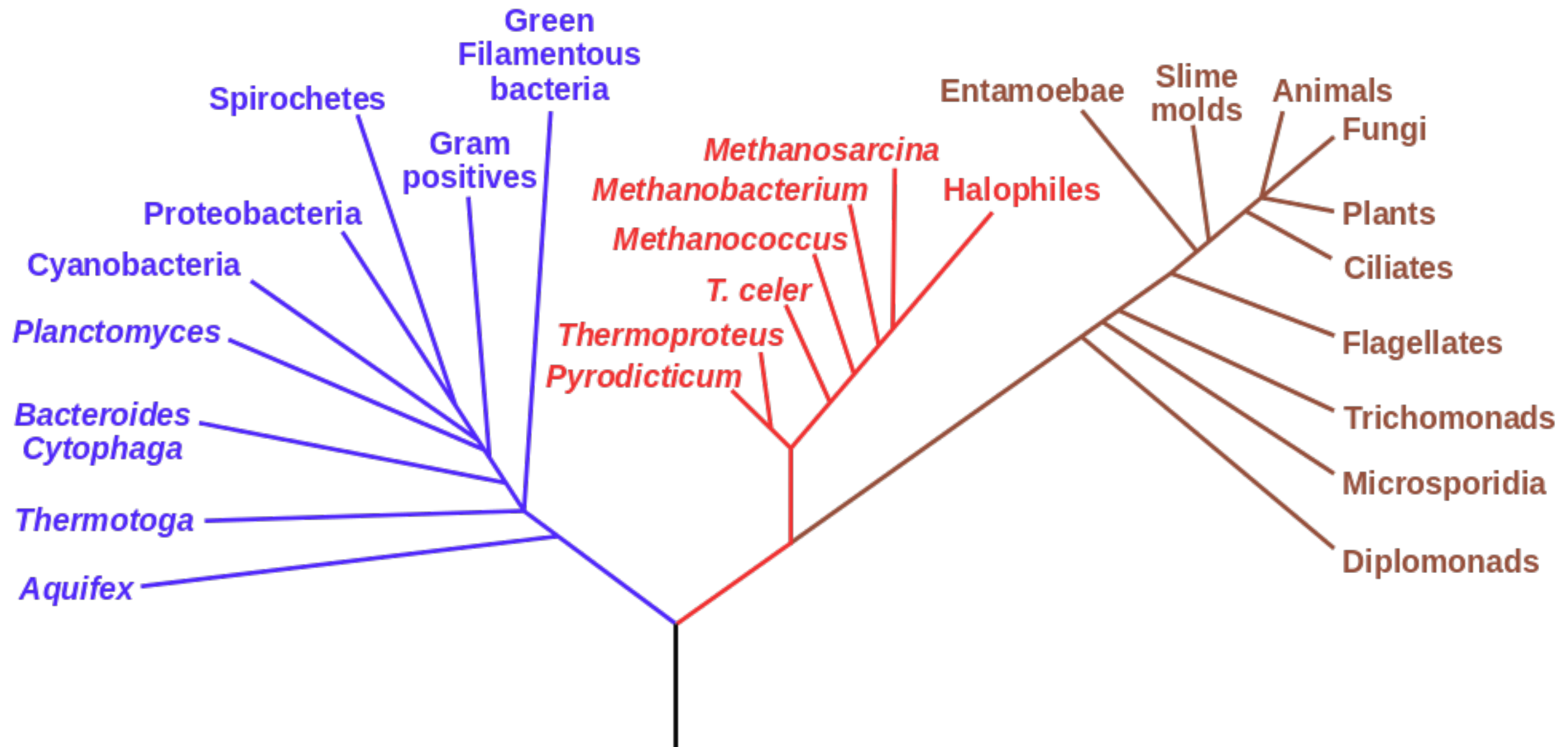


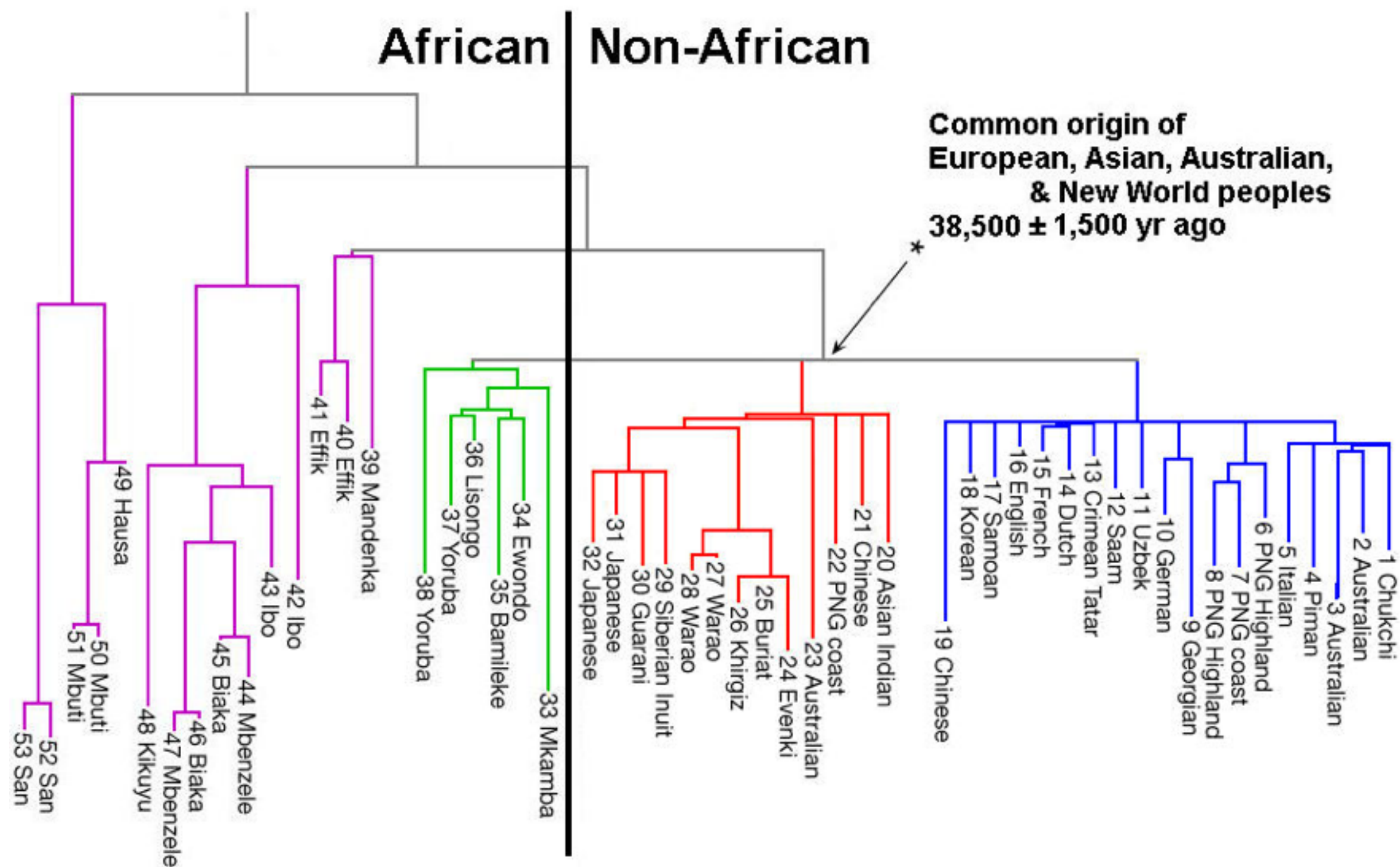
Phylogenetic Tree of Life

Bacteria

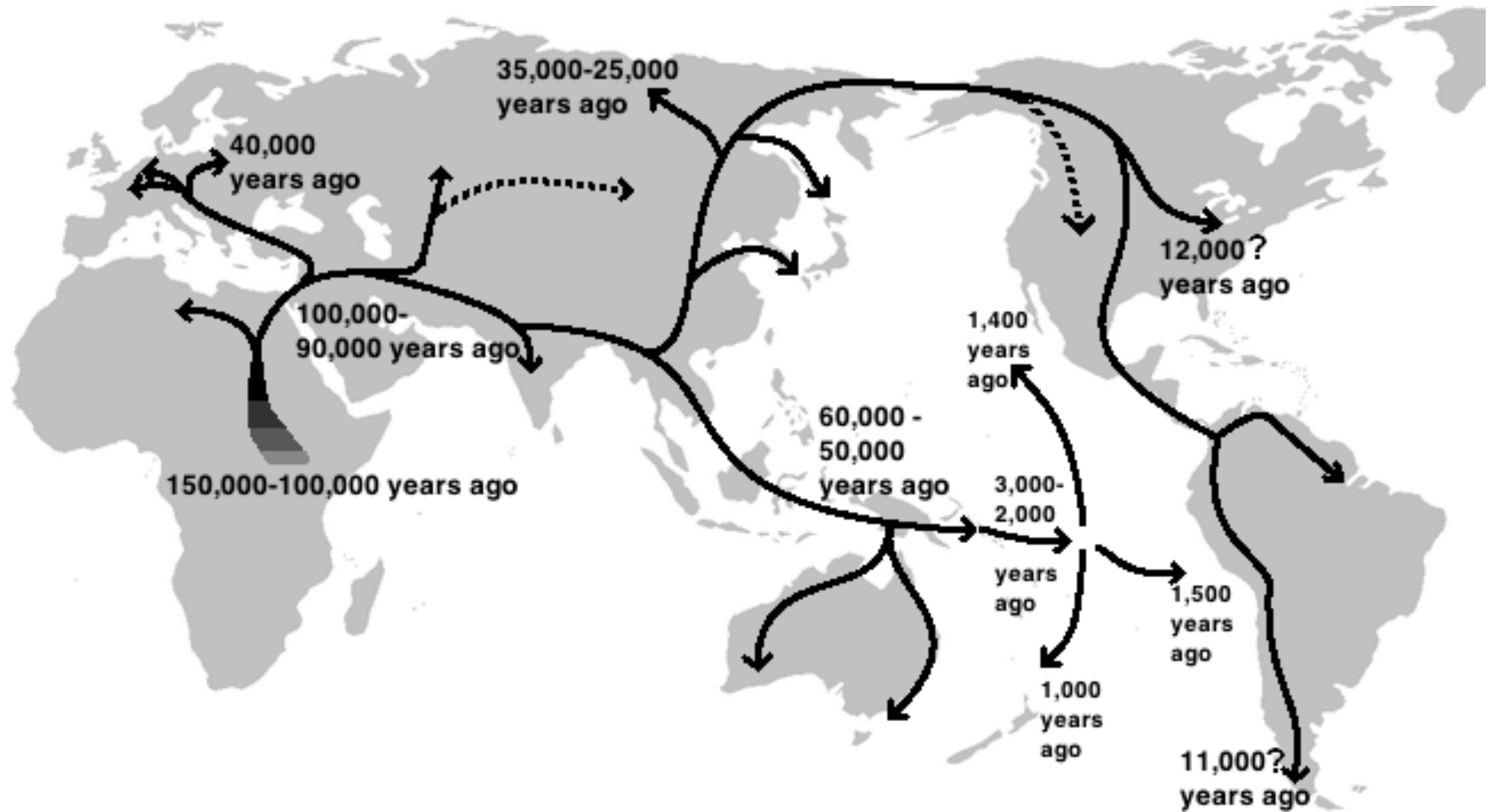
Archaea

Eukaryota





Эволюция

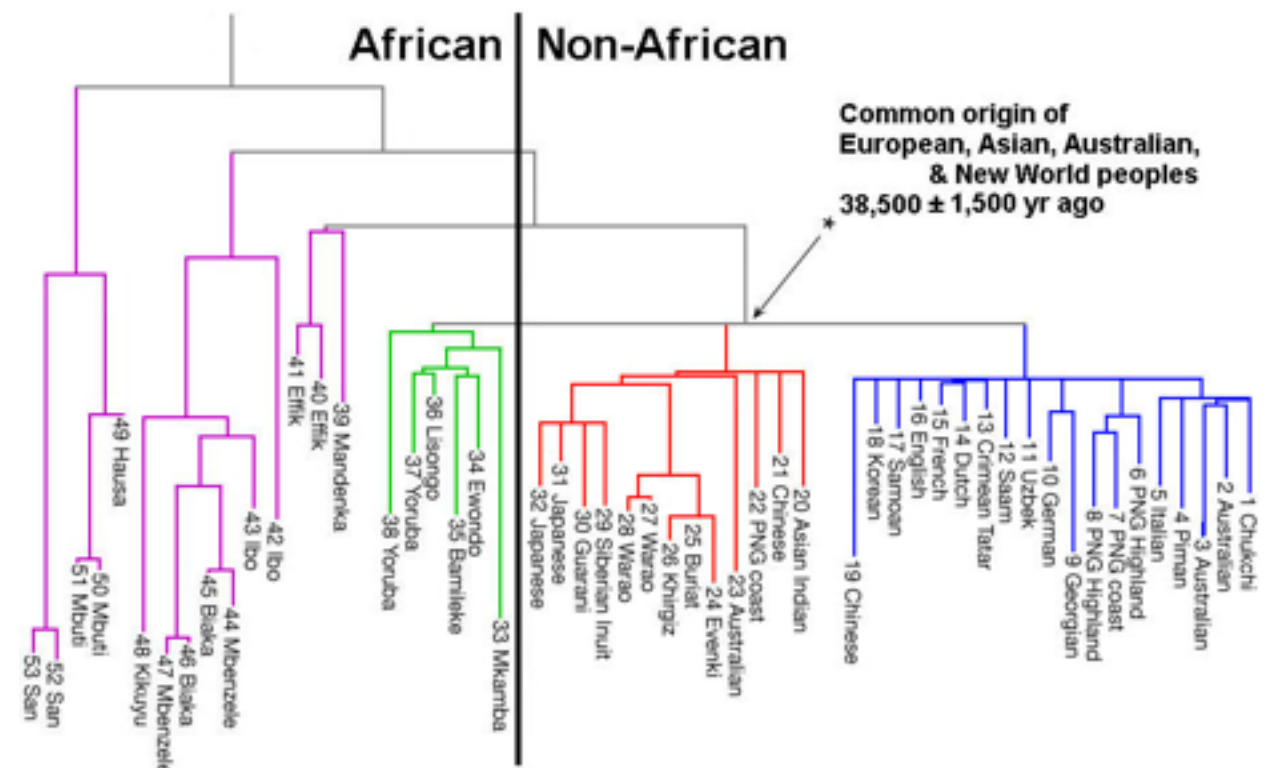


