Facilities & Other Resources

FACILITIES: Specify the facilities to be used for the conduct of the proposed research. Indicate the performance sites and describe capacities, pertinent capabilities, relative proximity, and extent of availability to the project. If research involving Select Agent(s) will occur at any performance site(s), the biocontainment resources available at each site should be described. Under “Other,” identify support services such as machine shop, electronics shop, and specify the extent to which they will be available to the project. Use continuation pages if necessary.

Laboratory:

**Magnetic Resonance Research Facility**

An 8,000 square foot state-of-the-art MR facility is available. This facility is on the lower level of the Pappajohn Pavilion. It contains 200 square feet of lab space for image processing. There are five offices housing scientific staff of the MRI Center and a conference room. The research dedicated 3T scanner is housed in approximately 1,500 square foot facility within the College of Medicine Medical Education Research Facility (MERF). The MERF facility contains a participate waiting and changing rooms, animal preparation and wet laboratory, electronics shop, cryogen storage, and 13 seat computer and image processing laboratory.

Clinical:

A participant waiting and changing rooms exist for subject preparation before imaging.

Animal:

An animal preparation room exists within the College of Medicine and is dedicated to MR imaging research. This space is located within 100 feet of the research dedicated MR facility. This room contains two stainless steel tables for animal transport, overhead surgical lighting for catheter insertion, and a wall mounted drug box.

Computer:

The research activities are supported by an 8TB HP Linux based fileserver. A number of image processing workstations exist including 8 Linux based workstations, 3 Macintosh, and 10 Windows based systems. The IDEA/ICE pulse programming environments exist for the Siemens systems allowing custom sequence and image reconstructions tools to be developed. The Iowa CTSA award is supporting the hardware and software for the XNAT software being used as a DICOM server for the MR Research Facility.

Office:

There are five offices housing scientific staff of the MR Research Facility and a conference room.

MAJOR EQUIPMENT: List the most important equipment items already available for this project, noting the location and pertinent capabilities of each.

Listed below are the research whole body MR scanners at the University of Iowa Hospitals and Clinics and the University of Iowa College of Medicine:

**1.5 T Siemens Avanto MRI Scanner (Research Dedicated)**

- **Description:** This scanner is equipped with the total imaging matrix (TIM) receiver technology, echo-planar imaging capability, multi-nuclear option, spectroscopic and chemical shift imaging. The scanner is equipped with gradient coils of strength of 45 mT/ m and a maximum slew rate of 200 T/ m/s and an 18 channel receiver system.
- **Specialized Sequences:** Echo-planar imaging, Diffusion tensor imaging, Single voxel spectroscopy, Chemical shift imaging, Neuro Functional Imaging, Advanced Cardiac Imaging, T1ρ, 3He Imaging sequences
- **Coils:** 12 channel Head Array, Neck Matrix, Spine Matrix, Body Matrix, Peripheral/Angio Matrix, Large Flex, Small Flex, Breast Coil, CP Extremity Coil, Endorectal, Extremity Array coil
- **fMR Equipment:** LCD Projector - InFocus LP840, Stimulus Computer with Eprime and Presentation, Avotec Silent Scan, and Daylite rear projection screen
3. Siemens TIM Trio MRI Scanner (Research Dedicated)

Description: This scanner is equipped with the TIM receiver technology and was recently acquired through an NCRR High End Instrumentation Grant. This scanner resides in 1500 square feet of space within the College of Medicine. This scanner includes echo-planar imaging, spectroscopic imaging, and is equipped with a broadband receivers allowing nuclei other than hydrogen to be imaged. The scanner is equipped with gradient coils of strength of 45 mT/m and a maximum slew rate of 200 T/m/s. The scanner has an 18-channel receiver system.

Specialized Sequences: Advanced 3D, Advanced Turbo, Advanced Angiographic Imaging, CARE Bolus Imaging, Echo Planar Imaging, Neuro Perfusion, Bold and Advanced Functional Imaging, Single Voxel Spectroscopy, Chemical Shift Imaging, EPSI, PEPSI, Arterial spin labeling, Advanced Cardiac Imaging, High angular diffusion tensor imaging, and T1ρ

Coils: 12 channel head array, 8 channel body array, 12 channel spine array, Wrist coil, Extremity coil, CP Head, Endorectal coil, 1inch small loop coil


Other Equipment: Biopac Physiological monitoring system (GSR, pulse ox, respiration, air flow, expired gas analysis), Animal anesthesia machine (VT-110-MRI), FerroGurard metal detector

3.0 Siemens Trio MRI Scanner (50% Research)

Description: The scanner supports echo-planar imaging, spectroscopic and chemical shift imaging. The scanner is equipped with gradient coils of strength of 45 mT/m and a maximum slew rate of 200 T/m/s. The scanner has an 18 channel receiver system.

Specialized Sequences: Advanced 3D, Advanced Turbo, Advanced Angiographic Imaging, CARE Bolus Imaging, Echo Planar Imaging, Neuro Perfusion, Bold and Advanced Functional Imaging, Single Voxel Spectroscopy, Chemical Shift Imaging, Advanced Cardiac Imaging

Coils: 8 channel head array, 8 channel body array, 12 channel spine array, Wrist coil, Extremity coil, CP Head

fMR Equipment: Avotec Silent Scan, LCD Projector - InFocus LP840, Stimulus Computer with Eprime and Presentation, Serial Response Box, Fiber Optic Manipulandum