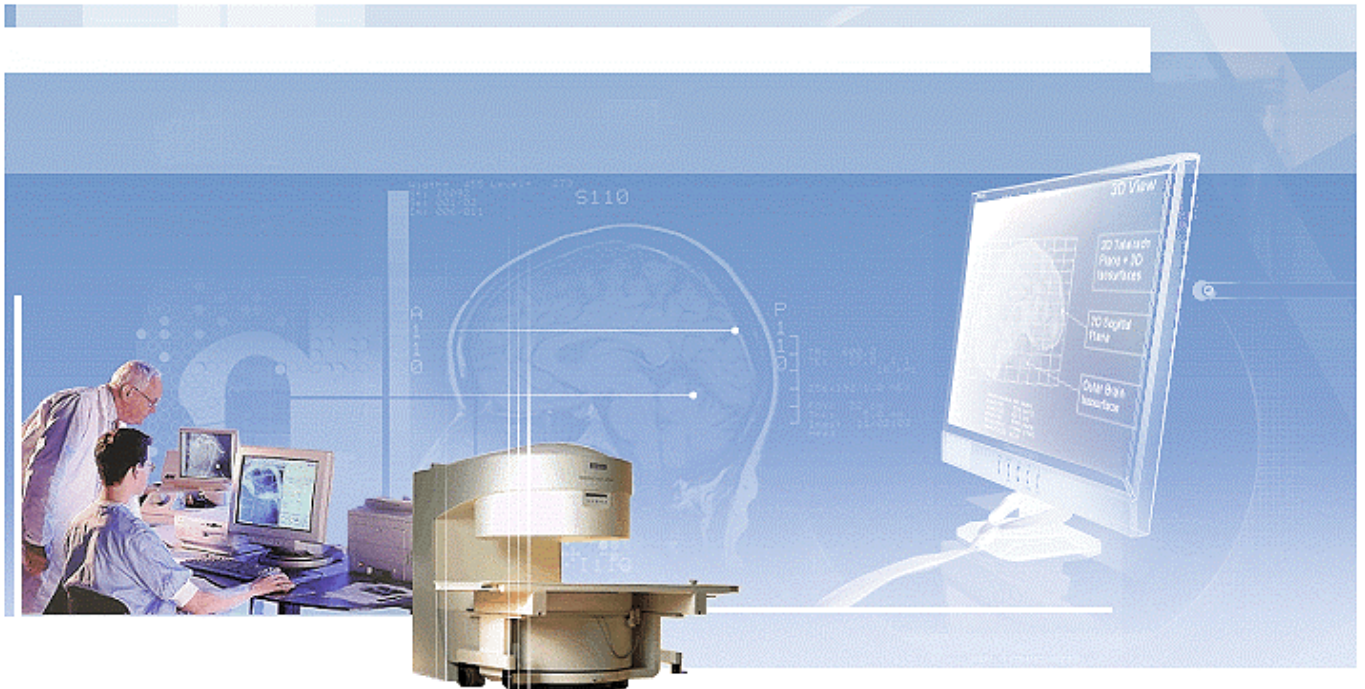




# Galileo™



"Declare the past, diagnose the present, foretell the future; practice these acts."

Hippocrates (a.460 -377 B.C.)- Epidemics ,Book I, Section XI.