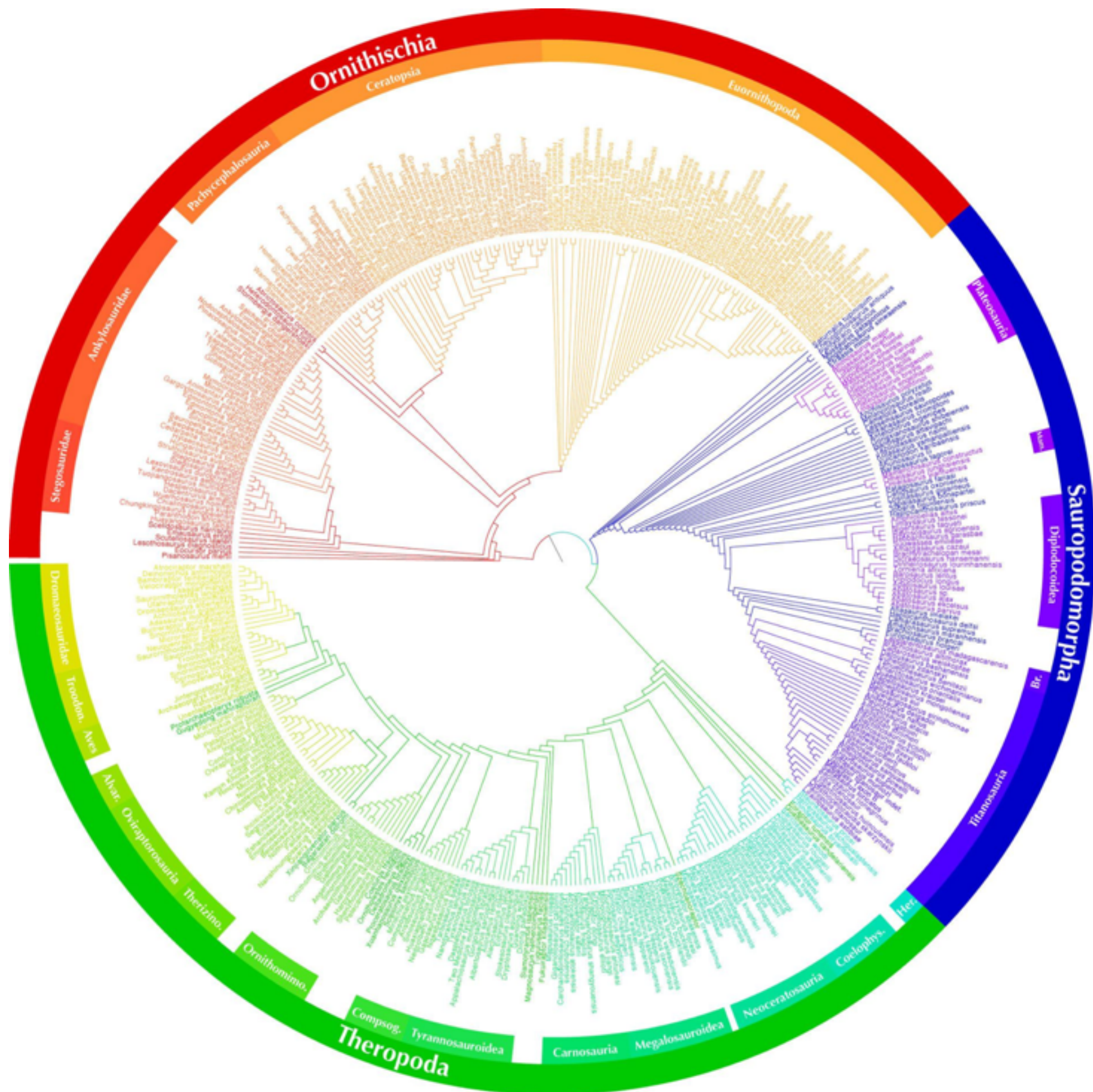
Филогенетическое дерево

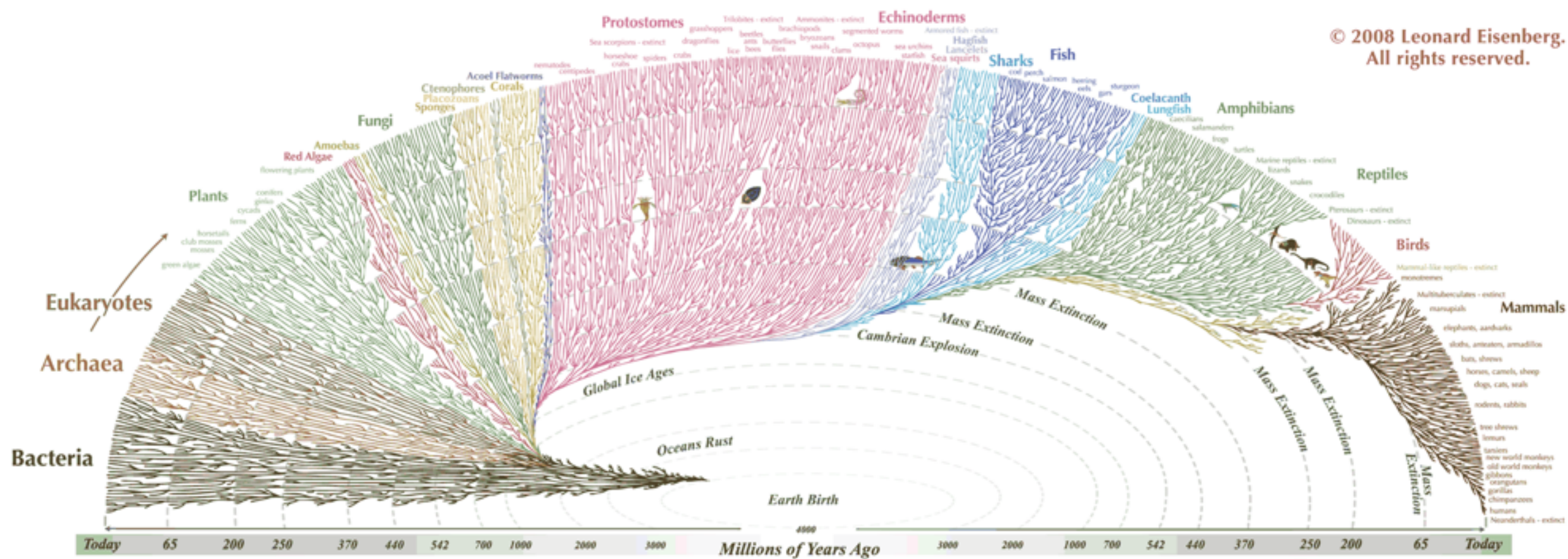
Листья – существующие виды.

Внутренние
вершины – предки.

Корень – общий
предок всех видов.





