



# 3T MR Research Program

## Center for MR Research

TECH 2000 3T MRI RESEARCH FACILITY

SUMMER 2014 ISSUE

## 3T Research News

By Mike Flannery

### 3T CMRR Non-Human Subjects / Biological Specimen Research

The 3T MR Research Program would like to inform the research imaging community of the current procedure for non-human and/or biological specimen MR research projects. If your project requires imaging on the Outpatient Care Center 3T MR scanner, you must first obtain approval from the UIC Medical Center. To initiate the process, please contact the CMRR-3T Research Manager (Mike Flannery) to request the "CMRR 3T Request Form for Non-Human Subjects / Biological Specimen Imaging". This form can also be directly downloaded from our website:

[http://chicago.medicine.uic.edu/research/cmrr/cmrr3t/documentation\\_and\\_tools/](http://chicago.medicine.uic.edu/research/cmrr/cmrr3t/documentation_and_tools/)

It is the PI's responsibility to complete this form prior to any imaging being done. The PI must furnish the following information:

- IRB Protocol number
- Brief description of the study
- Intended imaging site
- Mode of transport for the non-human / biological specimen to the medical center
- Names of the BRL or Research staff supervising the study(if applicable)
- CMRR Technologist conducting the study
- Proposed project Start/End dates

If the Biological Resources Laboratory (BRL) is involved in the project, it is the PI's responsibility to

obtain the necessary signatures from the BRL staff. Once the form is completed with the PI's signature and the BRL signature (if applicable), the PI must email the approval form to the CMRR-3T Research Manager (Mike Flannery) for CMRR – 3T approval. At this point, the CMRR-3T Manager will then send the form to the Hospital for approvals by the Hospital Department Director and Medical Director of Infection Control. The PI will be notified immediately once the Hospital approvals are granted and the study may commence at this point.

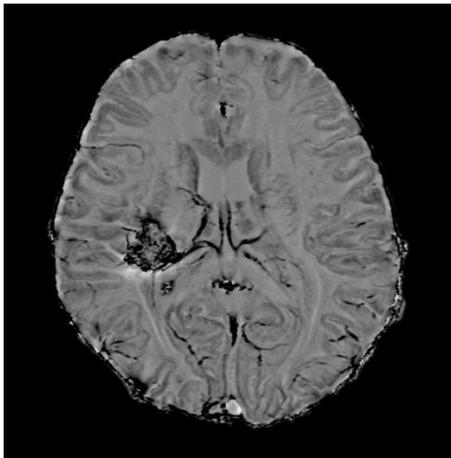
generation software. This would equate to an average time savings of 4-5 minutes per study.

The included ASSET 3.0 feature will provide improved parallel imaging capabilities allowing for higher quality images in less time.

The base upgrade also includes some application features. One

such feature is GE's Real Time Field Adjustment (RTFA) technology. This feature corrects field imperfections that result in image distortions and loss of resolution in diffusion imaging techniques.

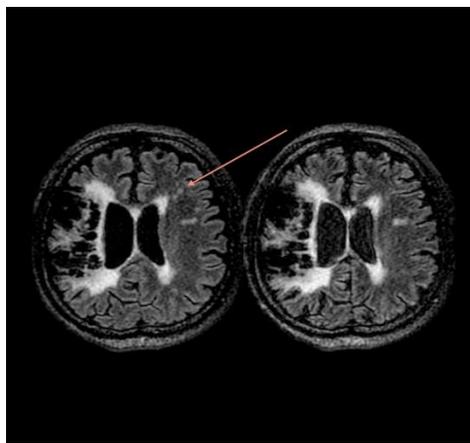
The addition of SWAN 2.0 offers a high-resolution 3D multi-echo gradient echo sequence that results in an SNR that is higher than a single echo acquisition. SWAN 2.0 generates magnitude and phase images from a single acquisition, allowing you to differentiate between microvasculature bleeds and calcified lesions.



eSWAN 2.0 Image courtesy of GE Healthcare

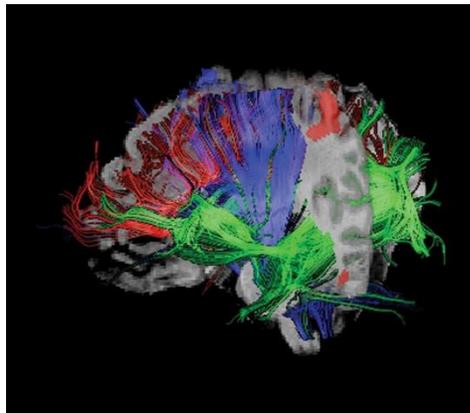
GE also includes Body Navigators which are designed to allow for free breathing, motion-controlled acquisitions. DWI, MRCP, T2 and T1 high-resolution images are scanned without a breath hold.

The D24.0 upgrade also offers purchasable advanced applications. 3D PROMO is one new feature that provides 3D volumetric imaging correction of motion in real-time through a unique, state-of-the-art algorithm that reduces the need for retakes during neuro exams.



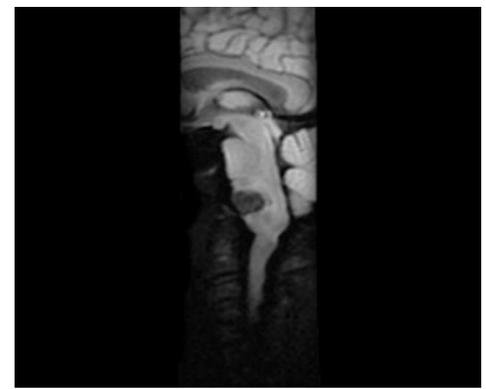
3D PROMO Image courtesy of GE Healthcare

Brainwave 3.0 offers a new, simplified solution for functional MRI with support for multi-design paradigms, event-related activity and extensions for diffusion tractography and report generation support.



Brainwave 3.0 Image courtesy of GE Healthcare

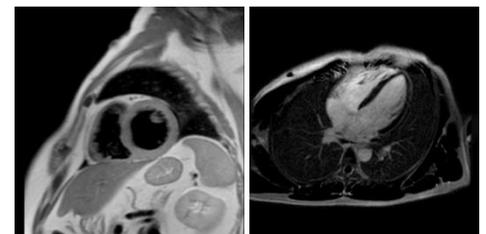
Another optional new application offered with this upgrade is FOCUS. This application delivers a highly efficient method for increasing the resolution in Single Shot DW EPI sequences. Utilizing a multi-dimensional selective excitation, FOCUS supports zoomed, small field of view imaging of specific organs with higher diagnostic quality, lower artifacts and faster exam times compared to conventional diffusion imaging.



FOCUS Image courtesy of GE Healthcare

There are some optional MR cardiac imaging applications available with the new upgrade. The first of these is called Black Blood Single Shot Fast Spin Echo. This application utilizes single shot acquisitions and allows large volume multi-slice coverage for morphological imaging of the heart and vessels. That means Black Blood SSFSE improves patient comfort by reducing the number of breath holds, as well as reducing overall scan times.

The second cardiac application is called Phase Sensitive Inversion Recovery-Myocardial Delayed Enhancement or PS-MDE. This application is used to reduce the sensitivity of inversion delay times for enhanced cardiac exams. The result is consistent imaging without worrying about the delay time.



Black Blood Single Shot Fast Spin Echo

PS-MDE

Images courtesy of GE Healthcare