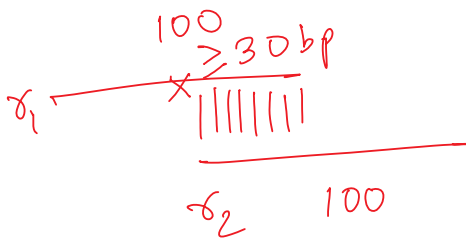
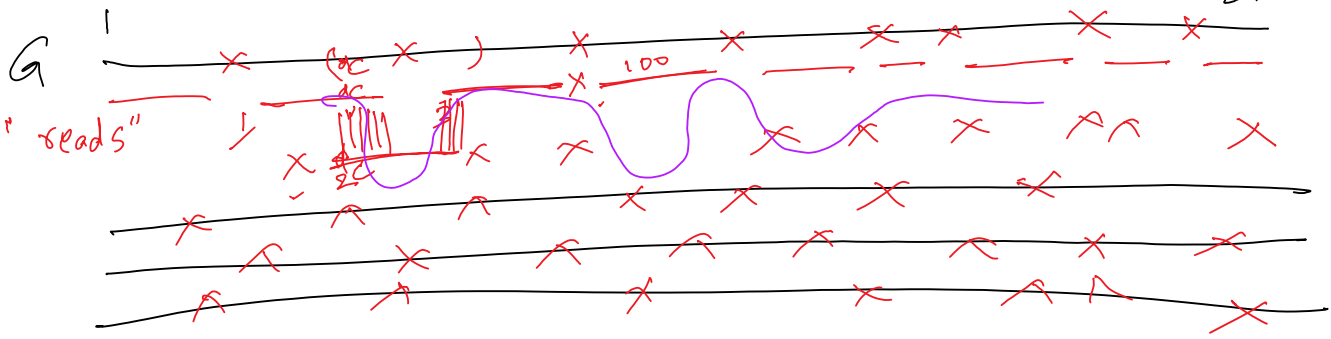


