APPLICATION FOR APPROVAL OF UMMS HUMAN STUDIES
UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL

NOTICE TO INVESTIGATOR

THE PRINCIPAL INVESTIGATOR IS RESPONSIBLE FOR THE CONTENT OF THIS APPLICATION AND MUST PROOF READ THE FINAL VERSION OF THE APPLICATION FORM BEFORE IT IS SUBMITTED. Errors in the application reflect poorly on the PI’s oversight of the research. FAILURE TO ADEQUATELY REVIEW THE APPLICATION WILL PUT THE STUDY AT HIGH RISK OF BEING TABLED UNTIL THE NEXT MEETING.

Before the IRB meeting deadline, you must submit ONE COPY of the completed IRB application, including all 7 of the sections. All signatures and attachments MUST be in place. The application and consent form must be numbered. This packet will be pre-reviewed in the Human Subjects Office and returned to you. Copies should not be made until the pre-review is completed.

This administrative review is done to prevent receiving applications that are poorly prepared and unacceptable to the Committee. You are urged to prepare this application and consent form carefully. The two Human Subjects Committees review 10-20 protocols a month. The Committees are composed of individuals who donate a considerable amount of their time to this effort, and your careful attention to accurate, complete information and grammar are fully anticipated. The Human Subjects staff and the IRB reviewers will return the submission to you if this is not the case, resulting in an unnecessary delay in study review and your anticipated study initiation

INSTRUCTIONS

RADIATION OR DNA/CELL LINES

If the subjects receive any radiation, please contact the Radiation Safety Committee (RSC) at 508-856-3208 to discuss the possibility of RSC review. If RSC review is needed, IRB approval will not be given until RSC approval has been obtained.

If the subjects receive any rDNA vaccines, retroviruses, adenovirus derivative vectors, or autologous modified tissue, please contact the Institutional Biosafety Committee (IBC) at 508-856-5416 to discuss the possibility of IBC review and registration. If laboratory personnel will be involved with rDNA vaccines, retroviruses, adenovirus derivative vectors, or autologous modified tissue this must also be registered with the IBC. If review is needed, IRB approval will not be given until IBC approval has been obtained.

SIGNATURES

1. The PI signs Section III and Section VII the Informational Drug Data Form (IDDF).
2. The Chair and the Chief of the PI’s Department/Division sign Section IV.
3. Additional signatures may also be required in section IV, please review.
3. All Research Personnel, including the PI, sign Section VI.
PROCEDURES FOR SUBMITTING A COMPLETED APPLICATION

If you are unsure about the type of review required by your study, or are inexperienced in completing IRB applications, it is strongly recommended that you provide a copy of a reasonably complete draft version. A substantive preliminary review by the Human Subjects Office will be performed. This preliminary review gives you the opportunity to address issues before the meeting and will save you time in the long run. Obviously, this review must be done well in advance of the IRB meeting deadline.

EXPEDITED REVIEW

If the study qualifies for Expedited Review (determined by the Human Subjects Office after review) the original and three copies of the final version of the application will be required. Two Committee members will review the protocol. This process usually takes approximately three weeks.

FULL COMMITTEE REVIEW

If the full Committee must review the study, the original and twenty copies will be needed (one for each member of the Committee). Please note that the original copy of the full application and consent form must be sent to the Human Subjects Office for initial administrative review before the Principal Investigator makes twenty copies for the Committee.

Meetings are scheduled for the first and third Tuesday of each month at 4:00 P.M. (except for the months of July and August when the Committee meets once each month). Meeting dates and deadline dates are available on our web page and are subject to change.

Each protocol is reviewed by two committee members prior to the meeting, and the investigator may be contacted to respond to concerns. You will be notified of the date and location of the meeting. Most Principal Investigators do not have to attend the meeting, but you are asked to be on call via your pager or telephone between the meeting hours of 4-6 p.m.

AMENDMENTS

The Human Subjects Office or the IRB must review any amendment or change in a protocol or consent form. No changes may be instituted until the investigator has received written approval of the revision from the Committee.

YEARLY REVIEW AND REAPPROVAL

Approved studies must receive re-approval at least once a year and more often if required by the Committee. A notice will be sent to you before the re-approval is due; approximately 2 months prior to the expiration date. Re-approval must occur within 30 days of the expiration date and appropriate planning must take place to meet this required deadline.

