Supplementary Information for

Growth Patterns and Variation Among Early Theropods

C. T. Griffin, Department of Geosciences, Virginia Polytechnic Institute and State University,

ctgriff@vt.edu.

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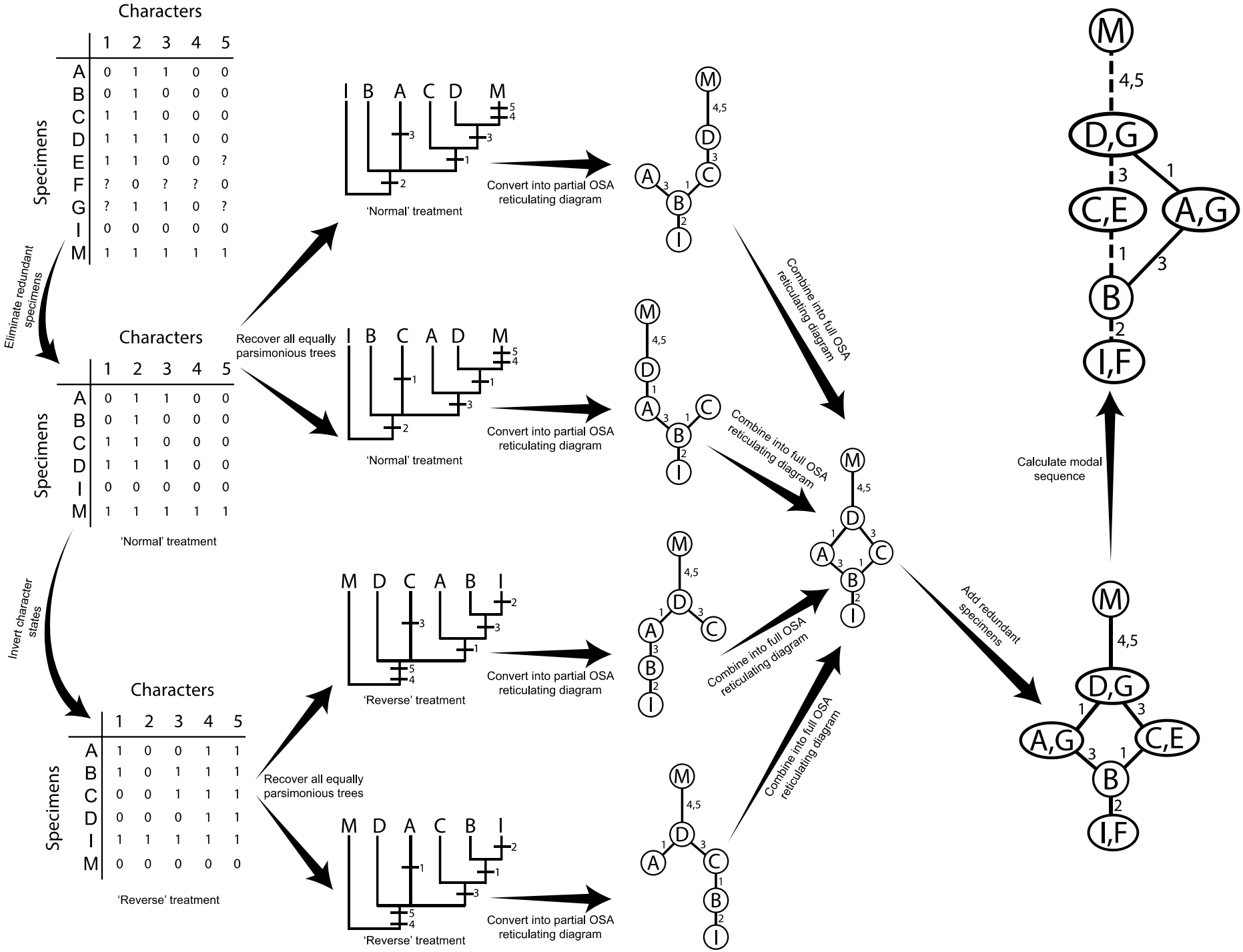
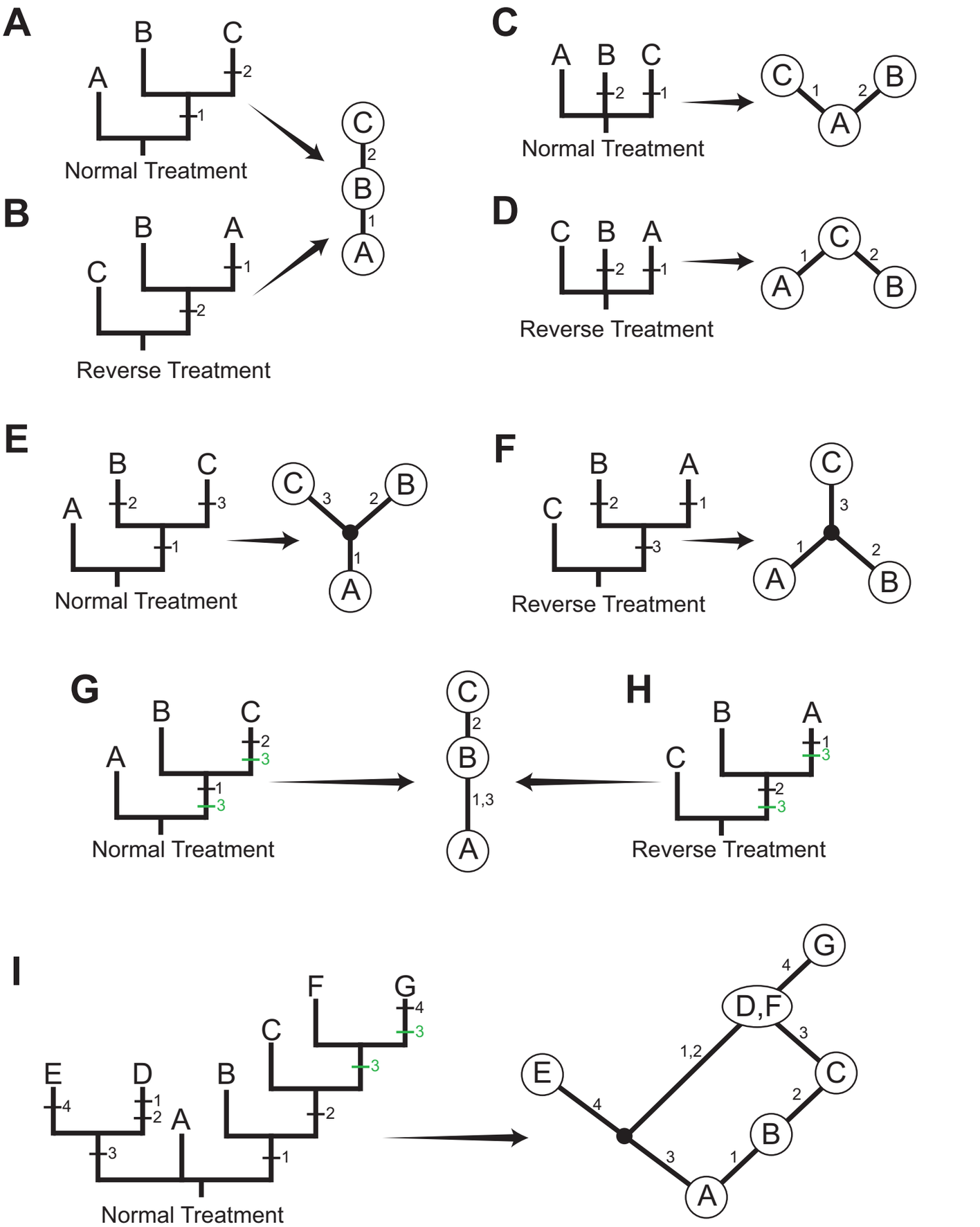


Supplementary Methods 1. Flowchart showing a simple example of ontogenetic sequence analysis methodology. Refer to Methods of the main text for precise instructions on conducting OSA.



Supplementary Methods 2. Transforming trees returned by PAUP* into partial OSA reticulating diagrams. **A** and **B** show basic character state transformations between semaphoronts in both normal and reverse treatments. **C** and **D** show how to transform trees containing polytomies in both normal and reverse treatments. **E** and **F** illustrate how predicted semaphoronts (semaphoronts with support weight of 0) are determined, in both treatments. **G** and **H** show how to place ambiguous character transformations (in green) onto the reticulating diagram in both treatments; essentially, it is an ACCTRAN optimization, with the assumption being that the character appeared in the earliest place possible during ontogeny. **I** shows a more complex example, illustrating how all these transformations can be used to form complex reticulating diagrams (this example is only in normal treatment).

Supplementary Figure 1. Detailed ontogenetic sequence analysis reticulating diagram for the full postcrania dataset of 27 ontogenetic characters of *Coelophysis bauri*.