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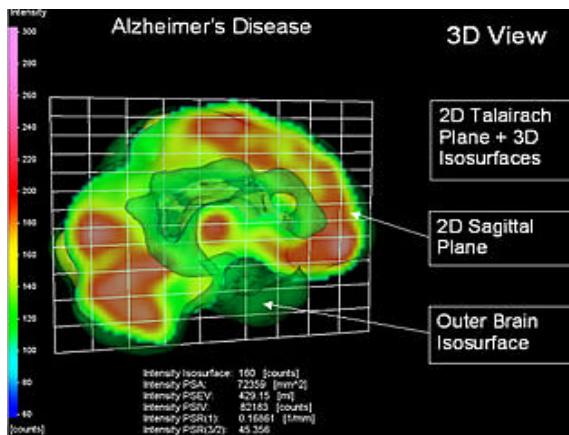
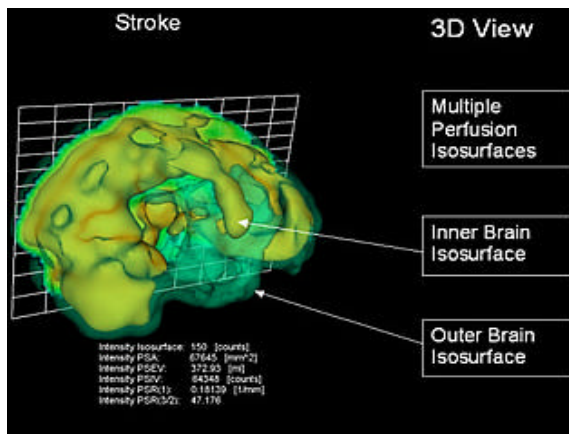
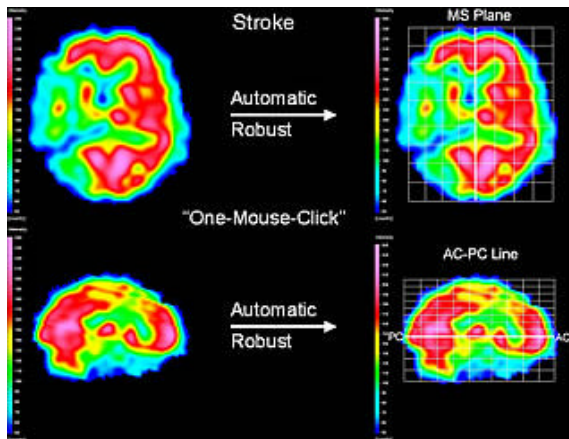
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## Galileo|BrainGuide™

All image analysis operations described in BrainGuide™ Version 2 are both full automatic – “one mouse click” (unless explicitly stated otherwise) and rapid (30 seconds or less).

### SPECT Module

**NM Tracers:** BrainGuide currently accepts

- Perfusion IMP.
- Quantitative ARG protocol for IMP (with or without DIAMOX).
- Perfusion ECD
- Perfusion TI-201
- D2 neuroreceptor binding 5IA

**Background Removal:** Auto-removal in 3D of background surrounding the brain image.

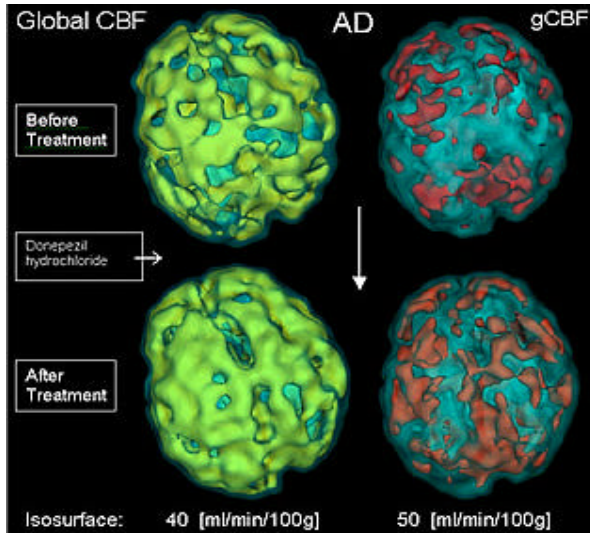
**3D Image Orientation:** Auto-establishment of stereotaxic image orientation in 6 degrees of freedom (3 translational d.o.f.+3 rotational d.o.f.).

**Standard Talairach Globally Proportional Atlas:** Auto-establishment of the standard Talairach proportional stereotaxic atlas including

- Auto-location of the mid-Sagittal plane.
- Auto-location of the AC-PC (Anterior Commissure – Posterior Commissure) line.
- Auto-location of the OM (Orbital – Meatus) line using the standard Talairach atlas.

**2D Image Display:** 2D Talairach Axial, Sagittal and Coronal image views in addition to Original (quasi-trans-Axial) and Hippocampal views.

**3D Image Display:** Multiple surface display consisting of outer brain surface (for reference) plus a selectable perfusion (or neuroreceptor binding) isosurface. In addition, the outer brain surface plus one additional 2D Talairach Axial, Sagittal, Coronal and Hippocampal image view, with or without overlaid standard Talairach grid, can also be displayed, thus placing the 2D Talairach slice plane in 3D context.