Please contact the Human Subjects Office at 856-4261 if you need additional information.
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VI CERTIFICATION OF APPROVAL

VII INFORMATIONAL DRUG DATA FORM
SECTION I

Before this application is submitted to the Research Subjects Office, the following must be done. Please indicate by stating "YES" OR "N/A" (not applicable) that you have reviewed the packet and have accomplished these tasks as they apply to your study.

IN THE APPLICATION SECTION

X Completed Protocol Summary Sheet Section II

X Completed & obtained signatures on the P.I.’s Assurance Section III and

X Obtained signed agreement forms from all cooperating faculty Section V and departments Section VII.

N/A Obtained approval from Radiation Safety Committee or submitted protocol to the RSC

N/A Provided the Investigational New Drug (IND #) on the Protocol Summary Sheet Section II

N/A If the study is grant funded and you need additional information contact the Research Funding Office at 508-856-2119. If the study is

N/A industry supported, please contact the Office of Clinical Research at 508-856-5015

N/A Provided 1 copy of the Sponsor Protocol or the “body” of the research grant (e.g. sections a through e of the Research Plan of an NIH grant). HUMAN SUBJECTS USE MUST BE IDENTICAL IN GRANT/COMPANY PROTOCOL AND IRB APPLICATION.

N/A Provided 1 copy of the Investigator’s Drug Brochure

X Numbered the pages of the Protocol body.

N/A Obtained approval from the Institutional Biosafety Committee (IBC) or submitted the protocol to the IBC Committee for review.

IN THE CONSENT FORM

X Indicated that subjects will sign a written consent form.

X Provided a consent form in standard UMMS format

X Wrote the consent form in the second person and at a 7th grade level.

X Numbered the pages of the consent form appropriately. (e.g. Page 1 of 4, Page 2 of 4)

N/A Indicated that verbal consent will be obtained if written consent is not being obtained.

N/A Provided a fact sheet for the patient. (A fact sheet should be included for complex, lengthy, or high risk studies.)
**SECTION II**  
**PROTOCOL SUMMARY SHEET**

Today's Date: 12/1/2011  
P.I. Name: Shaokuan Zheng  
(P.I. Must be UMMS Faculty Member)  
Degree: Ph D  
Faculty Title: Instructor  

Department: Radiology  
Division Name: Advanced MRI Center  
Duration of the Study: 5 Years  
Phone #: 508-856-5122  
Beeper/Pager#:  
Email Address: Shaokuan.Zheng@umassmed.edu  

**Title of Study:** General MRI Protocols  
(Protocol # and version)  

**Contact Person Name**  
Shaokuan Zheng  
Phone #: 508-856-5122  

**University:**  
Memorial: X  
Marlborough:  
Shriner Center:  
Others:  

**Source of Funding:** Department of Radiology  

**DEVICE INFORMATION**  
Please provide IDE# if not approved by FDA  

<table>
<thead>
<tr>
<th>Device Name</th>
<th>Approved</th>
<th>Investigational</th>
<th>IDE#</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI System</td>
<td>X</td>
<td></td>
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</table>

**DRUG INFORMATION**  
In the table below, list all drugs being used. If the drug is considered investigational by the FDA you must include the IND# assigned by the FDA. Please “X” approved or investigational.  

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Approved</th>
<th>Inves.</th>
<th>IND#</th>
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<td>N/A</td>
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**USE SPACE BELOW FOR COMMENTS OR ADDITIONAL DRUG INFORMATION**  
N/A  

DECRIBE THE RESEARCH BY CHECKING ALL THE ITEMS “YES” OR “NO”  

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
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<td>X</td>
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<td>Adults</td>
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<td>X</td>
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<td>Pregnant Women</td>
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<td>X</td>
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<td>Minors (under 18)</td>
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<td>Teenagers (12-17)</td>
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<td>X</td>
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<td>Prisoners</td>
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<td>X</td>
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<td>Fetus/Abortuses</td>
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<td>MRI</td>
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<td>Investigation drugs/device</td>
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<td>Increased hospital costs</td>
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<td>X</td>
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<td>Mental Impairment</td>
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<td>X</td>
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<td>Phase I Study</td>
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Version 1/5/05
SECTION III
PRINCIPAL INVESTIGATOR’S ASSURANCE

As Principal Investigator for this study, I acknowledge and accept my responsibility, as mandated by the UMMS Assurance of Compliance for Protecting the rights and welfare of the human subjects taking part in this research study.

