

## Bioinformatics – Lecture Notes

### Announcements

Seminar – “Quality Control in Manufacturing Oligo Arrays”

Professor Charlie Colbourn (over 230 journal papers)

Friday February 1, 11: am

EC 2.112

### Class 6

#### 1. Global Pairwise Sequence Alignment

- A. Distance Methods – how different are the sequences
- B. Alignment with Tandem Duplication – Uses the DSI model which is a different evolutionary model with duplications, substitutions and indels
- C. Similarity Methods – align many sequences with of different lengths and find optimal alignment of all sequences

#### Distance Methods –

Additivity of Alignment Distances

Proof relating alignment to alignment distance

Needleman-Wunch Distance

Dynamic Programming

Traceback

Examples

Alignment with Gap Penalty

Gotoh's Algorithm