



histomass

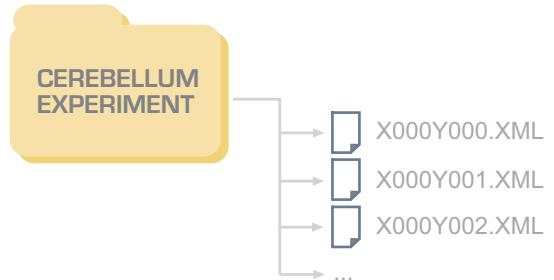


Software for imaging
mass-spectrometry

What is Histomass?

Histomass is a software package developed in Visual Basic.NET over MySQL data base for analyzing imaging mass spectrometry experiments carried out over tissues.

This software loads files from imaging mass spectroscopy experiments. After normalizing the data, includes several visual and analytic functionalities that make data interpretation easier.

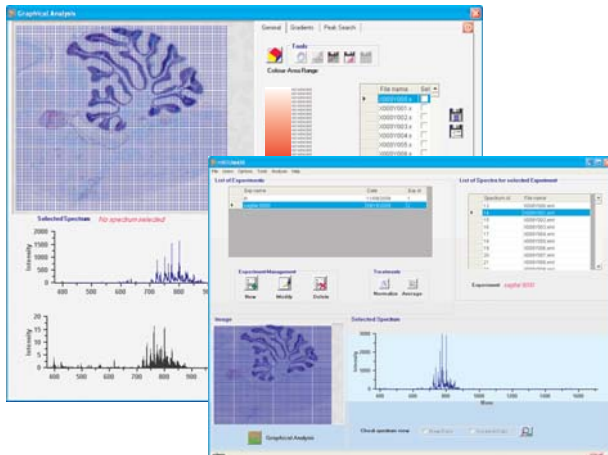


Data input

Histomass input data are the mass spectra recorded directly from a rectangular area of a tissue slice in XML format, together with a picture of the slice. The program allows to superimpose density maps over the picture of the tissue to ease the identification of anatomical areas.

Data loading and preparation

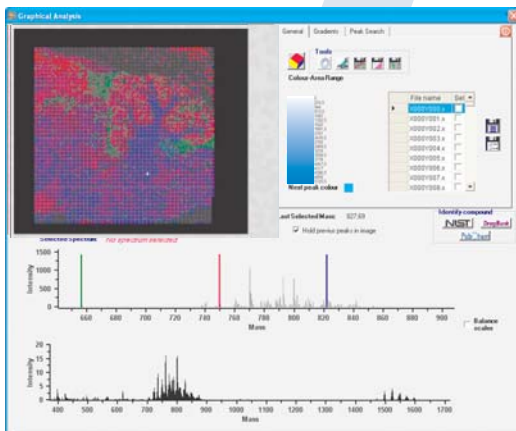
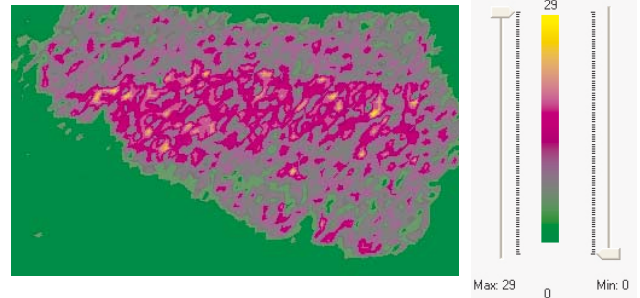
- The folder with XML spectra files and images is loaded.
- The data can be normalized to the total ion current, so peaks in different spectra are comparable.
- An average spectrum can be calculated, to obtain an overall picture of the quality of the results.



ANALYSIS

You can select one or more peaks corresponding to proteins or compounds of interest. Histomass calculates the areas of those peaks in every spectrum and shows over the picture the distribution of the intensities of those compounds along the tissue. Higher colour saturation corresponds to higher concentration levels.

The distribution can be visualized with the colour gradient tool. You can fit the concentration thresholds in order to eliminate background noise or to detect peaks into a particular intensity band.



Other functionalities

- Compound search (from selected peak mass) in public data bases.
- Peak search.
- Spectra export.
- Image export.
- 3D expression distribution visualization.
- Experiment management.
- User management.
- Etc.

Advantages

- Server-client architecture allows multiple access to data base, processing time optimization, etc.
- Auto-installer installs everything you need almost automatically: from data base to FTP server.
- The input format, XML experimental system-independent, gives a higher flexibility than existing tools.

Technical features

Minimum characteristics for the user:

- Processor: Intel Pentium IV , 2,4 GHz
- RAM: 1Gb

Minimum characteristics for the application server:

- Operating system: Microsoft Windows, we advise to use the Windows 2000 Professional version, with NT technology, for better system stability.

Minimum characteristics for the application server:

- MySQL 4.1.



Contact information

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References

Use case:

- Egoitz Astigarraga, Gabriel Barreda-Gómez, Laura Lombardero, Olatz Fresnedo, Fernando Castaño, Maria Teresa Giralt, Begoña Ochoa, Rafael Rodríguez Puertas, José A. Fernández. *"Profiling and imaging of lipids on brain and liver tissue by matrix-assisted laser desorption/ionization mass spectrometry using 2-mercaptobenzothiazole as a matrix"* Anal. Chem. in press

Description of the technique:

- Caldwell RL, Caprioli RM (2005). *"Tissue profiling by mass spectrometry: a review of methodology and applications"*. Mol. Cell Proteomics 4 (4): 394-401