Assuring that the risks to an individual are outweighed by the potential benefits to him/her or by the importance of the knowledge to be gained.

Complying with all the applicable requirements specified by the UMMS Institutional Review Board as a condition of IRB approval.

Completing the required human subjects education by completing the required modules in the CITI Course "Biomedical Investigator Course-learner GROUP 1".

Providing each research subject with a signed copy of the IRB-approved consent form at the time of consent.

Retaining the original signed forms in a reasonably secure and confidential area for at least three years after termination of the research project.

Obtaining approval from the UMMS IRB of any proposed changes in a previously approved study. The proposed changes will not be implemented before IRB review and approval, unless necessary to eliminate apparent immediate hazards to subjects.

Informing the IRB immediately if I become aware of any violations of HHS regulations (45CFR46), FDA regulations (21CFR50, 56) or IRB requirements for the protection of human subjects.

Submitting progress reports of approved research as often as, and in the manner prescribed by, the UMMS IRB (the frequency of these will be on the basis of risk to subjects, but will be at least annually).

Within 48 hours (in-house events) or five working days (sponsor-reported events) report any unanticipated serious adverse experiences, injuries, and other unanticipated problems that involve risks to subjects and others, either physical, psychological, or threats to privacy.

Reporting any research subject’s death within five working days, regardless of cause.

Understanding that the failure to comply with all applicable HHS and FDA regulations, IRB requirements/policies, and the provisions of the protocol as approved by the IRB may result in suspension or termination of my research project.

The Principal Investigator’s signature must be obtained before submitting.

Signature of Principal Investigator: __________________________ Date: __________

Type PI name and title: Shaokuan Zheng – Instructor, Radiology
SECTION IV
DEPARTMENTAL / DIVISIONAL APPROVAL

I have reviewed the attached research project for both ethical considerations and technical merit and recommend its approval.

I certify that there are adequate resources and facilities to carry out this research, including staff, funding, space, recordkeeping capability, and resources to address serious adverse events and possible research-related injuries.

Signature of PI’s Department Chair: _______________________________  Date:________

Type Name and title of Chair: ________________________________

Signature of PI’s Division Chief: ________________________________  Date:________

Type Name and title of Division Chief: ________________________________

Will this research involve faculty or recruit patients from another department besides the department listed above?

Yes  No  X

If yes, please complete

MY SIGNATURE BELOW INDICATES THAT I AM AWARE OF AND AGREE TO INVOLVE MY DEPARTMENT IN THIS RESEARCH PROJECT

Department Name: ________________________________

Department Chair Name: ________________________________

Signature of Department Chair: ________________________________  Date: ____________

Please “X” boxes below that apply

Faculty from my department will be involved in this research study
Patients from my department will be involved in this research study

The section above may be duplicated if there is more than one additional department or faculty member from another department that is participating in this study.
SECTION V
DESCRIPTION OF RESEARCH PROJECT

1. PERSONNEL ENGAGED IN THE RESEARCH STUDY. List all personnel engaged in the study. This list must agree with that in Section VI (Delegation of roles/responsibilities).

   Shaokuan Zheng, Ph.D.
   Keith Cauley, M.D., Ph.D.

2. GENERAL STATEMENT OF PROBLEM
Purpose: Include concise hypothesis to be tested by proposed research.

The purpose of this application is to apply for a general protocol to cover feasibility studies and MRI sequence testing and will be limited to healthy volunteers.

3. BACKGROUND AND SIGNIFICANCE:
   a. Provide a summary of the facts which led to selection of the problem.

   In the Advanced Magnetic Resonance Imaging Center (AMRIC), we provide service for different Principle Investigators with different areas of research. In addition to providing service to pursue providing our service to the researchers whom we currently work with, we also would like to test some new pulse sequences to expand our capabilities and hence service. Furthermore, we are also planning to expand our own research portfolio, which is solely based on new MRI technologies.

