Quantitative Magnetic Resonance Imaging of the Brain
Applications for Tissue Segmentation and Multiple Sclerosis
Janne West

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The present work describes a new method of qMRI for the human brain (QMAP), and a segmentation method based on this. The developed methods were validated both in control subjects and MR phantoms. In addition, an application for MS patients was demonstrated.

One major finding of this work was that qMRI was able to detect and quantify tissue changes in MS, which were not visible using conventional MRI. This work also demonstrated that QMAP offered high accuracy and also relatively high precision, within a clinically acceptable examination time. Furthermore, qMRI could be used for brain tissue segmentation and volume estimation of the whole brain, parameters that may be highly useful in characterising progression in neurological diseases.

The challenge for the future is to understand the connection between the qMRI properties of the brain and underlying biology.
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