

TME 2 PHYLOGENY

Extended Abstract

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ABSTRACT

l'usage dans ce TME des outils de Phlogenies et les théories nécessaires à leur compréhension

KEYWORDS

ACM proceedings, L^AT_EX, text tagging

ACM Reference Format:

Bassiro Ouremi TRAORE. 2018. TME 2 PHYLOGENY: Extended Abstract. In *Proceedings of ACM Conference (Conference'17)*, Jennifer B. Sartor, Theo D'Hondt, and Wolfgang De Meuter (Eds.). ACM, New York, NY, USA, Article 4, 2 pages. https://doi.org/10.475/123_4

1 PARSIMONY/PARCIMONIE

Le principe de parcimonie, principe énoncé par Guillaume d'Occam, qui interdit de multiplier le nombre de choses à moins d'y être contraint. (Ce principe est également appelé rasoir d'Occam.)[1].

1.1 exemple parsimony

1.2 small and Large parsimony

What are the small and large parsimony problems? Which one is harder? Why?

1.3 sankoff and fitch

l'algorithme de sankoff et l'algorithme de fitch sont des algorithmes de reconstructions de arbres phylogéniques basée sur les caractères. tous deux utilisent les fondements de la programmation dynamique pour résoudre des problèmes d'étiquetage d'arbres.

application. Given the following sequences, topology and cost matrices, apply the Fitch and Sankoff's algorithms to calculate the scores

sankoff. Soit la matrice de pénalité de sankoff

Todo

fitch. Soit la matrice de pénalité de fitch

Todo

*Dr. Trovato insisted his name be first.

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Conference'17, July 2017, Washington, DC, USA

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ACM ISBN 123-4567-24-567/08/06.

https://doi.org/10.475/123_4

	A	T	G	C
A	0	3	4	9
T	3	0	2	4
G	4	2	0	4
C	9	4	4	0

Table 1: Sankoff algorithm

	A	T	G	C
A	0	1	2	3
T	1	0	2	4
G	2	2	0	1
C	3	4	1	0

Table 2: Fitch algorithm

1.4 the nearest neighbor

What is the main idea of the nearest neighbor interchange algorithm? Why it is considered a heuristic method?

2 RECONSTRUCTION USING REVERSAL DISTANCES

2.1 application web site Part 1

Go to the web page <http://cinteny.cchmc.org>, choose human and mouse and click start. Then, select whole genome analysis (using human genome as reference). For human, genes are colored by chromosome, while for mouse by chromosome of human's homologous genes. Include both figures in your report.

2.2 application web site Part 2

Start again with human and mouse but select chromosome versus chromosome for chromosome 1 in human and 4 in mouse. What is the reversal distance? Why a big part of each chromosome was left in white? Include the figure in your report.

Mouse chr 4 - Human chr 1 Number of synteny blocks: 14 Reversal Distance: 1 Breakpoint Reuse: 1.00

what is the reversal distance? la distance de reversal **Todo**

2.3 application web site Part 3

Now start again with human, mouse, cow, and chimpanzee. Choose a whole genome analysis, write the matrix of reversal distances. Include this matrix in your report.

Chimp-Human: Number of synteny blocks: 723 Reversal Distance: 18 Breakpoint Reuse: 1.12