   All the users who use this scanner must have their own IRB approved protocols. However, we are also in need of a general IRB protocol to cover all the testing procedures for new pulse sequences and new technologies. For example, we need to develop and to test 2D ultrashort echo time (UTE) pulse sequences for magnetic resonance angiography (MRA) applications or pseudocontinuous arterial spin labeling (pCASL), which can be used to measure the perfusion of brain. In order to use such new technologies for the research of our potential principle investigators, we need perform some testing with healthy volunteers and eventually optimize the experimental parameters and evaluate the quality of resultant data. Hence, the purpose of this application is to apply for a general protocol to cover all the main areas in MRI, which will include, but not limited to, functional MRI (fMRI), diffusion tensor imaging (DTI), perfusion, angiography, magnetic resonance spectroscopy (MRS), image reconstruction and image analysis.

   Briefly, this IRB would cover feasibility studies and MRI sequence testing and will be limited to healthy volunteers. No medications or IV contrast agents will be used in these studies.

   b. Please describe the Investigator’s previous work on the problem.

   Dr. Shaokuan Zheng has 4 years of experience on Bruker MRI scanner and 2 years of experience on Philips MRI scanner. He has been working within the advanced MRI techniques such as fMRI, DTI, perfusion, angiography, MRS, fast imaging techniques, image reconstruction and image analysis. He is also familiar with MRI pulse sequence development and coil design.

   Keith Cauley, MD PhD, Clinical Director of the Advanced MRI Center, is a board-certified neuroradiologist with research interest in MRI. He is available for consultation on issues of MR safety and will be involved in the optimization and evaluation of test sequences. He also reviews research cases from the AMRIC to ensure that any clinically significant lesions are identified and appropriate communication with patient and research investigator is achieved.

   c. What are the aspects that justify the use of human subjects, human data, or specimens as part of this research?
For a new pulse sequence development, the pulse sequences will be tested by phantom first. However, phantom testing is not enough due to the complexity of human body, which cannot be simulated by a simple phantom. Therefore the new pulse sequences should be tested by healthy volunteers before they are employed within the research studies, i.e. with patients.

d. Attach references as appropriate.

N/A

4. DETAILED DESCRIPTION OF RESEARCH PLAN (especially as it affects the subject)

a. Include a schematic representation of what the research will entail (e.g. a table with the number of visits and what will happen at each visit or flow diagram of subject’s involvement over time).

Subject agrees → Subject screened → MRI performed → Study is completed

The screening will include going through the inclusion/exclusion criteria to determine any factors that may possible prevent the possibility of the potential subject to be scanned by an MRI system. In general, the MRI scan session will take about 1 hour, but it may take up to 2 hours depending on the protocol being tested.

b. Inclusion/Exclusion Criteria - As appropriate, explain what steps will be taken to insure that subjects meet the criteria (e.g. healthy, not pregnant, etc).

Subjects must be healthy, older than 18 years of age and don’t have any MRI incompatible implants. Specifically, people with the following will not be eligible to participate:

- Cardiac pacemakers, defibrillators
- Aneurysm clips and other vascular stents, filters, clips or other devices
- Prosthetic heart valves
- Other prostheses
- Neuro-stimulator devices
- Implanted infusion pumps
- Cochlear (ear) implants
- Ocular (eye) implants or metal fragments in eyes
- Exposure to shrapnel or metal filings (sheet metal workers, welders, and others)
- Other metallic surgical hardware in vital areas
- Certain tattoos with metallic pigments

All subjects will be screened prior to the scheduling of scanning for the presence of any MRI incompatible medical implants, conditions and/or tattoos with metallic pigments. In addition, we will use a metal detector to determine any external devices or metals (including hair pins, jewelry, body piercings, and tattoos with metallic pigments).

Women who are or may be pregnant cannot take part in this study. While there are no known risks for fetuses, the safety of MR for pregnant women, women of childbearing potential, and nursing mothers has not been established.

c. Discuss the number of experimental and control subjects, and explain the statistical basis for the numbers.

Due to the variations among different subjects, we might need to assess each pulse sequence in multiple volunteers with various ages and genders. Thus we are requesting to perform each test in about 4 but up to 20 volunteers.

d. Does the study involve randomization?

No
If yes, please describe process.

e. How long will each subject be enrolled in the study?

Each participant will be scanned only for one session, lasting up to 2 hours depending on the protocol being tested.

f. Provide a brief overview of what participation in the study will mean to each participant in terms of what he/she will experience. Describe in order, each procedure, how long each procedure will take and how often each procedure will be performed. Include doses & route of administration of any drugs and whether the procedure or drugs would always, sometimes or never be required as part of the subject’s standard of care.