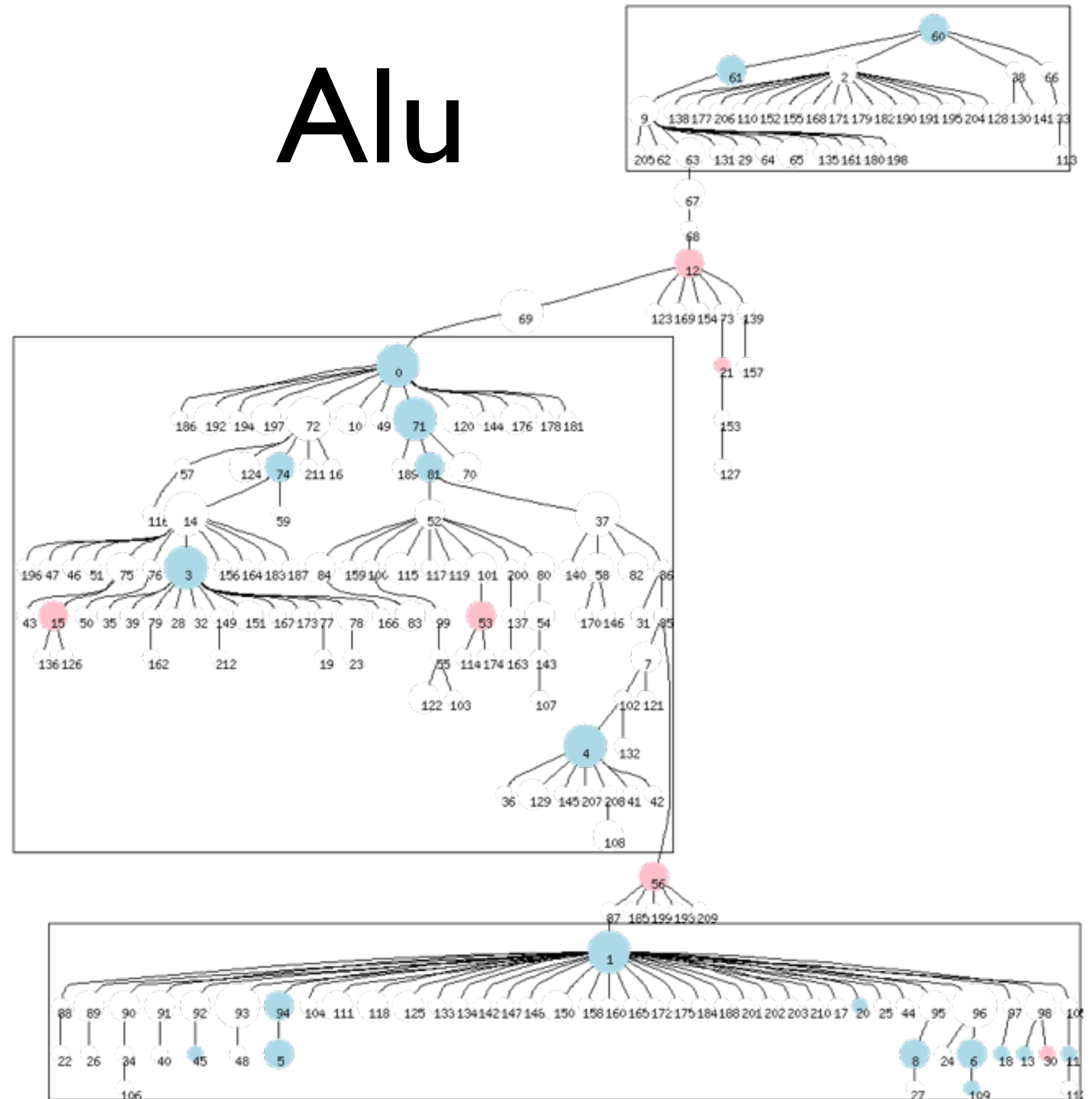


All the major and many of the minor living branches of life are shown on this diagram, but only a few of those that have gone extinct are shown. Example: Dinosaurs - extinct

