

Supplementary Information for:

Evolution of tooth morphological complexity and its association with the position of tooth eruption in the jaw in non-mammalian synapsids

**Table S5: Reconstructed ancestral states of the dentition position in the cranium at each node, which is numbered in Fig. S5.**

| Node | State at ancestor | State at node |
|------|-------------------|---------------|
| 3    | 0.00843988        | -0.00776594   |
| 4    | -0.00776594       | -0.01762766   |
| 5    | -0.01762766       | -0.14408299   |
| 6    | -0.14408299       | -0.16417589   |
| 7    | -0.16417589       | -0.18338817   |
| 8    | -0.18338817       | -0.26482391   |
| 9    | -0.26482391       | -0.25982822   |
| 10   | -0.25982822       | -0.11038409   |
| 11   | -0.11038409       | -0.11284098   |
| 12   | -0.11284098       | -0.09396514   |
| 13   | -0.09396514       | -0.14505199   |
| 14   | -0.14505199       | -0.07675403   |
| 15   | -0.07675403       | -0.12589158   |
| 16   | -0.12589158       | -0.08496551   |
| 17   | -0.08496551       | -0.07965003   |
| 18   | -0.07965003       | -0.06689234   |
| 19   | -0.06689234       | 0.01743232    |
| 20   | 0.01743232        | 0.04524039    |
| 21   | 0.04524039        | 0.00721090    |
| 22   | 0.00721090        | -0.00713100   |
| 23   | 0.00721090        | 0.01364100    |
| 24   | 0.04524039        | 0.11013200    |

|    |             |             |
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| 25 | 0.01743232  | -0.05547800 |
| 26 | -0.06689234 | -0.02206400 |
| 27 | -0.07965003 | -0.08292574 |
| 28 | -0.08292574 | 0.14453111  |
| 29 | 0.14453111  | 0.00610109  |
| 30 | 0.00610109  | 0.00399867  |
| 31 | 0.00399867  | -0.06370700 |
| 32 | 0.00399867  | 0.07684800  |
| 33 | 0.00610109  | -0.06276300 |
| 34 | 0.14453111  | 0.16871000  |
| 35 | -0.08292574 | -0.13134800 |
| 36 | -0.08496551 | 0.09669400  |
| 37 | -0.12589158 | -0.23392200 |
| 38 | -0.07675403 | -0.02450600 |
| 39 | -0.14505199 | -0.17268700 |
| 40 | -0.09396514 | -0.08084920 |
| 41 | -0.08084920 | -0.07242723 |
| 42 | -0.07242723 | -0.07498839 |
| 43 | -0.07498839 | -0.03679253 |
| 44 | -0.03679253 | -0.27916400 |
| 45 | -0.03679253 | -0.01897900 |
| 46 | -0.03679253 | 0.04983000  |
| 47 | -0.07498839 | -0.12003576 |
| 48 | -0.12003576 | -0.07910500 |
| 49 | -0.12003576 | -0.13198000 |
| 50 | -0.07242723 | -0.01242900 |
| 51 | -0.08084920 | -0.04501400 |
| 52 | -0.11284098 | -0.18217000 |
| 53 | -0.11038409 | -0.05540199 |
| 54 | -0.05540199 | -0.04141100 |
| 55 | -0.05540199 | -0.04466500 |
| 56 | -0.25982822 | -0.27508145 |

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| 57 | -0.27508145 | -0.30658202 |
| 58 | -0.30658202 | -0.27872172 |
| 59 | -0.27872172 | -0.24527215 |
| 60 | -0.24527215 | -0.24201000 |
| 61 | -0.24201000 | -0.12058100 |
| 62 | -0.24201000 | -0.34863600 |
| 63 | -0.24527215 | -0.22239700 |
| 64 | -0.27872172 | -0.21294800 |
| 65 | -0.30658202 | -0.39924962 |
| 66 | -0.39924962 | -0.86992400 |
| 67 | -0.39924962 | -0.36742300 |
| 68 | -0.30658202 | -0.34948497 |
| 69 | -0.34948497 | -0.50416600 |
| 70 | -0.34948497 | -0.26846600 |
| 71 | -0.27508145 | -0.25830100 |
| 72 | -0.26482391 | -0.34945049 |
| 73 | -0.34945049 | -0.37124569 |
| 74 | -0.37124569 | -0.37216886 |
| 75 | -0.37216886 | -0.37667157 |
| 76 | -0.37667157 | -0.36958793 |
| 77 | -0.36958793 | -0.36934598 |
| 78 | -0.36934598 | -0.41354356 |
| 79 | -0.41354356 | -0.47689668 |
| 80 | -0.47689668 | -0.55240964 |
| 81 | -0.55240964 | -0.44837900 |
| 82 | -0.55240964 | -0.74563400 |
| 83 | -0.47689668 | -0.48930100 |
| 84 | -0.41354356 | -0.33757500 |
| 85 | -0.36934598 | -0.20519639 |
| 86 | -0.20519639 | -0.12654900 |
| 87 | -0.20519639 | -0.36198100 |
| 88 | -0.36958793 | -0.30705600 |

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|     |             |             |
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| 89  | -0.37667157 | -0.44901300 |
| 90  | -0.37216886 | -0.32115500 |
| 91  | -0.37216886 | -0.39930500 |
| 92  | -0.37124569 | -0.46404400 |
| 93  | -0.34945049 | -0.34395963 |
| 94  | -0.34395963 | -0.34105600 |
| 95  | -0.34395963 | -0.34459900 |
| 96  | -0.18338817 | -0.21118472 |
| 97  | -0.21118472 | -0.36275433 |
| 98  | -0.36275433 | -0.58462700 |
| 99  | -0.36275433 | -0.57451700 |
| 100 | -0.21118472 | 0.00822100  |
| 101 | -0.16417589 | -0.17927185 |
| 102 | -0.17927185 | -0.15750603 |
| 103 | -0.15750603 | -0.12871717 |
| 104 | -0.12871717 | -0.00860100 |
| 105 | -0.12871717 | -0.03029800 |
| 106 | -0.15750603 | -0.11752500 |
| 107 | -0.15750603 | -0.32527100 |
| 108 | -0.17927185 | -0.43242500 |
| 109 | -0.14408299 | 0.05560400  |
| 110 | -0.01762766 | 0.10339000  |
| 111 | -0.01762766 | 0.06132800  |
| 112 | -0.00776594 | 0.00358200  |
| 113 | 0.00843988  | 0.09671769  |
| 114 | 0.09671769  | 0.08516500  |
| 115 | 0.09671769  | 0.11831200  |

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