Maturity Score

Modal sequence with character state transformation

Sequence with character state transformation

Manually completed sequence with character state transformation

Predicted, unobserved semaphoront

Support weight

Semaphoront number

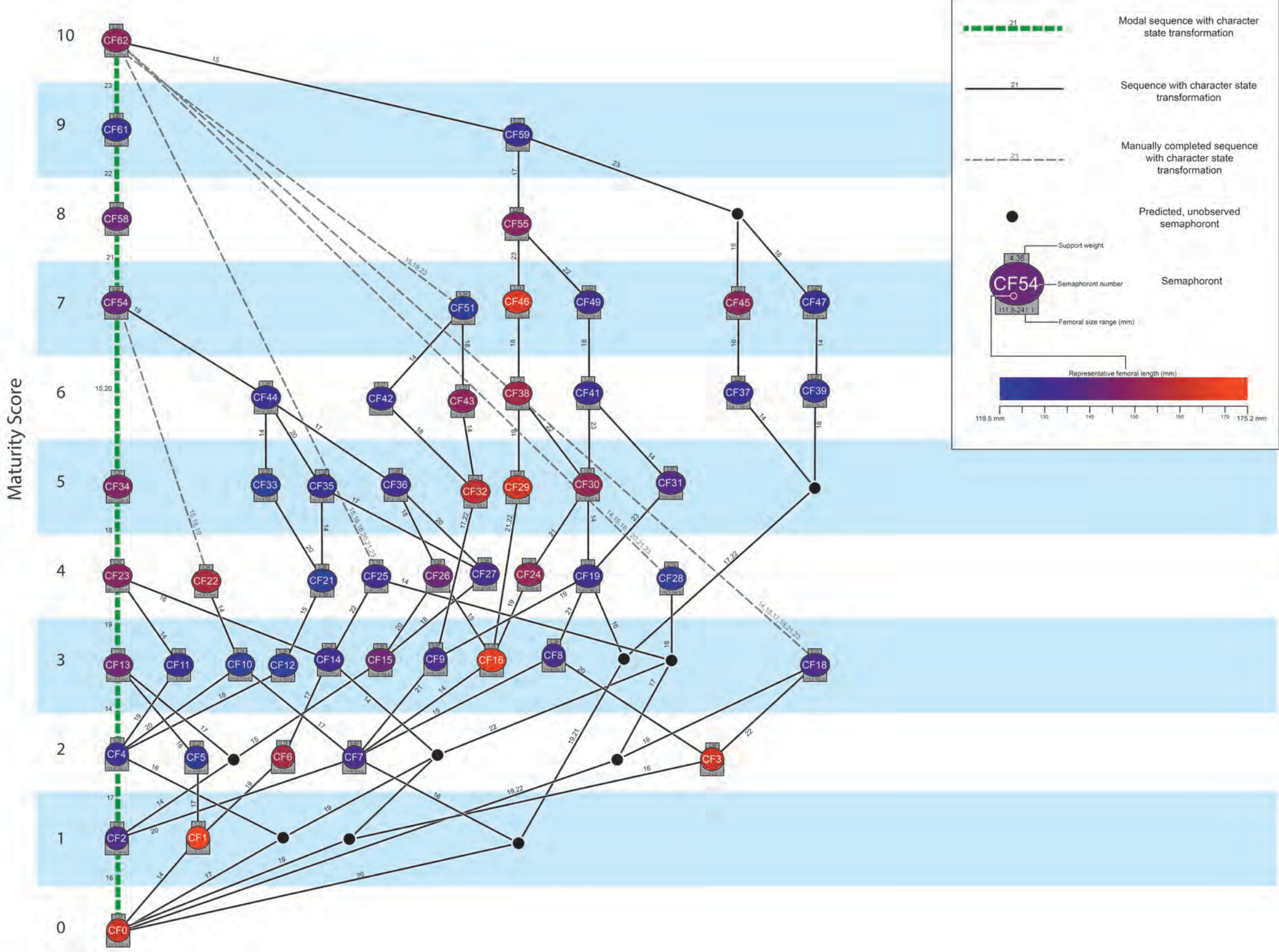
Femoral size range (mm)

Semaphoront

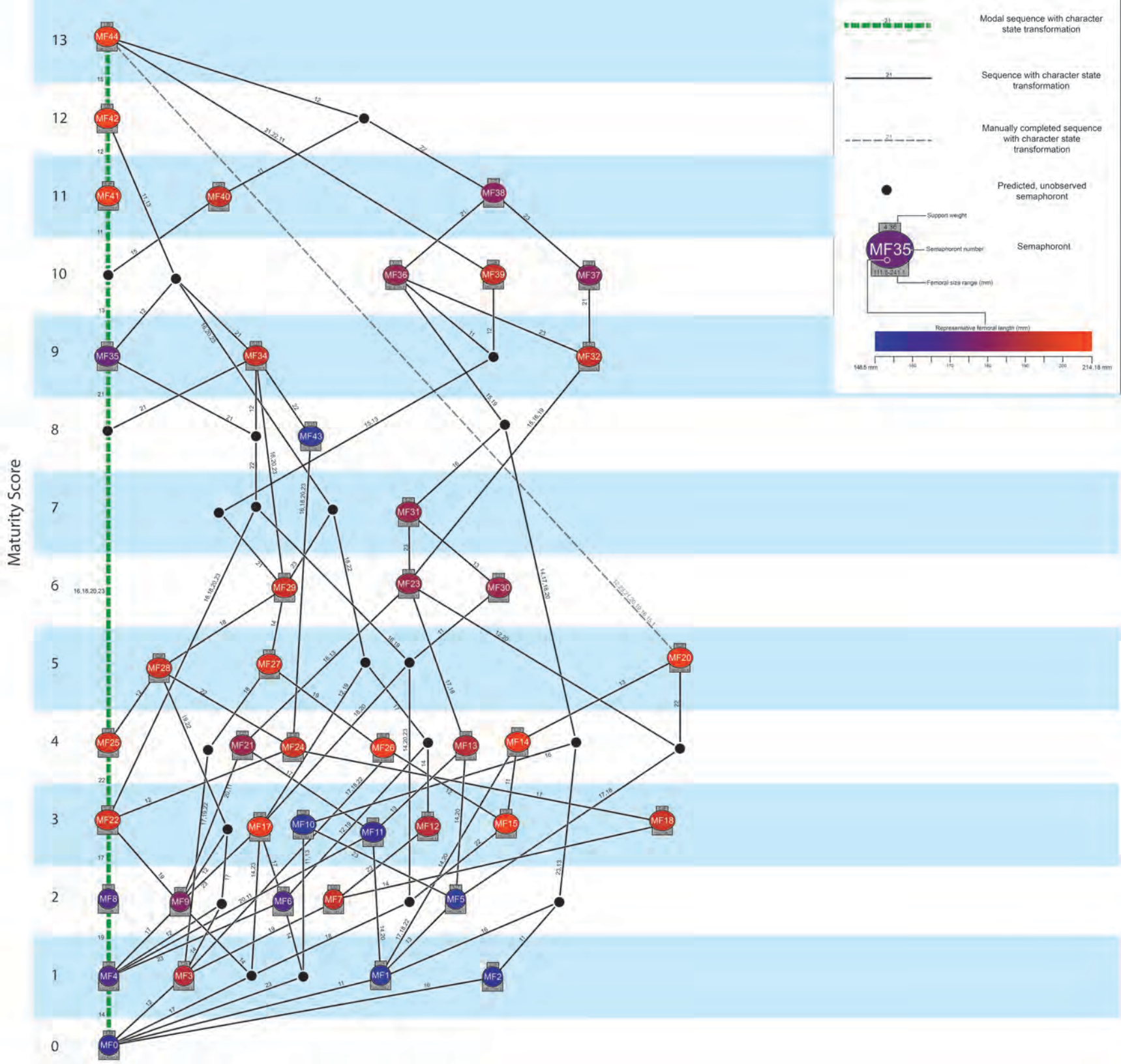
Representative femoral length (mm)

