

5. Uzaklık temelli filogenetik çıkarım yöntemleri

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3 T T C A A T C A G G C C C G A
  | | | | | | | | | | | | | |
1 T C A A G T C A G G T T C G A
  | | | | | | | | | | | | | |
2 T C C A G T T A G A C T C G A
  | | | | | | | | | | | | | |
3 T T C A A T C A G G C C C G A
  
```

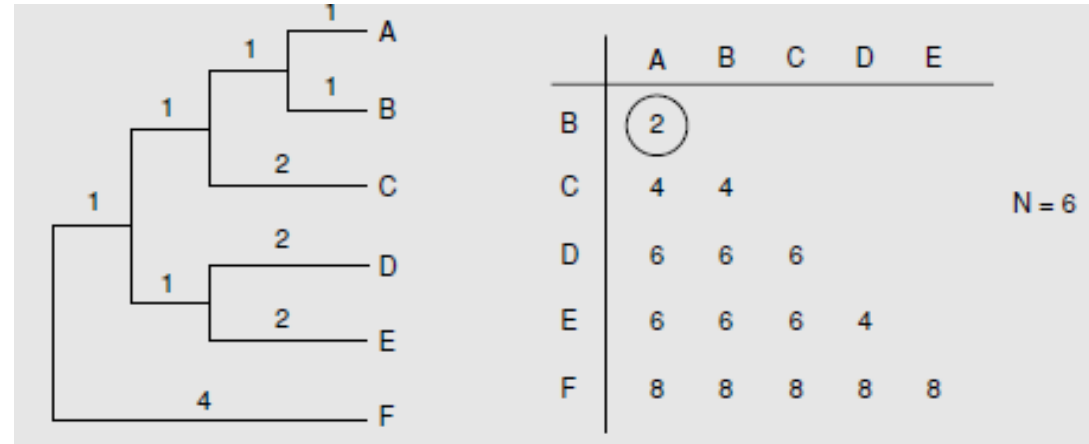
	1	2	3
2	0.266		
3	0.333	0.333	

Dissimilarities

↓

	1	2	3
2	0.328		
3	0.441	0.441	

Evolutionary distances