All subjects will be screened prior to the scheduling of scanning for the presence of any MRI incompatible medical implants, conditions and/or tattoos with metallic pigments. This screening is to ensure the volunteer’s safety in the MRI. The screening will consist being asked a series of questions from a check list (which is available in 3T advanced MRI Center) specifically developed to ensure that the volunteer has nothing in their body or on their person which would be dangerous in the strong magnetic field of the MRI.

The volunteers will be scanned at the Advanced MRI Center in the Medical School (Room SA-107L).

Prior to the scans, the volunteer will be screened using a metal detector, to make sure they do not have metallic, magnetic, or electronic implants that may be unsafe in the MRI.

After clearing them as not having unsafe metallic and/or magnetic objects, they will be let into the MRI room, be positioned on the imaging bed, which slides into the tunnel-like enclosure of a large magnet. Although the research staff will be outside the MRI room during the scans, they can hear the magnet room, and through the intercom system they can speak with the volunteer. In the event that they are experiencing some discomfort or want to ask a question, they can talk through this intercom system. This will also allow the volunteer to be able to quit the study at any time. Each MRI scan will typically take around one hour to complete. In very rare cases, it may take up to 2 hours, but in such cases the subjects’ comfort will be closely monitored and if needed subjects will be allowed to take breaks. No exogenous contrast material will ever be employed.

g. Is any aspect of this research study being conducted in the Medical School or a non-UMMMC facility? If yes, please explain.

Yes. The MRI scans and all the images process and analysis will be performed in the Medical School at the AMRIC.

h. Will hospitalization be required as part of this research study?

No

If yes, how long will subjects be hospitalized?

i. Will there be any material inducements or recruitment incentives given to research staff or research subjects as part of this research study? (e.g., direct payments, free hospitalization, care)

No

If yes, explain how much, the pay schedule, or any partial payments that will be given.

The committee is exceedingly sensitive to the threat of coercion that can stem from excessive compensation for participation in research. The IRB recommends hourly payments of $20/hr for every hour (or fraction thereof) the subject is involved in the study. This should include time in the hospital or clinic that is solely for the study, travel time, and time spent recovering from a procedure or an anesthetic agent used for a procedure. Time that the subject is unable to perform his/her routine activities of daily living due to study related issues should be included in this time. (Time required to perform multiple minor tasks
should be lumped together; that is, filling out a questionnaire that takes 15 minutes on four different days constitutes one hour of labor, not four hours.) If reimbursed, cost of transportation ($0.35/mile), parking and meals should be noted. A bonus of up to $50 may be given for completion of a long term study or for studies that involve low risk but uncomfortable procedures (such as endoscopy, multiple blood samples for pharmacokinetic studies, gynecological examinations, etc).

5. DISCLOSURE OF CONFLICT OF INTEREST
Investigators should disclose any financial arrangement they may have with a company whose product figures prominently in their research or financial arrangements they may have with company making a competing product. The relationship should also be described in the informed consent documents. In the case where the only relationship is that a company is sponsoring the research study, it is sufficient to prominently identify the sponsor on the front page of the consent form and to simply state “NONE” in the consent form under Conflict of Interest.

Is there a conflict of interest?
No

6. RELATIONSHIP TO STANDARD THERAPY.
Describe the standard therapy that patients would receive if not in the research study. Explain how this research intervention deviates from or replaces generally accepted standard therapy and justify the deviation.

No

7. DESCRIBE THE POTENTIAL BENEFITS OF THIS PROJECT.
   a. Include hoped-for benefit to society, to the group of subjects or to individual subjects.

There is no benefit to the volunteer.

   b. Address the risk/benefit ratio of the study. If there are no direct subject benefits, this should be stated.

There is no direct benefit to the volunteers. However there is also virtually no risk since contrast agents will not be employed and volunteers will be pre-screened before entering the MRI room to ensure safety.

8. DESCRIBE THE POTENTIAL RISKS TO SUBJECTS INCLUDE PSYCHOLOGICAL, ECONOMIC, LEGAL OR SOCIAL RISKS AS WELL AS PHYSICAL RISKS.

