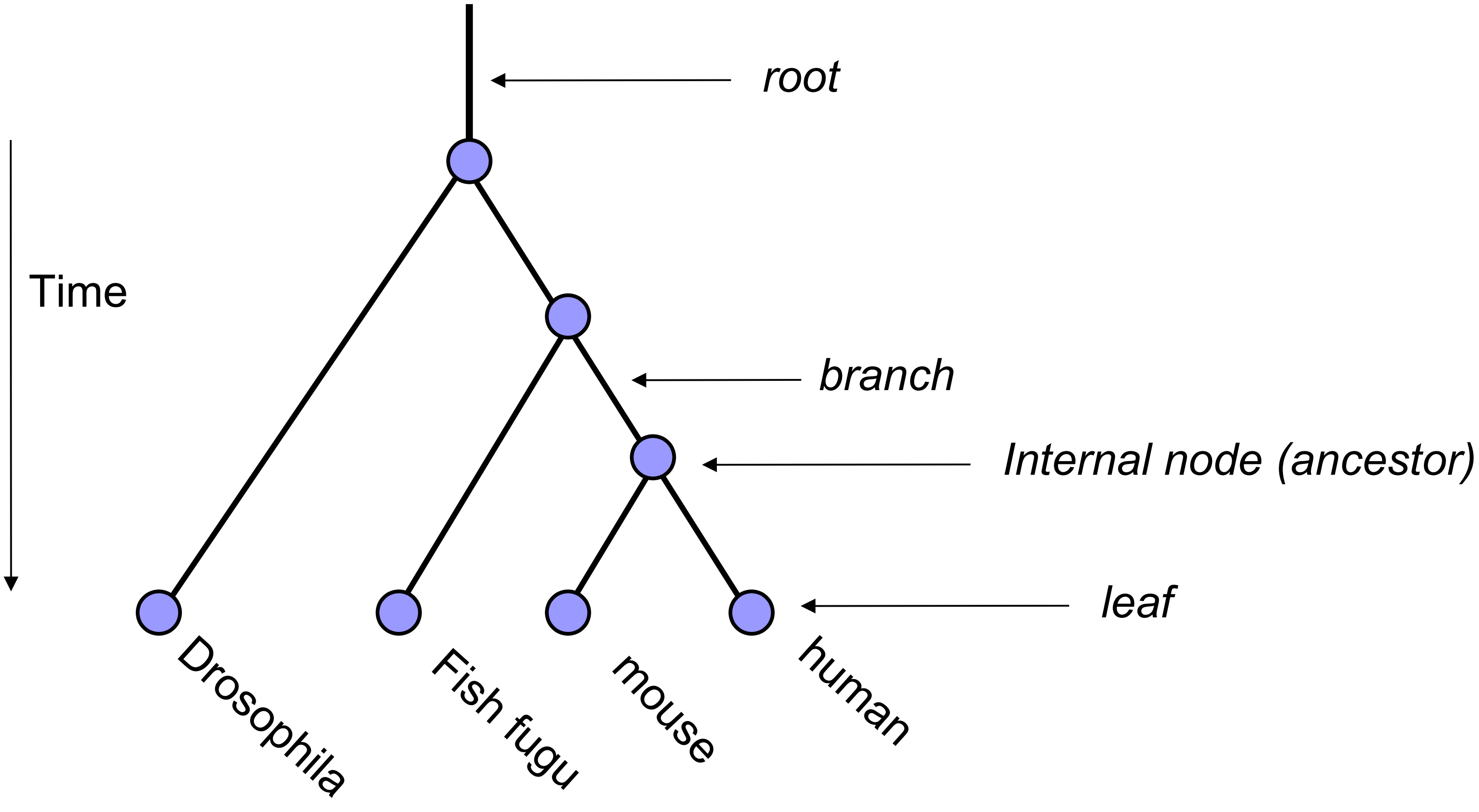
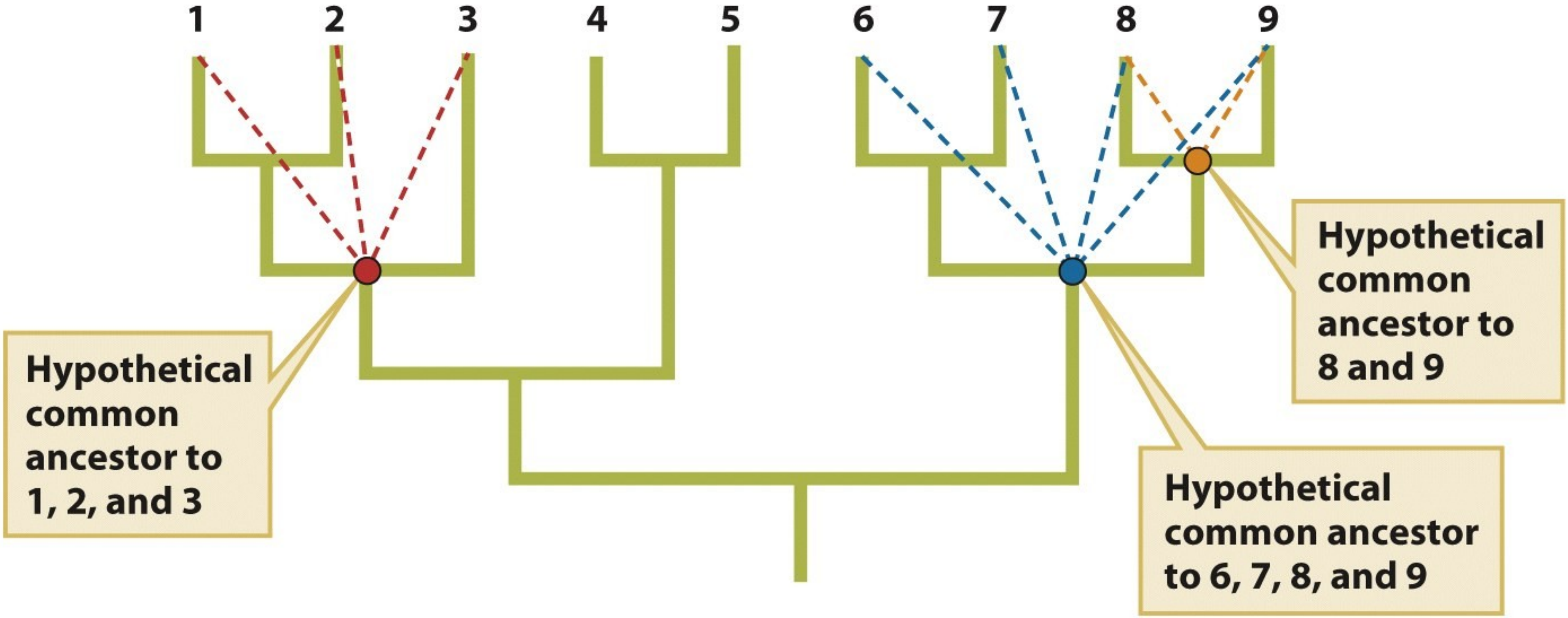
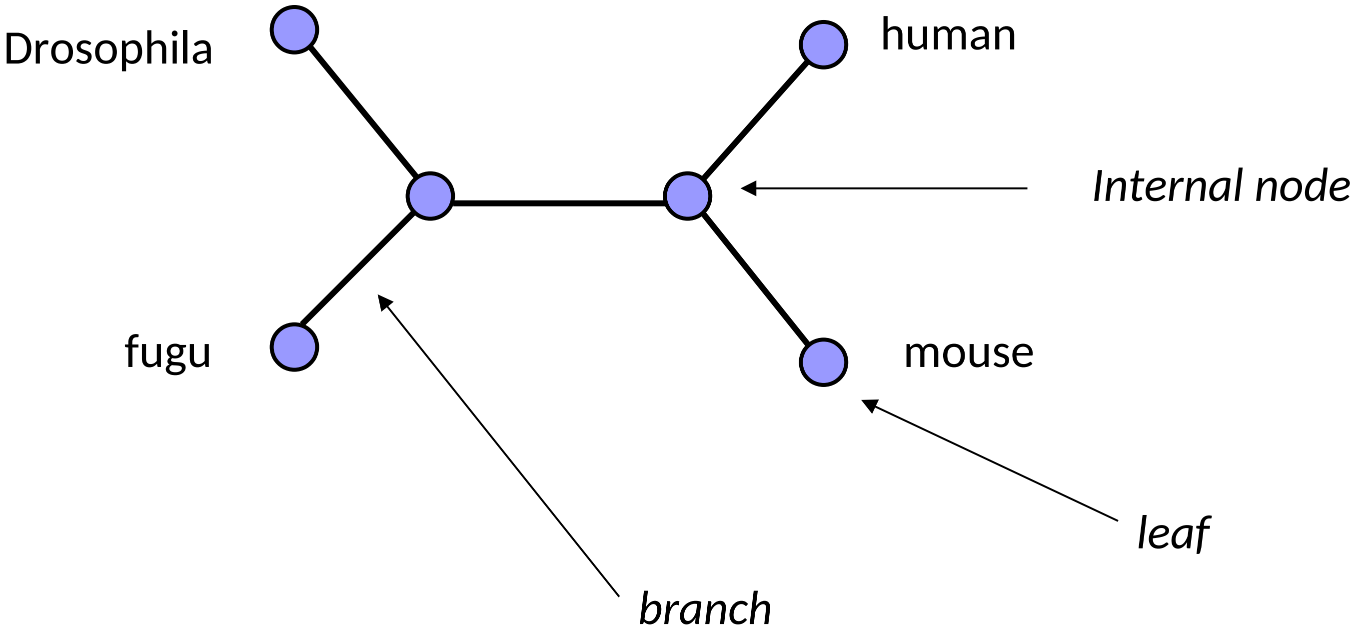
Phylogenetic trees