$$d_{(AB)C} = (d_{AC} + d_{BC})/2 = 4$$

$$d_{(AB)D} = (d_{AD} + d_{BD})/2 = 6$$

$$d_{(AB)E} = (d_{AE} + d_{BE})/2 = 6$$

$$d_{(AB)F} = (d_{AF} + d_{BF})/2 = 8$$

	(AB)	C	D	E
C	4			
D	6	6		
E	6	6	4	
F	8	8	8	8

$$d_{(DE)(AB)} = (d_{D(AB)} + d_{E(AB)})/2 = 6$$

$$d_{(DE)C} = (d_{DC} + d_{EC})/2 = 6$$

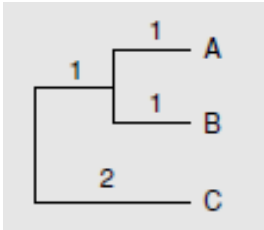
$$d_{(DE)F} = (d_{DF} + d_{EF})/2 = 8$$

	(AB)	C	(DE)
C	4		
(DE)	6	6	
F	8	8	8

$$N = N - 1 = 4$$

$$d_{(ABCDE)F} = (d_{(ABC)F} + d_{(DE)F})/2 = 8$$

	(ABC), (DE)
F	8

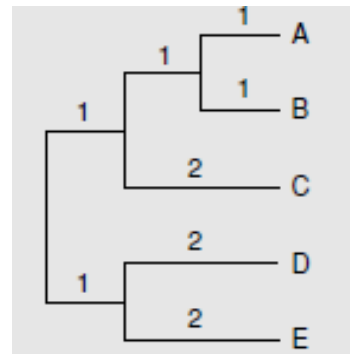


$$d_{(ABC)(DE)} = (d_{(AB)(DE)} + d_{C(DE)})/2 = 6$$

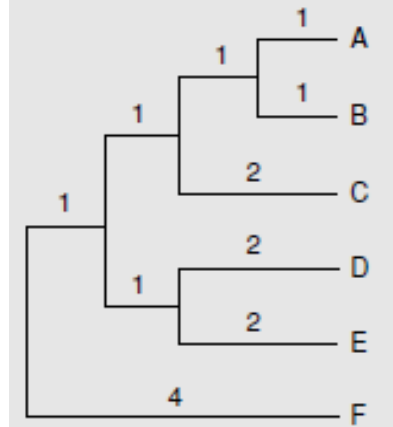
$$d_{(ABC)F} = (d_{(AB)F} + d_{CF})/2 = 8$$

	(ABC)	(DE)
(DE)	6	
F	8	8

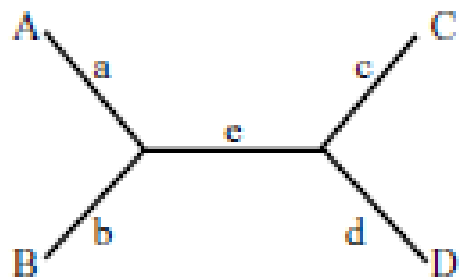
$$= N - 1 = 3$$



$$N = N - 1 = 2$$



$$d_{AB} + d_{CD} \leq \min (d_{AC} + d_{BD}, d_{AD} + d_{BC})$$



$$d_{AB} = a + b$$

$$d_{CD} = c + d$$

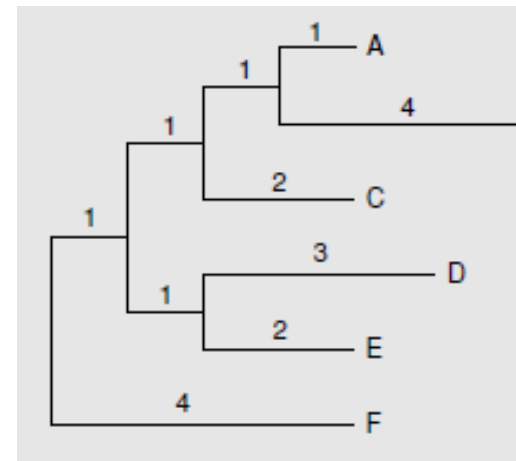
$$d_{AC} = a + e + c$$

$$d_{BD} = b + e + d$$

