

**Application for Biotechnology Research Resource (BTRR) Support**  
Center for Magnetic Resonance Research (CMRR), University of Minnesota, Minneapolis, MN  
And

**Application for Neuroscience Core Center (NCC) Support**  
Center for Magnetic Resonance Research (CMRR), University of Minnesota, Minneapolis, MN  
Mayo Clinic College of Medicine, Rochester, MN

*BTRR is a biotechnology research resource funded by National Centers for Research Resources, NIH (P41 RR008079) to advance technologies in high and ultrahigh field magnetic resonance imaging and spectroscopy and its biomedical applications. As part of this mission, BTRR in CMRR supports collaborative and service projects using its instrumental and human resources.*

*The CMRR/Mayo NCC (Neuroscience Core Center) was funded by a NIH Neuroscience Blueprint Interdisciplinary Center Core Grant (P30 NS057091) to provide infrastructure support in order to advance the Blueprint institutes' missions to further the understanding of the functions and disorders of the nervous system. The goal of NCC is to provide projects with funding for resources to expand and enhance their neuroscience research, rather than to replace existing funding. Briefly describe your project below and tell us how NCC support can assure a greater productivity to your neuroscience research. (Also please attach a 1 page **brief** overview of your project's aims, hypotheses, methods, strategy, and analysis with an emphasis on NCC support justification with respect to the goal of greater productivity. Do not attach a complete grant application.)*

*Instructions to the Principal Investigator: Use this form to describe your research, your investigation team, your funding, and the support you would like from the NCC / BTRR. Attach additional information as requested.*

**1.0 Your Research Project**

1.1 Principal Investigator \_\_\_\_\_

1.2 Project Title \_\_\_\_\_ 1.3 Appl. Date \_\_\_\_\_

1.4 Request Support Start Date \_\_\_\_\_

1.5 Anticipated Duration\* \_\_\_\_\_  
*\*Project support is subject to annual review*



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## 1.0 Your Research Project

1.7 In summary, how would this support enhance your research project's productivity?

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1.8 In general, what kind of support will you need?

- Subject support     Data Acquisition     Analysis/Visualization  
 Multi-modality     Coil building     Chemistry     Sequence Development

1.9 Does your project involve human subjects?  yes  no

1.10 Does your project involve non-human animal subjects?  yes  no

If so, please specify the animal species: \_\_\_\_\_

1.11 Does your project involve MR scanning?  yes  no

If so, which MR scanner(s) do you anticipate using?

- 9.4T 65cm bore     9.4T 31cm bore     7T 90cm bore  
 4.7T 40cm bore     4T 90cm bore     3T 90cm bore     Unsure

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**2.0 Your Research Team**

*Please describe your research team. (Do not include the CMRR members whose support you are requesting.)*

<i>Role / Name</i>	<i>X.500 if needed<sup>1</sup></i>	<i>CMRR Access<sup>2</sup></i>	<i>Human Subjects<sup>2</sup></i>	<i>Animal Subjects<sup>2</sup></i>
2.1 Principal Investigator				
2.2 Co-Investigators				
2.3 Technicians / Other				

*Note 1. X.500 is a University of Minnesota Internet id. It is required to access the on-line database for resource scheduling. Team members can register for a guest X.500 id at: <https://www.umn.edu/dirtools/guestportal>*

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*Note 2. Please put a check mark under each heading to indicate the training required for each team member, depending on their role. Refer to section 4 following for more information on training requirements.*

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**3.0 Regulatory Protocols**

3.1 Protocols

Attach a brief description of each approved regulatory protocol that affects your project. Indicate who approved each protocol (IRB, IACUC, etc.) and the renewal status (approved, submitted, TBD, unknown, need help, etc.).

<i>Protocol Title</i>	<i>Number</i>	<i>Agency<sup>1</sup></i>	<i>Status<sup>2</sup></i>	<i>Expires</i>

Note 1. When using a protocol approved by an outside institution, please refer to the cross-institutional protocol approval instructions: <http://www.cmrr.umn.edu/projects/protocols>

Note 2. For protocol status, indicate approved, submitted, unsure, need help, or TBD (to be determined).

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3.2 Does your project require the use of a controlled substances ?  yes  no

If so, see the following web page for coordination details: <http://www.cmrr.umn.edu/projects/controlledSubstance>

3.3 Controlled substances

*Specify any controlled substances used in your project.*

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*Please note that the US DEA (Drug Enforcement Agency) requires that all controlled substances used at our location be purchased by us under our DEA license. Please consult with our staff when planning a project using controlled substances.*

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## 4.0 Training Requirements

Which of the following training will be required by your research team?