Nodes represent common ancestors

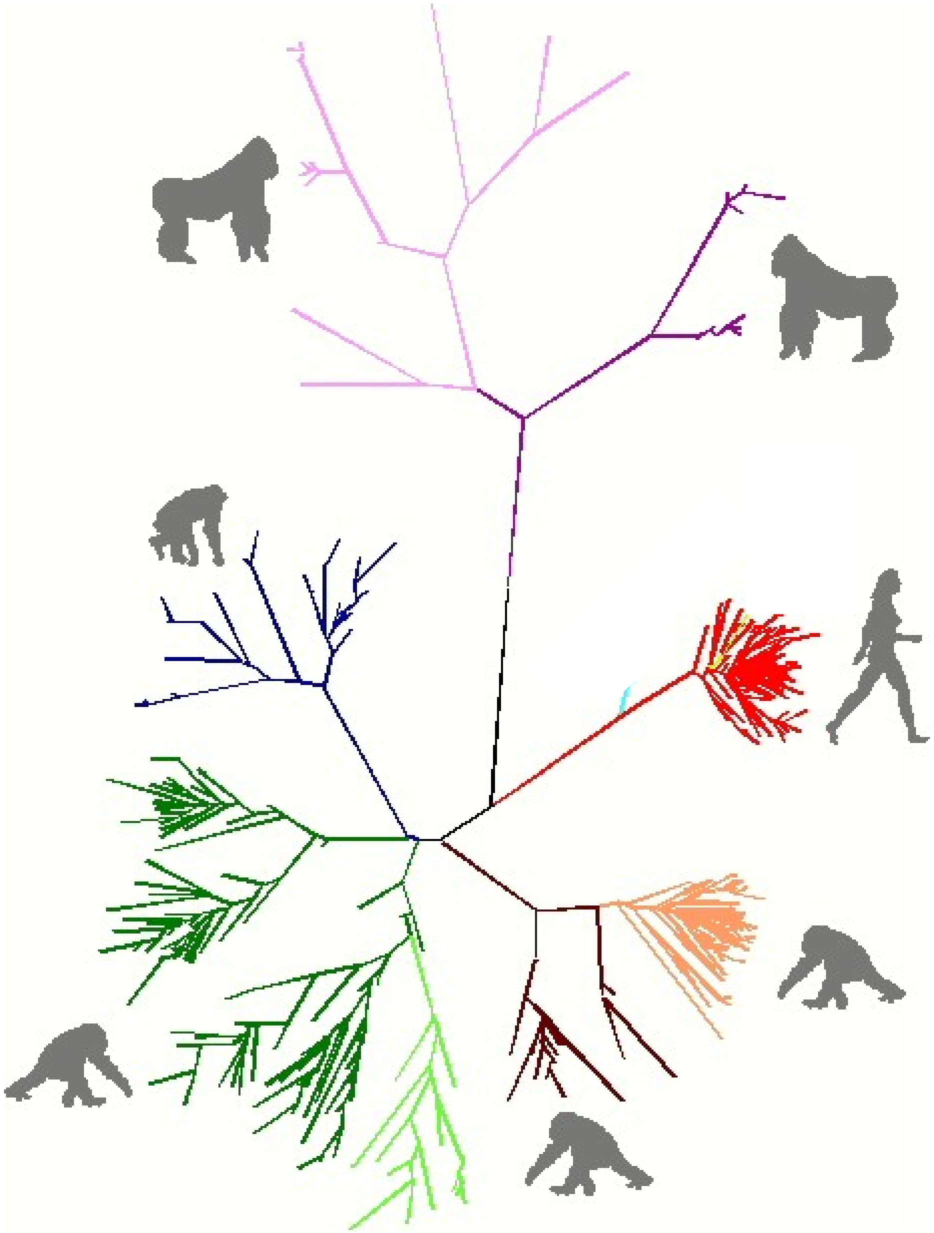


Unrooted tree



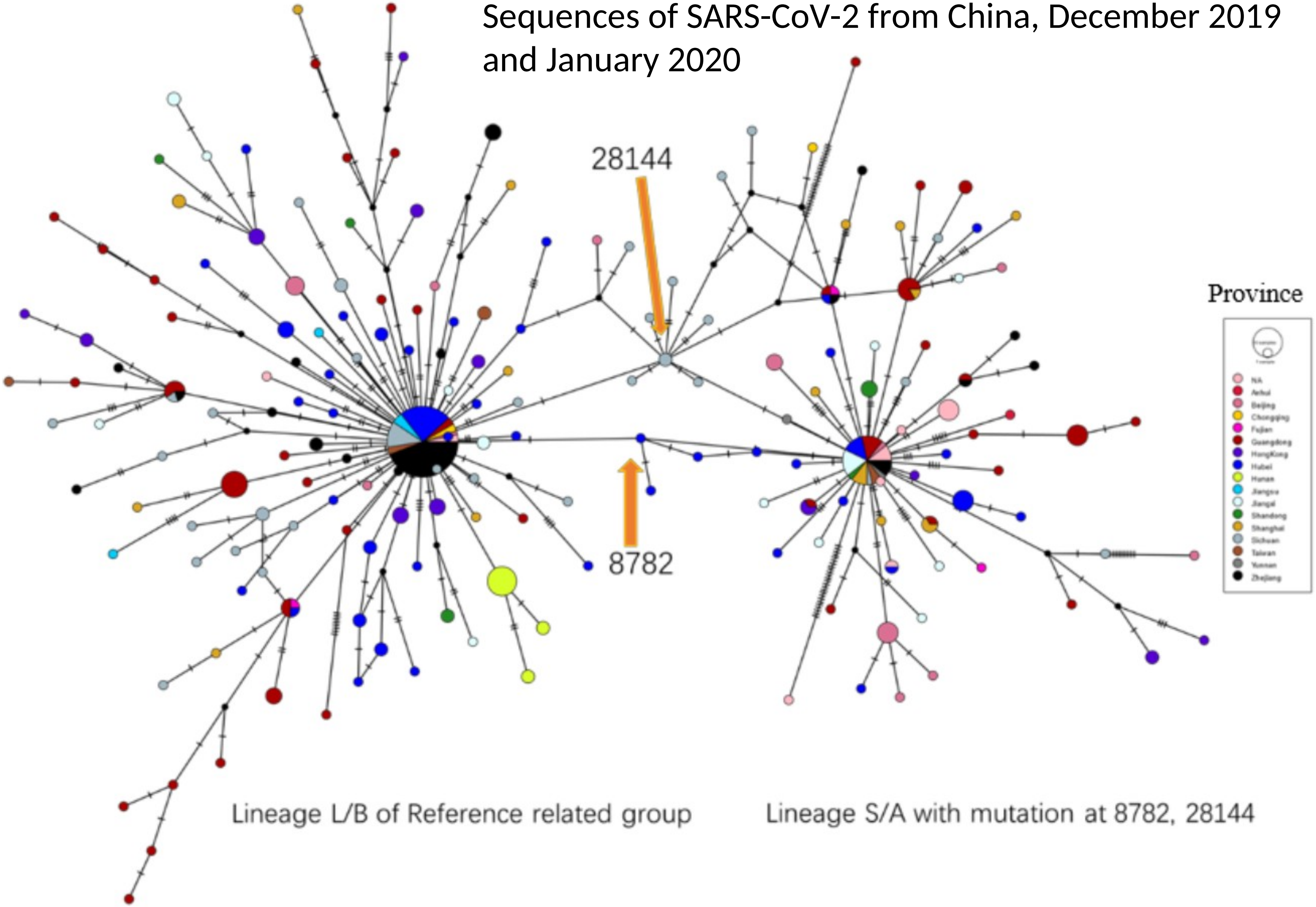
Unrooted tree

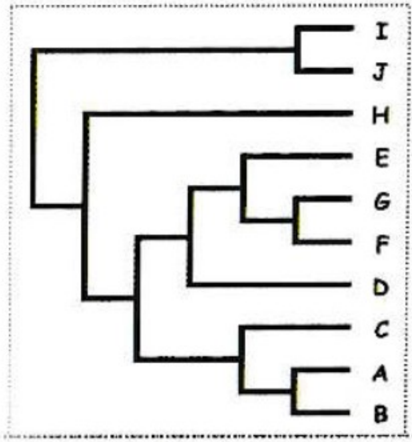
Greater genetic variation in a population of chimpanzees living in 50 km² in Central Africa than in the entire human species