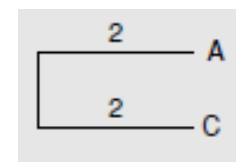
$$d_{AD} = a + e + d$$

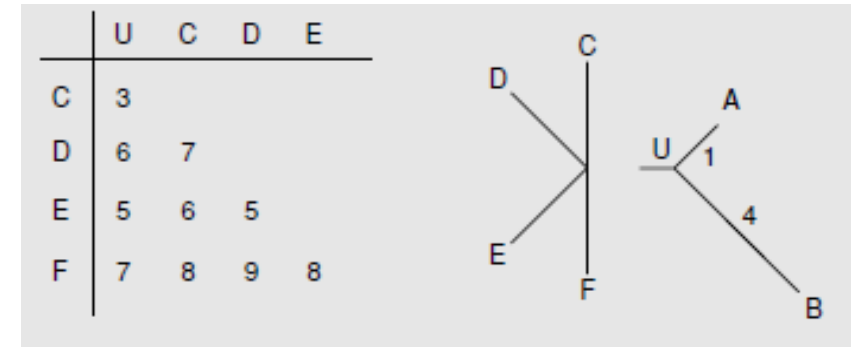
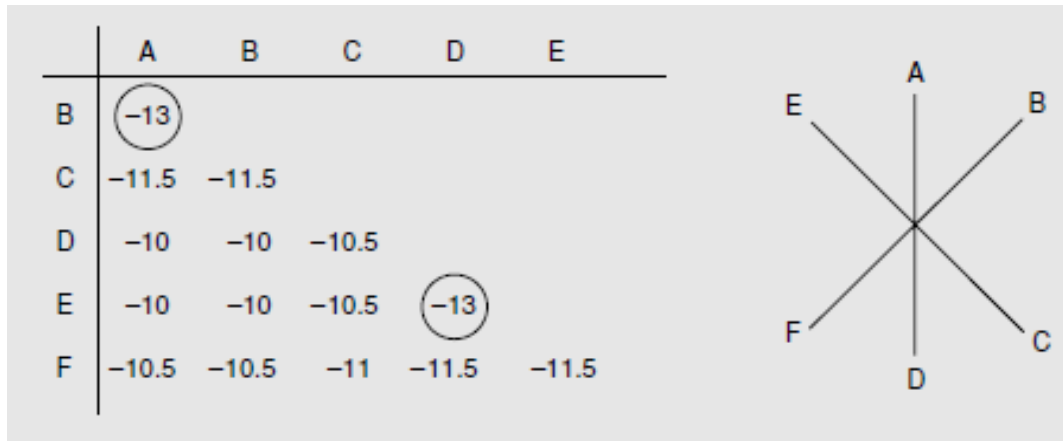
$$d_{BC} = b + e + a$$

$$(a + b + c + d) \leq \min [(a + b + c + d + 2c), (a + b + c + d + 2e)]$$



	A	B	C	D	E
B	5				
C	4	7			
D	7	10	7		
E	6	9	6	5	
F	8	11	8	9	8





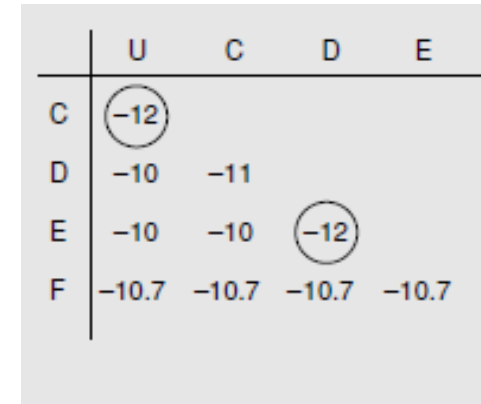
$$S_{AU} = d_{AB}/2 + (r_A - r_B)/2(N - 2) = 1$$

$$S_{BU} = d_{AB} - S_{AU} = 4$$

or alternatively