109.7 mm 120 140 160 180 200 220.6 mm

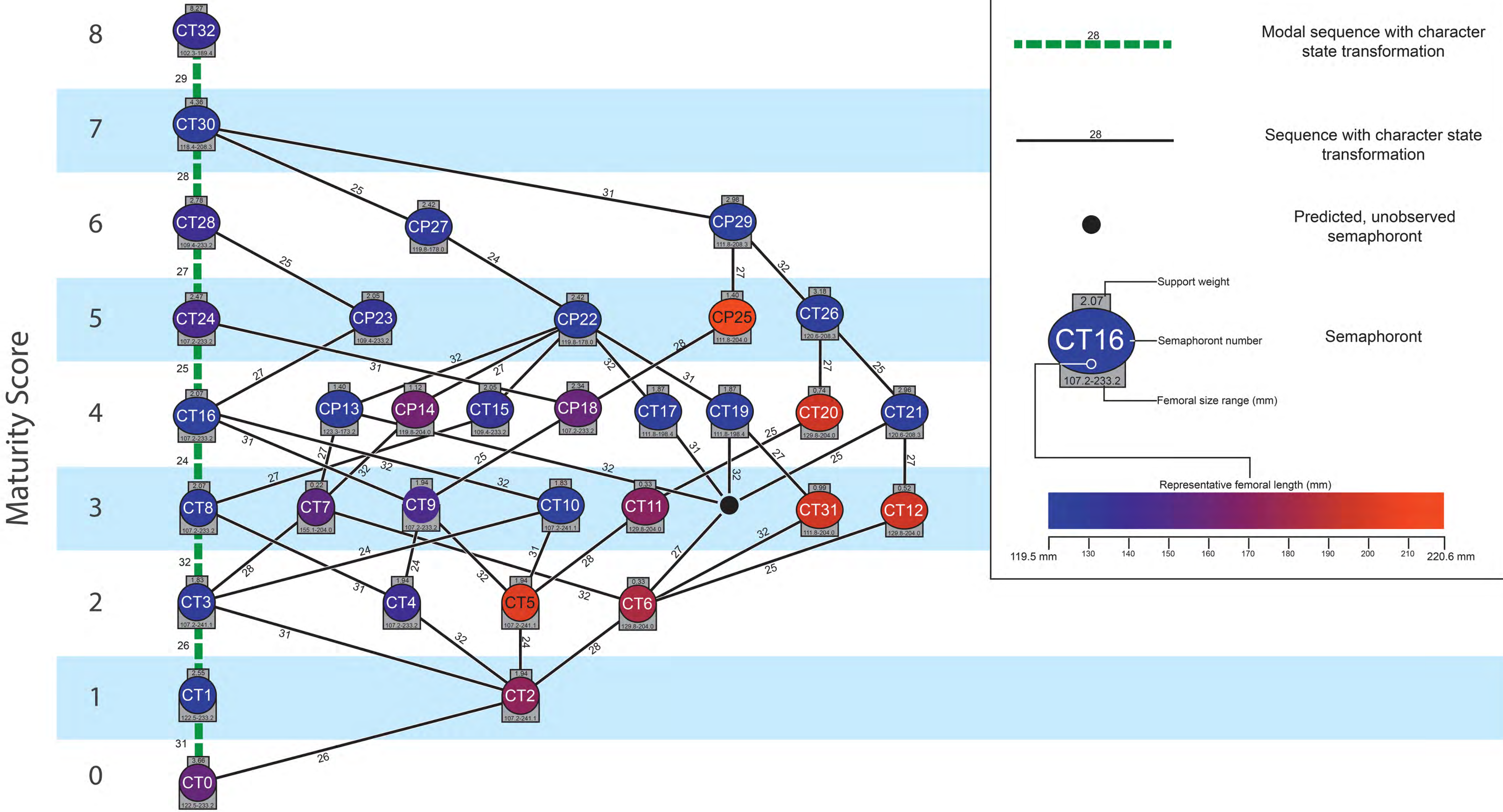
Supplementary Figure 2. Detailed ontogenetic sequence analysis reticulating diagram for the femoral dataset of 10 ontogenetic characters of *Coelophysis bauri*.


Maturity Score
10
9
8
7
6
5
4
3
2
1
0
CF62
CF61
CF58
CF54
CF44
CF34
CF23
CF22
CF13
CF11
CF10
CF12
CF14
CF15
CF9
CF16
CF8
CF18
CF4
CF5
CF6
CF7
CF3
CF2
CF1
CF0
CF59
CF55
CF51
CF46
CF49
CF45
CF47
CF42
CF43
CF38
CF41
CF37
CF39
CF33
CF35
CF36
CF32
CF29
CF30
CF31
CF21
CF25
CF26
CF27
CF24
CF19
CF28
Modal sequence with character state transformation
Sequence with character state transformation
Manually completed sequence with character state transformation
Predicted, unobserved semaphoront
Support weight
4.36
CF54
Semaphoront number
111.8-241
Femoral size range (mm)
Semaphoront
Representative femoral length (mm)
119.5 mm
130
140
150
160
170
175.2 mm

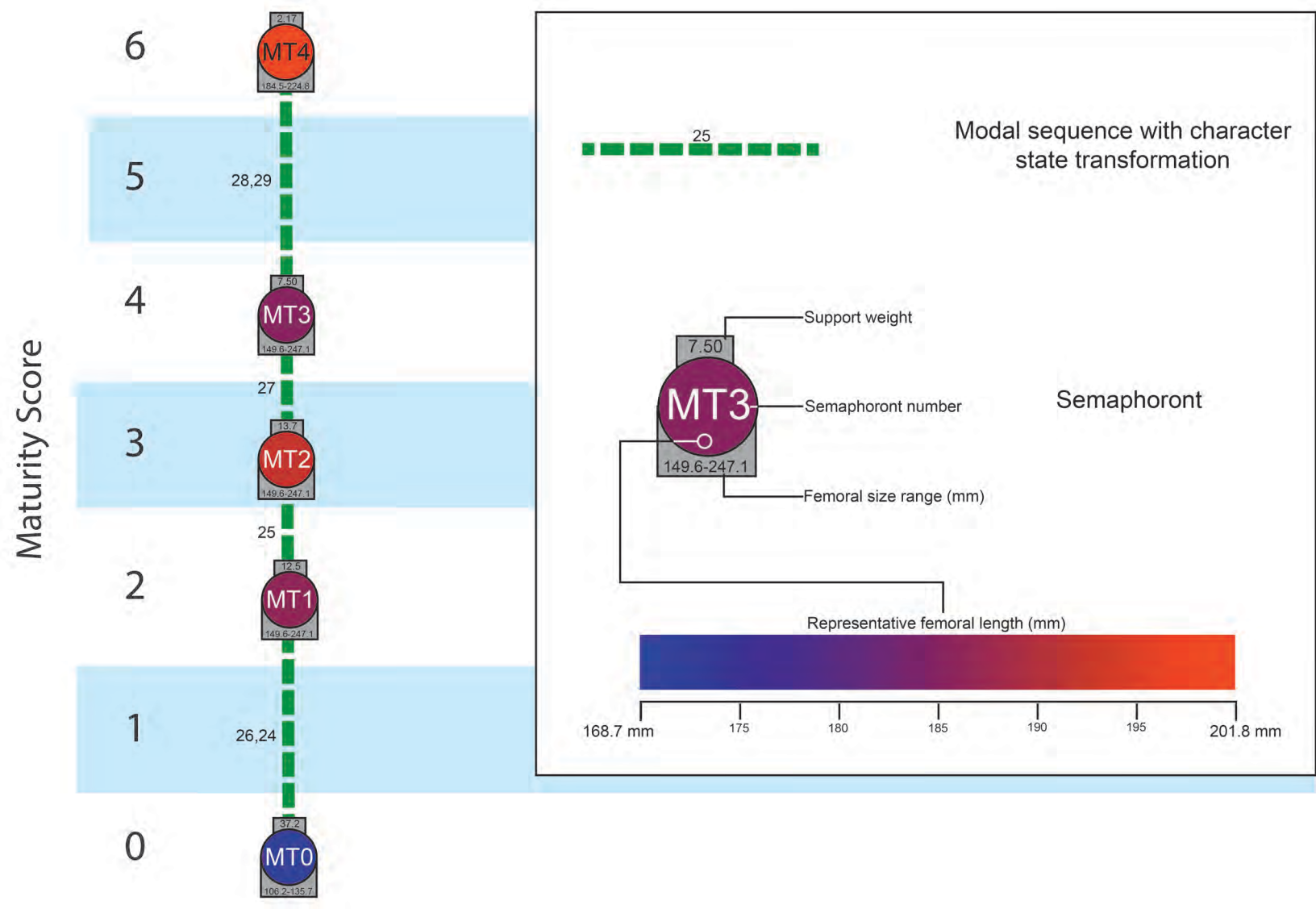
Supplementary Figure 3. Detailed ontogenetic sequence analysis reticulating diagram for the femoral dataset of 13 ontogenetic characters of *Megapnosaurus rhodesiensis*.


