NORDPLUS NEIGHBOUR 2005-2006

PROJECT "NORDIC – BALTIC - RUSSIAN ACADEMIC NETWORK IN BIOINFORMATICS"

NETWORK MEETING, 1.October-5.October, 2005

LATVIA UNIVERSITY OF AGRICULTURE, FACULTY OF INFORMATION TECHNOLOGIES, JELGAVA, LATVIA

The aims of the meeting are:
- Meet face-to-face fellow representatives from partner universities.
- Negotiations between partner universities about possible ways of cooperation.
- Get the information from the representatives about the current situation of the curriculum development at each university.
- Approve the draft outline of the network activity plan for 2005/2006.
- Work out general vision.

The network meeting activities are:
1. Introduction to the study programs and courses in the field of bioinformatics and related sciences at all partners' universities.
2. Introduction to the distance learning possibilities at the Latvia University of Agriculture.
3. Discussion and decision about course content of Biology, Biology data analysis and Bioinformatics.
4. Discussion about course organization and administration.

The network meeting specific outcomes are:
1. Biology course content:
   - *For the students with non -biological knowledge:*
   Biological make up of living organisms. Cells and chromosomes. DNA and proteins. DNA code. Central dogma. Genes. Genomics and proteomics. Genomes of prokaryotes. Genomes of eukaryotes. Human genome. Evolution of genomes. Single nucleotide polymorphism (SNPs) and its testing method. Quantitative Trait Locus (QTL) identification. Causative gene identification.
   - *Students with biological knowledge*
   Genomics and proteomics. Genomes of prokaryotes. Genomes of eukaryotes. Human genome. Evolution of genomes. Single nucleotide polymorphism (SNPs) and its testing method. Quantitative Trait Locus (QTL) identification. Causative gene identification.

2. Biological Data statistics course content:
   - *Distance Learning*
   Introduction to R tool. Data cleaning and transformation. Basic probability, estimation. Hipothesis testing (tests and p-values methods). Classical parametric statistics (t-tests; ANOVA).
   - *Face-to-face course*
   Introduction to R tool. Analysis of relationships: linear, logistic regression. ANOVA and GLM (general liner models). Dimensionality reduction (principal component analysis). Cluster analysis (hierarchical clustering; k-means clustering). Methods of classification (k-nearest neighbours, nearest centroid, linear discriminant analysis, neural networks).

The **Research Council** of Norway

3. Definition of bioinformatics:
   Bioinformatics is the use of mathematics, statistics and information technologies to solve problems in molecular biology.

4. Bioinformatics course content:
   - *Distance Learning*
   Introduction to R tool. Data bases. Sequence alignment.
   - *Face-to-face course*
   Phylogeny. Analysis of microarray data. Analysis of single nucleotide polymorphism (SNP) data and SNP array data.

5. The plan of bioinformatics network activities for the 2005/2006. and 2006/2007. study years.

The network meeting work group conclusions reached:

- The potential group of the applicants consists of the two groups of students with the background in biology and IT.

- To prepare the courses content which is appropriate for both students groups. The differences between initial knowledge will be compensated during distance-learning course before face-to-face course.

- Development of the project proposal for 2006. /2007. study year before 01 December 2005.

  Responsible: Irina Arhipova and Liga Paura.

- The 2nd network meeting will held in Kaunas, Lithuania in 04.01.-07.01.2006.
  Responsible: Ilona Miceikiene.

- The meeting agenda in Kaunas consists of the following questions:
  - o Biology course content
  - o Biology course administration
  - o Development of the final project proposal for 2006./2007. study year.

- The potential group of students consists of universities and higher education establishments from Lithuania (6), Latvia (3), Estonia (2), Denmark (1), Norway (2) and Russia (2).

- The course of Biology will be in Kaunas, Lithuania in May 2006.

  Responsible: Ilona Miceikiene.

- The 3rd network meeting will be in Norway in 06.-09.06.2006.

  Responsible: Lars Snipen.