# CS321: Numerical Methods in Comp Mol Bio

## Homework 11

Due: Thursday, Dec 1 2005 at the begining of the section

## Problem 1

Write a Matlab function that accepts two sequences, a similarity matrix and a gap penalty score and returns an optimal local alignment of the two sequences along with its score.

Use Blosum50 and a gap penalty of -5 to find the optimal local alignment for all the the pairs of sequences seq1 to seq4.

a) report your alignments and their scores.
b) comment on which of the sequences you belive are related to one another.

## Problem 2

On the same sequences as problem 1, find the percentage of global identity between all pairs.

a) report your alignments and their scores.
b) comment on which of the sequences you belive are related to one another.

## Problem 3

For extra credit:

Write a Matlab function that accepts two sequences, a similarity matrix a gap open penalty score and a gap extention penalty score and returns an optimal local alignment of the two sequences along with its score.
Use Blosum50 a gap open penalty of -10 and a gap extention penalty of -3 to find the optimal local alignment for all the pairs of the sequences:

a) report your alignments and their scores.
b) comment on which of the sequences you belive are related to one another.