depth of coverage

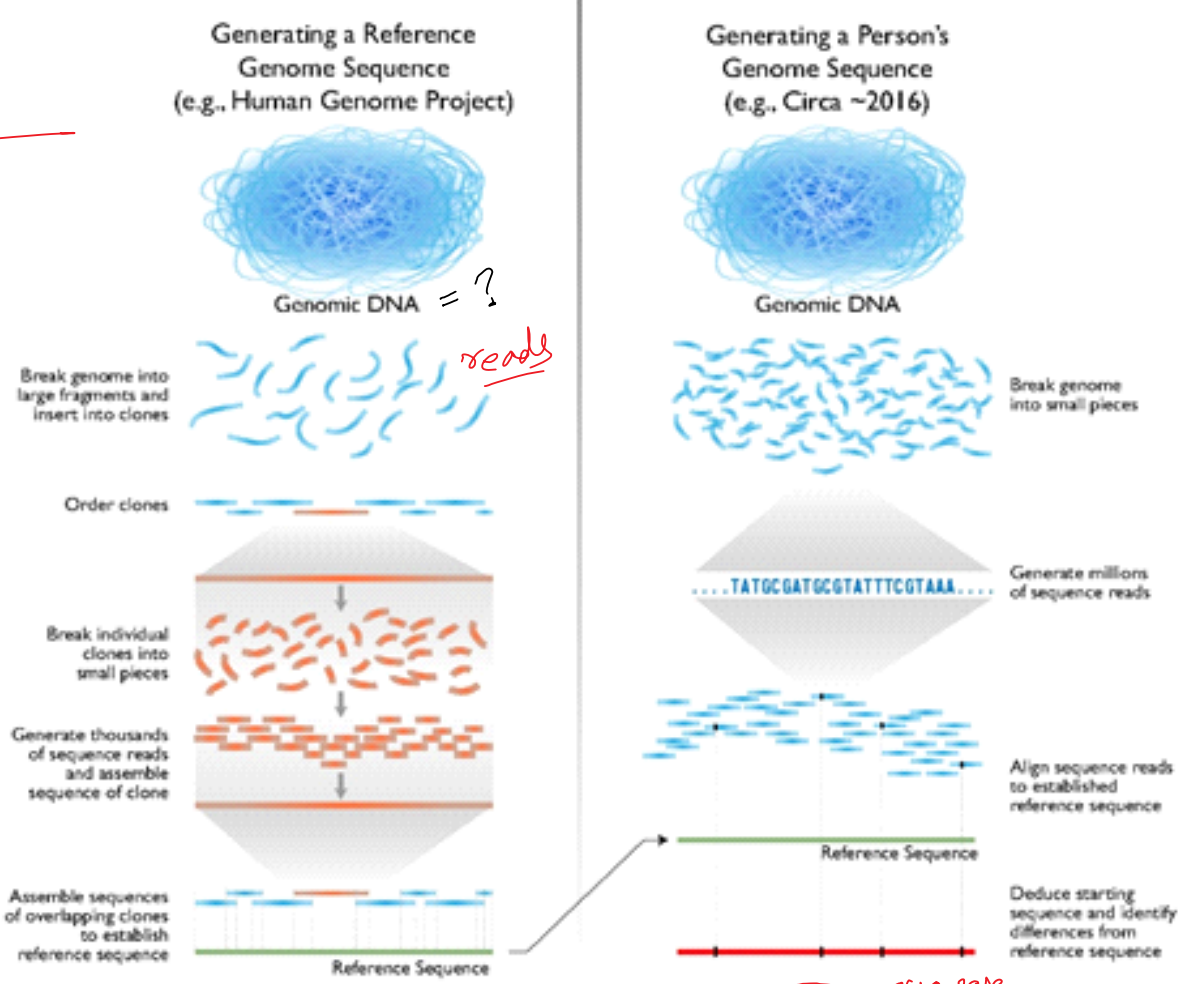
Shotgun approach

Semi-Global Alignments: Motivation

Monday, February 8, 2021 10:50 AM

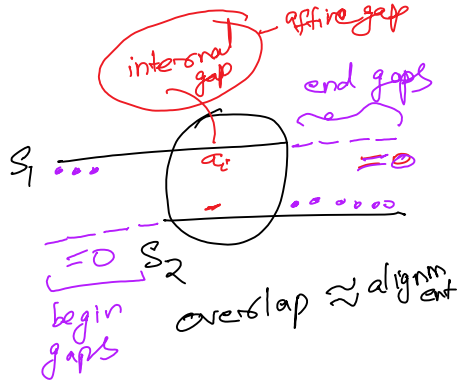
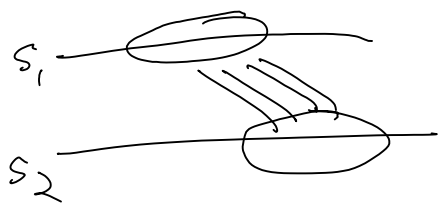
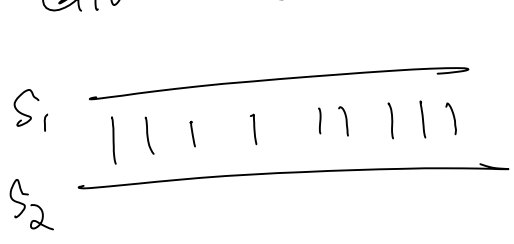


Human Genome Sequencing



Global alignment

Local Alignment

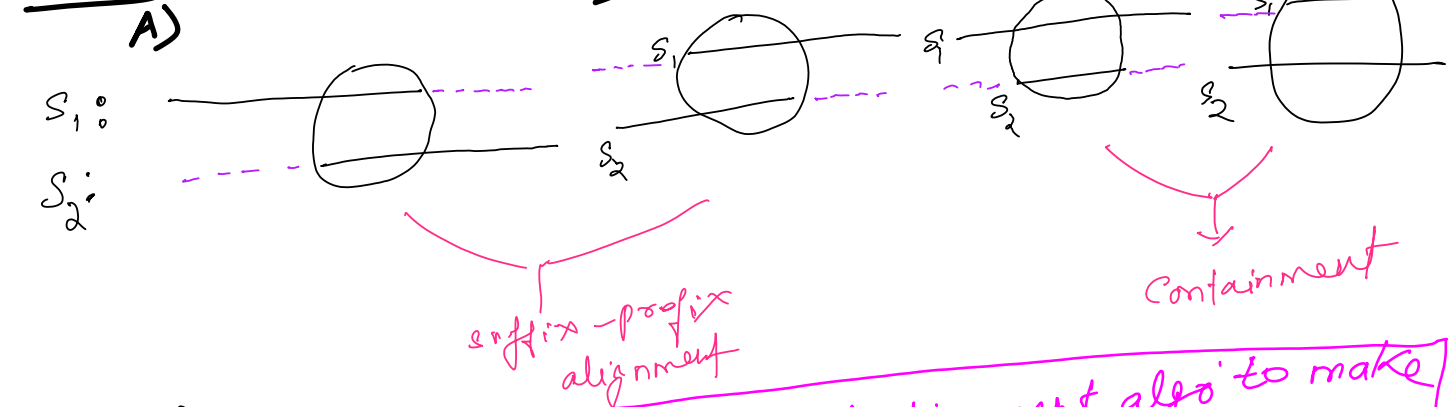


Algorithm (semi-global)