Include the following information:
   a. Estimate likelihood of occurrence, severity, and duration. If generally accepted quantitative estimates are available based on previous data, these should be stated. Otherwise, qualitative estimates such as “rare”, “occasionally”, or “frequently” may be used. The committee needs scientific information about drug/device side effects so as to best judge the pros and cons of the study. Do not simply cut and paste the consent form “Risk” section into this part of the protocol.

This study will be conducted in a 3T MR scanner, which has been approved for research and clinical studies by the FDA. MR technology does not use ionizing radiation like an X-ray. It uses strong magnetic fields and radio waves to collect the images and data. There are no known hazards or risks associated with these techniques.

As it is the case for any MR scanner, significant risks can arise if ferromagnetic materials (this includes many types of common metal objects) are brought into the high magnetic field environment of the scanner and immediate vicinity, as they can become hazardous projectiles.

During the scan, some people do report claustrophobia (fear of being in enclosed small spaces), dizziness, mild nausea, headaches, a metallic taste in their mouth, double vision, or sensation of flashing lights. In rare cases during certain types of scans, a very slight, uncomfortable tingling of the back due to the rapid switching of the magnetic field has been reported. Although the intensity is not harmful to their hearing, the sounds that subjects
hear inside the scanner may be annoying.

In addition, there is worry associated with observing something non-regular in the MRI scans. It is possible that the radiologist may conclude nothing of medical concern after reviewing the images.

There could also a potential problem with confidentiality since the volunteer may be identifiable in the digital video imaging.

b. Explain what steps will be taken to protect against its occurrence, minimizing the harm, methods for early detection of harm, and what procedures will be followed to avoid serious injury (e.g. withdraw from study or dose reduction).

Prior to the experiments, the volunteer will be screened by a member of the MRI staff to make sure the volunteer does not have metallic, magnetic, or electronic implants that may be unsafe in the MRI. The door of the room with the magnet will be shut all through the scan session.

The scanners will make sure that the subject is comfortable and calm. Through the intercom system, the participants will be checked as the scan session progresses. In addition, the subjects will be asked to wear ear plugs and head sets to prevent the annoying effect of the noise from the scanner.

The MRI scans are not being performed for any medical purpose on behalf of the volunteer. However, if the radiologist reviewing the images thinks that there may be an abnormality in the MRI scan, we will contact the volunteer and will help them get medical follow-up for the problem. No information generated in this study will become part of a hospital record. It is very unlikely that an abnormality might be observed; however, should one be observed we believe it is best that the volunteer be apprised of the possibility even if it turns out to be nothing of consequence.

In order to avoid linkage of the data to a subject’s true identity, we will be using alpha-numeric numbers as subject identifier, which will be specific to each subject. The matching between these ID numbers and the subject’s identity will be available only to the staff attached to this protocol.

c. Explain whether or not these risks are from a procedure performed with the intent and reasonable prospect of yielding direct health related benefit to the subject.

We anticipate no direct benefit to the volunteer.

d. Do you, as the PI, have equipoise regarding the study? That is, are you comfortable with the risks in relationship to the knowledge gained? If the study involves randomization, do you believe in the equality of the treatment arms?

Yes.

9. CONFIDENTIALITY CONSIDERATIONS: EXPLAIN STEPS THAT WILL BE TAKEN TO INSURE THE CONFIDENTIALITY OF INFORMATION THAT IS OBTAINED IN THE COURSE OF THIS RESEARCH PROJECT. INCLUDE THE FOLLOWING:

a. How will identifiers be used?

No identifying information will be recorded with any of the imaging studies being performed. Each volunteer will have their studies recorded under an alpha-numeric code.

b. Where will data be stored?

The images will be stored on magnetic disk or DVD under the alpha-numeric code.

c. Besides the UMMS IRB and their representatives, who will have access to the research data?
Any person working with the investigators on these studies will have access as needed to the digital images.

d. When will the data/specimens be destroyed?

The unidentified data will not be destroyed.

e. In the future, might other use be made of specimens collected as part of the research? If yes, please describe.

Although currently not anticipated it is possible that the images data may be used in some future investigation.

10. ECONOMIC CONSIDERATIONS:

a. In the course of this research project, might the subjects experience any additional expenses as a result of study participation? This includes both out-of-pocket costs and expenses that might not be covered by medical insurance.

No

If yes, please explain and justify.

b. Please explain potential increase in standard hospital costs if any.