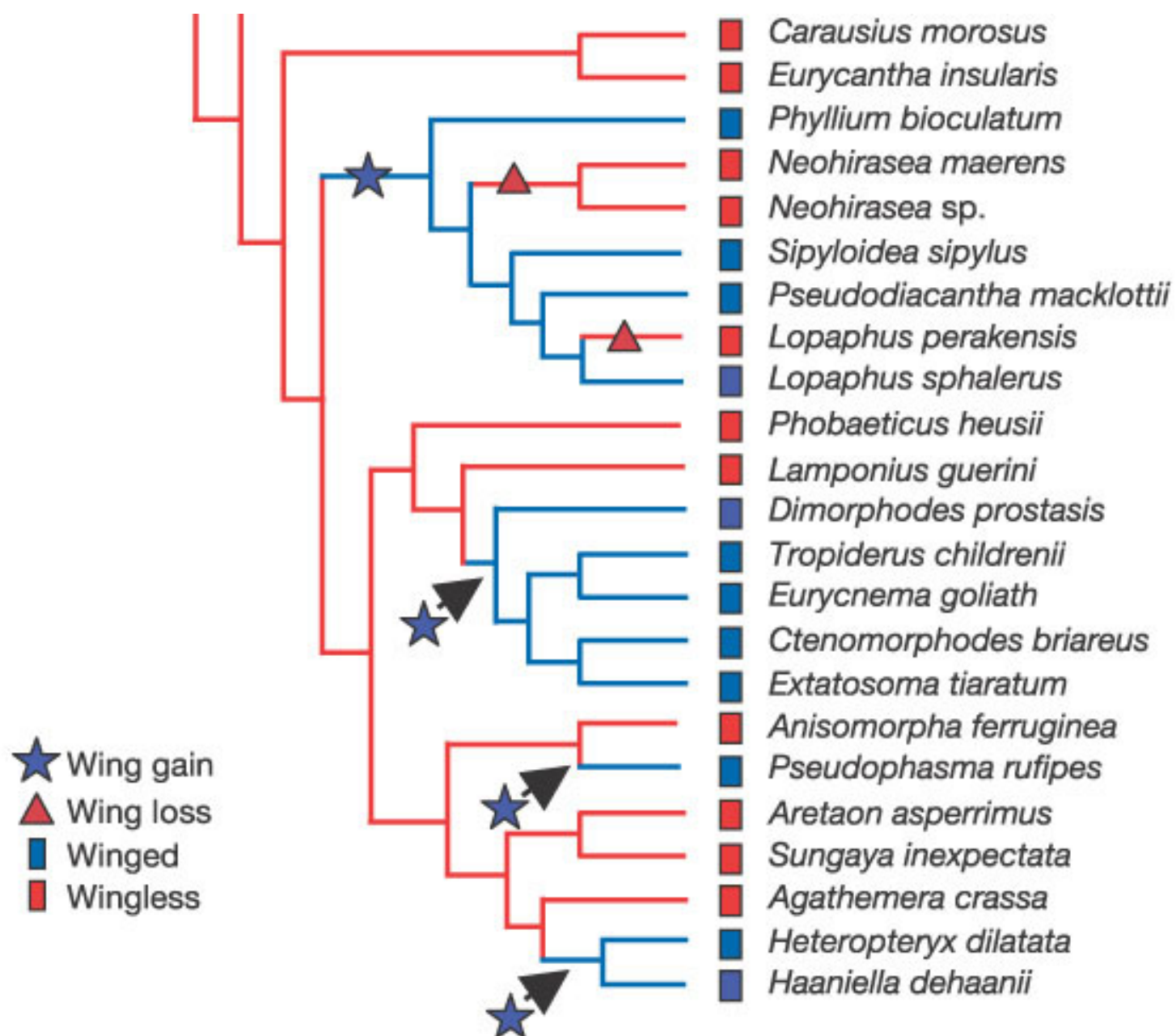


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ecogenes.com

Alu



Гомоплазия



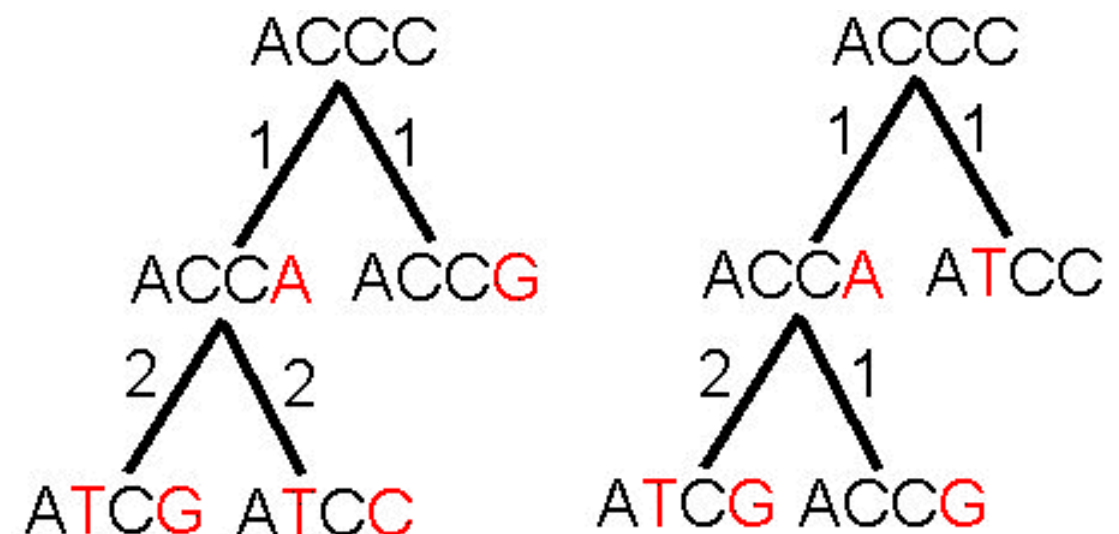
Переизобретение крыльев

Parsimony Problem