**3D VOIs:** VOIs (Volumes Of Interest) are easily generated using “point and click” with the mouse cursor to trace out the VOI. The mean rCBF values and their associated standard deviation are automatically calculated and listed. The listed mean rCBF data can be exported by “one-click” to a text file for further analysis in Matlab, MS Excel or other packages.

**3D Quantification:** gCBFs (global Cerebral Blood Flow) perfusion isosurfaces can be selected exactly by entering the desired rCBF value or by clicking on the rCBF of interest in any 2D viewer or by specifying an rCBF value of interest.

### MRI Module

**2D Image Display:** 2D Original (Quasi-trans-axial) reconstructed image view.

- Auto-location of the mid-Sagittal plane.
- Auto-location of the curved mid-Sagittal surface in *individual* brains.
- Establishment of stereotaxic image orientation in 3 degrees of freedom.

### MRI + SPECT Image Fusion

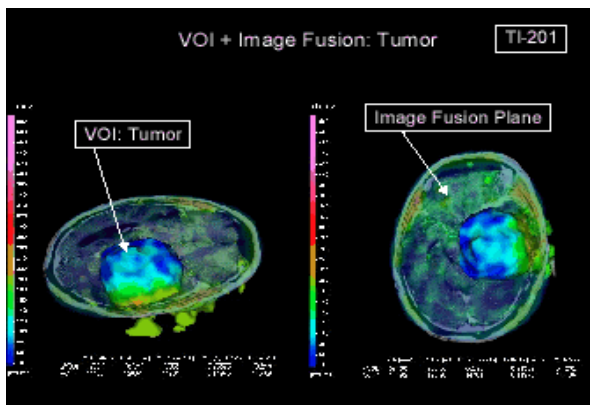
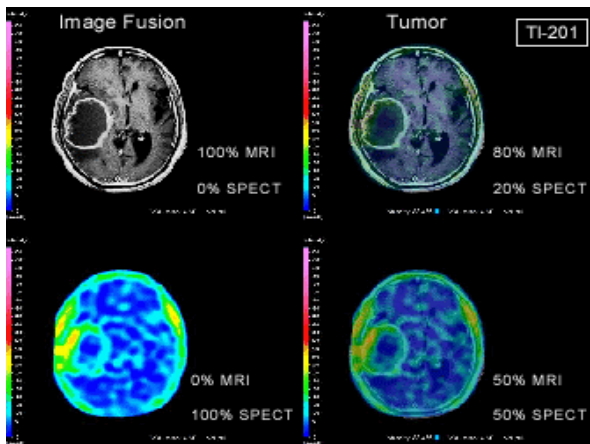
**Image Coregistration:** automatic, “one-click”.

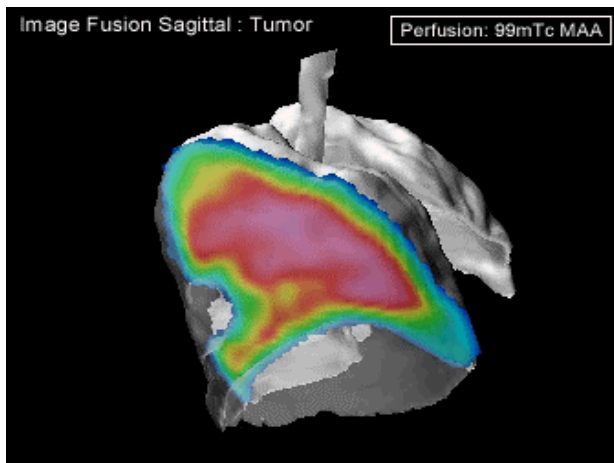
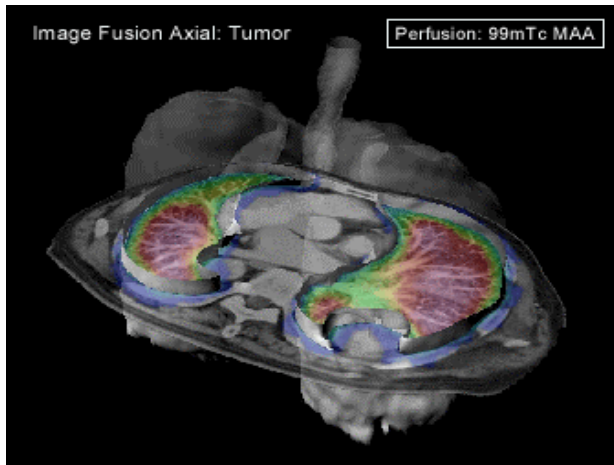
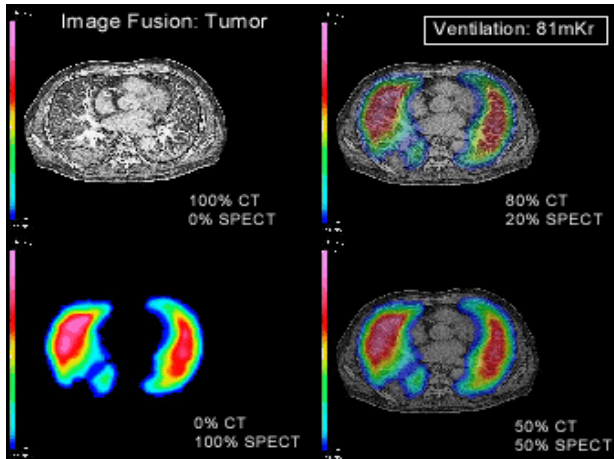
**Image Fusion Display:** The user can select the relative SPECT and MRI contributions.

