

AFLP Manager: a database to manage and analyze AFLP finger-print profiles

ID - 212

Catalano Domenico¹, Grillo Giorgio¹, Perrone Giancarlo², Stea Gaetano², Susca Antonia², Mule' Giuseppina², Licciulli Flavio¹

¹Istituto for Biomedical Technologies, ITB-CNR Bari, Italy

²Istituto of Science of Food Production, ISPA-CNR Bari, Italy

Motivation

Methods

The 'AFLP manager' database is able to transform raw data (AFLP experiments coming directly from the sequencers) in structured data useful to carry out comparative and evolutive studies and for the easy detection of characteristic peaks and profiles.

AFLP Manager allows the comparison of data with different search and filter criteria, integrating genomic data with morphological and phenotypic data as metabolites, geographic localization, host/substratum, etc. stored in the 'ITEM Collection' database (<http://www.ispa.cnr.it/Collection/>), a culture collection of important agro-food fungi maintained by the Institute of Sciences of Food Productions.

The three main blocks constituting the 'AFLP Manager' are: 'ABI Loader' allowing the loading of the profiles in the database (GeneScan output files, ABI binary files); 'ABI Info' where the management of the data concerning the experiments and the profiles occurs; 'Analysis' where the user may select, assemble and analyze the profiles of interest.

The most important part of the database is the 'Analysis' section: this represents a useful tool to carry out a fast comparison among profiles related to a specific oligo of strain. Moreover, it is possible to search strains characterized by particular profile patterns intersected with morphological and phenotypic features (available in ITEM Collection database), in order to lead analysis on strain identification, especially at low taxonomic ranks (Savelkoul et al. 1999, Schmidt et al., 2003, 2004), and to display peaks belonging to ranges/values defined by users.

Profiles data are displayed as a table in an easily readable format. The result table could be exported in two file types: Excel file and NtSys file usable by the NTSYSpc software (Exeter Software, NY-USA) to make cluster analysis and UPGMA tree diagrams. The 'AFLP Manager' is available as a web application, experimental information and peaks/profiles data are structured in a relational schema and managed by the MySQL DBMS (<http://www.mysql.com/>), while the web interface has been developed in PHP language (<http://www.php.net/>). The ABI binary file import procedure has been implemented through a software developed in C language using MySQL APIs.

Results

The 'AFLP manager' database was developed and tested using AFLP profiles of *Aspergillus Sect. Nigri* isolated from grapes in Europe (EU Project WINE-OCHRA RISK QLK1-CT-2001-01761).

At this stage the database contains: 1,560 AFLP runs with four different primer pairs (406 runs for primer EcoRIAC/MseICC, 386 for EcoRIAC/MseICA, 388 for EcoRIAT/MseICG, 380 for EcoRIG/MseICT), which were uploaded in the database. A first result in the 'AFLP Manager' use has been the characterization of a new *Aspergillus* population isolated from grapes (Perrone et al, 2006).

Furthermore, the data loading, accessing and analysis through the web represent an important facility; in this way, researchers could produce, store and analyze their data also when they are far from their laboratory.

Finally, the database structure and the methods used in the data management and analysis in 'AFLP Manager' could be useful in other biological domains, such as bacterial studies or for the generation of 'barcodes' for species identification.

Availability: <http://server.ispa.cnr.it/AFLPManager/>

Email: domenico.catalano@ba.itb.cnr.it