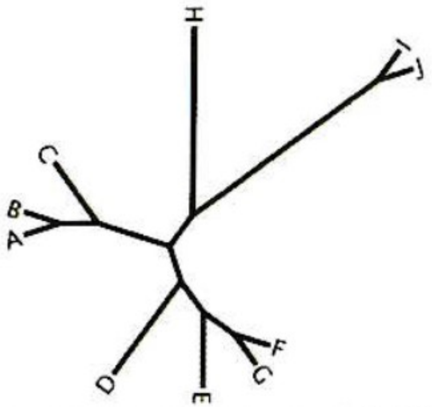
Network

Sequences of SARS-CoV-2 from China, December 2019 and January 2020

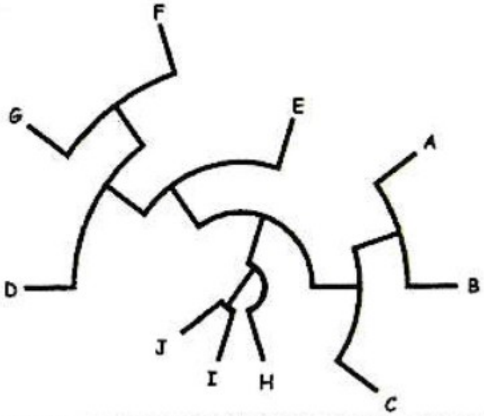


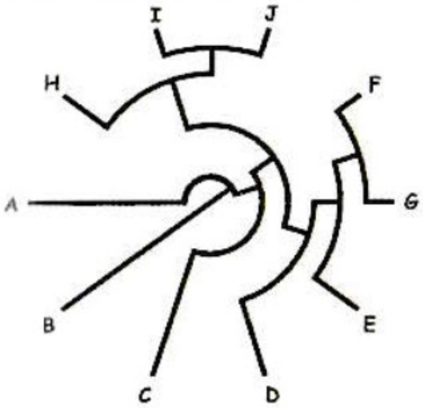

I
J
H
E
G
F
D
C
A
B

2

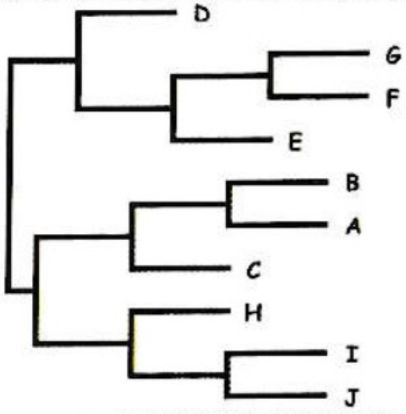

H
I
J
C
B
A
F
G
D
E

3

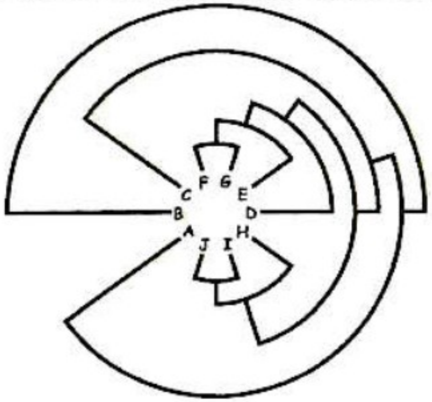

F
G
E
A
D
B
J
I
H
C

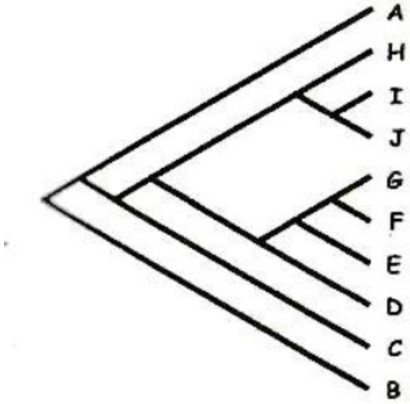

I
J
H
F
A
G
B
E
C
D

5

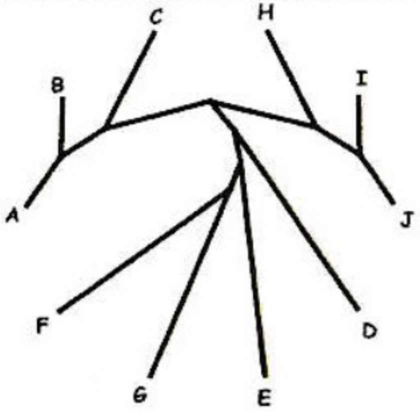

D
G
F
E
B
A
C
H
I
J

6

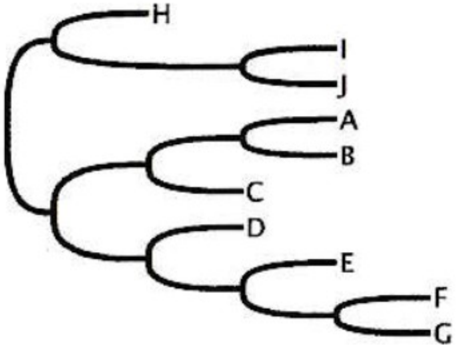

C
F
G
E
B
D
A
J
I
H

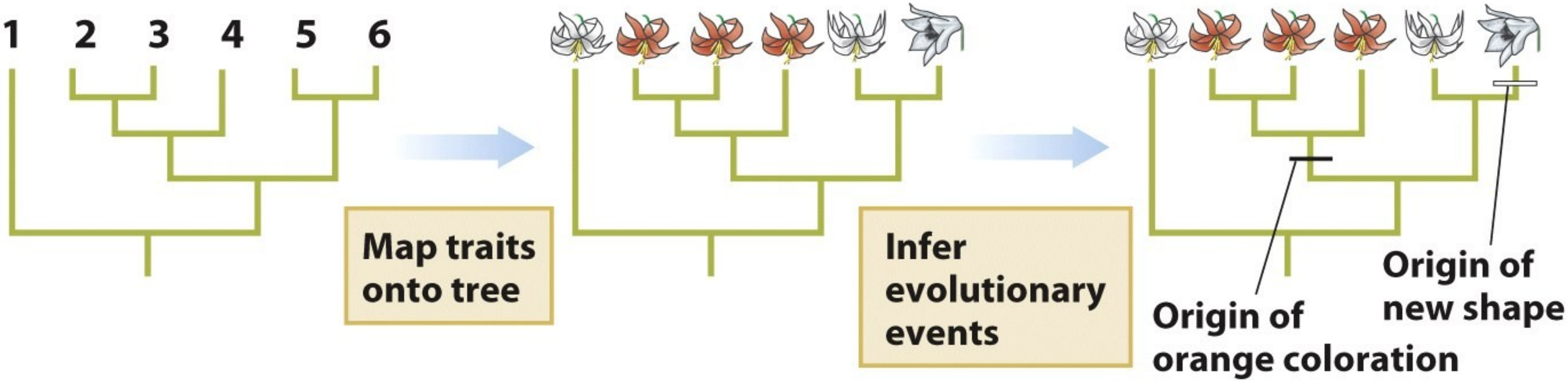

A
H
I
J
G
F
