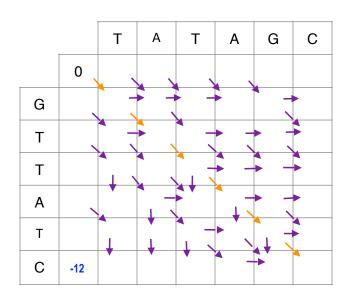
## **Homework Week2**

## **Sequence Alignment Fundamentals**

http://thegrantlab.org

Dr. Barry Grant

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.



Sequence 1: **TATAGC**Sequence 2: **GTTATC** 

Using a match score of +2, a mismatch score of -1, and a gap score of -2. Fill in the table and translate it into a alignment.

Please submit your completed answer via **gradescope**. This should be titled "02. Global Alignment HW Week2". You can submit this document as a PDFor a photo of a separate page with your completed **alignment matrix** along with your **aligned sequences** and their **optimal score**.

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	С
8	Correct optimal score obtained for given scoring scheme	1	В
9	Traceback path(s) clearly highlighted	1	Α
10	Correct alignment(s) yielding optimal score listed	1	A+

(10 Total points)

## **OPTIMAL SEQUENCE:**

Seq 1: TATAGC

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Seq 1 : GTTATC

## **OPTIMAL SCORE:**

+3