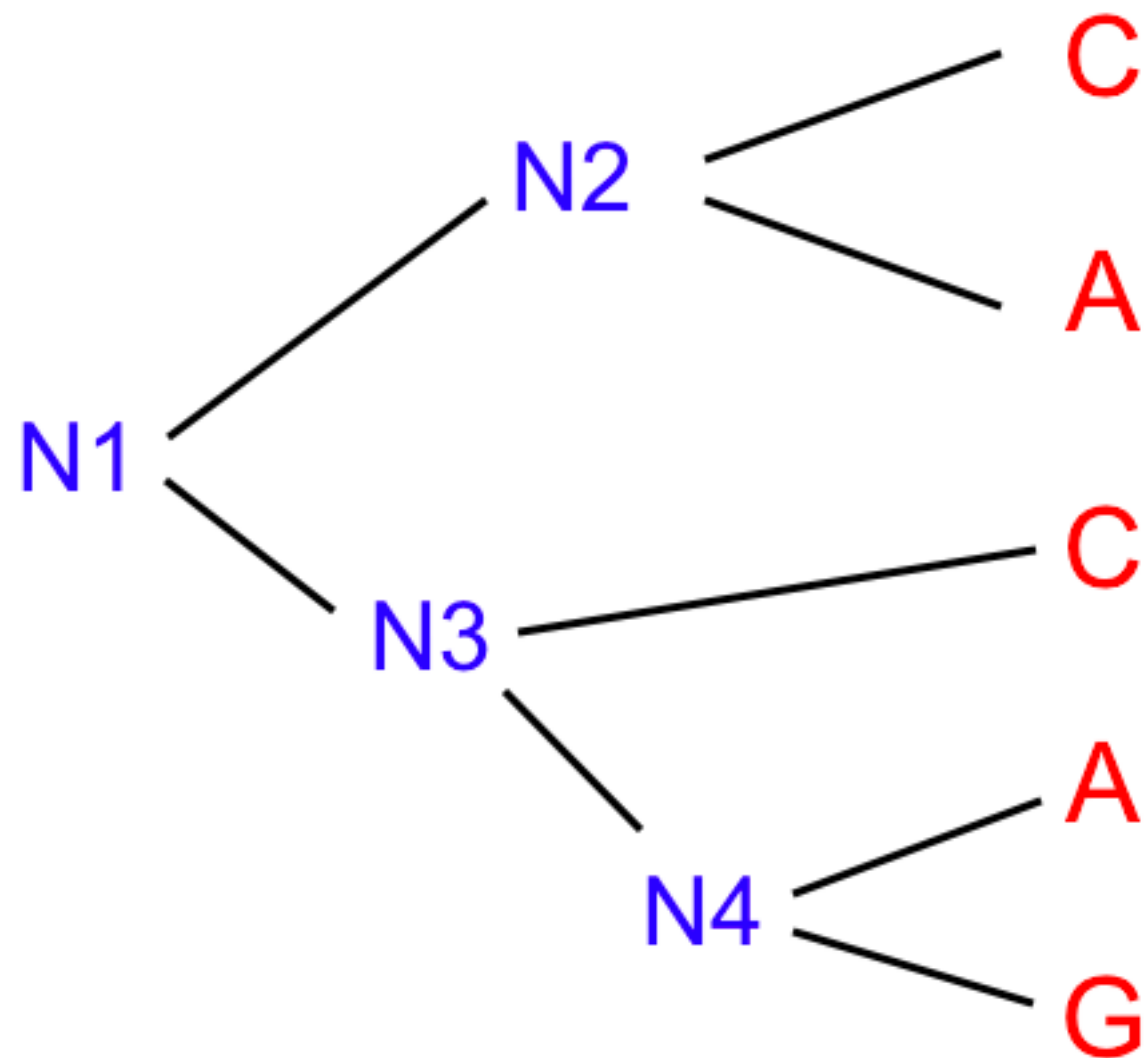
Дано: дерево с последовательностями на листьях.

Восстановить: последовательности на промежуточных вершинах.

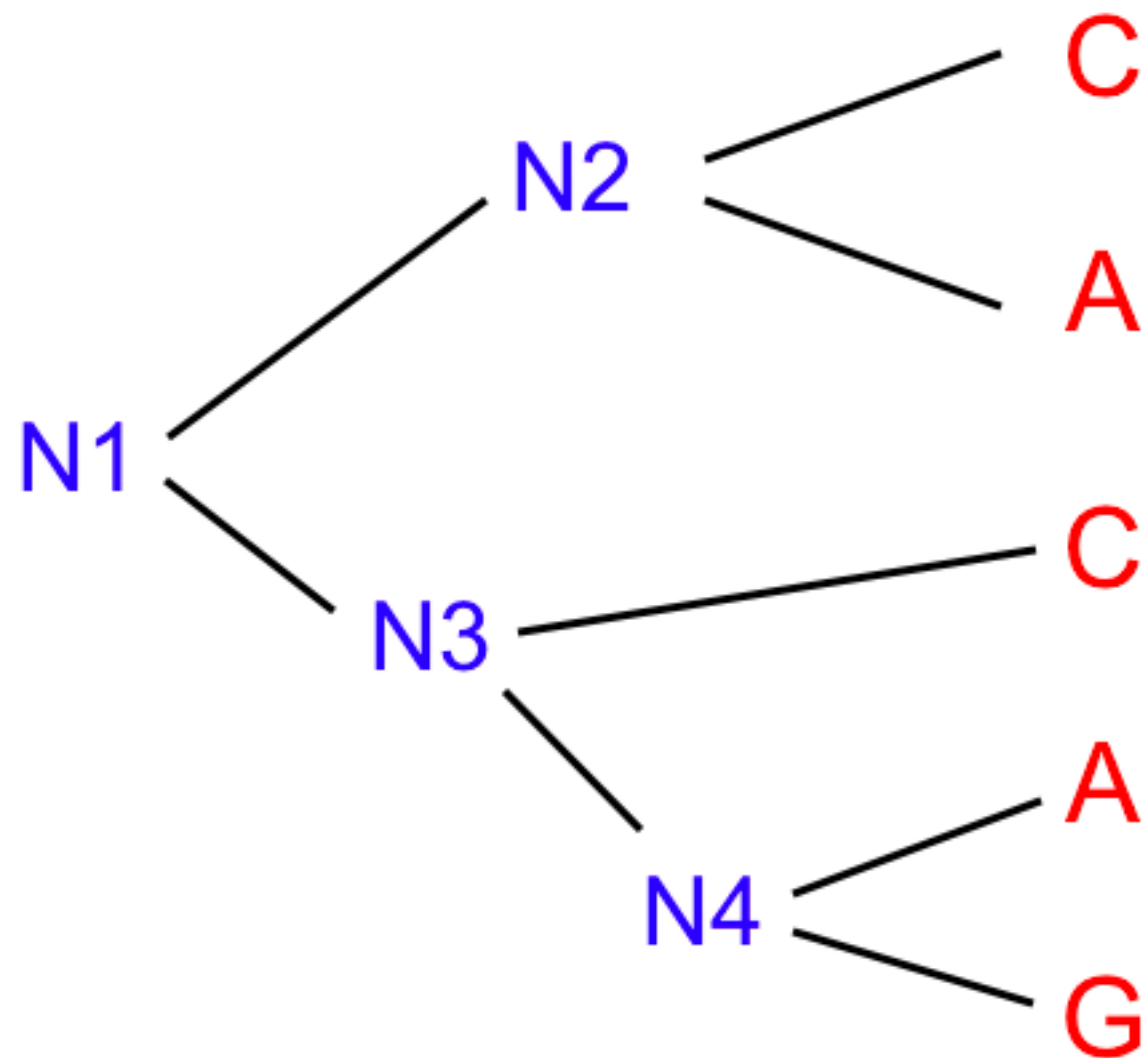
Минимизируем: суммарное расстояние Хэмминга на рёбрах дерева.



