

Local comparison

- Same matrix layout as global comparison
- Meaning of $a[i, j]$: maximum $\text{sim}(s[k, i], t[l, j])$
- Empty prefixes: zero score
- Don't let $a[i,j]$ become negative
- Looking for maximum: entire matrix

Saving space

- To compute score only:
 - space $O(n)$
- To retrieve optimal alignments:
 - space $O(n)$
 - time roughly doubles

BLAST

- Finding local alignments fast
- Database search
- Fine scoring for proteins:
 - PAM matrices
 - BLOSUM matrices

Edit distance

- Number of edit operations needed to transform one string into the other
- Notation:

$$d(s,t)$$

- Operations: insertion, deletion, substitution
- Arbitrary costs can be handled
- Not good for local alignments
- Similarity is more general than distance

Similar sequences

- Faster algorithms can be used
- They work in a band around the diagonal
- $O(nd)$ where $m = |s| = |t|$ and $d = d(s, t)$