Maturity Score
13
12
11
10
9
8
7
6
5
4
3
2
1
0
MF44
MF42
MF41
MF40
MF38
MF36
MF39
MF37
MF35
MF34
MF32
MF43
MF31
MF29
MF23
MF30
MF28
MF27
MF20
MF25
MF21
MF24
MF26
MF13
MF14
MF22
MF17
MF10
MF11
MF12
MF15
MF18
MF8
MF9
MF6
MF7
MF5
MF4
MF3
MF1
MF2
MF0
Modal sequence with character state transformation
Sequence with character state transformation
Manually completed sequence with character state transformation
Predicted, unobserved semaphoront
Support weight
MF35
Semaphoront number
111.8-245.1
Femoral size range (mm)
Semaphoront
Representative femoral length (mm)
148.5 mm
214.18 mm

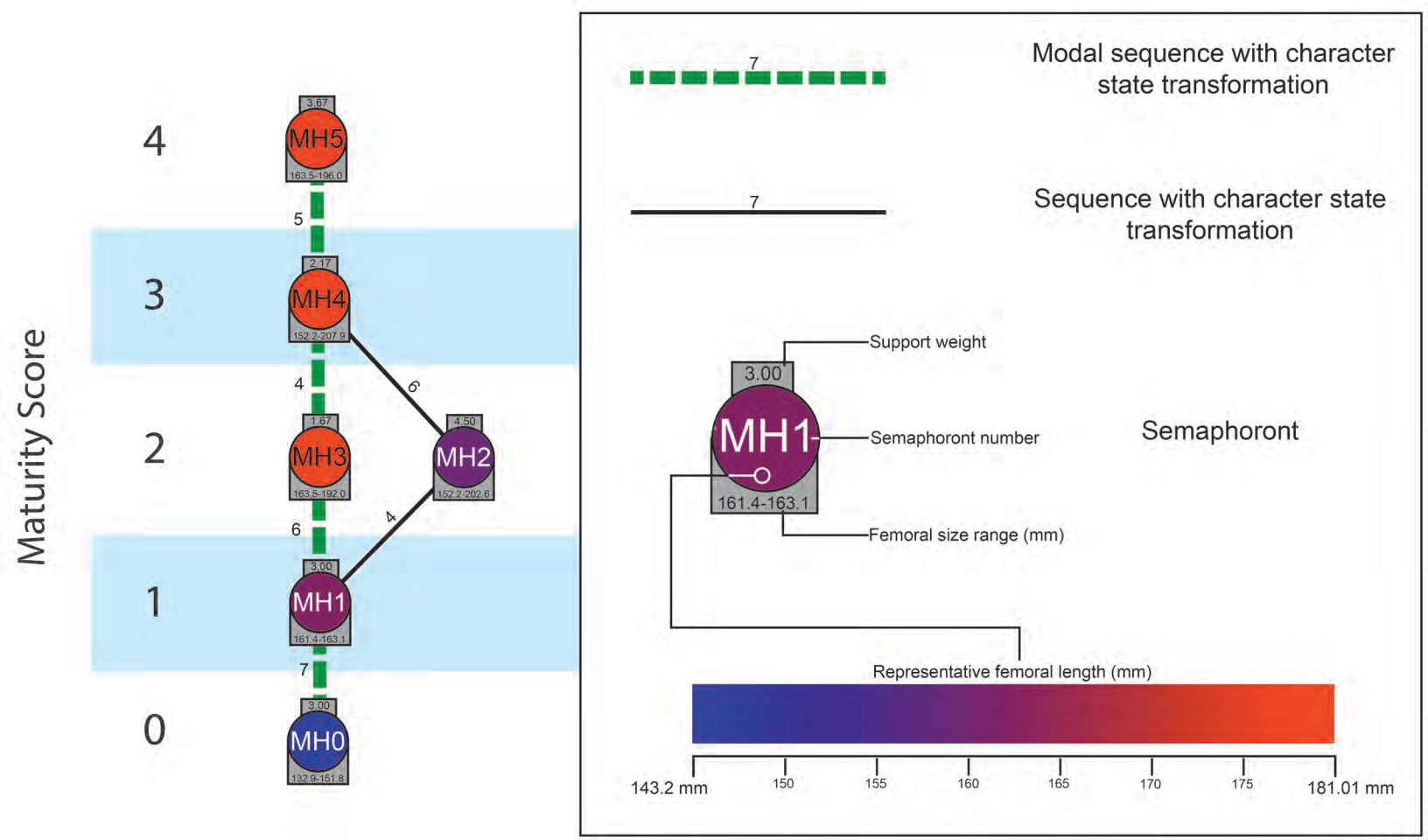
Supplementary Figure 4. Detailed ontogenetic sequence analysis reticulating diagram for the tibial, tarsal, and pedal dataset of 8 ontogenetic characters of *Coelophysis bauri*.


Maturity Score
8
7
6
5
4
3
2
1
0
CT32
CT30
CT28
CP27
CP29
CT24
CP23
CP22
CP25
CT26
CT16
CP13
CP14
CT15
CP18
CT17
CT19
CT20
CT21
CT8
CT7
CT9
CT10
CT11
CT31
CT12
CT3
CT4
CT5
CT6
CT1
CT2
CT0
Modal sequence with character state transformation
Sequence with character state transformation
Predicted, unobserved semaphoront
Support weight
Semaphoront number
Femoral size range (mm)
Semaphoront
Representative femoral length (mm)
119.5 mm
130
140
150
160
170
180
190
200
210
220.6 mm

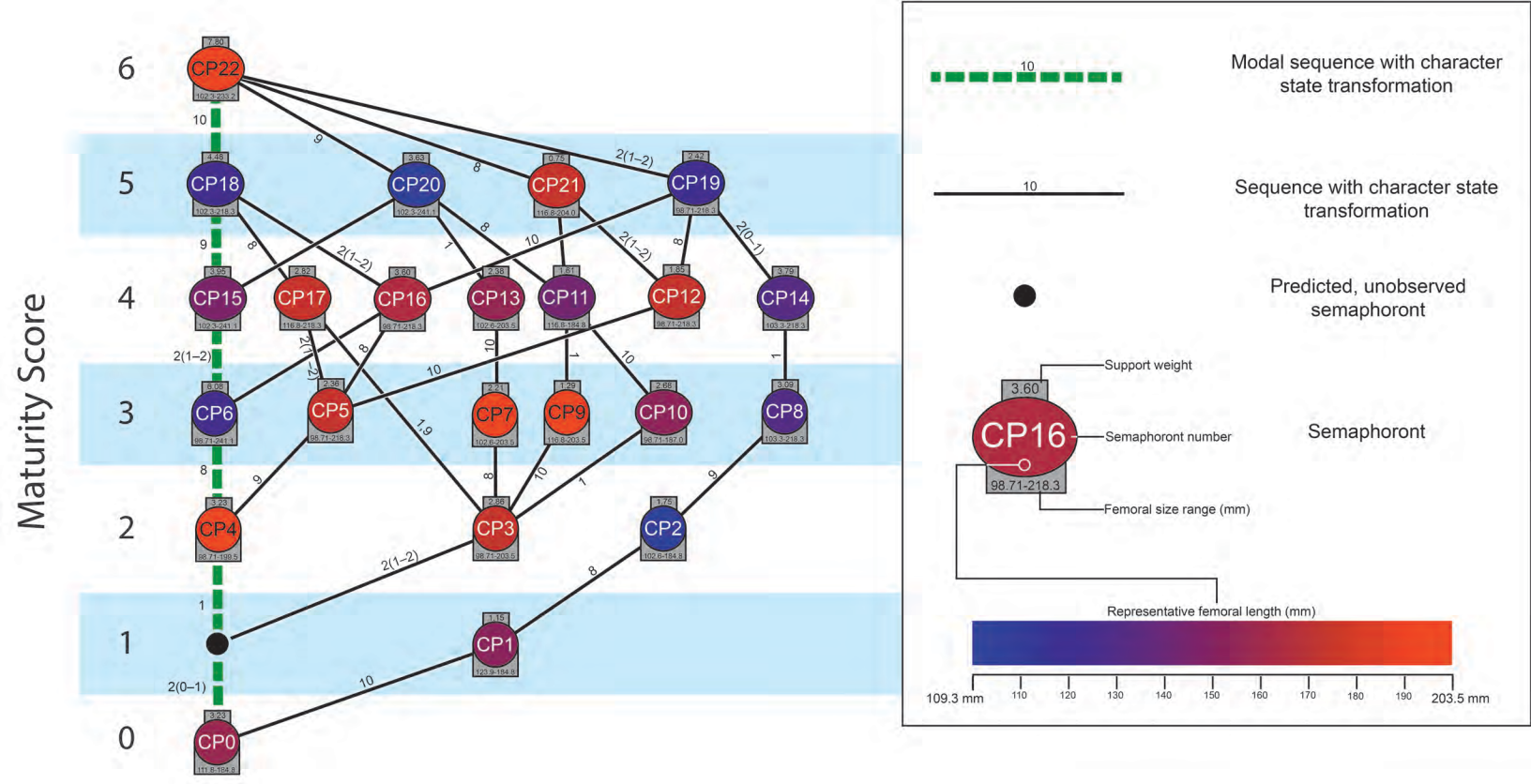
Supplementary Figure 5. Detailed ontogenetic sequence analysis reticulating diagram for the tibial and tarsal dataset of 6 ontogenetic characters of *Megapnosaurus rhodesiensis*.