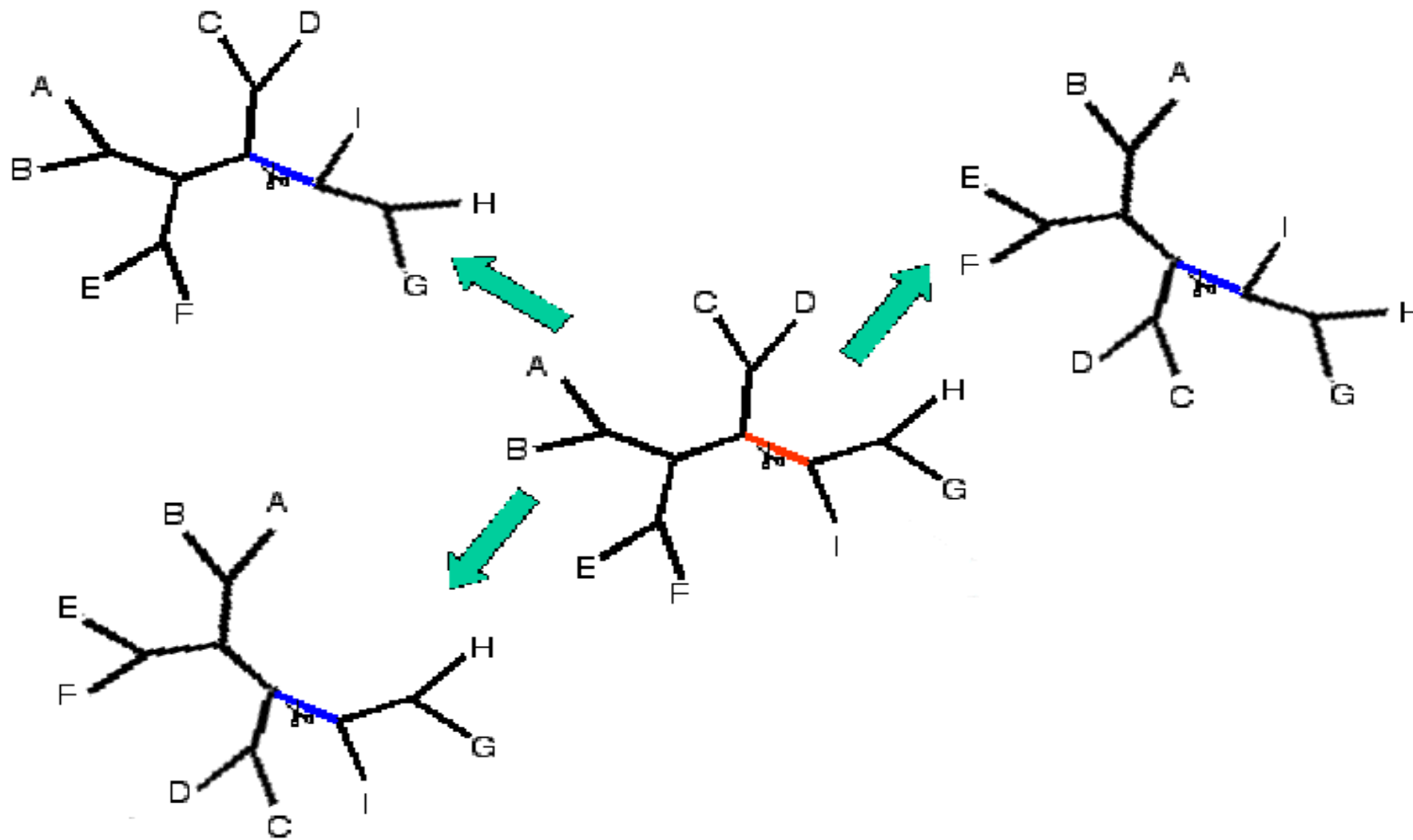
Fitch Algorithm



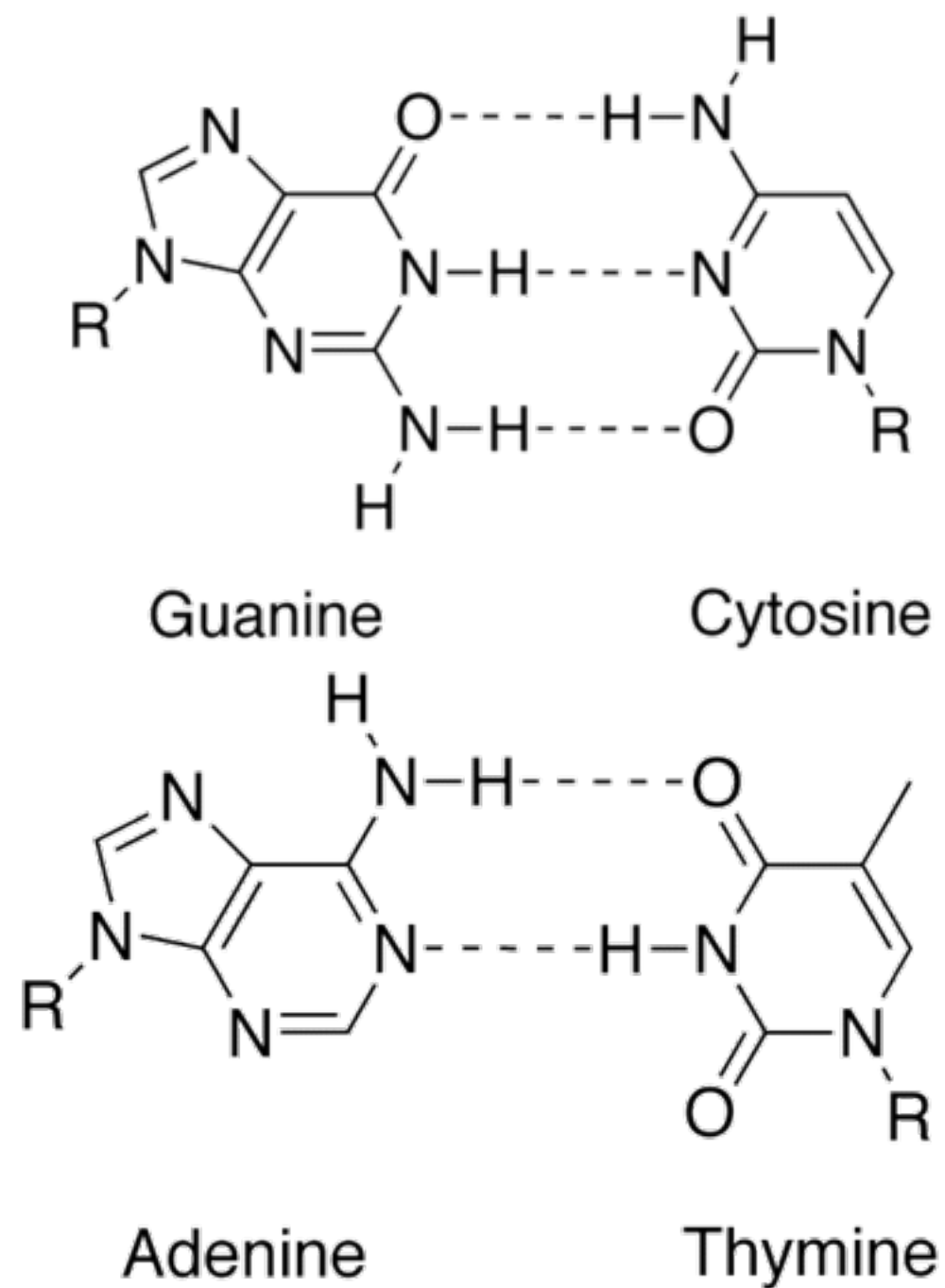
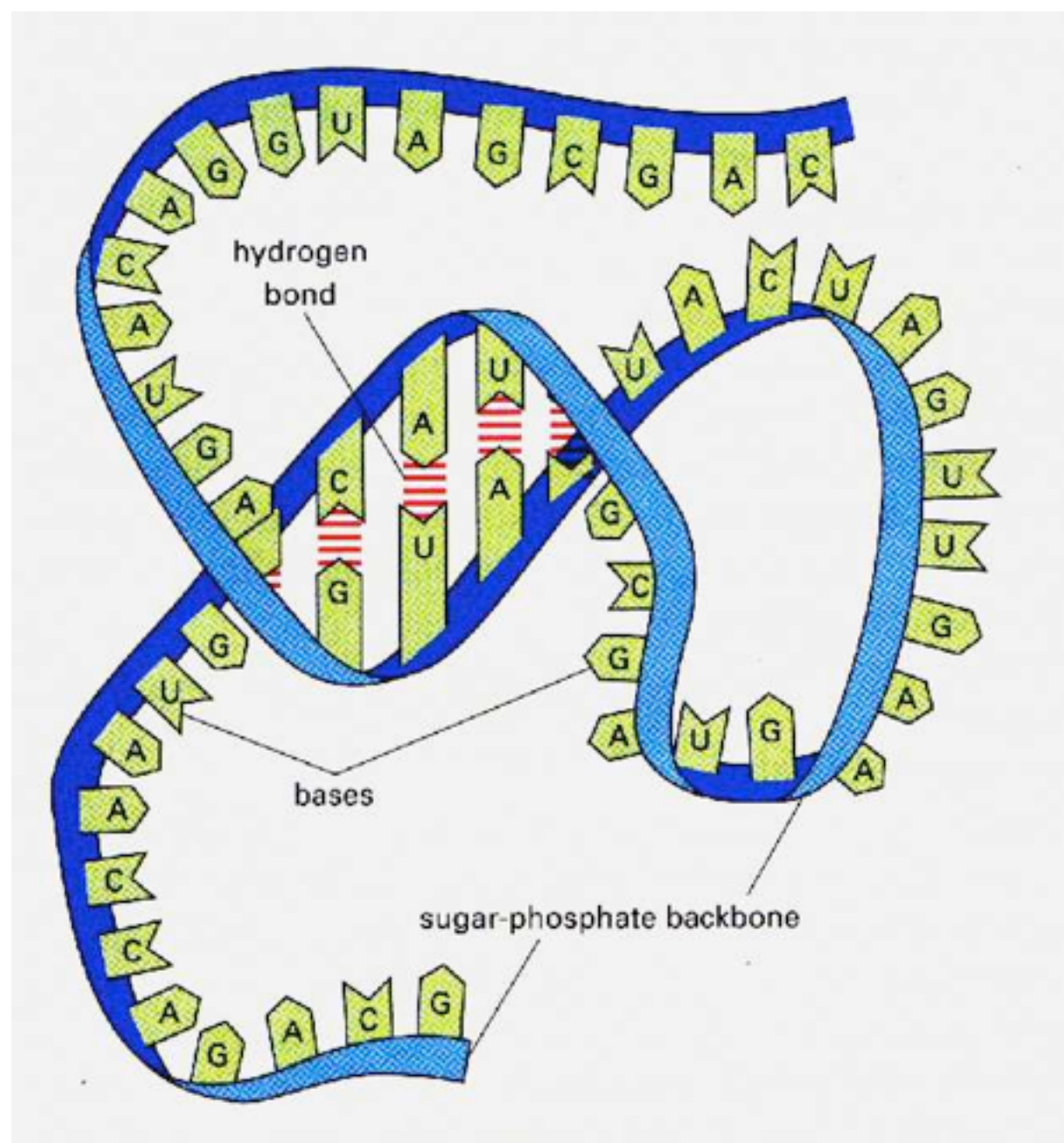
Sankoff Algorithm