Monday, February 8, 2021 10:51 AM

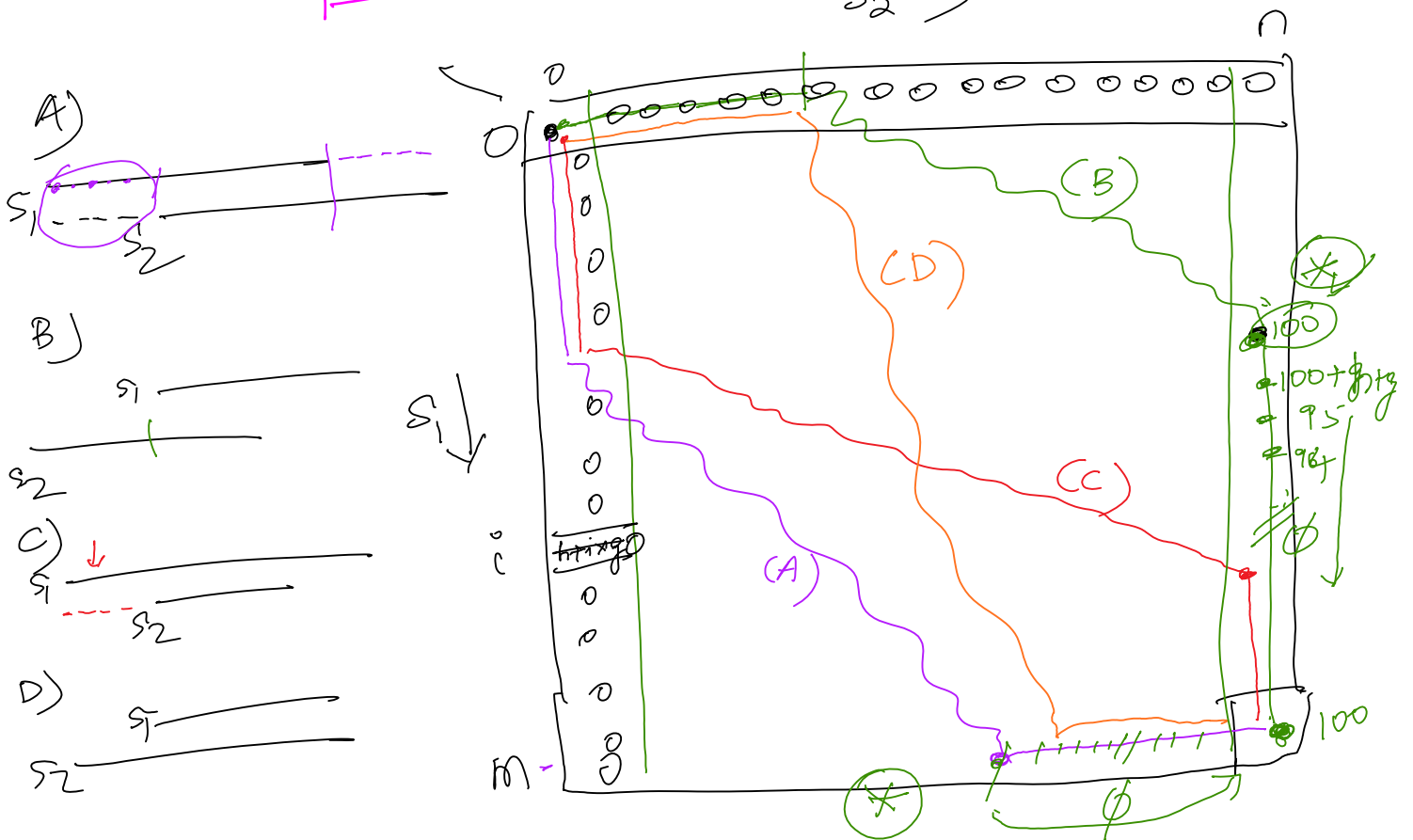
"End gaps" \approx score of ϕ
 internal gaps \approx affine gap

Cases:



Algorithm!

Strategy: Modify global alignment algo to make start & end gaps free.



Pseudocode for Semi-Global Alignment Algorithm

Wednesday, February 10, 2021 10:20 AM

Algorithm for semi-global alignments:

1. **Initialize** DP table $T[m+1][n+1]$:
 - a. initialize all values in row ϕ to ϕ
 - b. initialize all values in column ϕ to ϕ
2. **Compute** the main recurrence for global alignment at each cell (i, j) , for all $\begin{pmatrix} 1 \leq i \leq m \\ 1 \leq j \leq n \end{pmatrix}$
3. Let:
 - a) $score_1$ \leftarrow the best (maximum) score in row m
 - b) $score_2$ \leftarrow the best (maximum) score in column n
 - c) $score_{opt} \leftarrow \max \{ score_1, score_2 \}$
4. (For **optimal path retrace**):
Retrace from the cell that yielded the optimal score in step 3c.

Cases:

