

Procedure to fill in scoring tables per Smith-Waterman algorithm

1. Start in upper left corner.
2. Evaluate score at that element
3. Evaluate score for all elements of row (starting from element)
4. Evaluate score for all elements of column (starting from element)
5. Go down one square from element along the diagonal

How to evaluate score:

Evaluate score from three directions:

From left: If score from left came from a diagonal, subtract gap_open_penalty from it, otherwise subtract $\text{gap_extend_penalty}$ from it

From top: If score from top came from a diagonal, subtract gap_open_penalty from it, otherwise subtract $\text{gap_extend_penalty}$ from it

From diagonal: If target and query match at the element in question, add match_reward to score from diagonal, otherwise subtract mismatch_penalty

Take the highest of the three scores (or zero) and assign to element.

Keep track of the direction from which a score was derived.