See [Safety Training Guidelines](http://www.cmrr.umn.edu/safety) for training mandates and descriptions at <http://www.cmrr.umn.edu/safety>

4.1 Unescorted CMRR Access requires:

**CMRR Safety**

Introduction to Research Safety

Chemical Safety

Chemical Waste Safety

HIPAA Training

CPR Training (required for CMRR employees)

4.2 Direct Involvement with Human Studies Subjects requires:

*The CMRR Access training, plus:*

Human Subjects Training

Blood Borne Pathogen Training

CPR Training

4.3 Animal Studies

*The CMRR Access training, plus:*

Animal Use Training

Blood Borne Pathogen Training

Controlled Substances Training (required if using controlled substances)

Non-Human Primate Training (required if using non-human primates)

4.4 Mayo Access / Studies require:

TBD





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**6.0 Requested NCC Support (THIS SECTION IS SPECIFIC FOR NCC)**

There are five core areas of service and resources funded by NCC. On this and the following pages, please indicate only those services and resources that you are requesting from the NCC.

Do not declare a comprehensive list of all activities for your project, but rather this list should comprise only that support which is needed in addition to your existing personnel and resources.

**6.1 CORE 1 (Research Subjects)**

**6.1.1 Human Subject Projects Services**

<i>Services<sup>1</sup></i> <i>(unscheduled)</i>
<input type="checkbox"/> <b>Controlled substances consultation</b>
<input type="checkbox"/> <b>3T committee (3T application assistance)</b>
<input type="checkbox"/> <b>GCRC (GCRC submission and renewal) <sup>2</sup></b>
<input type="checkbox"/> <b>U of M IRB (IRB submission assistance / renewal) <sup>2</sup></b>

*Note 1: Please indicate the services you are requesting.*

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6.1 Core 1 (Research Subjects) (continued)  
 6.1.2 Human Subject Projects Equipment / Room Resources

<i>Equipment / Room Resources (scheduled)</i>	<i>Typical Session Length/ Range<sup>1</sup></i>	<i>Number of Sessions...<sup>2</sup></i>	<i>...per (time period)<sup>2</sup></i>
<b>Mock scanner (Mock scanner for subject training)</b>			

*Note 1: List the length of a typical session in hours, if known. Use a range of hours if the session length varies.  
 Note 2: List the timing of sessions. Some examples: 1 time per week, 2 times per month.*

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6.1 Core 1 (Research Subjects) (continued)  
 6.1.3 Human Subject Projects Personnel Resources

<i>Personnel Resources (scheduled)</i>	<i>Typical Session Length / Range<sup>1</sup></i>	<i>Number of Sessions...<sup>2</sup></i>	<i>...per (time period)<sup>2</sup></i>
<b>Physiology (Physiology monitoring, blood sampling)</b>			
<b>Mock scanner (Assistance with mock scanner)</b>			
<b>MR subj prep (Consent and MR screen verification, placing and removing subject in magnet)</b>			

*Note 1: List the length of a typical session in hours, if known. Use a range of hours if the session length varies.  
 Note 2: List the timing of sessions. Some examples: 1 time per week, 2 times per month.*

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6.1 Core 1 (Research Subjects) (continued)

6.1.4 Animal Subject Projects Services

<i>Services<sup>1</sup></i> <i>(unscheduled)</i>
<input type="checkbox"/> IACUC (IACUC submission assistance and renewal) <sup>3</sup>
<input type="checkbox"/> Controlled substances consultation

Note 1: Please indicate the services you are requesting.

Note 3: Also, please list all regulatory protocols in section 3.

<i>Animal Housing Services</i> <i>(unscheduled)</i>	<i>Number of animals</i>	<i>Number of days...<sup>1</sup></i>	<i>...per (time period)<sup>1</sup></i>
<b>Large Animal Housing<sup>2</sup></b>			
<b>Primate Housing<sup>2</sup></b>			
<b>Small Animal Housing<sup>2</sup></b>			

Note 1: Please indicate the services you are requesting.

Note 2: For animal handling, the CMRR can assist your team's coordination with Research Animal Resources (RAR).

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<i>Animal Transportation Services (unscheduled)</i>	<i>Number of animals...<sup>1</sup></i>	<i>...per (time period)<sup>1</sup></i>
<b>Large Animal Transport<sup>2</sup></b>		
<b>Primate Transport<sup>2</sup></b>		
<b>Small Animal Transport<sup>2</sup></b>		

*Note 1: List the timing of services. For example: 2 times per year.*

*Note 2: For animal handling, the CMRR can assist your team's coordination with Research Animal Resources (RAR).*

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6.1 Core 1 (Research Subjects) (continued)  
 6.1.5 Animal Subject Projects Equipment / Room Resources

<i>Equipment / Room Resources (scheduled)</i>	<i>Typical Session Length / Range<sup>1</sup></i>	<i>Number of Sessions...<sup>2</sup></i>	<i>...per (time period)<sup>2</sup></i>
<b>Surgery room (Non-magnet sterile surgery room)</b>			

*Note 1: List the length of a typical session in hours, if known. Use a range of hours if the session length varies.  
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6.1 Core 1 (Research Subjects) (continued)  
 6.1.6 Animal Subject Projects Personnel Resources