Maturity Score
6
5
4
3
2
1
0
2.17
MT4
184.5-224.8
28,29
7.50
MT3
149.6-247.1
27
13.7
MT2
149.6-247.1
25
12.5
MT1
149.6-247.1
26,24
37.2
MT0
106.2-135.7
25
Modal sequence with character state transformation
Support weight
7.50
MT3
Semaphoront number
149.6-247.1
Femoral size range (mm)
Semaphoront
Representative femoral length (mm)
168.7 mm
175
180
185
190
195
201.8 mm

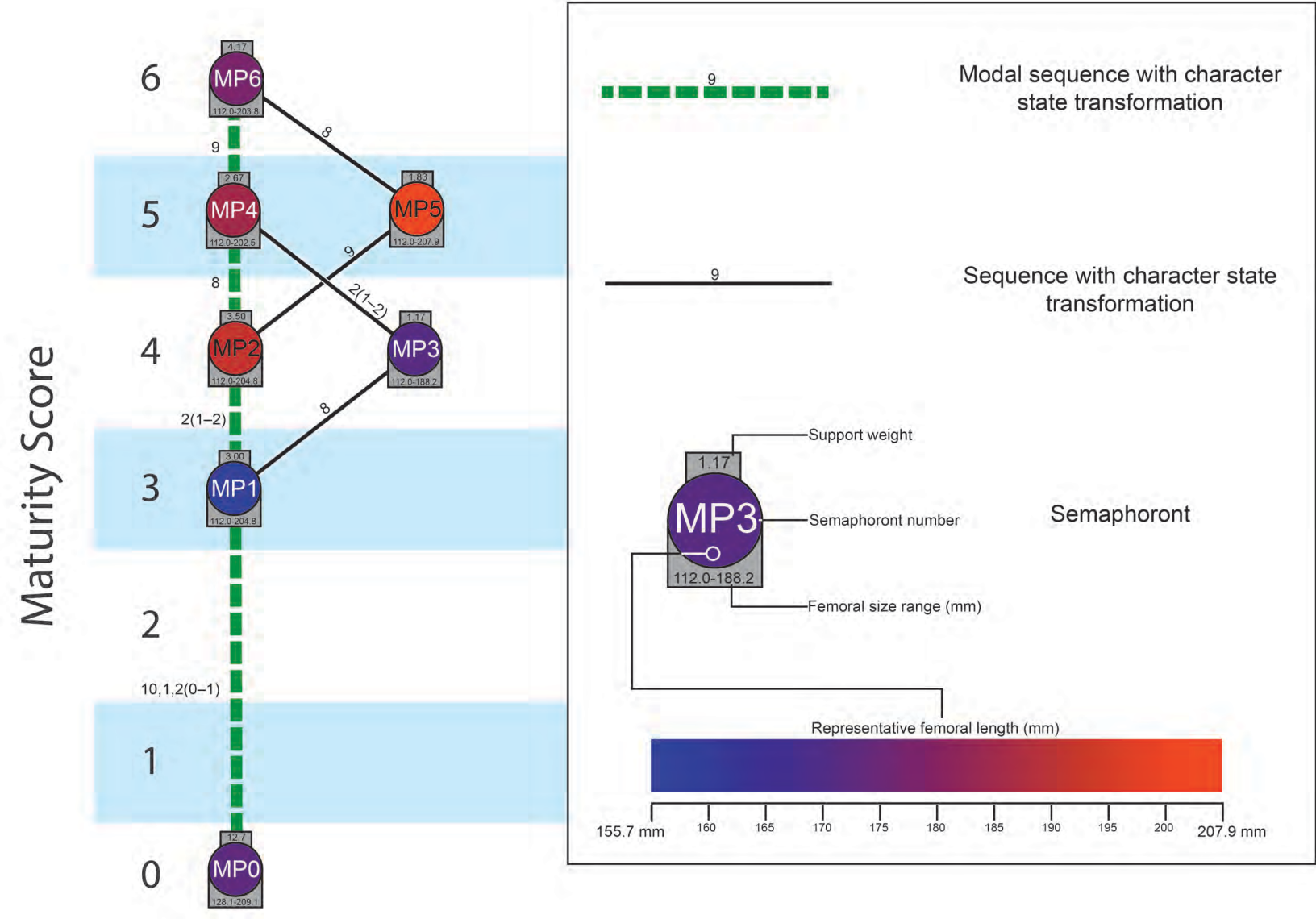
Supplementary Figure 6. Detailed ontogenetic sequence analysis reticulating diagram for the humeral dataset of 4 ontogenetic characters of *Megapnosaurus rhodesiensis*.


Maturity Score
4
3
2
1
0
3.67
MH5
163.5-196.0
5
2.17
MH4
152.2-207.9
4
6
1.67
MH3
163.5-192.0
4.50
MH2
152.2-202.6
6
4
3.00
MH1
161.4-163.1
7
3.00
MH0
132.9-151.8
7
Modal sequence with character state transformation
7
Sequence with character state transformation
Support weight
3.00
MH1
Semaphoront number
161.4-163.1
Femoral size range (mm)
Semaphoront
Representative femoral length (mm)
143.2 mm
150
155
160
165
170
175
181.01 mm

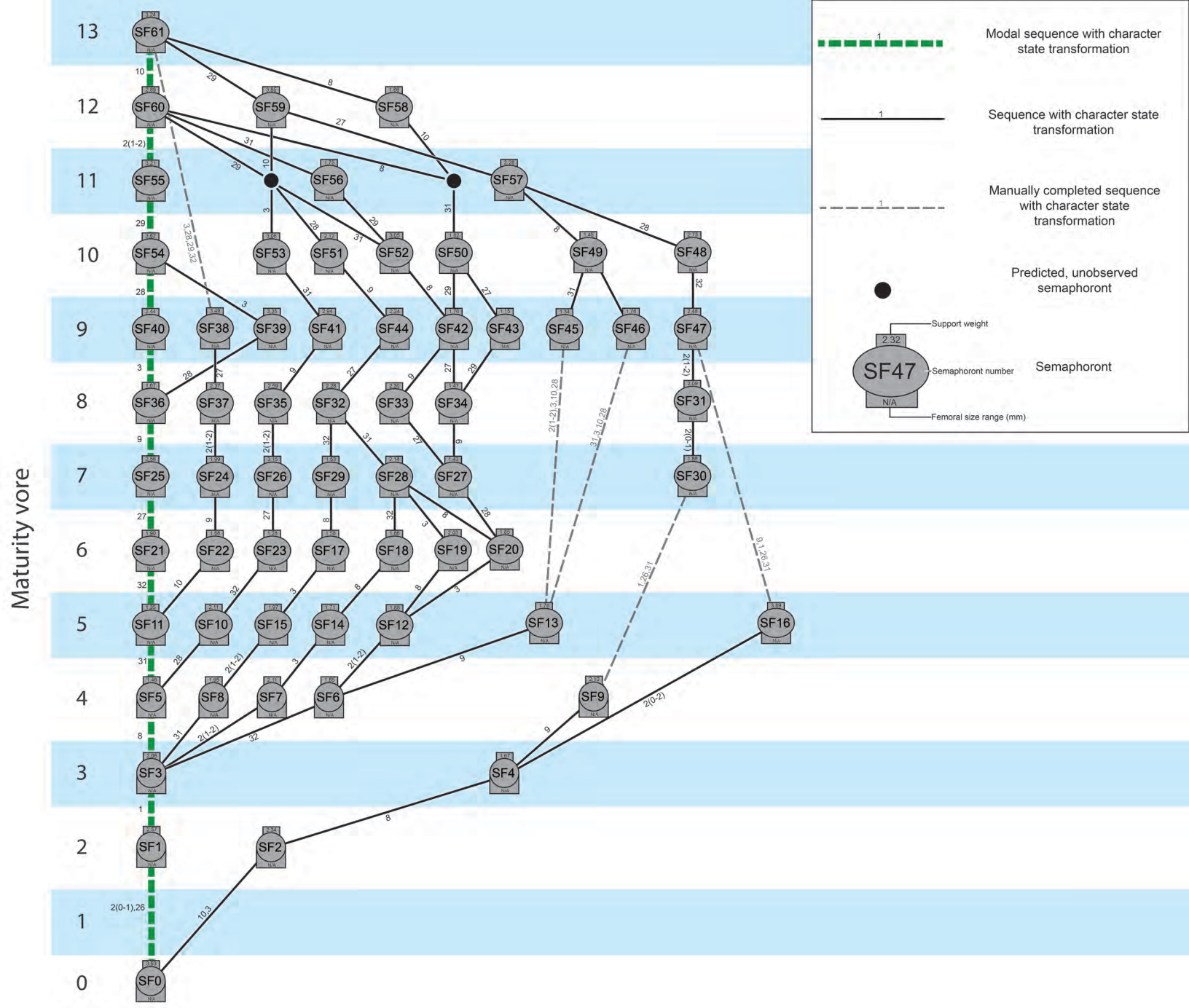
Supplementary Figure 7. Detailed ontogenetic sequence analysis reticulating diagram for the sacral and pelvic dataset of 6 ontogenetic characters of *Coelophysis bauri*.