$$S_{BU} = d_{AB}/2 + (r_B - r_A)/2(N - 2) = 4$$

$$S_{AU} - d_{AB} - S_{BU} = 1$$

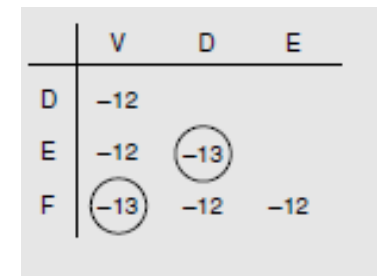


$$d_{CU} = (d_{AC} + d_{BC} - d_{AB})/2 = 3$$

$$d_{DU} = (d_{AD} + d_{BD} - d_{AB})/2 = 6$$

$$d_{EU} = (d_{AE} + d_{BE} - d_{AB})/2 = 5$$

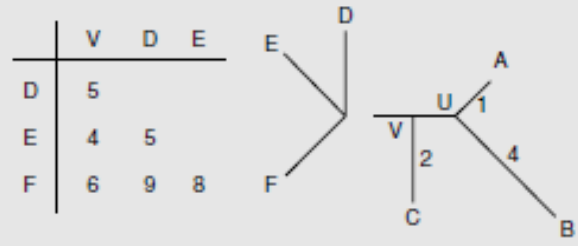
$$d_{FU} = (d_{AF} + d_{BF} - d_{AB})/2 = 7$$



$$d_{DV} = (d_{DU} + d_{CB} - d_{CU})/2 = 5$$

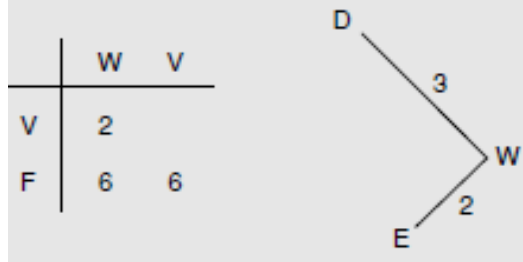
$$d_{EV} = (d_{EU} + d_{CB} - d_{CU})/2 = 4$$