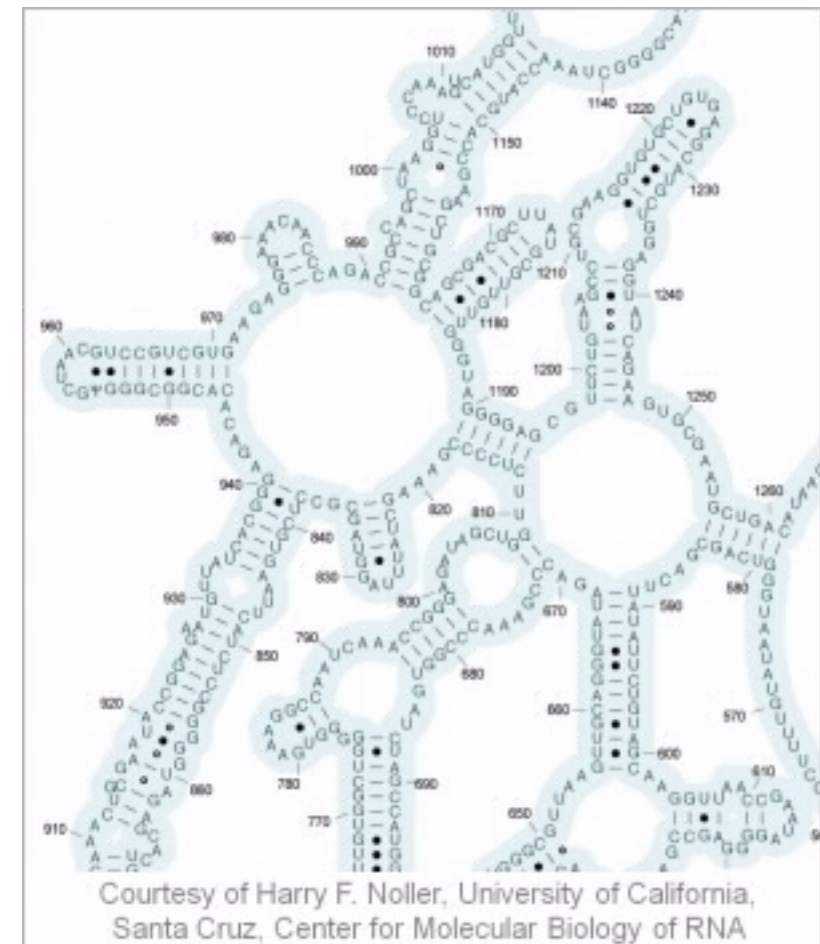
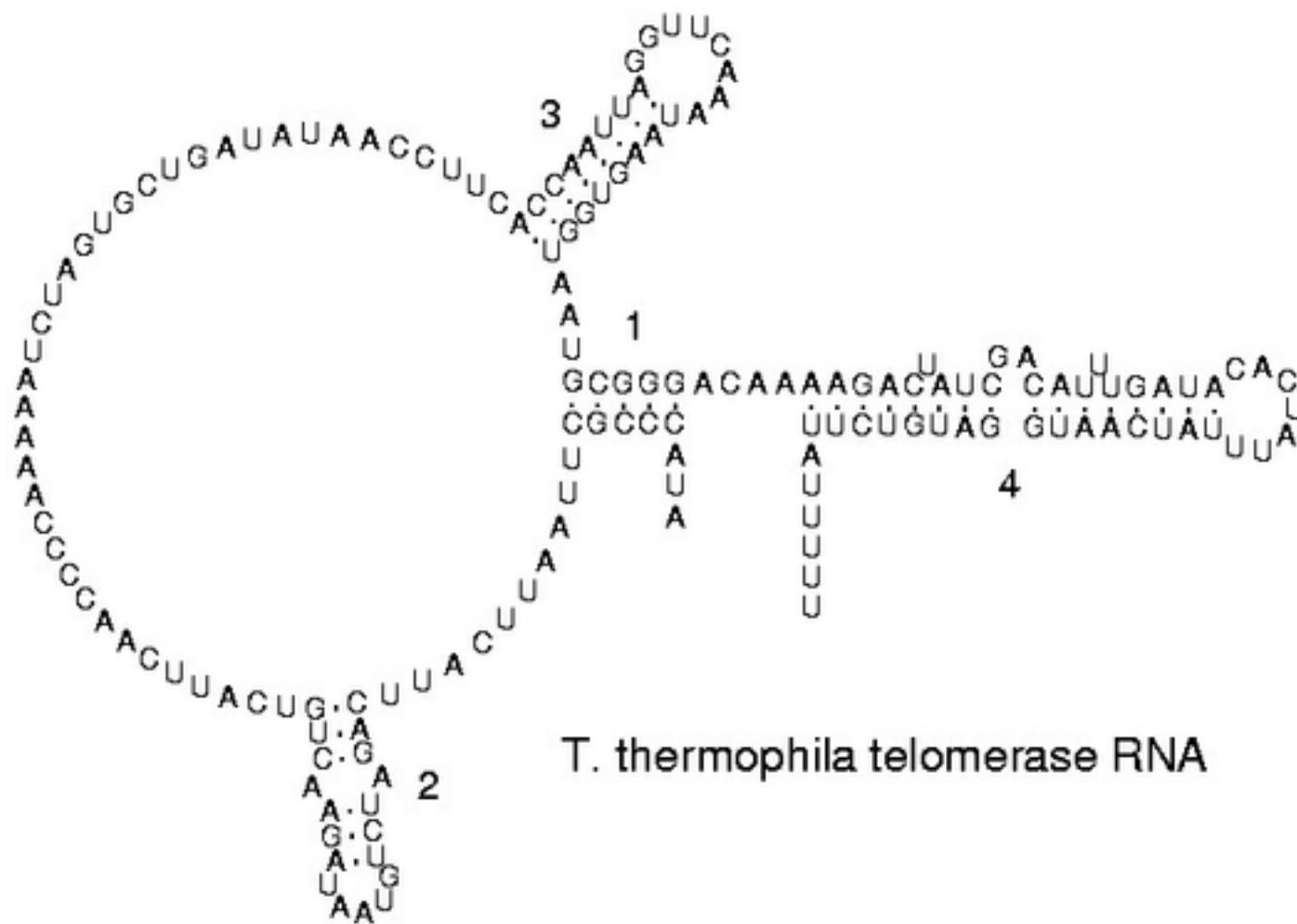
Large Parsimony