N/A

11. DESCRIBE THE CHARACTERISTICS OF THE SUBJECT POPULATION.

a. The subject population includes:

   ADULTS  X  CHILDREN

b. Is the subject population restricted in respect to any of the following characteristics?

   Please "X" those that apply   Yes  No
   Age Range  X
   Health Status  X
   Gender  X
   Racial/Ethnic composition  X

If you responded YES to any of the above, include a clear rationale for this restriction.

   We will not recruit children and adolescents (age<18) as volunteers for this study.

   We seek to recruit only healthy volunteers who pass the MRI pre-screening for not having metallic, magnetic, or electronic implants that may be unsafe in the MRI.

12. WILL THE STUDY POPULATION SPECIFICALLY INCLUDE A POPULATION OF SUBJECTS CONSIDERED “VULNERABLE”? VULNERABLE POPULATIONS ARE CHILDREN, MENTALLY IMPAIRED, PREGNANT WOMEN, PRISONERS, OR FETUSES.
If yes, please explain.

13. WHAT IS THE SOURCE OF THE SUBJECT POPULATION?

We will recruit the healthy subjects who have previously expressed interest in having a MRI scan. Healthy volunteers, who are familiar with the scope of the research in the Advanced MRI Center (AMRIC) and have basic knowledge about MRI, will be recruited from personal acquaintances and colleagues.

14. EXPLAIN ANY STEPS TAKEN TO INSURE THAT THE SUBJECT POPULATION IS REPRESENTATIVE.

Volunteers of both genders and different age will be included.

15. HOW AND WHERE WILL SUBJECTS BE RECRUITED FOR THE STUDY? CONSULT THE IRB GUIDELINES FOR THE RESTRICTIONS ON RECRUITMENT OF EMPLOYEES, STUDENTS, AND INPATIENTS. ATTACH COPIES OF ALL RECRUITMENT MATERIALS TO BE USED AS PART OF THIS RESEARCH STUDY. THESE MATERIALS MUST BE APPROVED BY THE IRB BEFORE BEING USED. Recruitment guidance can be found on our website under HSC Forms.

Healthy volunteers, who are familiar with the scope of the research in the Advanced MRI Center (AMRIC) and have basic knowledge about MRI, will be recruited from personal acquaintances and colleagues by word of mouth. No advertisement will be posted anywhere.

The PIs will not be enrolling employees, their directly supervise, so there is no risk of coercion in this case. If the volunteers will have a work relationship with the PIs, they will have equal status.

16. WILL PROTECTED HEALTH INFORMATION (PHI) BE USED AS PART OF THIS RESEARCH STUDY? PLEASE VISIT OUR WEBSITE FOR MORE INFORMATION ABOUT PHI OR THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT (HIPAA).

No

If yes, please answer the following questions.

a. How and where will the PHI be accessed (i.e. meditech, database, medical records, another site)?

b. Will a subject's PHI be accessed before the subject is enrolled in the study?

c. Please list the PHI to be used as part of this research study (i.e. name, DOB, medical record #).
17. METHOD FOR OBTAINING INFORMED CONSENT

a. Are you requesting a waiver of the requirement for obtaining consent?

No

If yes, please justify the request in the box below. Consent may be waived if research is minimal risk; the waiver does not adversely affect the subject and the research could not practically be carried out without the waiver. Your justification must address these issues. Specific regulations can be found at 45 CFR 46.117 (c) (1) (2) and 21 CFR 56.109 (c) (1)

Do not complete the following questions if you are requesting a waiver of informed consent.

18. WILL VERBAL CONSENT BE OBTAINED?

No

If yes, will an unsigned “fact sheet” be given to subjects before verbal consent is obtained?

Yes No

If yes, please provide a copy of the “fact sheet”.

19. WILL A SIGNED CONSENT FORM BE REQUIRED?

Yes

20. AS A GROUP, ARE THESE SUBJECTS EXPECTED TO BE COMPETENT TO GIVE CONSENT FOR THEMSELVES?

Yes

If no, please explain why and how consent will be obtained.

21. EXPLAIN THE CIRCUMSTANCES UNDER WHICH CONSENT WILL BE OBTAINED. HOW WILL YOU INSURE THAT POTENTIAL SUBJECTS HAVE ADEQUATE TIME TO CONSIDER THEIR OPTIONS, AND THAT POSSIBLE COERCION IS MINIMAL?

