
32 0.250 1 ==> 2
37 0.286 0 ==> 1
40 0.333 3 ==> 2
42 0.308 1 ==> 2
43 0.250 0 ==> 2
56 0.286 1 ==> 0
103 0.250 1 ==> 0
node_17 --> node_16
8 0.222 0 ==> 2
9 0.250 1 ==> 0
21 0.333 0 ==> 1
46 0.333 0 ==> 1
84 0.167 1 --> 0
node_16 --> *Semiolepis bremanus*
6 0.333 2 ==> 0
76 0.600 1 --> 0
80 0.250 1 ==> 2
97 0.250 0 ==> 1
node_16 --> *Tlayuamichin itzli*
30 0.200 0 ==> 1
35 0.143 2 --> 0
42 0.308 1 ==> 0
87 0.400 1 --> 2
99 0.400 0 --> 2
103 0.250 1 ==> 2
node_22 --> *Semionotus bergeri*
32 0.250 1 ==> 2
37 0.286 1 ==> 2
42 0.308 0 ==> 2
65 0.400 1 ==> 2
66 0.600 0 ==> 4
100 0.286 1 --> 2
node_23 --> *Luoxiongichthys hyperdorsalis*
10 0.333 1 ==> 0
53 0.667 0 ==> 1
63 0.500 0 ==> 1
64 0.200 0 ==> 1
99 0.400 2 ==> 0
node_25 --> node_24
8 0.222 0 ==> 2
1 0.286 0 ==> 1
16 0.333 0 ==> 1
21 0.333 0 ==> 2
42 0.308 0 --> 3
46 0.333 0 ==> 1
51 0.500 0 --> 1
52 0.750 1 ==> 2
79 0.200 0 ==> 1
80 0.250 1 ==> 2
88 0.333 0 --> 1
98 0.667 1 ==> 0
node_24 --> *Macrosemius rostratus*
40 0.333 3 --> 0
56 0.286 0 ==> 1
96 0.333 0 ==> 1
node_24 --> *Notagogus* spp.
15 0.167 0 ==> 1
44 0.333 0 ==> 1
97 0.250 1 ==> 0