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17012296

Sheet 1

No.

Date.

/ /

ACGTCA & GTCA T

① a) Scoring Scheme A, match = 5, mismatch = -1, Gap = -2

		A	C	G	T	C	A
	0	-2	-4	-6	-8	-10	-12
G	-2	↖ -1	↖ -3	1	↖ -1	↖ -3	↖ -5
T	-4	↖ ↖ -3	↖ -2	↖ -1	6	↖ 4	↖ 2
C	-6	↖ ↖ -5	↖ 2	↖ 0	↖ 4	11	↖ 9
A	-8	↖ ↖ -1	↖ 0	↖ 1	↖ 2	↖ 9	16
T	-10	↖ ↖ ↖ -3	↖ ↖ ↖ -2	↖ ↖ ↖ -1	↖ ↖ ↖ 6	↖ ↖ ↖ 7	14

ACGTCA -  
- - GTCA T

Score = 14

Scoring scheme B, match = 1, mismatch = 0, Gap = -10

		A	C	G	T	C	A
	0	-10	-20	-30	-40	-50	-60
G	-10	0	-10	-19	-29	-39	-49
T	-20	-10	0	-10	-19	-28	-38
C	-30	-20	-9	0	-10	-17	-27
A	-40	-29	-19	-9	0	-16	-16
T	-50	-39	-29	-19	-8	0	-10

ACGTCA  
GTCA T -

Score = -10

Scoring scheme C, match = 1, mismatch = -10, Gap = -2

		A	C	G	T	C	A		
		0	-2	-4	-6	-8	-10	-12	
G	-2	↖	-4	↖	-6	↖	-8	↖	-10
T	-4	↖	↖	-6	↖	-8	↖	-10	↖
C	-6	↖	↖	-8	↖	-10	↖	-12	↖
A	-8	↖	↖	-10	↖	-12	↖	-14	↖
T	-10	↖	↖	-12	↖	-14	↖	-16	↖

ACGTCA -  
- - GTCA T

Score = -2

DAOM

1

No.

Date. / /

Scoring scheme D, match = 2, mismatch = -2, gap = -5

		A	C	G	T	C	A	
		0	-5	-10	-15	-20	-25	-30
G	-5	↑	↑	↑	←	←	←	
		-2	-7	-8	-13	-18	-23	
T	-10	↑	↑	↑	←	←	←	
		-7	-4	-9	-6	-11	-16	
C	-15	↑	↑	↑	←	←	←	
		-12	-5	-6	-11	-9	-9	
A	-20	↑	↑	↑	←	←	←	
		-13	-10	-7	-8	-3	-2	
T	-25	↑	↑	↑	←	←	←	
		-18	-15	-12	-5	10	-7	

ACGTCA -  
--GTCA T

Score = -7

Scoring scheme E, match = 1, mismatch = -1, gap = -1

		A	C	G	T	C	A
	0	-1	-2	-3	-4	-5	-6
G	-1	↑	←	↑	←	←	←
T	-2	↑	↑	↑	←	←	←
C	-3	↑	↑	↑	←	←	←
A	-4	↑	↑	↑	←	←	←
T	-5	↑	↑	↑	←	←	←

ACGTCA -  
--GTCA T

Score = 1

#

We had 2 kinds of Alignments:

1. ACGTCA - & 2. ACGTCA  
--GTCA T GTCAT-

← Scheme B

Max  
Mismatches

DAOM

2

↑  
rest same amount  
of gaps

### Neanderthalis

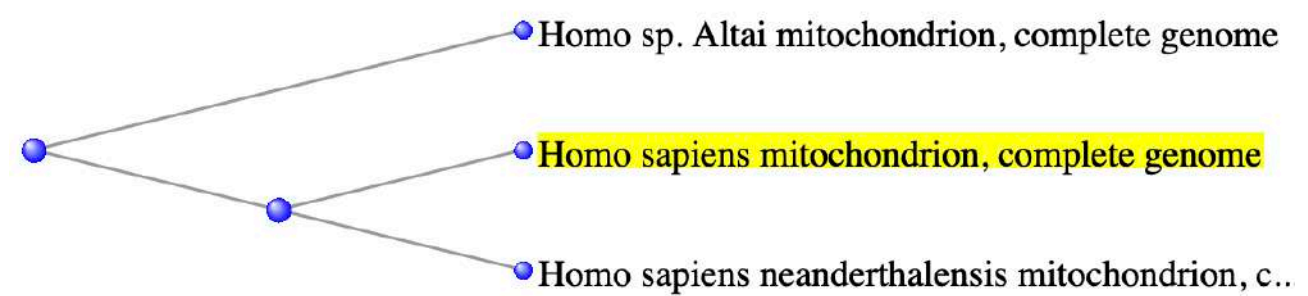
CDS:NADH dehydrogena	1		M P M A N L L L L I V P I L I A M A	
Query	3301	AACAACATACCCATGGCCAACCTCCTACTCCTCATTGTACCCATTCTAATCGCAATGGCA		3360
<b>Sbjct</b>	3296	..... <b>C</b> ..... <b>G</b> .....		3355
CDS:NADH dehydrogena	1		M A N L L L L <b>V</b> V P I L I A M A	

V to I doesn't change much (conservative mutation)

### Denisovan

CDS:NADH dehydrogena	1		M P M A N L L L L I V P I L I A M	
Query	3299	TTAACAACATACCCATGGCCAACCTCCTACTCCTCATGTACCCATTCTAATCGCAATGG		3358
<b>Sbjct</b>	3295	..... <b>A</b> .....		3354
CDS:NADH dehydrogena	1		M P M A N L L L L I V P I L I A M	

Only one change in Denisovan



Homo sapiens are closer to Neanderthalis than Denisovan