E
D
C
B

8


C
H
B
I
A
J
F
D
G
E

9


H
I
J
A
B
C
D
E
F
G

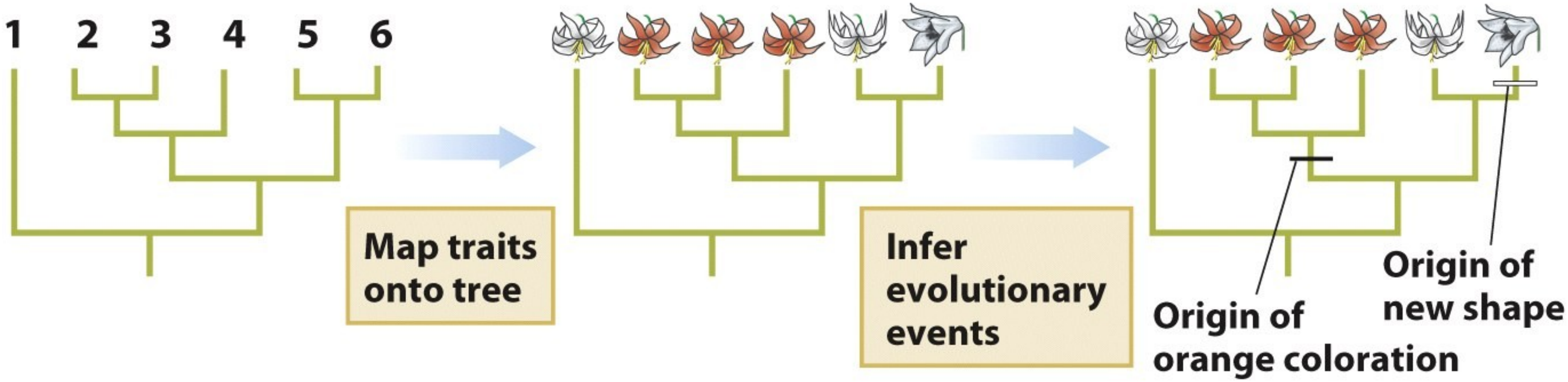


Map traits onto tree

Infer evolutionary events

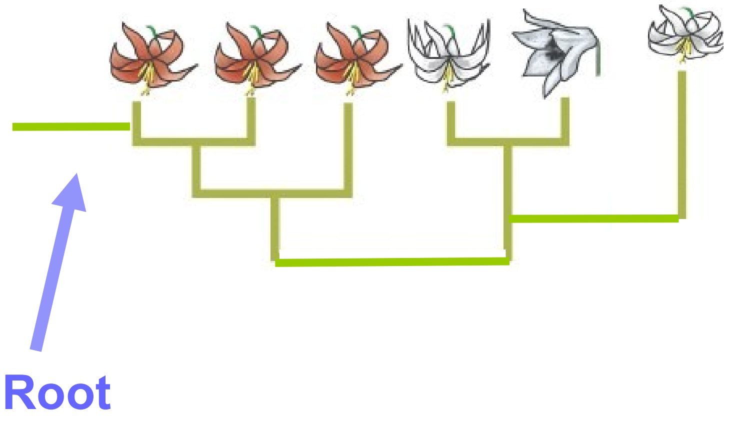
Origin of orange coloration

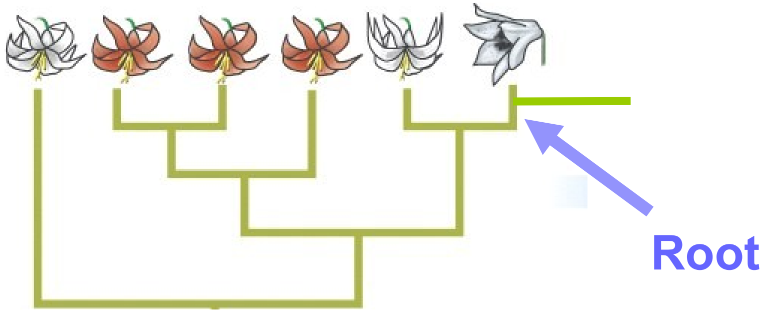
Origin of new shape

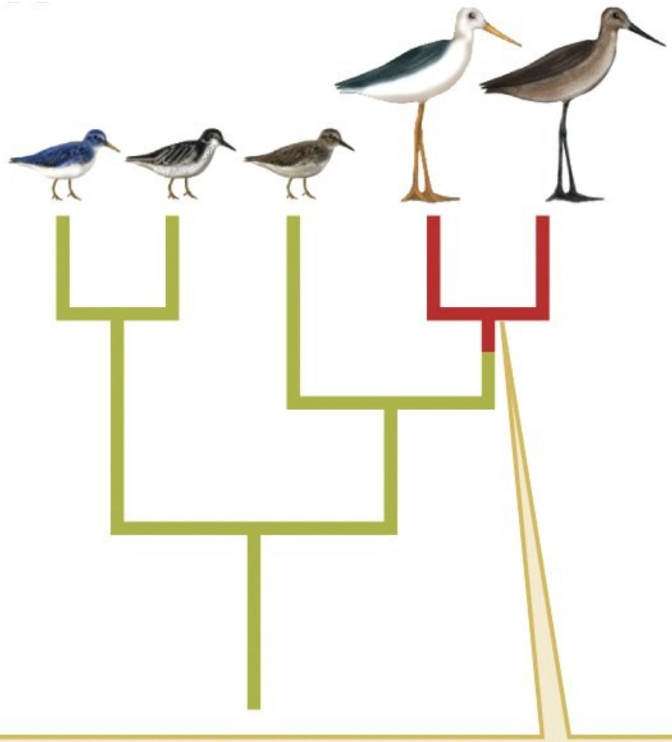


Map traits onto tree

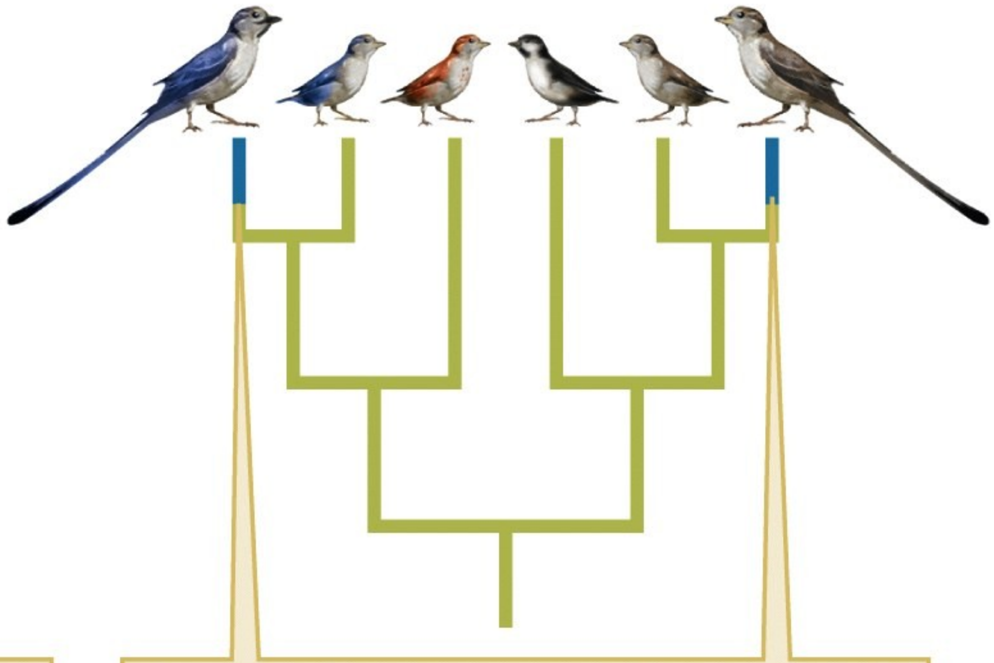
Infer evolutionary events



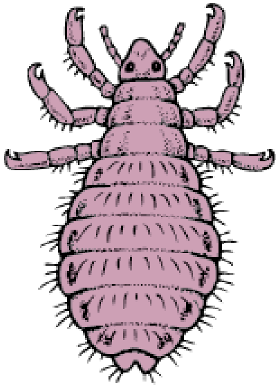




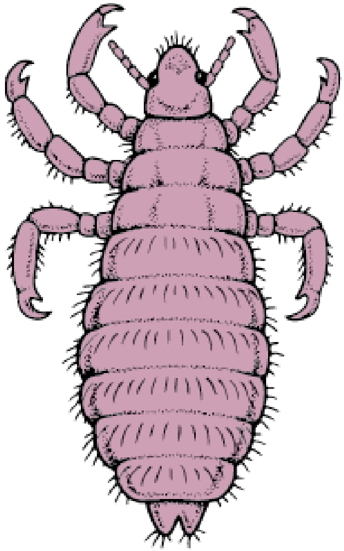
Long legs are a homologous trait



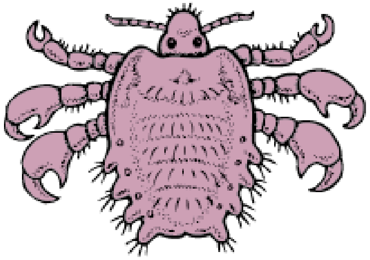
Long tails are an analogous trait



