



UNIVERSITE LIBRE DE BRUXELLES

FACULTE DES SCIENCES



SERVICE DE BIOINFORMATIQUE DES GENOMES ET DES RESEAUX (BIGRe)
<http://www.bigre.ulb.ac.be/>

The public dissertation for the PhD diploma of

Mme Karoline FAUST

will take place

Friday Feb 12 2010 at 16:00

ULB Campus Plaine, bâtiment NO, 5th floor, Salle Solvay
Boulevard du Triomphe, Accès 2, 1050 Bruxelles

Campus map: http://www.ulb.ac.be/docs/campus/pla_NO.html

Development, assessment and application of bioinformatics tools for the extraction of pathways from metabolic networks

Summary: The aim of the work was the development, evaluation and application of tools that predict metabolic pathways from associated enzyme-coding genes. Genes can be associated in various ways, for instance by co-expression in microarrays or by co-regulation in operons and regulons. The products of enzyme-coding genes can be linked to their EC numbers and reactions using public databases. The set of reactions obtained from the query genes can then be connected in a metabolic network using a graph algorithm. In this thesis, metabolic networks were constructed from the two major metabolic databases KEGG and MetaCyc. The evaluation of several graph algorithms showed that a combination of a Steiner tree heuristic with a random walk-based algorithm performed best on the set of reference pathways.

Promoter: Jacques van Helden