Maturity Score
6
5
4
3
2
1
0
CP22
CP18
CP20
CP21
CP19
CP15
CP17
CP16
CP13
CP11
CP12
CP14
CP6
CP5
CP7
CP9
CP10
CP8
CP4
CP3
CP2
CP1
CP0
Modal sequence with character state transformation
Sequence with character state transformation
Predicted, unobserved semaphoront
Support weight
Semaphoront number
Femoral size range (mm)
Semaphoront
Representative femoral length (mm)
109.3 mm
203.5 mm

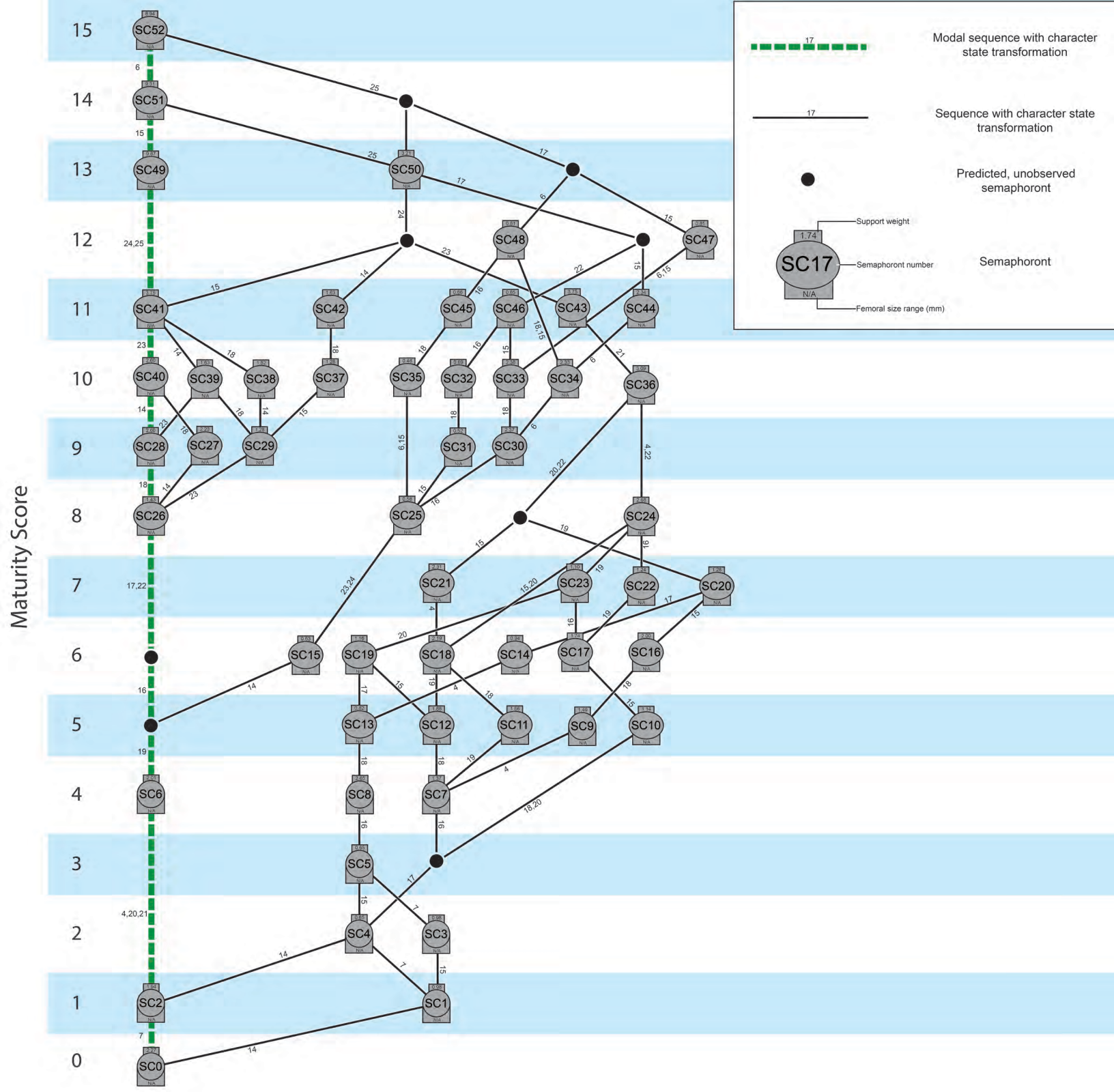
Supplementary Figure 8. Detailed ontogenetic sequence analysis reticulating diagram for the sacral and pelvic dataset of 6 ontogenetic characters of *Megapnosaurus rhodesiensis*.


Maturity Score
6
5
4
3
2
1
0
MP6
4.17
112.0-203.8
MP5
1.83
112.0-207.9
MP4
2.67
112.0-202.5
MP2
3.50
112.0-204.8
MP3
1.17
112.0-188.2
MP1
3.00
112.0-204.8
MP0
12.7
128.1-209.1
9
8
9
8
2(1–2)
8
2(1–2)
10,1,2(0–1)
Modal sequence with character state transformation
Sequence with character state transformation
Support weight
Semaphoront number
Femoral size range (mm)
Semaphoront
Representative femoral length (mm)
155.7 mm
160
165
170
175
180
185
190
195
200
207.9 mm

Supplementary Figure 9. Detailed ontogenetic sequence analysis reticulating diagram for the suture fusion dataset of 12 ontogenetic characters of *Coelophysis bauri*.


Maturity vore
13
12
11
10
9
8
7
6
5
4
3
2
1
0
SF61
SF60
SF59
SF58
SF55
SF56
SF57
SF54
SF53
SF51
SF52
SF50
SF49
SF48
SF40
SF38
SF39
SF41
SF44
SF42
SF43
SF45
SF46
SF47
SF36
SF37
SF35
SF32
SF33
SF34
SF31
SF25
SF24
SF26
SF29
SF28
SF27
SF30
SF21
SF22
SF23
SF17
SF18
SF19
SF20
SF11
SF10
SF15
SF14
SF12
SF13
SF16
SF5
SF8
SF7
SF6
SF9
SF3
SF4
SF1
SF2
SF0
2(1-2)
2(0-1),26
3,28,29,32
2(1-2),3,10,28
3,1,3,10,28
1,26,31
9,1,26,31
2(0-2)
Modal sequence with character state transformation
Sequence with character state transformation
Manually completed sequence with character state transformation
Predicted, unobserved semaphoront
Support weight
2.32
SF47
Semaphoront number
N/A
Femoral size range (mm)
Semaphoront

Supplementary Figure 10. Detailed ontogenetic sequence analysis reticulating diagram for the bone scar dataset of 15 ontogenetic characters of *Coelophysis bauri*.


Maturity Score
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
SC52
SC51
SC49
SC50
SC48
SC47
SC41
SC42
SC45
SC46
SC43
SC44
SC40
SC39
SC38
SC37
SC35
SC32
SC33
SC34
SC36
SC28
SC27
SC29
SC31
SC30
SC26
SC25
SC24
SC21
SC23
SC22
SC20
SC15
SC19
SC18
SC14
SC17
SC16
SC13
SC12
SC11
SC9
SC10
SC6
SC8
SC7
SC5
SC4
SC3
SC2
SC1
SC0
24,25
17,22
4,20,21
Modal sequence with character state transformation
Sequence with character state transformation
Predicted, unobserved semaphoront
Support weight
1.74
SC17
Semaphoront number
N/A
Femoral size range (mm)
Semaphoront

Supplementary Figure 11. The left tarsus and pes of a fairly large individual of *Coelophysis bauri* (YPM 41197). Note that, despite its large size (estimated femur length = 177.9 mm; see main text) it possesses a clear line of suture between part of the astragalus and calcaneum, indicating that these two elements were not yet completely co-ossified at death. The tibia and fibula are also not co-ossified to the astragalus and calcaneum, although metatarsal III and tarsal III are completely co-ossified. The right scapula and coracoid of this individual are also completely co-ossified (not pictured).


10 CM

Supplementary Data 1. Specimen scores for 27 ontogenetic characters of *Coelophysis bauri*. All characters are arranged sequentially (that is, the first score is character 1, the second score is character 2, and so on); but note that characters 5, 11, 12, and 30 are exclusive to *Megapnosaurus rhodesiensis*, and so are skipped in the sequential order of characters. Individuals that were scored but possessed no specimen number are indicated by a number following a pound sign (#), listed by the museum which houses that individual. For specimen numbers that represent more than one individual, the scores of the different individuals are indicated by pound signs and sequential numbers following the specimen number.

AMNH FARB 2705	??????001????????????????
AMNH FARB 2706	??????0?0????????????????
AMNH FARB 2708	????????0????????????????
AMNH FARB 2704	?????????0?000????????????
AMNH FARB 2722	1 1??????????????????????
AMNH FARB 2750	1 ??????????????????????
AMNH FARB 30614	????????????????????1110??
AMNH FARB 30615	????????????????????1110??
AMNH FARB 30618	?????????111??1111????????
AMNH FARB 30576	????????????????????1000??
AMNH FARB 7238	??1????0101001?????111111
AMNH FARB 7230	?0110111?0?1101????????????
AMNH FARB 7232	??????0?????1?1??????1111??
AMNH FARB 7231	??????1?11010011???????????