$$d_{FV} = (d_{FU} + d_{CF} - d_{CU})/2 = 6$$

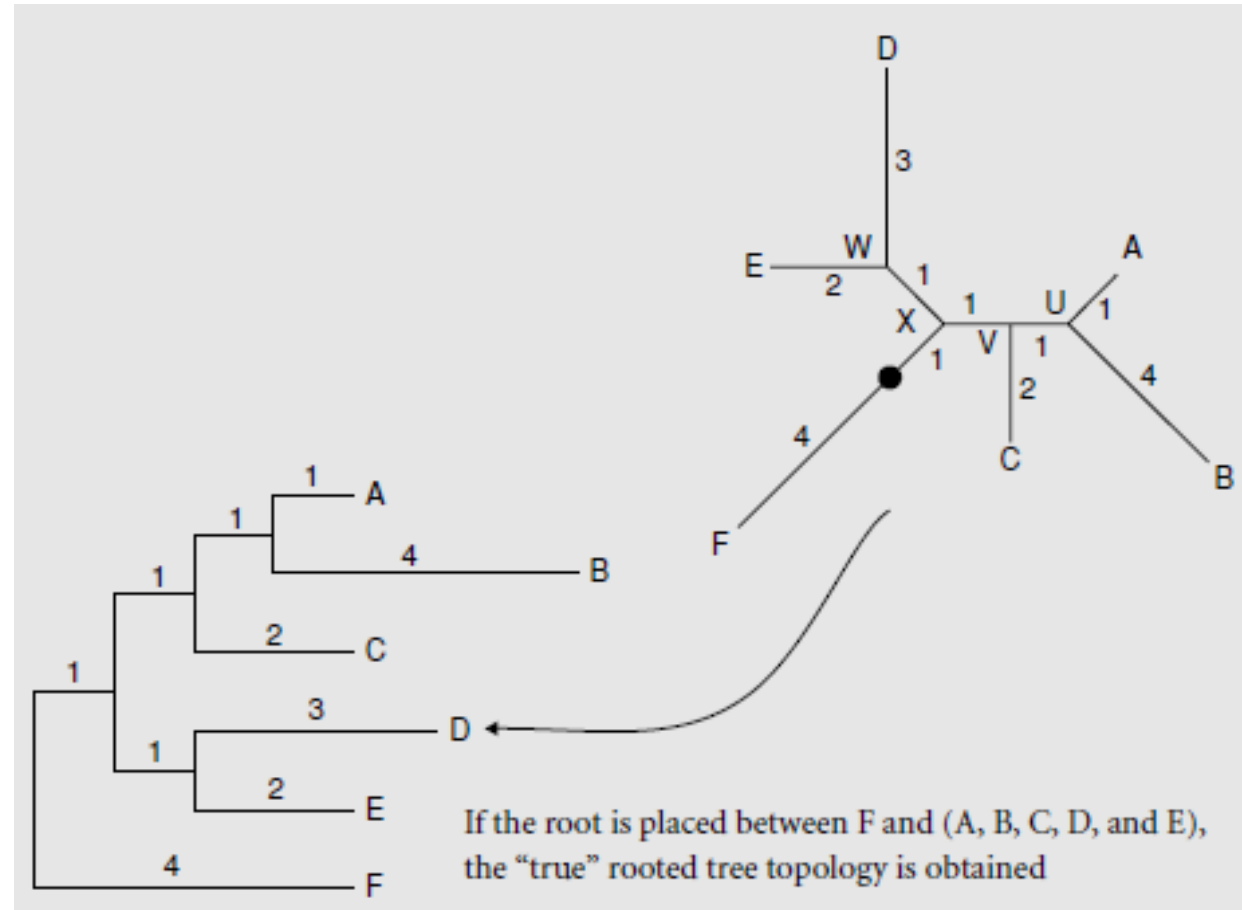


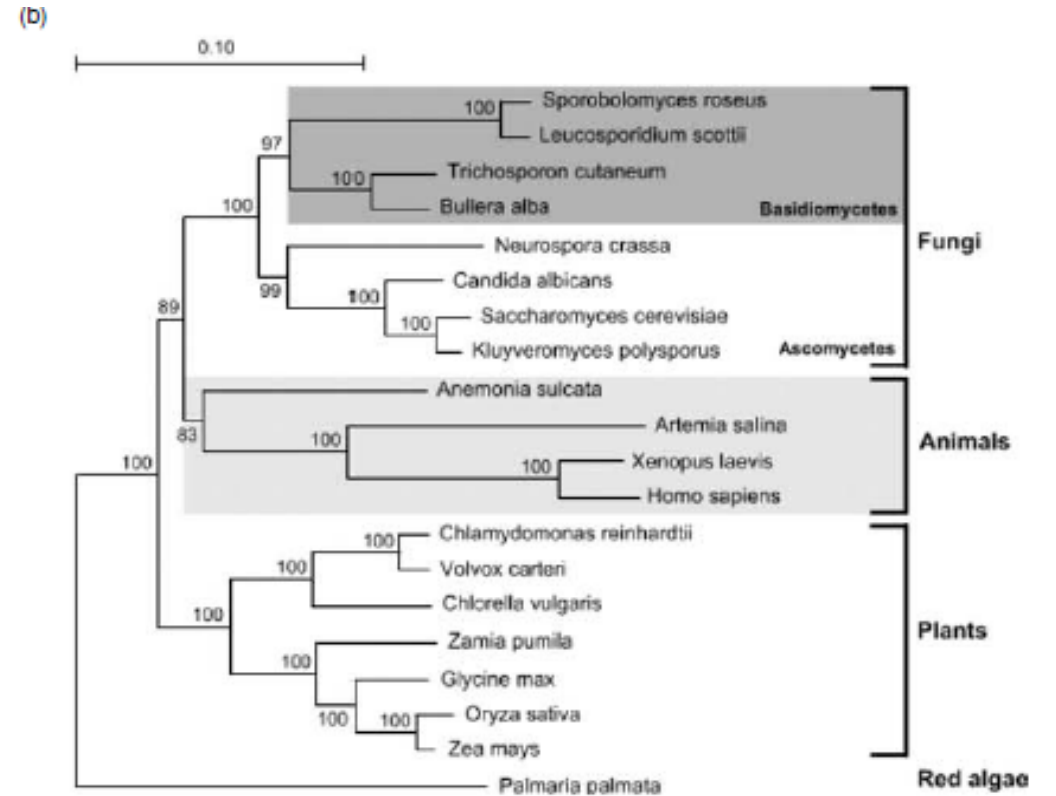
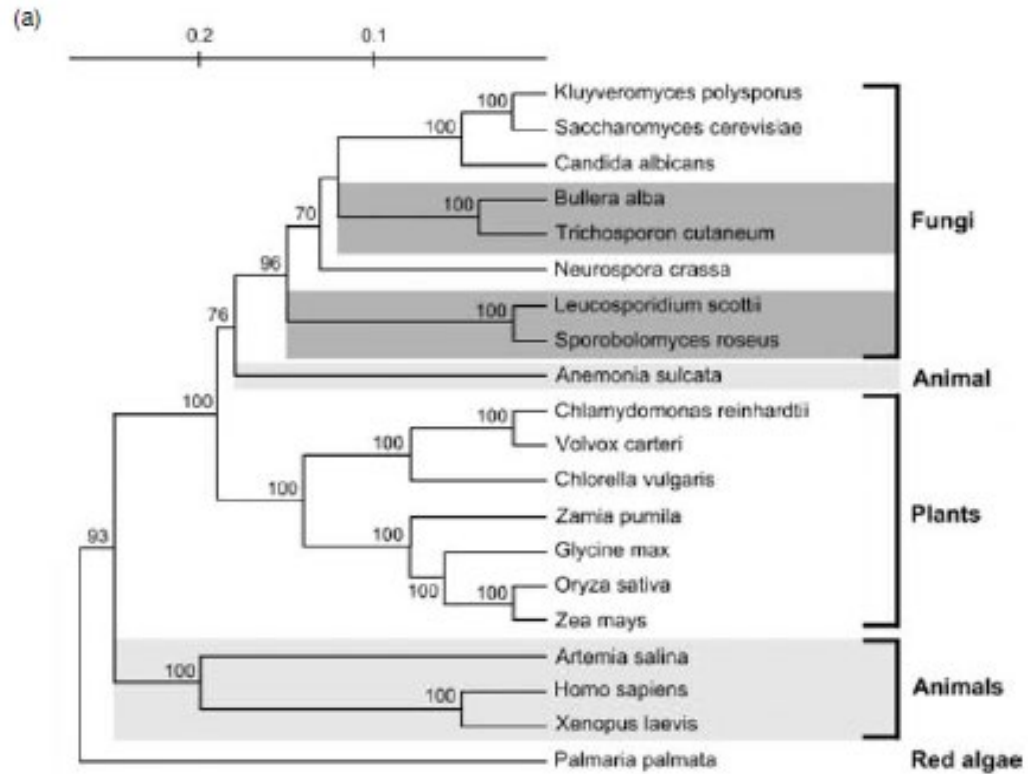
$$d_{VW} = (d_{DV} + d_{EV} - d_{DE})/2 = 2$$

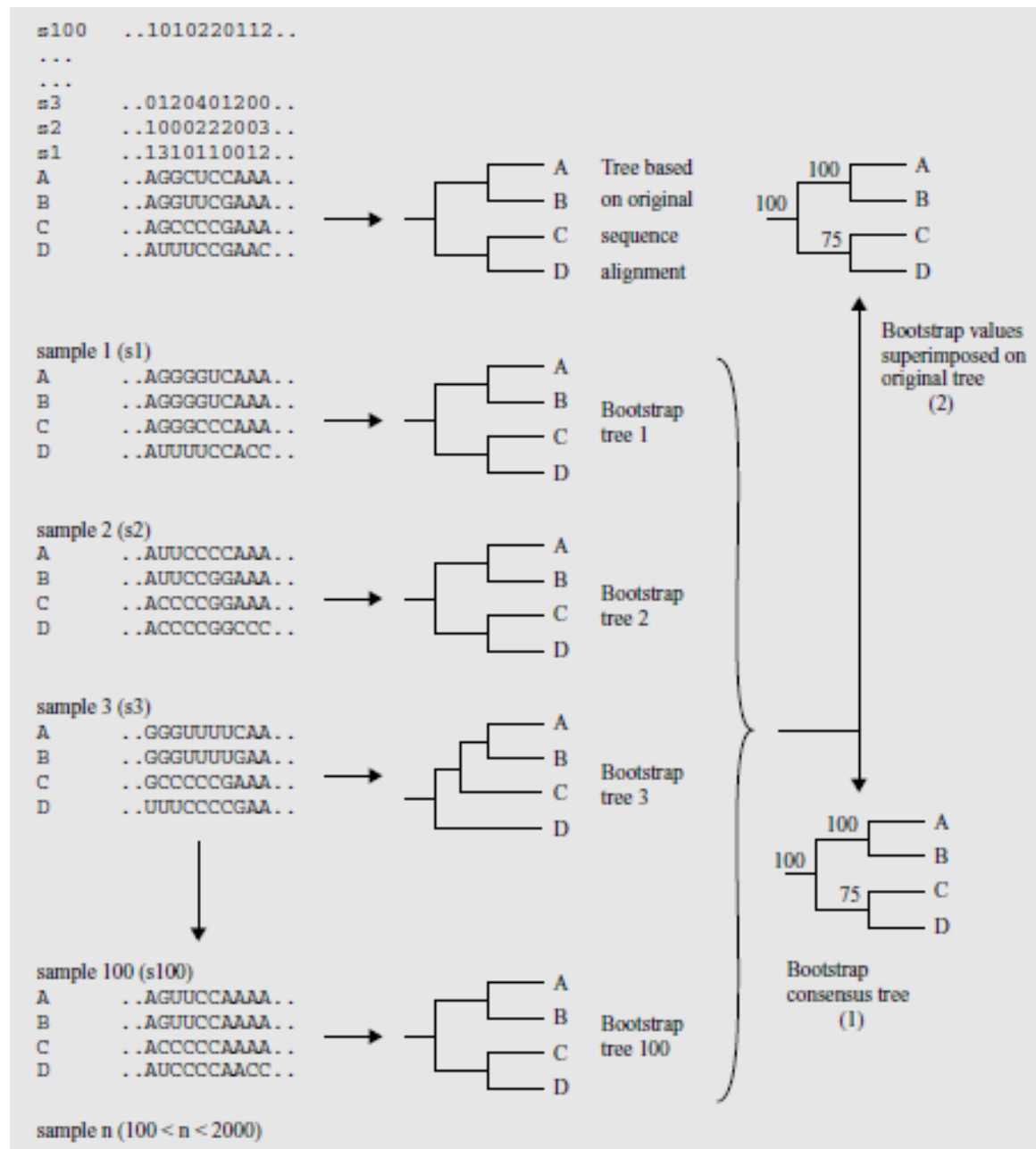
$$d_{FW} = (d_{DF} + d_{EF} - d_{DE})/2 = 6$$

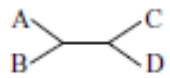


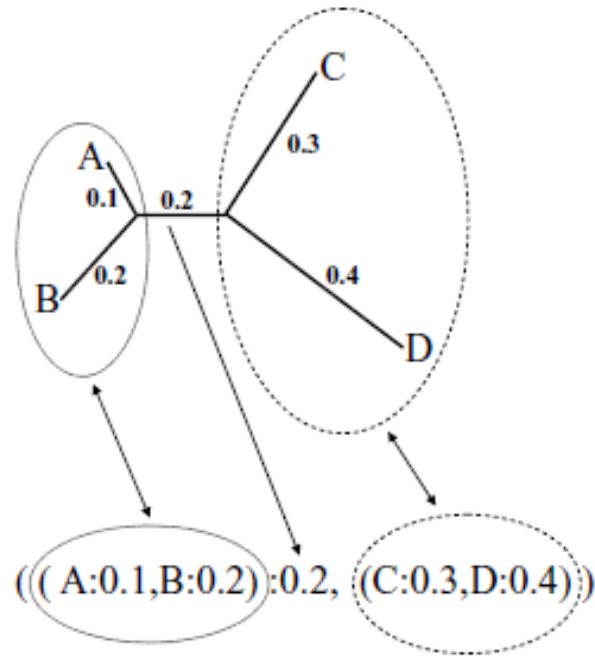
	W	V
V	(-14)	
F	(-14)	(-14)







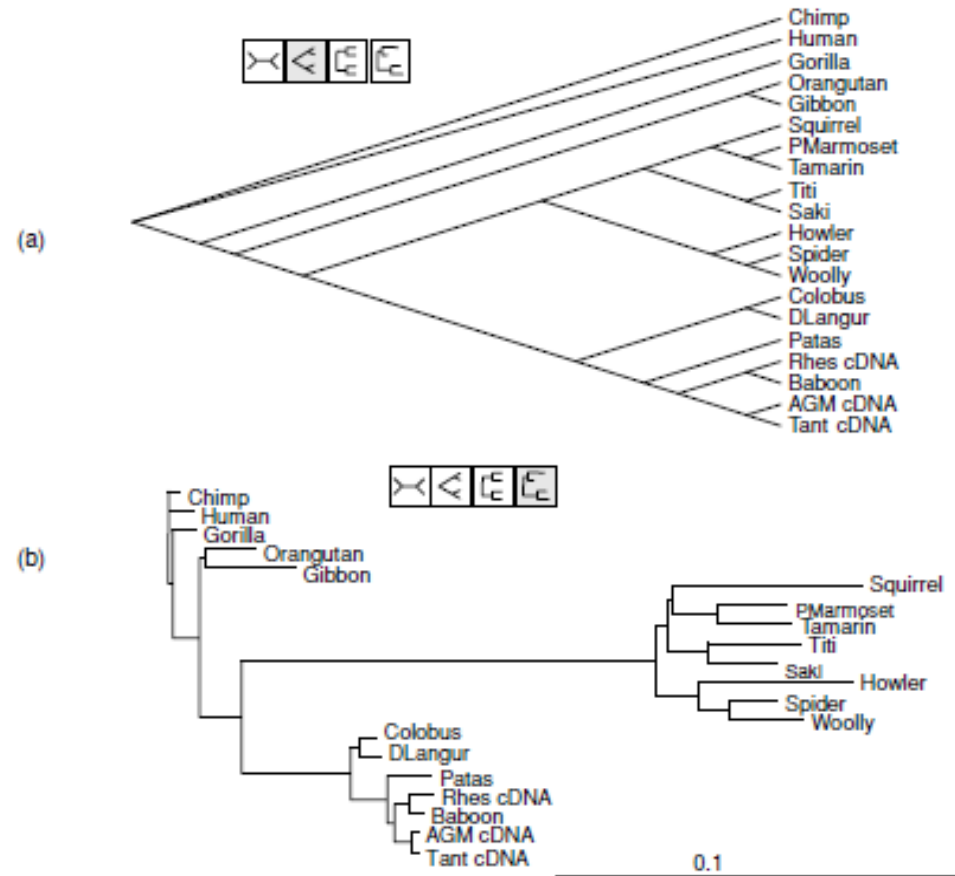
$((A,B),(C,D)) \equiv$ 