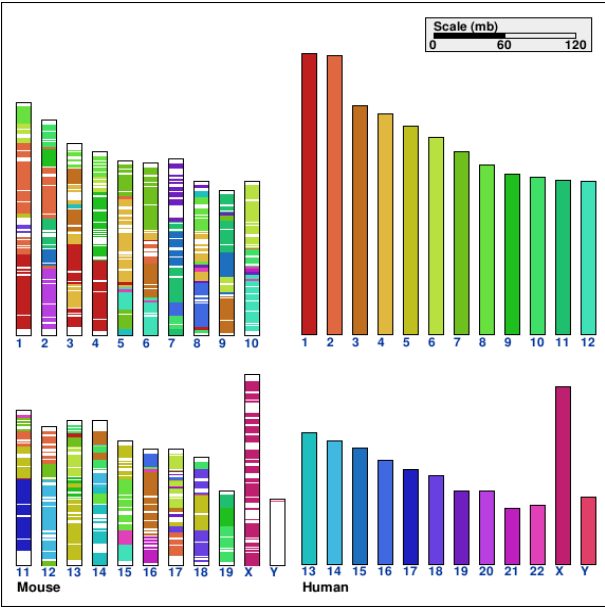


Figure 1: analyse du g n me humain et de la souris chacun de fa on entier

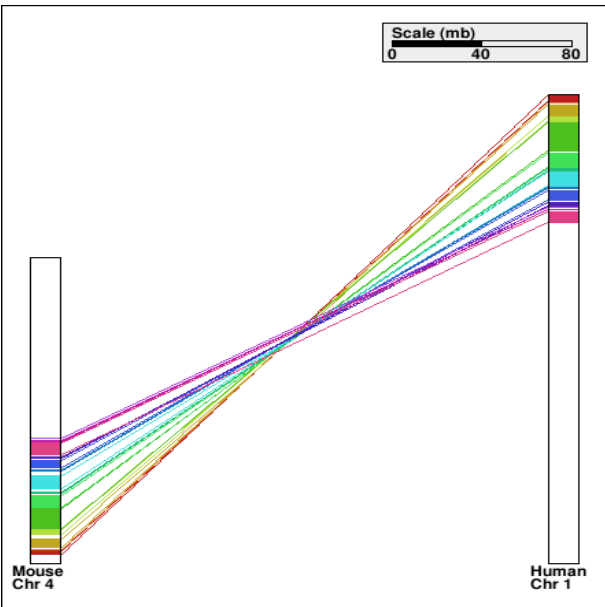


Figure 2: analyse du g n me humain et de la souris sur des le chromosome 1 pour le g n me Humain et le chromosome 4 pour la sourisincludegraphics command.

Cow-Mouse: Number of synten blocks: 1005 Reversal Distance: 360 Breakpoint Reuse: 1.54
Chimp-Mouse: Number of synten blocks: 957 Reversal Distance: 306 Breakpoint Reuse: 1.59

Chimp-Cow: Number of synten blocks: 990 Reversal Distance: 261 Breakpoint Reuse: 1.31
Mouse-Human: Number of synten blocks: 936 Reversal Distance: 302 Breakpoint Reuse: 1.61
Cow-Human: Number of synten blocks: 980 Reversal Distance: 257 Breakpoint Reuse: 1.31

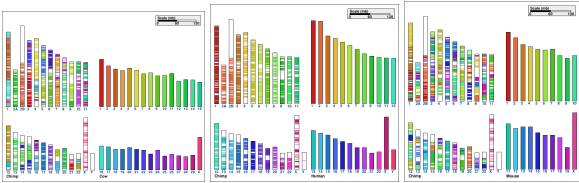


Figure 3: 3 images de r sultats de comparaisons des g n mes cow vs chimpanzee ;chimpanzee vs Himan; chimpanzee vs mouse

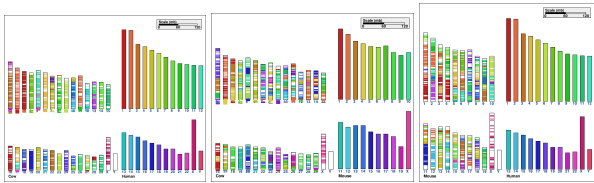


Figure 4: 3 images de r sultats de comparaisons des g n mes cow vs humain ;cow vs mouse; mouse vs Humain

	A	T	G	C
A	0	1	2	3
T	1	0	2	4
G	2	2	0	1
C	3	4	1	0

Table 3: Fitch algorithm

2.4 Using PHYLIP'S

Use PHYLIP's command neighbor to compute NJ and UPGMA trees from this matrix. Are these trees correct?

REFERENCES

[1] TUG 2017. Larousse definition de parcimonie. Retrieved May 27, 2018 from <https://www.larousse.fr/dictionnaires/francais/parcimonie/58082/locution>