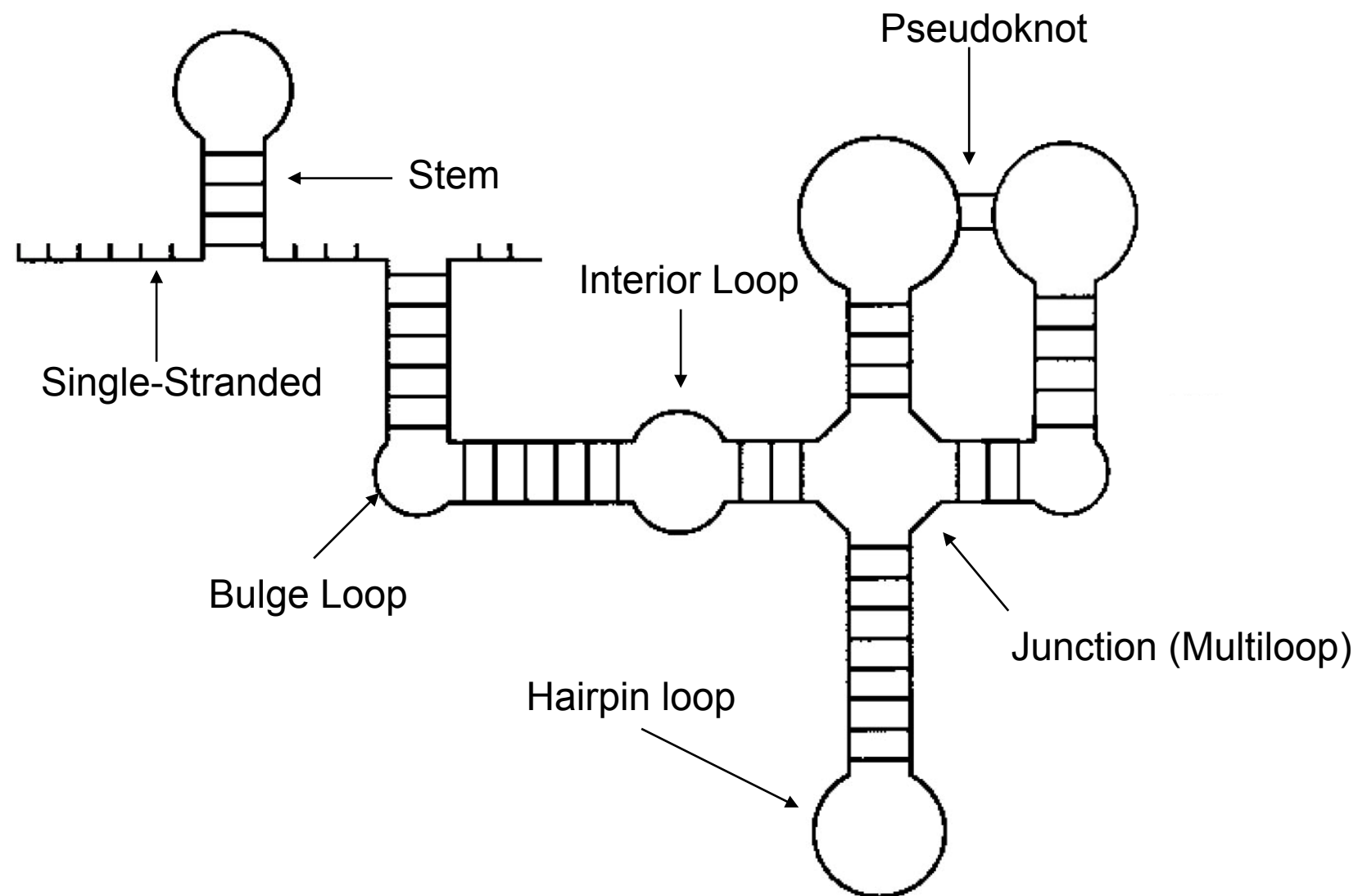
PHK



Структура РНК

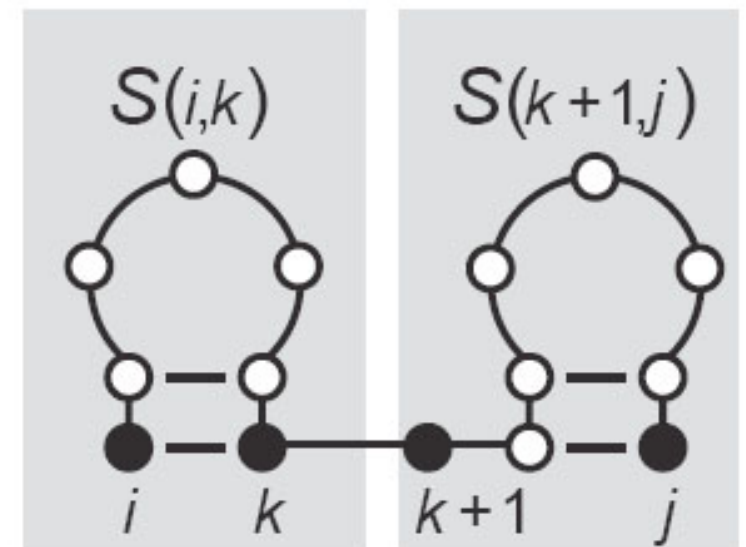
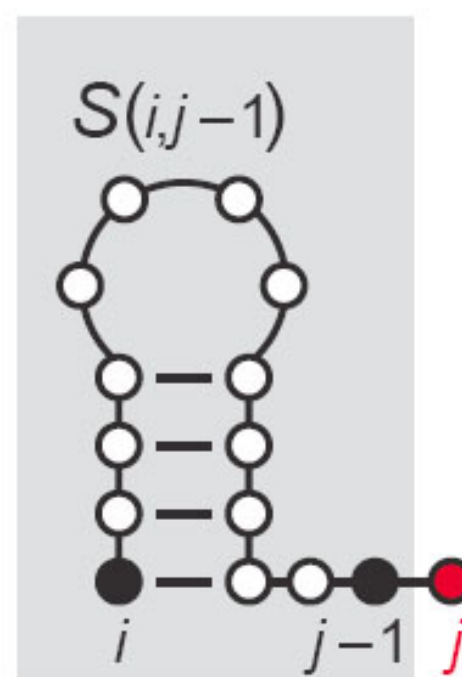
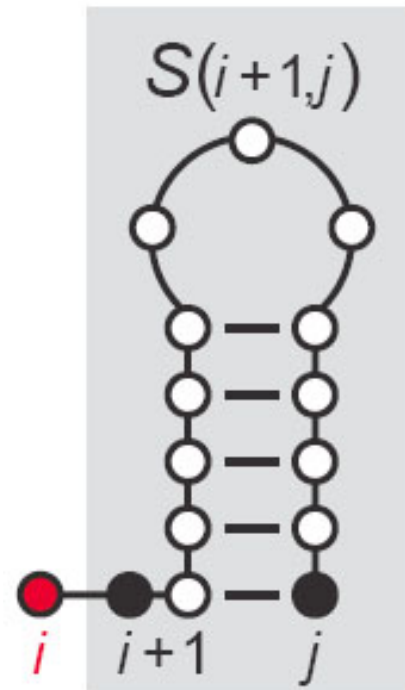
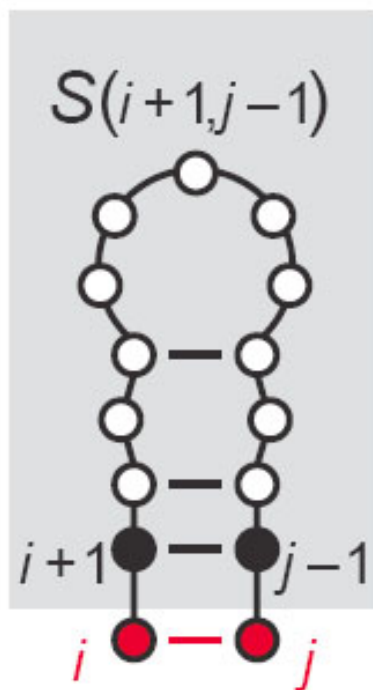


Структура РНК



Структура РНК

$$S(i,j) = \max \begin{cases} S(i+1, j-1) + 1 & \text{[if } i, j \text{ base pair]} \\ S(i+1, j) \\ S(i, j-1) \\ \max_{i < k < j} S(i, k) + S(k+1, j) \end{cases}$$



Набор



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<http://bioinf.me>

Магистратура в СПбАУ РАН:

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<http://bioinformaticsinstitute.ru/summer2013>