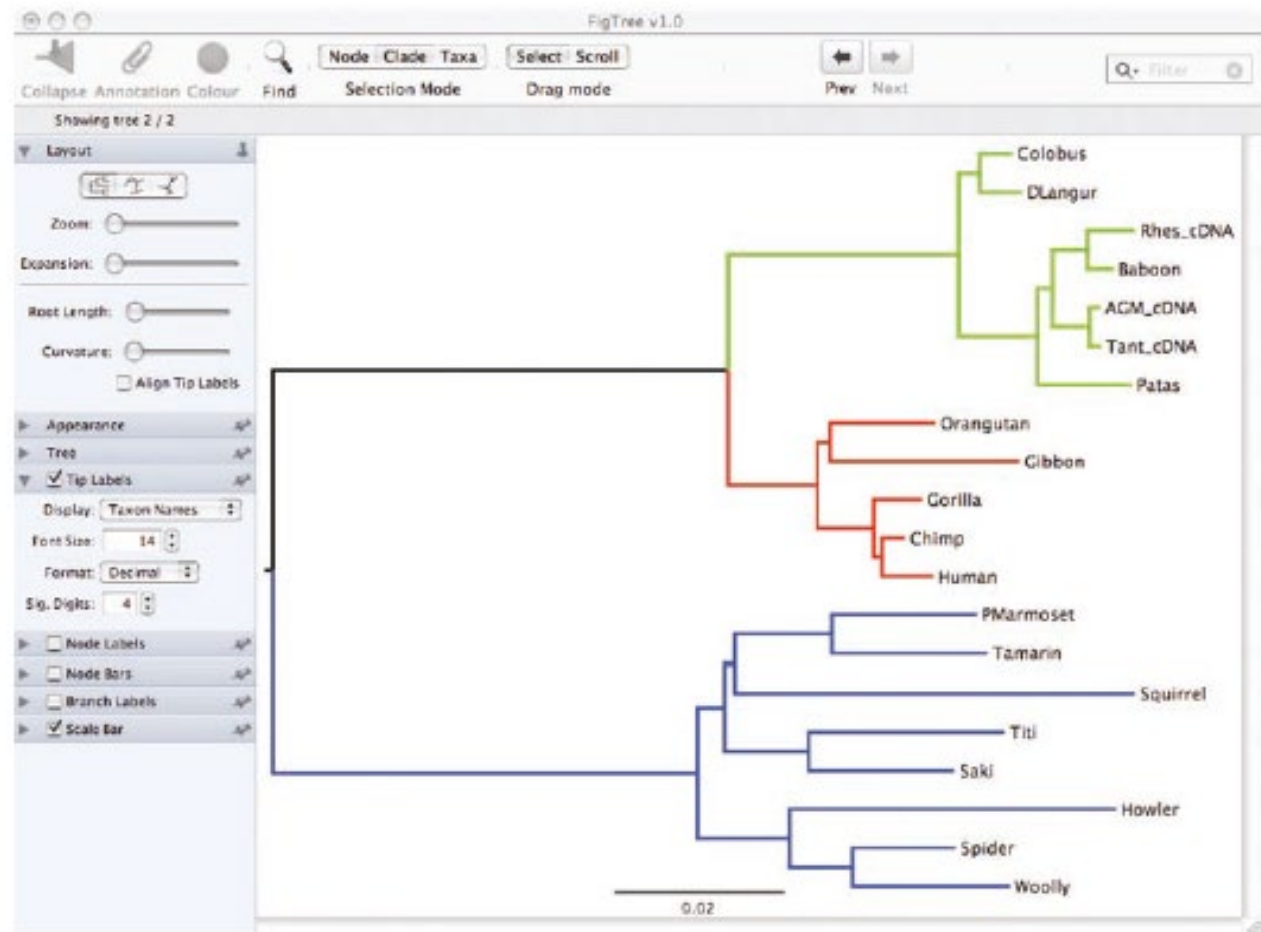
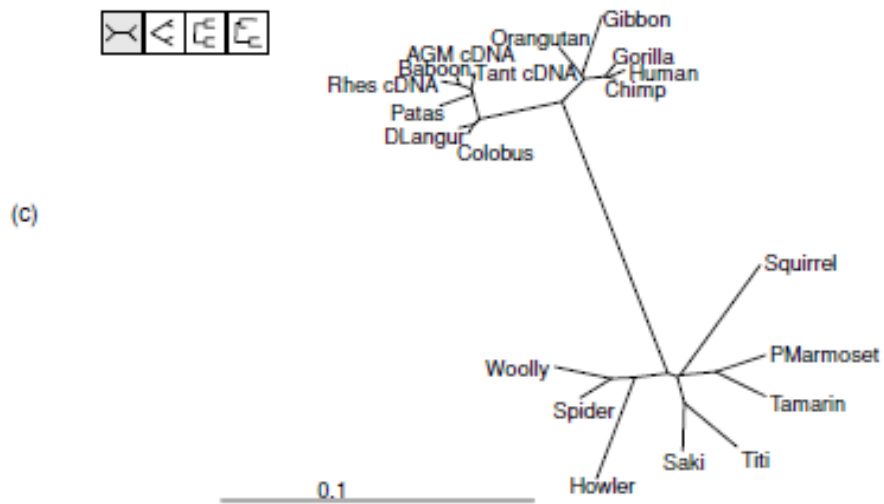


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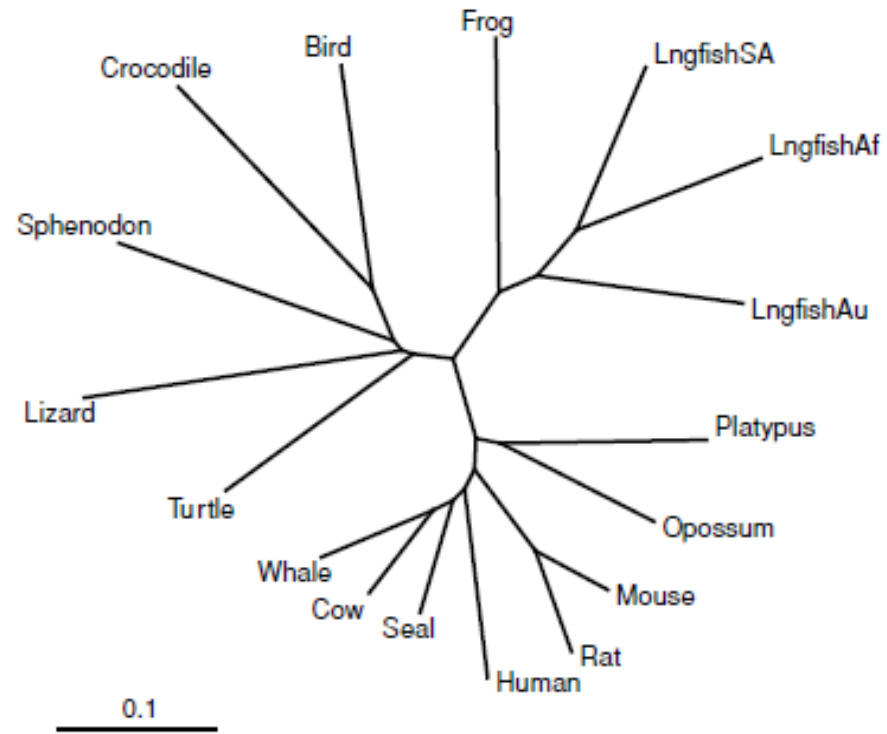
4 D,
;
tree PAUP_1 = [&U] ((1:0.1,2:0.2):0.2,(3:0.3,4:0.4));
End;

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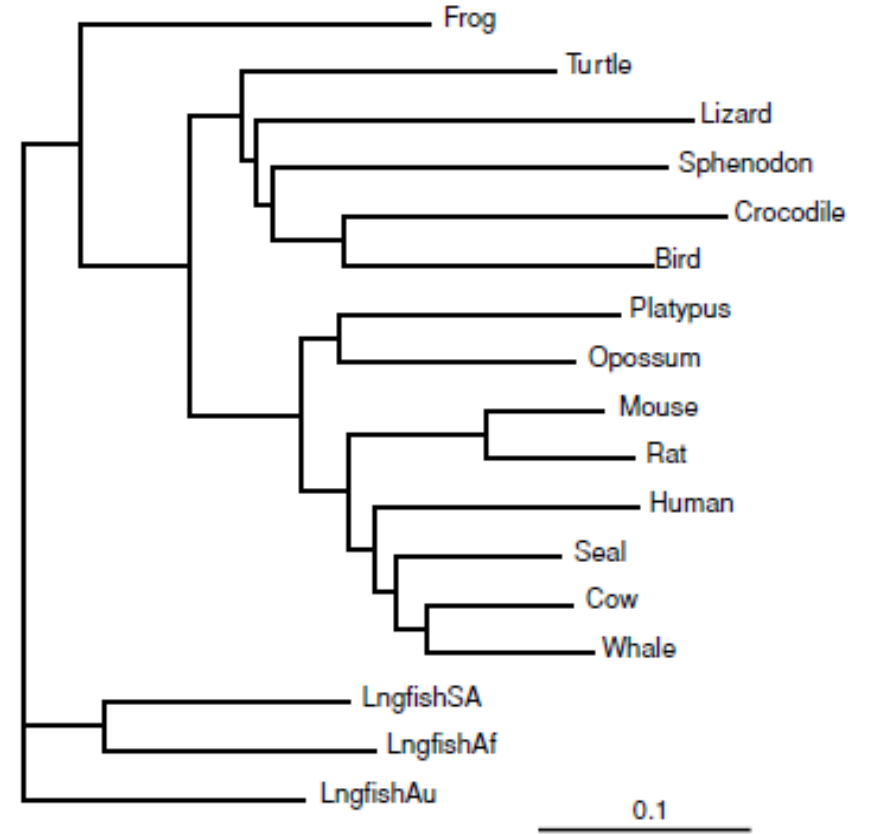


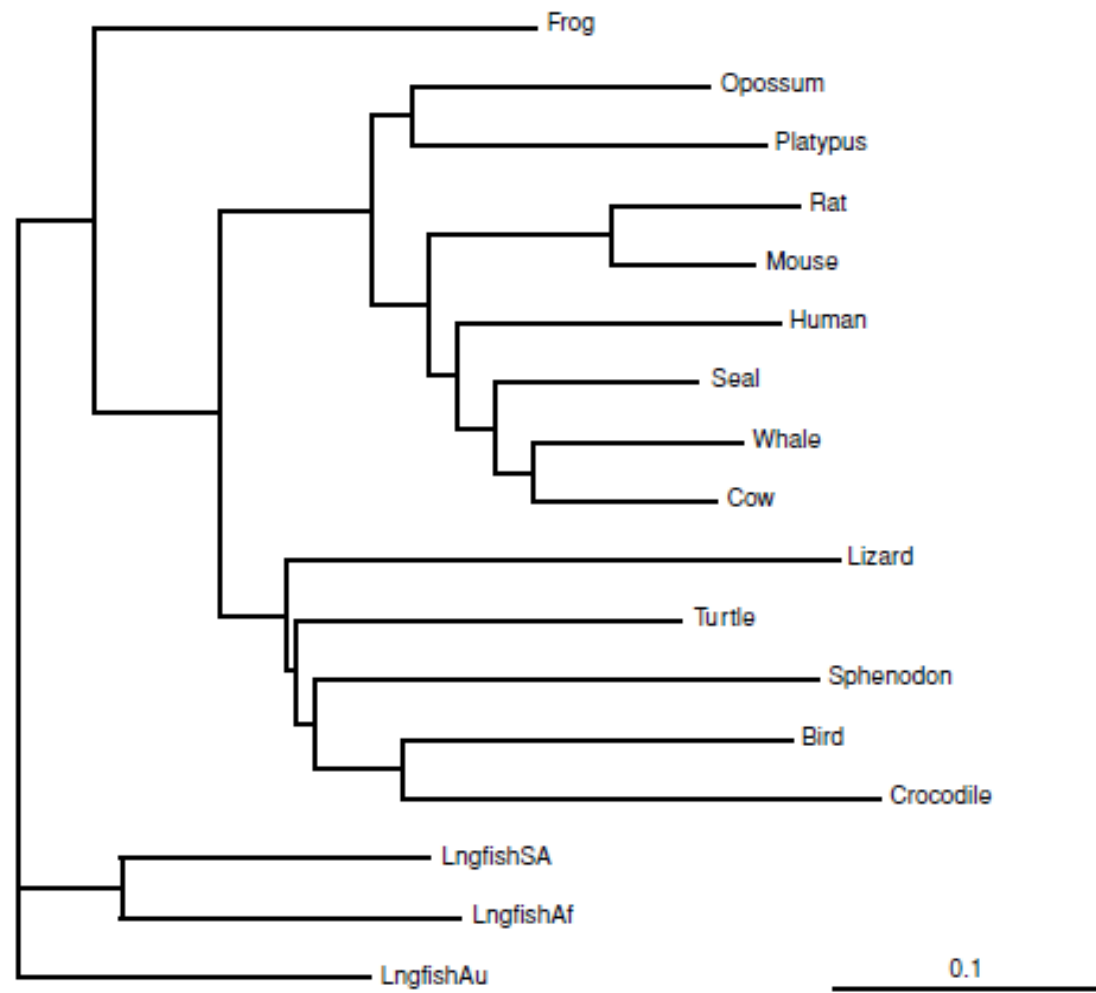


(a)

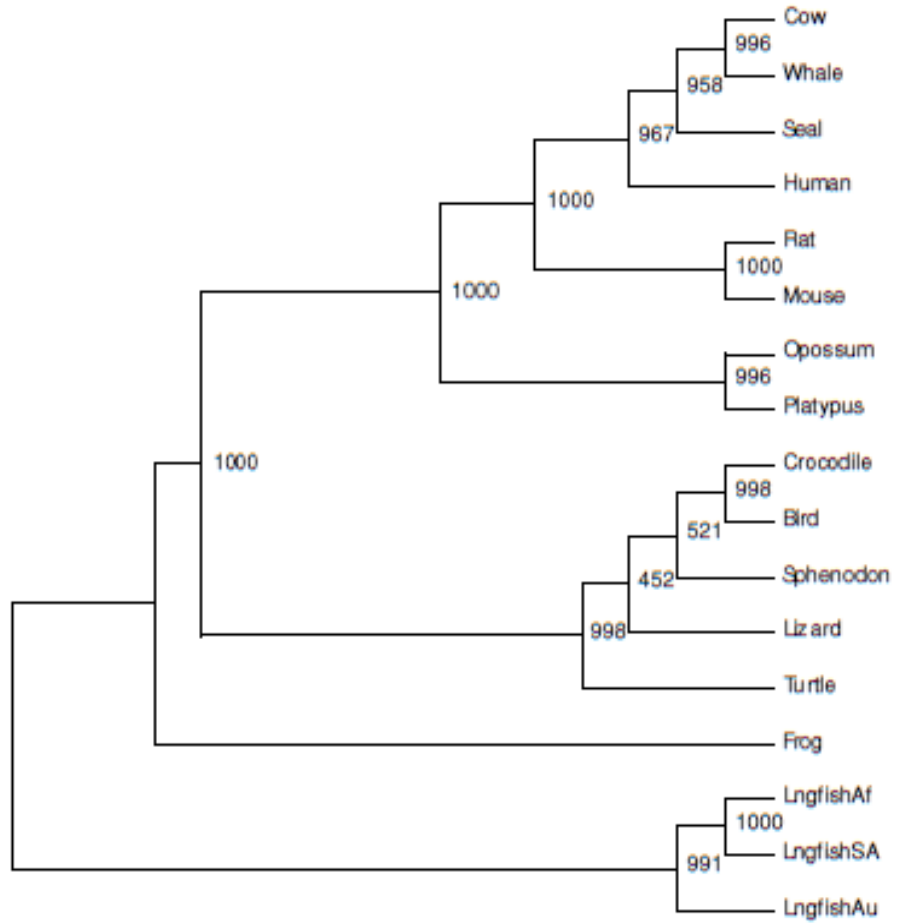


(b)

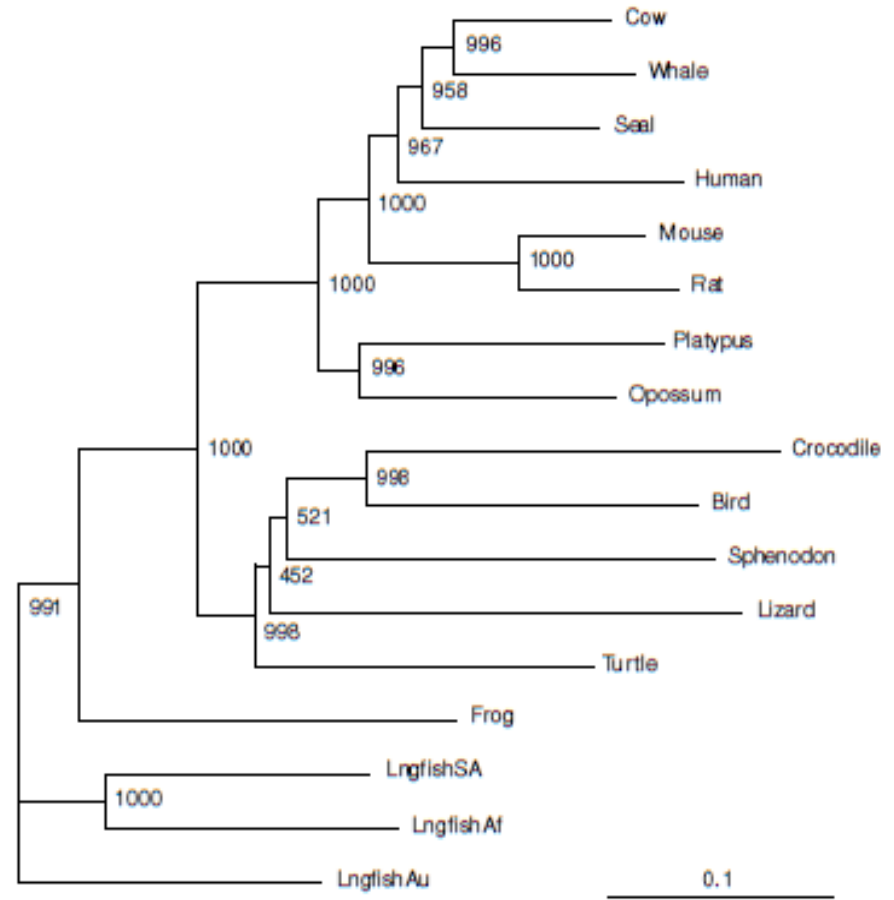




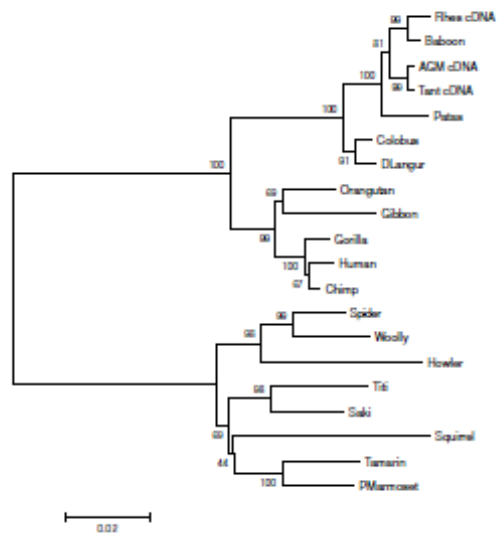