Once the study has been approved by IRB and the new A-level MRI system is ready for research usage, individuals who have expressed an interest in participating will be approached and asked if they are still interested. If they express an interest they will be given the written informed consent document and asked to look it over. They will be given time to look over the document and ask questions. If they are still interested in participating in the study, we will go over the questionnaire (see attached screening form) with them to make sure they do not have any conditions (i.e. metallic implants) that are not MR compatible. A time for their imaging will then be scheduled. When they show up at the MRI imaging suite they will again be asked if they still wish to participate, given a chance to ask questions, and then asked to sign the informed consent.
22. IF THE SUBJECT POPULATION INCLUDES MINORS, AND SIGNED CONSENT WILL BE OBTAINED, WILL AN ASSENT FORM BE USED AS PART OF THE CONSENTING PROCESS? CONSULT IRB GUIDELINES FOR INFORMATION ABOUT CHILDREN IN RESEARCH STUDIES.

No Minors enrolled

NOTE: In general, it is expected that minors from age 8 to 15 will read and sign an assent form. Older adolescents (16 and 17) will usually read and sign the same consent form as the parents signed. The assent form template is available on our website.

23. IF YES, PLEASE EXPLAIN WHO WILL APPROACH THE MINORS AND HOW AND WHERE THE ASSENTING PROCEDURE WILL TAKE PLACE.
SECTION VI
CERTIFICATION OF APPROVAL

PI Name: Shaokuan Zheng

DELEGATION OF ROLES/RESPONSIBILITIES*: Checklist/Signature List

<table>
<thead>
<tr>
<th>Name and Credentials</th>
<th>Role*</th>
<th>Signature</th>
<th>Department/Campus</th>
<th>Delegation of responsibilities: Please use key** in box below to summarize your study activities and place an “x” in the appropriate column</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaokuan Zheng, Ph.D.</td>
<td>PI</td>
<td></td>
<td>Radiology/University</td>
<td>X X X X X X</td>
</tr>
<tr>
<td>Keith Cauley, MD, Ph.D.</td>
<td>co-PI</td>
<td></td>
<td>Radiology/University</td>
<td>X X X</td>
</tr>
</tbody>
</table>

Other: Reading the radiological images.

**Roles: (choose appropriate # below)
1. Sub or Co-Investigator 2. Study Nurse Coordinator 3. Study Coordinator 4. Other:

**Delegation of Responsibility Codes: (choose all that apply)
A. Consent Subjects
B. Take Medical History
C. Conduct Physical Exam
D. Phlebotomy
E. Monitor Vital Signs/Nursing Assessment
F. Maintain Regulatory Documents
G. CRF Completion and Query Resolution
H. SAE/AE Monitoring/Reporting
I. IRB Communications and Continuing Review
J. Other (explain): Although the Principal Investigator is ultimately responsible for every element of study activity, this form serves to clarify to whom the PI has delegated specific study activities and responsibilities.
SECTION VII
INFORMATIONAL DRUG DATA FORM
DEPARTMENT OF PHARMACY

Date:
Docket #: H-
Drug Name or Code No: ____________________________________________________
Other Name: ______________________________________________________________
Drug Company Name: ______________________________________________________
Provider of Drug: ___________________________________________________________

Pharmacy Use Only

Is the drug approved by the FDA for the treatment described in this protocol? Yes ___ No ___ If no, IND# __________

As PI of the study are you acquiring the IND through the FDA for the drug listed above? Yes _____ No _____

Protocol Title:

Dose:

Dosage Form
and Strength:

Route of Administration: ______________________________________________________

Schedule:

Administration Instructions: __________________________________________________

Pharmacologic/Therapeutic properties __________________________________________

Possible Side Effects: _______________________________________________________

Precautions: _________________________________________________________________

Drug Interactions: ___________________________________________________________

Treatment of Overdose: _______________________________________________________

Literature References: _______________________________________________________

Will UMMC pharmacy distribute? Yes ___ No ___ If no, who will distribute? ________________________

Storage Requirements: ______________________________________________________

Principal Investigator: _______________________________________________________

Signature ______________________ Type PI Name ____________________________

Submitted by: _______________________________________________________________

Signature ______________________ Date ________________________________

Reviewed by Investigational Drug Service _____________________________________

Pharmacist's Signature ______________________ Date ___________________________