Pou de tête

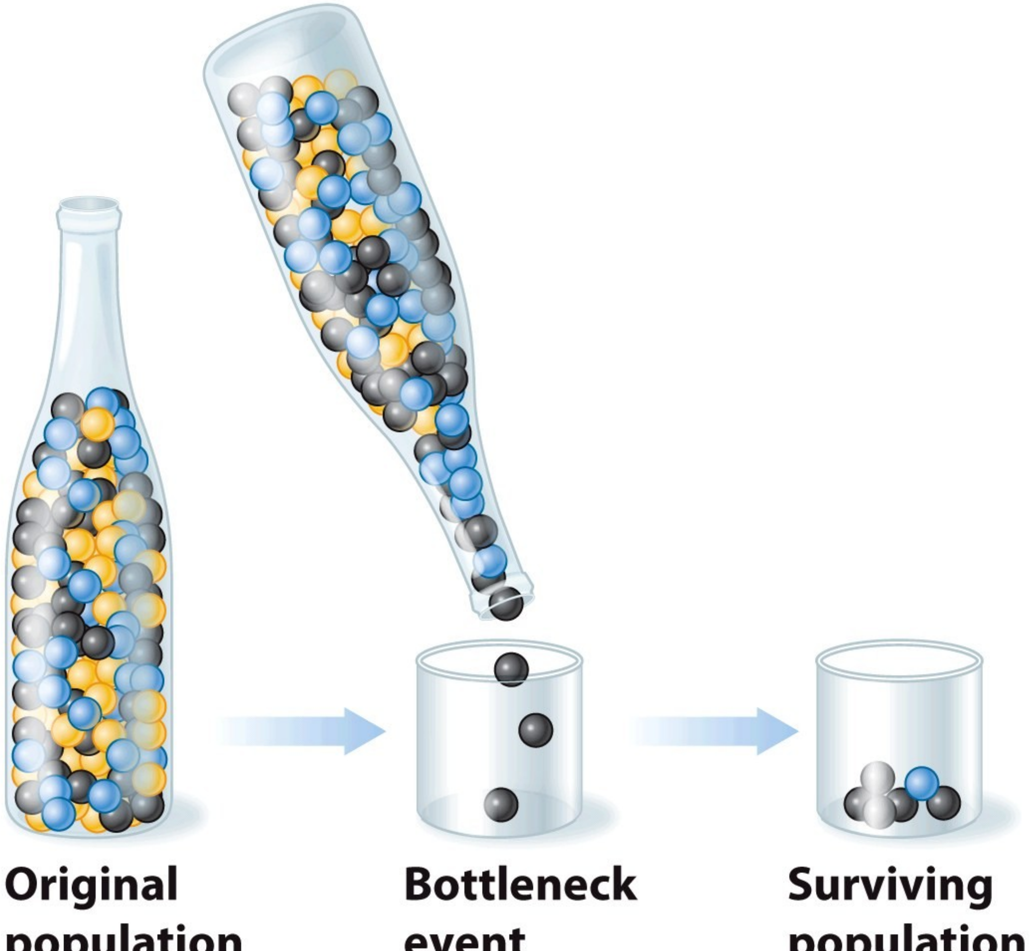


Pou de corps

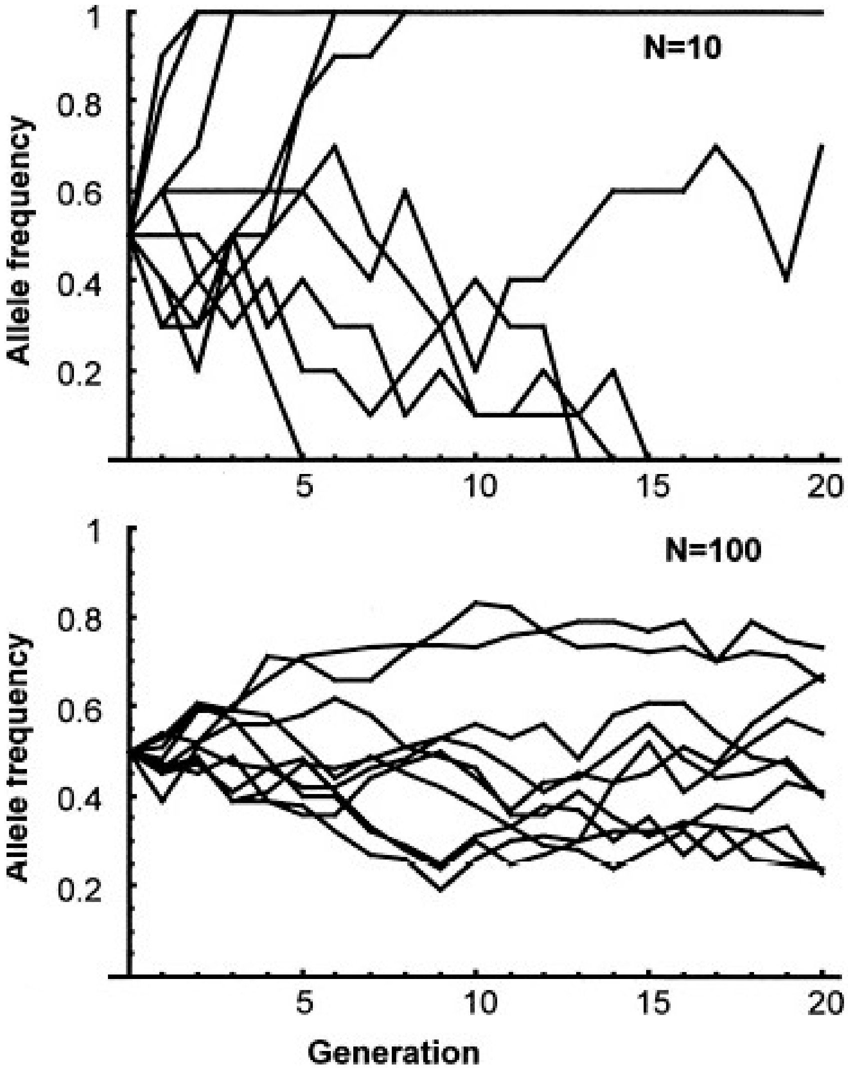


Pou pubien

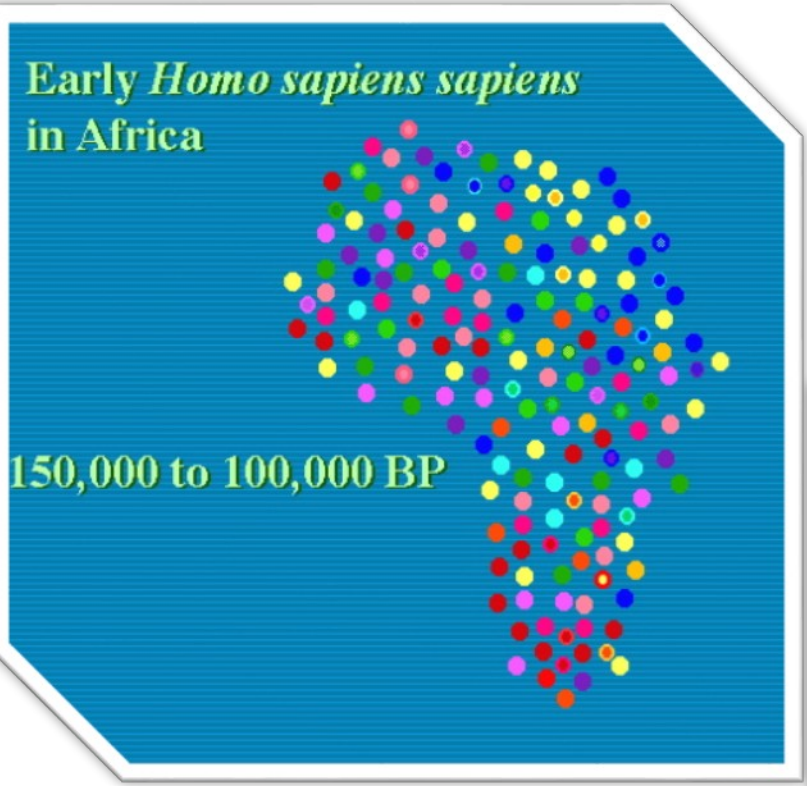
Genetic drift

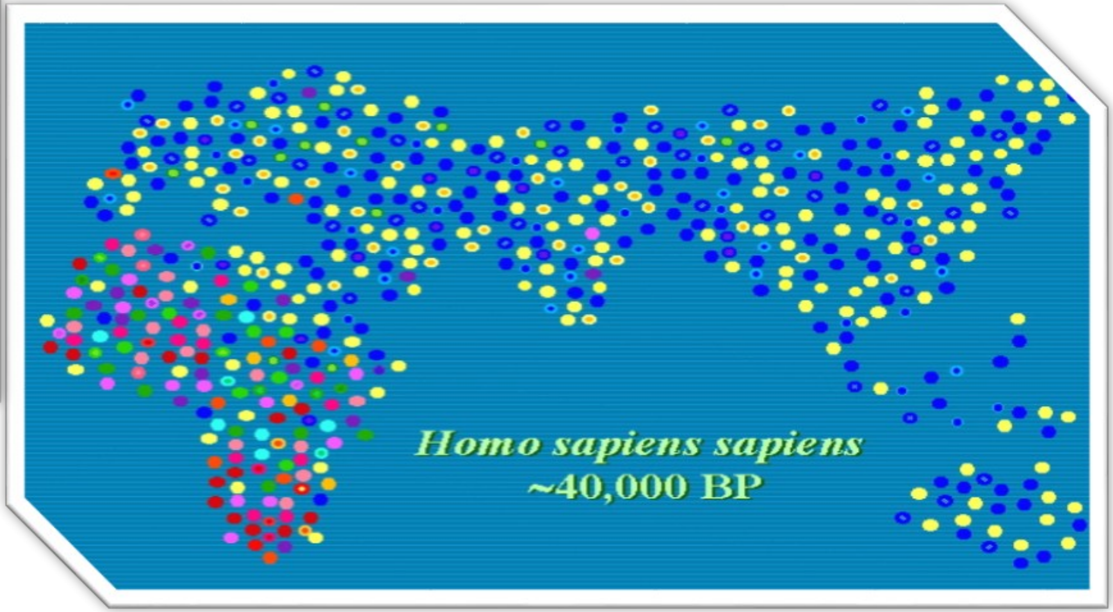


Genetic drift

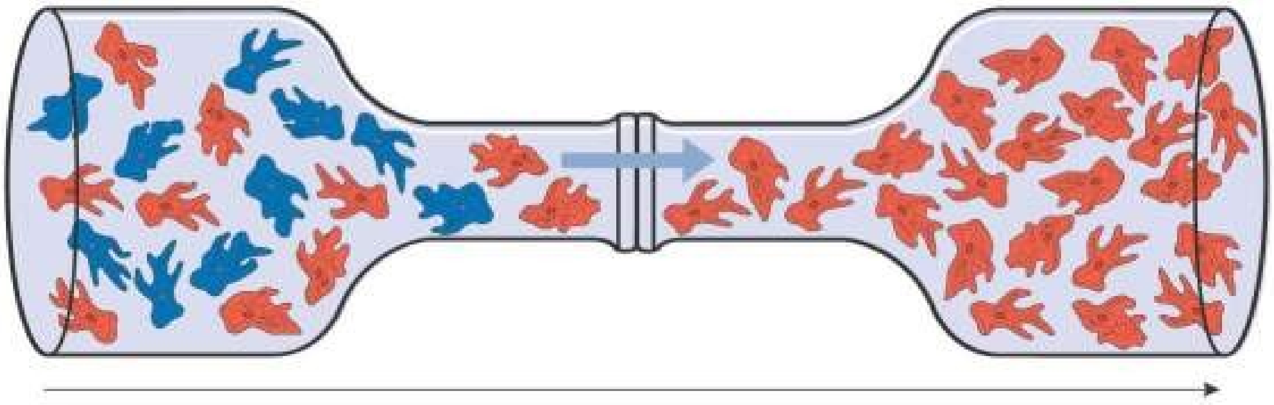


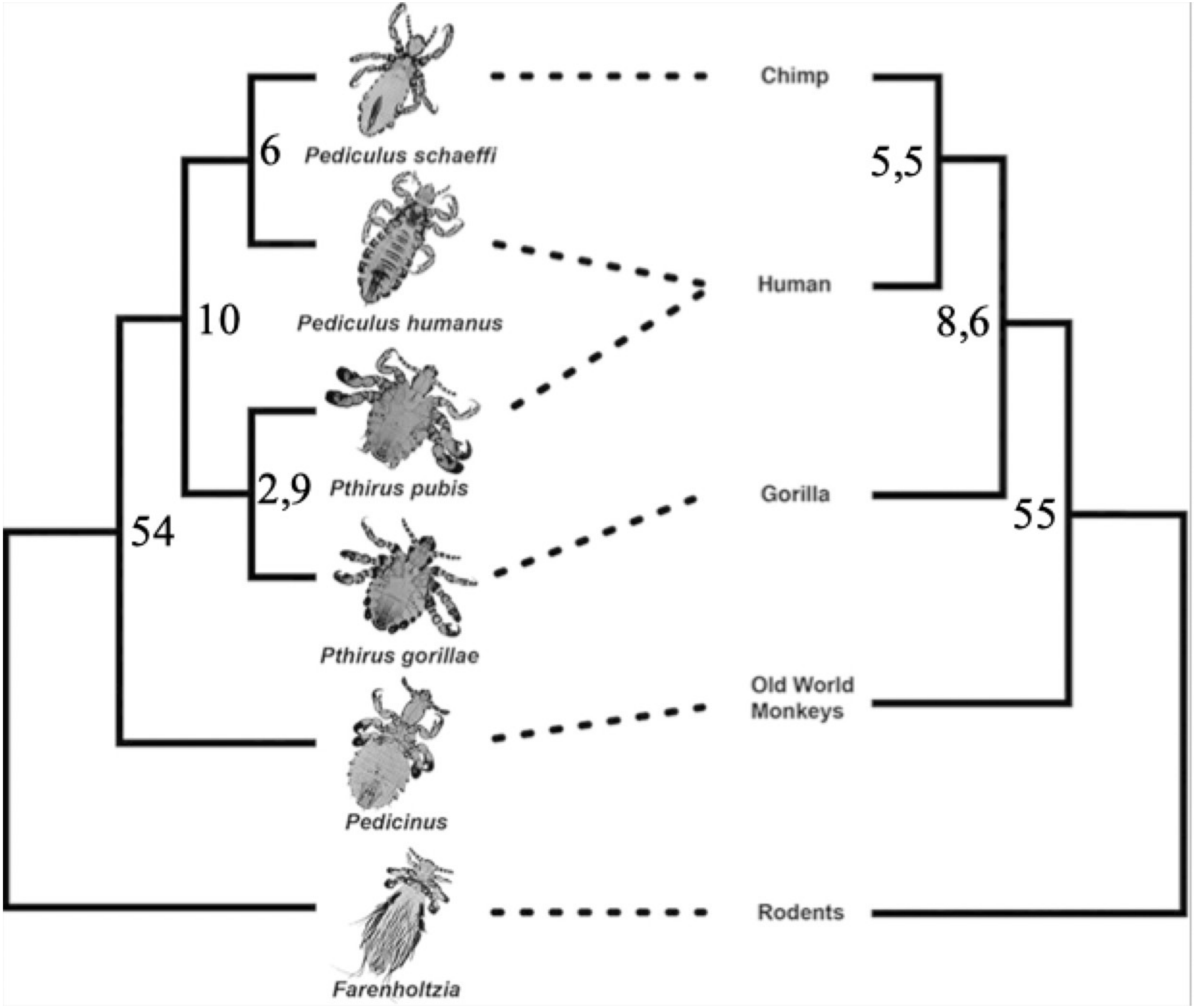
Genetic diversity in humans



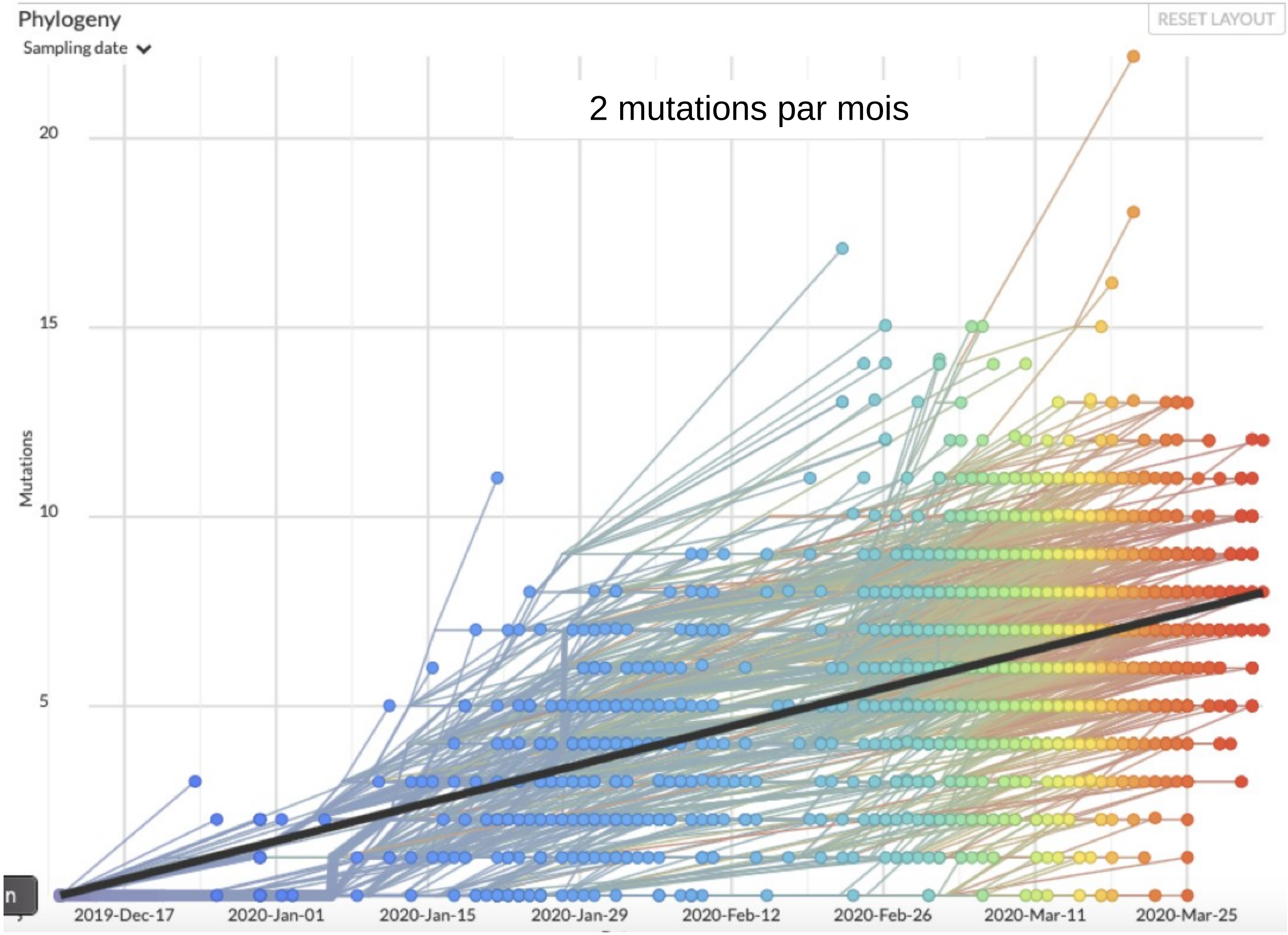


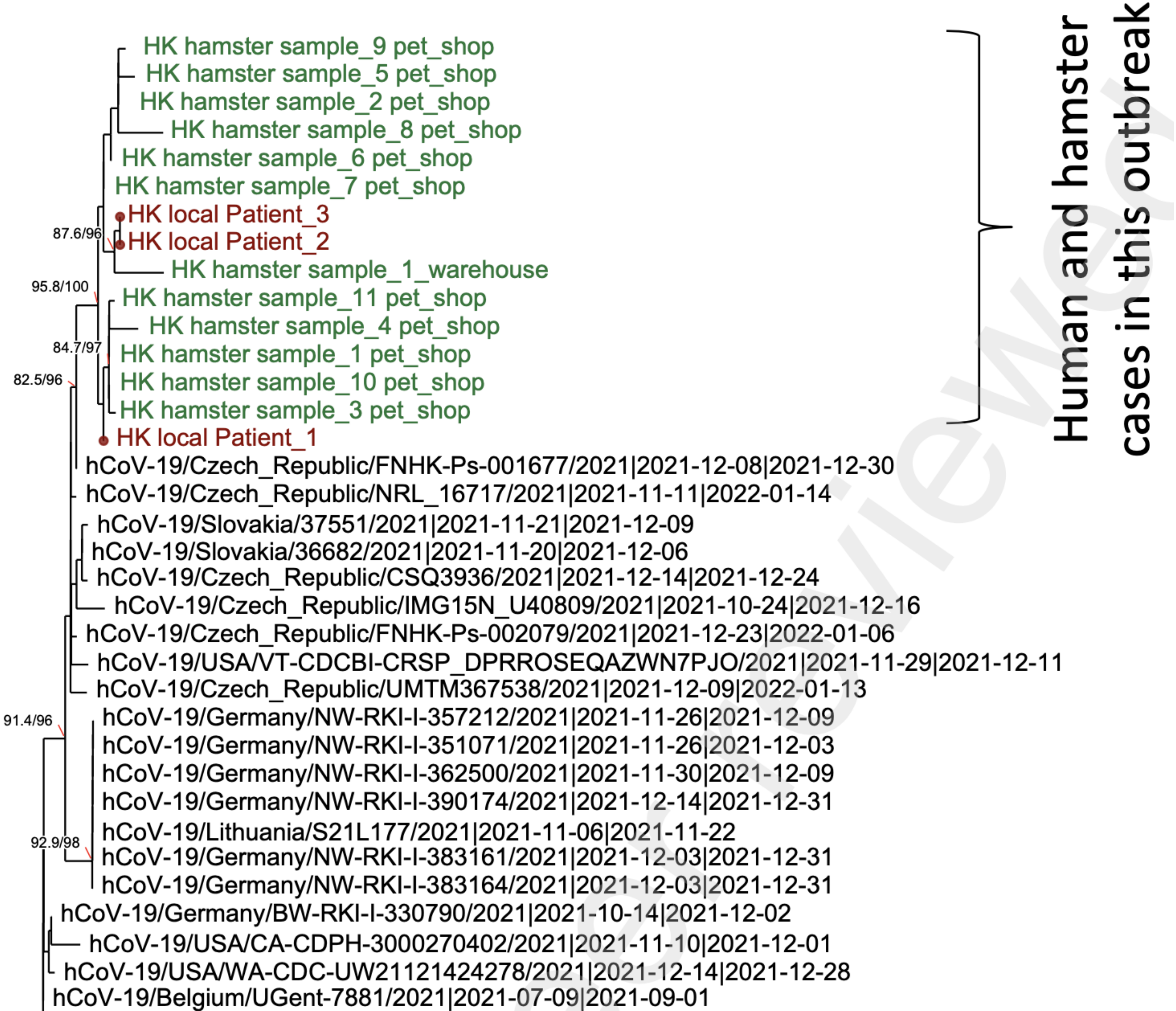
Little genetic diversity in small size populations




6
10
54
2,9
Pediculus schaeffi
Pediculus humanus
Pthirus pubis
Pthirus gorillae
Pedicinus
Farenholtzia
