

***exprDB*: a flexible relational database for gene expression data**

Hagen Höpfner¹, Niels Grabe¹, Lothar Altschmied²

¹Bioinformatics Lab

Otto-von-Guericke University Magdeburg

hoepfner@cs.uni-magdeburg.de, grabe@iti.cs.uni-magdeburg.de

²Department of Molecular Genetics

Institute for Plant Genetics and Crop Plant Research (IPK Gatersleben)

altschmied@ipk-gatersleben.de

The schema of gene expression databases like [1] strongly depends on the design of the underlying lab works. So modifications in lab works often lead to modifications in the database schema. A solution would be to store as few data as possible. But for future evaluations of the experimental data, as much information as possible should be stored. Here we present an approach addressing this problem. To keep the schema of our database flexible, we used a meta model to store the data in our database. The meta model allows the additional introduction of new data types and experimental process steps at any time without the modification of any source code of our database application; e.g. our database schema can be used for cDNA-arrays as well as for oligonucleotide arrays and for radioactively labelled cDNA probes as well as for fluorescent labelled probes. Opposed to [1] we introduce 'procedures' defining experimental steps. We can store detailed information about these procedures as needed. So we can split the hybridisation experiment into a series of experimental steps. Hybridisation is only one step besides rehybridisation, wash, stripping, radioactive or fluorescent signal detection. These parts can be used more than once in an experiment series. Because of our meta model the user is easily able to add new experimental steps with its specific parameters. We applied the meta model to construct a prototype database. Only 18 simple relations were needed which are managed by MySQL. A web-based user interface for *exprDB* was developed. To realise this interface HTML with PHP3 and Java-Script was used. So *exprDB* can be accessed with common webbrowsers.

References

[1] EBI (2000) Array Express Database, <http://www.ebi.ac.uk/arrayexpress/index.html>