(a)



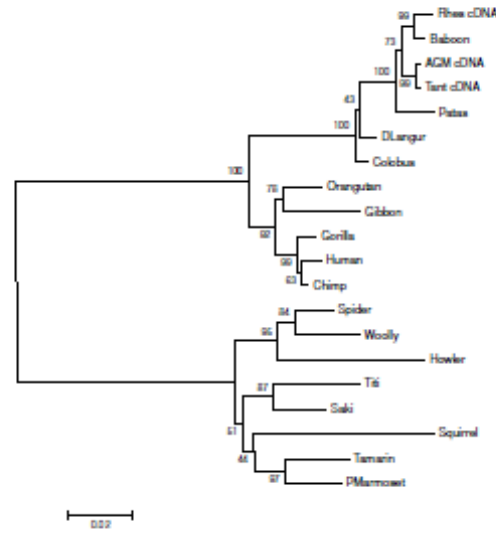
(b)



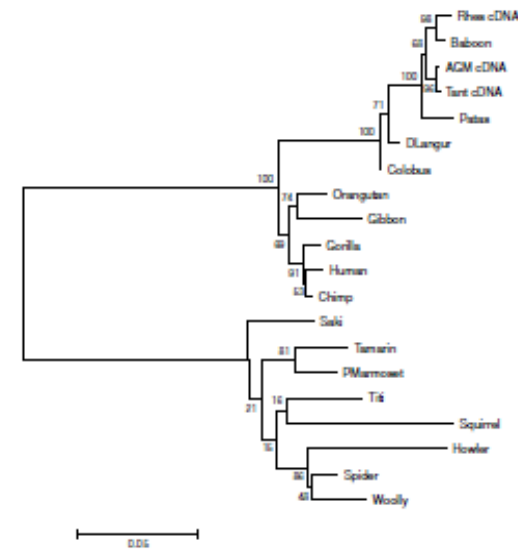
(a) K2P



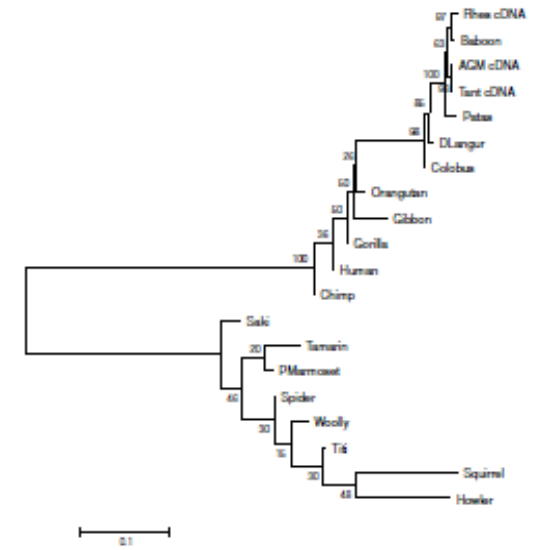
(b) K2P + Γ ($\alpha = 0.5$)



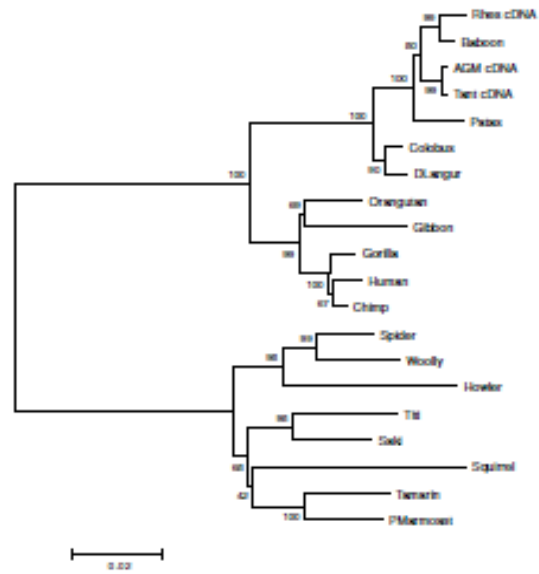
(c) K2P + Γ ($\alpha = 0.25$)



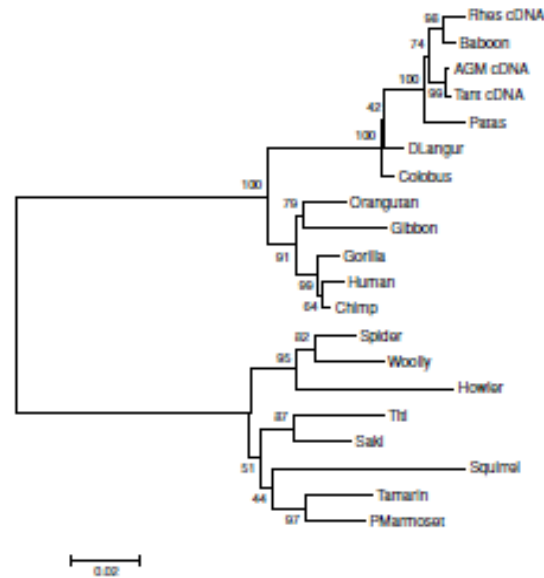
(d) K2P + Γ ($\alpha = 0.10$)



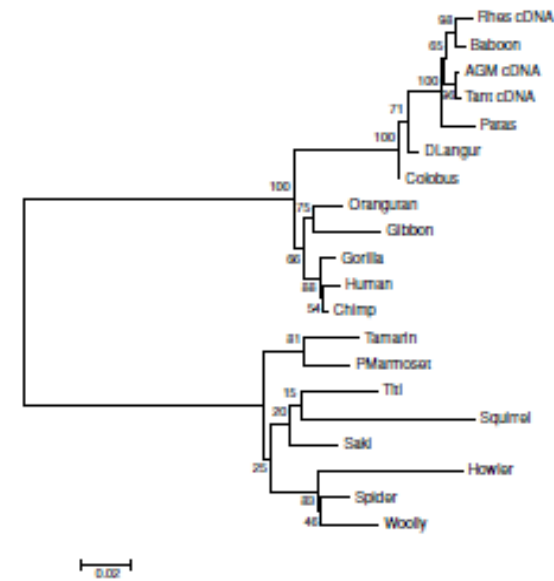
(e) TN



(f) TN + Γ ($\alpha = 0.5$)



(g) TN + Γ ($\alpha = 0.25$)



(h) TN + Γ ($\alpha = 0.10$)

