

54. Molecular biobanks unravel the secrets of breast cancer

Modern medicine tries to understand diseases more and more by looking at the molecular fingerprint of a disease. This is done by molecular imaging of biological tissues. Molecular imaging can assist in the diagnosis and prognosis of diseases. It also enables the development of medicine specific for you and not just for everybody, a booming research field called 'personalized medicine'. Our demo presents a 3D-visualization of molecular imaging data generated by Mass Spectrometry Imaging (MSI). MSI is a technique for the simultaneous detection and visualization of a large variety of molecules based on their molecular masses. Using our interactive tool you can view and explore 3D-images of molecular breast cancer tissue.



ICT science question

The main scientific challenge is to reduce, process, analyze and interpret huge datasets.

Application

Molecular imaging with mass spectrometry easily generates large amounts of complex data. The embedding of molecular imaging in a clinical setting requires easy data visualization and extraction of relevant information.

In our demo you will experience the complexity of molecular imaging data. We expect that the information extracted from this data will assist medical doctors in clinical decision making in the future. It can then be used for example for diagnosis, prognosis and treatment response prediction.



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COMMIT/ project

Alternative Application

Alternative applications may lie in the field of different medical imaging modalities like MRI or microscopy. MRI or microscopy data can be correlated with molecular imaging from mass spectrometry.

A completely different possible application lies in the field of the molecular analysis of different layers of paint that compose for example a Van Gogh- or a Rembrandt-painting.

Nice to know

One molecular image can contain more than one million spectra.



Visualization of molecular data for personalized, predictive, participatory and preventive medicine.



The development of software tools that can analyze complex molecular imaging data brings us closer to personalized medicine, the future of patient health care.



Innovative medical image generation, data processing and visualization (in cancer research).



Interactive 3D visualization and analysis of complex molecular imaging data.