Vertical and horizontal = always Gap score -2

Homework Week2

Horizontal gap → 0 = gap in first sequence

Sequence Alignment Fundamentals

Vertical gap ↓ 0 = gap in second sequence

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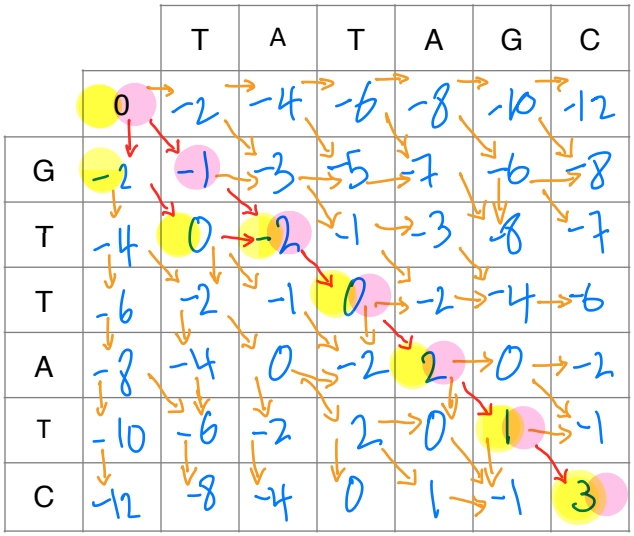
This unit's homework consists of both (1) an online knowledge assessment quiz (see online) and (2) a Needleman-Wunsch dynamic programming assessment exercise (this document). Both components contribute 50% to this unit's grade. For the later we have two sample sequences, and we'd like to use the Needleman-Wunsch algorithm discussed in class to align them.

M: +2 MM: -1 Gap: -2

Sequence 1: **TATAGC**

Sequence 2: **GTTATC**



→ 1 + 2 = (3) → optimal Score

↓ -1 + -2 = -3

→ -1 + -2 = -3

Possibility #1

TATAGC
GTTATC

Possibility #2

-TATAGC
G-TTATC

Step	Scoring Rubric/Assessment Criteria	Points	
1	Setup labeled alignment matrix	1	
2	Include initial column and row for GAPs	1	
3	All alignment matrix elements filled in	1	
4	Evidence for correct use of scoring scheme	1	
5	Direction arrows drawn between all cells	1	
6	Evidence of multiple arrows to a given cell if appropriate	1	D
7	Correct optimal score position in matrix used	1	C
8	Correct optimal score obtained for given scoring scheme	1	B
9	Traceback path(s) clearly highlighted	1	A
10	Correct alignment(s) yielding optimal score listed	1	A+

(10 Total points)