Chimp
Human
Gorilla
Old World Monkeys
Rodents
5,5
8,6
55

Estimation of the mutation rate for SARS-CoV-2


2 mutations par mois


HK hamster sample_9 pet_shop
HK hamster sample_5 pet_shop
HK hamster sample_2 pet_shop
HK hamster sample_8 pet_shop
HK hamster sample_6 pet_shop
HK hamster sample_7 pet_shop
HK local Patient_3
87.6/96
HK local Patient_2
HK hamster sample_1_warehouse
95.8/100
HK hamster sample_11 pet_shop
HK hamster sample_4 pet_shop
84.7/97
HK hamster sample_1 pet_shop
82.5/96
HK hamster sample_10 pet_shop
HK hamster sample_3 pet_shop
HK local Patient_1
hCoV-19/Czech_Republic/FNHK-Ps-001677/2021|2021-12-08|2021-12-30
hCoV-19/Czech_Republic/NRL_16717/2021|2021-11-11|2022-01-14
hCoV-19/Slovakia/37551/2021|2021-11-21|2021-12-09
hCoV-19/Slovakia/36682/2021|2021-11-20|2021-12-06
hCoV-19/Czech_Republic/CSQ3936/2021|2021-12-14|2021-12-24
hCoV-19/Czech_Republic/IMG15N_U40809/2021|2021-10-24|2021-12-16
hCoV-19/Czech_Republic/FNHK-Ps-002079/2021|2021-12-23|2022-01-06
hCoV-19/USA/VT-CDCBI-CRSP_DPRROSEQAZWN7PJO/2021|2021-11-29|2021-12-11
hCoV-19/Czech_Republic/UMTM367538/2021|2021-12-09|2022-01-13
91.4/96
hCoV-19/Germany/NW-RKI-I-357212/2021|2021-11-26|2021-12-09
hCoV-19/Germany/NW-RKI-I-351071/2021|2021-11-26|2021-12-03
hCoV-19/Germany/NW-RKI-I-362500/2021|2021-11-30|2021-12-09
hCoV-19/Germany/NW-RKI-I-390174/2021|2021-12-14|2021-12-31
hCoV-19/Lithuania/S21L177/2021|2021-11-06|2021-11-22
92.9/98
hCoV-19/Germany/NW-RKI-I-383161/2021|2021-12-03|2021-12-31
hCoV-19/Germany/NW-RKI-I-383164/2021|2021-12-03|2021-12-31
hCoV-19/Germany/BW-RKI-I-330790/2021|2021-10-14|2021-12-02
hCoV-19/USA/CA-CDPH-3000270402/2021|2021-11-10|2021-12-01
hCoV-19/USA/WA-CDC-UW21121424278/2021|2021-12-14|2021-12-28
hCoV-19/Belgium/UGent-7881/2021|2021-07-09|2021-09-01
Human and hamster
cases in this outbreak