**3D VOIs:** VOIs (Volumes Of Interest) are easily generated as in the SPECT module.

The listed mean rCBF data can be exported by “one-click” to a text file for further analysis in Matlab, MS Excel or other packages.

**Dynamic Imaging:** Once ROIs are drawn on an MRI, they can be used, via automatic SPECT + MRI image fusion, to quantify the activity in these regions for any number of additional SPECT studies of the same patient.





## Galileo|LungGuide™

All image analysis operations described in LungGuide™ – Version 2 are full -automatic – “one mouse click ” (unless explicitly stated otherwise).

### SPECT Module

**NM Tracers:** LungGuide™ currently accepts

Perfusion: 99m Tc-MAA.

Ventilation: 81m Kr

**Background Removal:** Auto-removal in 3D of background surrounding the lung image.

**2D Image Display:** 2D quasi-Axial, Sagittal and Coronal image views.

**3D Image Display:** Multiple surface display consisting of outer lung surface (for reference) plus a selectable perfusion or ventilation isosurface. In addition, the outer brain surface plus one additional 2D quasi-Axial, Sagittal and Coronal slice plane view can also be displayed, thus placing the 2D slice plane in 3D organ context.

### CT Module

**2D Image Display:** Dual contrast-optimized 2D quasi-trans-Axial reconstructed image view. The outer surfaces of each lung and of the major external airways are automatically determined. Separate optimal contrast enhancement is then applied to lung and non-lung regions so that both may be viewed in the same display.

### CT + SPECT Image Fusion

**Image Co-registration:** With one mouse click, a 3D energy-minimizing nonlinear mapping is automatically computed between each point in the CT and SPECT lung volumes.

**Image Fusion Display:** The user can adjust the relative CT and SPECT contributions in both 2D and 3D views. In the 3D view, a user-selected 2D slice plane consisting of fused CT and SPECT images can be used to section the 3D lung surface.



## Conclusion

The **Galileo™** medical imaging software suite, developed by Advanced Biologic Corp. for the low-cost, high-performance Windows PC platform, is a set of advanced image analysis modules.

The design of Galileo follows five key principles:

**Fast.** Galileo completes all image analyses fast enough to be both practical and useful in a clinical environment.

**Automatic.** Galileo robustly performs all image analyses automatically requiring only “one-mouse-click” by the user.

**Accurate.** Galileo image analysis meets or exceeds the clinical “gold-standards” of accuracy.

**Robust.** Galileo successfully processes clinical images despite the presence of severity of any disease-induced defects.

**Clinically Useful.** Galileo is easy, friendly and intuitive to use.

## System Requirements

PC: Desktop or Laptop

CPU: 1.3 GHz

DRAM: 512 Mbytes

Hard Drive: 40 GBytes (Ultra-wide SCSI recommended)

Network Card: Ethernet 100 Mbps

Graphics Chip: ATI Radeon 9800 Pro.

Operating System: Windows 2000 with SP 3. Windows XP. Japanese or English.

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