AMNH FARB 7233	?1????100111110???????1????
AMNH FARB 7236	???????0???100????????????
AMNH FARB 7228	?1????01?111111??????10???1
AMNH FARB 7229	1 1????1?0111110??????1110??
AMNH FARB 7227	1 11???110101011????????????
AMNH FARB 7325	???????1??????????????????
AMNH FARB 7256	????????????????????111011
AMNH FARB 7234	??????110????????????1111??
AMNH FARB 7223	1 2?10110?111111??????1000??
AMNH FARB 7224	021????0?11?11????????0????
AMNH FARB 7249	?2????01?0?1111??1????0????
AMNH FARB 7248	??????11??????????????????
AMNH FARB 7244	0 ?????00010110???????100000
AMNH FARB 7245	???????1???1??1???????????
AMNH FARB 7246	??????01???????????????0?
AMNH FARB 7247	?????????101110????00111001
AMNH FARB 7251	??????00?101111????????????
AMNH FARB 7253	????????????????????110011
AMNH FARB 7250	????????????????????111011
AMNH FARB 7252	?1????000110?111?0?????????
AMNH FARB 30647	??0??????????????????????
AMNH FARB 7243	??????????????????11??????

AMNH FARB #1	?????????11011????????????
CM 89948	????????????????????10?0??
CM 89951	?????????????????????11000??
CM 89255	1 ?????????????????????????0
CM 81768	?21???000101101??????1000??
CM 81766	1200010??11100?????????00??
CM 81767	??0???00010110????????000?0
CM 81769	1 2?????????????????????????
CM 81770	???????????10????????1100??
CM 81768 #2	???101?????????????????????1
CM 79083	?????????1111111111????????
CM 31390	12????110??????????????????
CM 81768	?1???????????????????????????
CM 81774	?2????10?101100??????0000?0
CM 81775	1 ?????100111?0?????????????
CM 81779	??????10?0???????????100011
CM 81778	?????????100110????????????
CM 76863	???????????11??11??????????
CM 31390	?2?????????????????????????
CM 89952	?????????0??000????????????
CM 81773	11????1??111111????????????
CM 81771	12????11?111111??????11100?

CM 89950	?????????111?1?111????????
CM 89954	1??????????????????????????
CM 89958	??????????????????????????
CM #1	????????????????????1110??
CM #2	??1??????????????????????
CM #3	?????????110110????????????
CM #4	???????????1???1110????????
CM #5	??????111??????????????????
CMNH 10971 #1	1 ?????10?111111??????1000?0
CMNH 10971 #2	1 ?????10?0?1?????????1100??
CMNH 10971 #3	1 2????11?101111??????1100??
CMNH 10971 #4	??????10?110000????????????
CMNH 10971 #5	1 ????????101?0????0??1000??
CMNH 10971 #6	??????1??111010????????????
CMNH 10971 #7	??????11??????????????????
CMNH 10971 #8	??????????????????????????11
CMNH 10971 #9	????????????????????11110??
CMNH 10971 #10	????????????????????11010??
CMNH 10971 #11	??????0?0??????????????????
CMNH 10971 #12	??????????????????????????11
CMNH 10971 #13	????????????????????1????00
CMNH 10971 #14	????????????????????1000??

CMNH 10971 #15	??1??????10111111111001010??
CMNH 10971 #16	1 2????111????????????????????
CMNH 10971 #17	1 2????111????????????????????
CMNH 10971 #18	????????????1111111??????????
CMNH 10971 #19	????????????101??1????????????
CMNH 10971 #20	????????????101??1????????????
CMNH 10971 #21	??????10?1011?1????????????
CMNH 10971 #22	????????????????????1010?0
CMNH 10971 #23	??????????????111?????????
CMNH 10971 #24	??????????????????????????11
GR 649	1 2?????1??????????????1110??
GR 650	????????????????????0000??
GR 651	????????????????????00?0??
GR 652	??1???????????????????????
GR 653	1 ?????111????????????????????
GR 654	????????????10111????????????
GR 148	?2?????11111?1???11????0???
GR 655	????????????100000????????????
GR 656	????????????????????????00
GR 657	????????????????????0000??
HMCZ 4334 #1	????????????11????????????1
HMCZ 4334 #2	1 1????111101111???1??1???10

HMCZ 4334 #3	?1??????????????????????
HMCZ 4331 #1	?2????10?11??11??????1????1
HMCZ 4331 #2	?????????10???1???????????
HMCZ 4331#3	??????????????????????????1
HMCZ 4331 #4	??????1??111111???????????1
HMCZ 4332 #1	????????????????1???????????1
HMCZ 4332 #2	?1????11?111?1??11??1?1??11
HMCZ 4332 #3	?????????11111????????????
HMCZ 9433	????????????????????00????1?
MNA V1960 #1	?????????101110????????????
MNA V1960 #2	???????0?101??1?????1111???
MNA V1960 #3	?????????111??????????1???0
MNA V1960 #4	????????????????????1000??
MNA V3318	?10???10?10?????????1111000
MNA #1	?????????101???11??????????
MNA #2	????????????????111??????????
MNA #3	????????????????111??????????
MNA #4	???????1???????????????????
MNA #5	??????11?101?1111??????????
NMMNH P-42353	?001?1???1?0001????????????
NMMNH P-42578	??1??0?????????????????????
NMMNH P-42200	???1?1111111?1?1111?1111?11

NMMNH P-55336	??????111????????????????
NMMNH P-44552	?????????101111??????1?0???
NMMNH P-42352	?11??????1?1011?1011011????
NMMNH P-42351	?201??00011111?1111??1000??
NMMNH P-50537	?????????101111???????1????
NMMNH P-44554	??0????????????????????????
NMMNH P-55337	????????????????????1110??
NMMNH P-55344	?????????10111?1???????????
NMMNH P-50536	????????????????????11110?0
NMMNH P-42586	?0????000101?110000???????
NMMNH P-42577	??01?1?????????????????????
NMMNH P-42576	??1??????????????????????
NMMNH P-55345	????????????????????????01
NMMNH P-50535	????????????????????11??????
NMMNH #1	????????????????????11????
SMP VP 1072	?????????1010?1????????????
SMP VP 1306	11????000101110????????????
SMP VP 1180	???????0?101111????????????
SMP VP 858	12????1??101111??????111111
SMP VP 630	12????100101011???11??00001
SMP VP 1190	?2????111????????????????
SMP VP 3939	??????0??0?0000???????000??

SMP VP 3940	??????111????????????????
SMP VP 1230	???????????1??111??????????
SMP VP #1	????????????????0000????????
SMP VP #2	?????????0?0000????????????
SMP VP #3	12????11???1??1??????1000??
SMP VP #4	??0?????????????????11111011
SMP VP #5	1 2???????????????????????
SMP VP #6	???????00????????00??1?1?01
SMP VP #7	??11???????????????????????
SMP VP #8	???????0?111??110??????????
TMP 1984.063.0001 #1000	? ??0000?0000???000000000
TMP 1984.063.0001 #212	? ???11?101?111111?1111001
TMP 1984.063.0001 #3	??????00????????????????????
TMP 1984.063.0001 #4	??11???????????????????????
TMP 1984.063.0001 #5	??1???????????????????????
TMP 1984.063.0001 #6	??1???????????????????????
TMP 1984.063.0001 #7	????????????????????1?1011
TMP 1984.063.0001 #8	????????????????????1000??
TMP 1984.063.0001 #9	????????????????????001000??
TMP 1984.063.0001 #10	???????0???111?11?1????????
TMP 1984.063.0001 #11	????????????????????11110??
TMP 1984.063.0001 #12	?????????1011?????????????

TMP 1984.063.0001 #13 ??????101?????????????????

TMP 1984.063.0001 #14 ????????????????11?1????????

TMP 1984.63.11 ??????????????????????1??????

TMP 1984.63.6 ?????????10111111?1??1111?

TMP 1984.63.7 ??????????????????????1??????

TMP 1984.63.21 ????????????????????????1111??

Supplementary Data 2. Specimen scores for 32 ontogenetic characters of *Megapnosaurus rhodesiensis*. Individuals that were scored but possessed no specimen number are indicated by a number following a pound sign (#). For specimen numbers that represent more than one individual, the scores of the different individuals are indicated by pound signs and sequential numbers following the specimen number.

QG 691 #1 ??????????1000000000?00?????????

QG 727 ? ?????????0011111111111?????????

QG 9174 ? ?????????0000000000000?????????

QG 756 ? ?????????1?1111??1100??????????

QG 715 ??????????0000010000000?????????

QG 76 ? ????????????00011?0?10?????????

QG 733 ? ?????????111101111111?1?????????

QG 717 ? ?????????010000000000??????????

QG 714 ??????????0001?0100000??????????

QG 731 ? ?????????101111111110??????????

QG 729 ? ?????????1?1??1??111???????????

QG 725 ??????????101101??111??????????

QG 726 ??????????10110111111111?????????

QG 716 ??????????0?0100?0100?0?????????

QG 7131 ????????????000???????????????

QG 732 ??????????1?1?????1?1??????????

