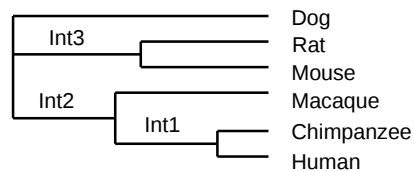


A



C

Constrained model

```

element.human      = S * Khuman      * repeat.human
element.chimp      = S * Kchimp       * repeat.chimp
element.internal_1 = S * Kinternal_1 * repeat.internal_1
element.macaque    = S * Kmacaque     * repeat.macaque
element.internal_2 = S * Kinternal_2 * repeat.internal_2
element.mouse      = S * Kmouse       * repeat.mouse
element.rat        = S * Krat         * repeat.rat
element.internal_3 = S * Kinternal_3 * repeat.internal_3
element.dog        = S * Kdog         * repeat.dog
  
```

Unconstrained model allowing human branch to be longer

 $F > 1$ 

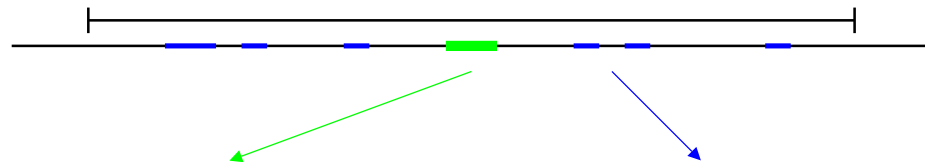
```

element.human      = F * S * Khuman      * repeat.human
element.chimp      = S * Kchimp       * repeat.chimp
element.internal_1 = S * Kinternal_1 * repeat.internal_1
element.macaque    = S * Kmacaque     * repeat.macaque
element.internal_2 = S * Kinternal_2 * repeat.internal_2
element.mouse      = S * Kmouse       * repeat.mouse
element.rat        = S * Krat         * repeat.rat
element.internal_3 = S * Kinternal_3 * repeat.internal_3
element.dog        = S * Kdog         * repeat.dog
  
```

B

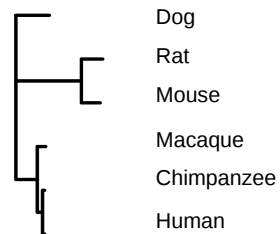
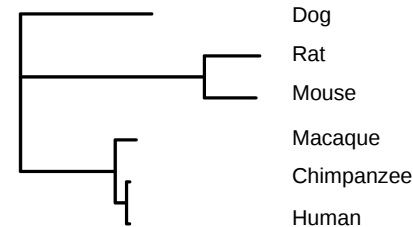
Element and repeats

750 kb window



|         |                  |                                              |
|---------|------------------|----------------------------------------------|
| human   | CAACTATTTTAA ... | CAGAGCTGATCTAAAGCAGCTCATCCTCCTATTTAAGAGG ... |
| chimp   | CAACTATTTTAA ... | CAGAGCTGATCTAAAGCAGCTCATCCTCCTATTTAAGAGG ... |
| macaque | CAACTATTTTAA ... | CAGAGCTGATCTAAAGCAGCTCATCCTCCTATTTAAGAGG ... |
| mouse   | CAACTATTTTAA ... | CAAGAGACATCTTTAGTAGCTCATCCTCTGATTTAAGAAG ... |
| rat     | CAACTATTTTAA ... | TAAGAGACATCTTTAGTAGCTCATCCTCTGATTTAAGGAG ... |
| dog     | CAACTATTTTAA ... | TCAAGCCAATGTAAAGAAGCTCATCCTCTAGTTTAAAGG ...  |

D

Genome wide tree  
from conserved elementsGenome wide tree  
from ancestral repeats

human elements

Khuman = -----

human repeats