QG 737 ????????????1??11???1??????????

QG 755 ??????????10110111111111?????????

QG 753 ??????????101101??11111?????????

QG 760 ??????????000101111111?????????

QG 754 ??????????10110111111111?????????

QG 743 ??????????000??0??000??????????

QG 741 ??????????01??????1?0??????????

QG 745 ???????????0000000??00?????????

QG 748 ???????????????00????0?????????

QG 728 ??????????111101??111?1?????????

QG 691 #2 ??????????0000000000000?????????

QG 738 ??????????00010?00000??????????

QG 740 ??????????000001000000??????????

QG 739 ??????????00000000000??????????

QG 742 ??????????00000000000??????????

QG 713 ??????????0000000000000?????????

QG1 12110110111111111111111111000???

QG 174c	??????????1??100??0100??????????
QG 174a	??????????000000???00???????????
QG 735	??????????1?1?????1?1???????????
QG 805	??????????????????????????1111001??
#1?	??????????????????????????0000?00
QG 761	??????????????????????????0??00???
QG 794	??????????????????????????000???
QG 793	??????????????????????????0?0???
QG 801	??????????????????????00???????
QG 799	??????????????????????00???????
QG 798	??????????????????????00???????
QG 790	??????????????????????00???????
QG 797 #1	??????????????????????00???????
QG 797 #2	??????????????????????????1100???
QG 791	??????????????????????00???????
QG 788	??????????????????????????0?0???
QG 765	??????????????????????????0?0???
QG 814	??????????????????????????0?0???
QG 800	??????????????????????11???????
#4	??????????????????????00???????
QG 806	??????????????????????????1110???
QG 803	??????????????????????????1000???

QG 768	??????????????????????????0000???
QG 799 #2	??????????????????????????1100???
QG 795	??????????????????????????0?????
QG 802	??????????????????????????1000???
QG 764	??????????????????????????0?0???
QG 169	??????????????????????????11???????
QG 792	??????????????????????????00?0?0???
QG 771	??????????????????????????1000???
QG 767	??????????????????????????1??0???
QG 772	??????????????????????????00???????
QG 766	??????????????????????????10???????
QG 691 #3	??????????????????????????10???????
QG 763	??????????????????????????00???????
QG 773	??????????????????????????00???????
QG 762	??????????????????????????00???????
QG 691#4	??????????????????????????00???????
QG 816	??????????????????????????0?0????
QG 787	??????????????????????????0?0????
#2	??????????????????????????0?0????
#3	??????????????????????????1?0????
QG 816 #2	??????????????????????????00?????
QG 820	??????????????????????????00?????

QG 818	??????????????????????????00?????
QG 776	??????????????????????????0?0??
QG 777	??????????????????????????0?1??
#6	??????????????????????????0?1??
QG 813	??????????????????????????0?1??
QG 811	??????????????????????????0?0??
QG 812	??????????????????????????0?1??
QG 808	??????????????????????????0?0??
QG 807	??????????????????????????0?1??
#5	????????????????????????????????0
QG 1029	????????????????????????????????11
QG 912	????????????????????????????????00
QG 1050	????????????????????????????????11
QG 768 #2	??????????????????????????0000??0
QG 941	????????????????????????????????11
QG 782	??????????????????????????10?????
QG 817	??????????????????????????0?0????
QG 785	??????????????????????????00?????
QG 781	??????????????????????????000????
QG 783	??????????????????????????100????
QG 885	????????????????????????????????0
QG 768 #3	??????????????????????????0000?00

QG 691 #5	??????????????????????00???????
QG 796	??????????????????????11???????
QG 127/E	????????????????????????????1??
#7	????????????????????????????0??
QG 3A	??????????????????????11???????
#8	??????????????????????????0000???
#9	??????????????????????????0?0???
#10	??????????????????????00???????
#11	??????????????????????????0000???
#12	??????????????????????00000???
QG 700	???????00??????????????????????
QG 692	???????00??????????????????????
QG 698	???????00??????????????????????
QG 699	???????000?????????????????????
QG 691 #6	???????000?????????????????????
QG 697	???????000?????????????????????
#13	1??????????????????????????????
QG 706	????????00??????????????????????
#14	???????0?0??????????????????????
QG 705	????????00??????????????????????
QG 707	????????00??????????????????????
QG 701	???????0?0??????????????????????

#15	???????000?????????????????????
QG 695	12?????111?????????????????????
QG 179 #1	?0?????????????????????????????
QG 45	?????????????10????????????????
QG 3A #2	??????????111101??111??11???????
QG 193	??1??????????????????????????????
QG 512	??0??????????????????????????????
QG 517	??0??????????????????????????????
QG 518/B	??0??????????????????????????????
QG 519	??0??????????????????????????????
QG 515	??0??????????????????????????????
QG 528	??0??????????????????????????????
QG 524	??0??????????????????????????????
#16	??0??????????????????????????????
QG 527	??1??????????????????????????????
QG 526	??0??????????????????????????????
QG 521	??0??????????????????????????????
QG 526	??0??????????????????????????????
QG 522	??0??????????????????????????????
QG 535	???1111?????????????????????????
QG 548	???0001?????????????????????????
QG 514	???1111?????????????????????????

QG 541	???1001??????????????????????????
QG 546	???100??????????????????????????
QG 543	???1111??????????????????????????
QG 544	???0000??????????????????????????
QG 517	???0000??????????????????????????
QG 536	???101??????????????????????????
QG 551	???10?1??????????????????????????
QG 545	???0000??????????????????????????
QG 524/B	???0001??????????????????????????
QG 514	???1111??????????????????????????
#17	???0001??????????????????????????
#18	??????????1010000000000??????????
#19	???????00??????????????????????
QG 179 #2	?1?????00????0000????0??????????
QG 127/E	???????101??????????????????????
#20	???????000?0010000?????????????
#21	??1??????????????????????????????
#22	12??????????????????????????????
QG 693	12??????????????????????????????
QG 694	???????1??????????????????????????
#23	?0??????????????????????????????
QG 696	12?????111??????????????????????

QG 5164 ??????????????????????????0?????

QG 770 ????????????????????????11?100???

QG 174 #1 ????????????????????????11?1?????

QG 174 #2 ????????????????????????????????

QG 174 #3 ????????????????????????????0?0???

QG 174 #4 ????????????????????????????1000???

QG 174 #5 ??1????????????????????????????

QG 174 #6 ???????00????????????????????????

QG 174 #7 ??????????????????????????????????11

QG 174 #8 ????????????????????????100????

QG 174 #9 ?????1??????????????????????0?0???

QG 174 #10 ??1100????????????????????????????

QG 174 #11 12?0011?0????????????????????????

QG 174 #12 ?????1????????????????????????????

QG 174 #13 ????????????00????00???????????

QG 174 #14 ????????????1?111?1??1?????????

QG 174 #15 ???100????????????????????????????

QG 174 #16 12??????0????????????????????????

Supplementary Data 3. NEXUS file of *Coelophysis bauri* specimens used for the full-body, 27-character ontogenetic sequence analysis. See attached NEXUS file.

Supplementary Data 4. NEXUS file of *Coelophysis bauri* specimens used for the femoral character ontogenetic sequence analysis. See attached NEXUS file.

Supplementary Data 5. NEXUS file of *Megapnosaurus rhodesiensis* specimens used for the femoral character ontogenetic sequence analysis. See attached NEXUS file.

Supplementary Data 6. NEXUS file of *Coelophysis bauri* specimens used for the tibial, tarsal, and pedal character ontogenetic sequence analysis. See attached NEXUS file.

Supplementary Data 7. NEXUS file of *Megapnosaurus rhodesiensis* specimens used for the tibial and tarsal character ontogenetic sequence analysis. See attached NEXUS file.

Supplementary Data 8. NEXUS file of *Megapnosaurus rhodesiensis* specimens used for the humeral character ontogenetic sequence analysis. See attached NEXUS file.

Supplementary Data 9. NEXUS file of *Coelophysis bauri* specimens used for the sacral and pelvic character ontogenetic sequence analysis. See attached NEXUS file.

Supplementary Data 10. NEXUS file of *Megapnosaurus rhodesiensis* specimens used for the sacral and pelvic character ontogenetic sequence analysis. See attached NEXUS file.

Supplementary Data 11. NEXUS file of *Coelophysis bauri* specimens used for the suture fusion character ontogenetic sequence analysis. See attached NEXUS file.

Supplementary Data 12. NEXUS file of *Coelophysis bauri* specimens used for the bone scar character ontogenetic sequence analysis. See attached NEXUS file.

Supplementary Table 1. Measurements taken from *Coelophysis bauri* specimens. All measurements in millimeters. “R” is right element, “L” is left element.

Supplementary Table 2. Measurements taken from *Megapnosaurus rhodesiensis* specimens. All measurements in millimeters. “R” is right element, “L” is left element.

Supplementary Table 3. Linear regressions used to estimate femoral length for *Coelophysis bauri* and *Megapnosaurus rhodesiensis*.