<i>Personnel Resources (scheduled)</i>	<i>Typical Session Length / Range<sup>1</sup></i>	<i>Number of Sessions...<sup>2</sup></i>	<i>...per (time period)<sup>2</sup></i>
<b>Surgical Anesthesia (Induction, maintenance, monitoring of anesthesia)</b>			
<b>Surgical Anesthesia recovery (Post anesthesia recovery monitoring)</b>			
<b>Surgery acute (Acute surgery support)</b>			
<b>Surgery chronic (Chronic surgery support)</b>			
<b>Tissue procurement (Tissue perfusion, extract, processing)</b>			
<b>Physiology (Physiology monitoring, blood sampling)</b>			
<b>Mock scanner (Assistance with mock scanner)</b>			
<b>Non-Surgical Anesthesia</b>			

*Note 1: List the length of a typical session in hours, if known. Use a range of hours if the session length varies.  
 Note 2: List the timing of sessions. Some examples: 1 time per week, 2 times per month.*

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**Requested NCC Support**

6.2 CORE 2 (Data Acquisition)

6.2.1 Human Subject Projects Services

<i>Services<sup>1</sup></i> <i>(unscheduled)</i>
<input type="checkbox"/> Data Preprocessing
<input type="checkbox"/> Acquisition Training
<input type="checkbox"/> RF Coil Construction
<input type="checkbox"/> Siemens Pulse Programming
<input type="checkbox"/> Varian Pulse Programming

*Note 1: Please indicate the services you are requesting.*

*Please briefly describe the specific services requested.*

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6.2 Core 2 (Data Acquisition) (continued)  
 6.2.2 Human Subject Projects Personnel

<i>Personnel Resources (scheduled)</i>	<i>Typical Session Length / Range<sup>1</sup></i>	<i>Number of Sessions...<sup>2</sup></i>	<i>...per (time period)<sup>2</sup></i>
<b>3T MRI (Imaging Acquisition Assistance)</b>			
<b>3T MRS (Spectroscopy Acquisition Assistance)</b>			
<b>4T MRI (Imaging Acquisition Assistance)</b>			
<b>4T MRS (Spectroscopy Acquisition Assistance)</b>			
<b>7T MRI (Imaging Acquisition Assistance)</b>			
<b>7T MRS (Spectroscopy Acquisition Assistance)</b>			
<b>9.4T 65cm MRI (Imaging Acquisition Assistance)</b>			
<b>9.4T 65cm MRS (Spectroscopy Acquisition Assistance)</b>			

*Note 1: List the length of a typical session in hours, if known. Use a range of hours if the session length varies.  
 Note 2: List the timing of sessions. Some examples: 1 time per week, 2 times per month.*

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6.2 Core 2 (Data Acquisition) (continued)  
6.2.3 Animal Subject Projects Services

<i>Services<sup>1</sup></i> <i>(unscheduled)</i>
<input type="checkbox"/> <b>Data Preprocessing</b>
<input type="checkbox"/> <b>Acquisition Training</b>
<input type="checkbox"/> <b>RF Coil Construction</b>
<input type="checkbox"/> <b>Siemens Pulse Programming</b>
<input type="checkbox"/> <b>Varian Pulse Programming</b>

*Note 1: Please indicate the services you are requesting.*

*Please briefly describe the specific services requested.*

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6.2 Core 2 (Data Acquisition) (continued)

6.2.3 Animal Subject Projects Services

<i>Personnel Resources (scheduled)</i>	<i>Typical Session Length / Range<sup>1</sup></i>	<i>Number of Sessions...<sup>2</sup></i>	<i>...per (time period)<sup>2</sup></i>
<b>3T MRI (Imaging Acquisition Assistance)</b>			
<b>3T MRS (Spectroscopy Acquisition Assistance)</b>			
<b>4.7T MRI (Imaging Acquisition Assistance)</b>			
<b>4.7T MRS (Spectroscopy Acquisition Assistance)</b>			
<b>7T MRI (Imaging Acquisition Assistance)</b>			
<b>7T MRS (Spectroscopy Acquisition Assistance)</b>			
<b>9.4T 65cm MRI (Imaging Acquisition Assistance)</b>			
<b>9.4T 65cm MRS (Spectroscopy Acquisition Assistance)</b>			
<b>9.4T 31cm MRI (Imaging Acquisition Assistance)</b>			
<b>9.4T 31cm MRS (Spectroscopy Acquisition Assistance)</b>			

*Note 1: List the length of a typical session in hours, if known. Use a range of hours if the session length varies.*

*Note 2: List the timing of sessions. Some examples: 1 time per week, 2 times per month.*

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<b>Requested NCC Support</b>
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### 6.3 CORE 3 (Data Analysis and Visualization)

These services are used to train your team members on techniques and methods. They include providing some assistance and consultation to enhance your team's effectiveness in data processing.

#### 6.3.1 Human Subject Projects

<i>Services<sup>1</sup></i> <i>(unscheduled)</i>
<input type="checkbox"/> <b>Anatomic Image (Anatomic Image analysis and visualization)</b>
<input type="checkbox"/> <b>Artifact correction (Data artifact correction preprocessing)</b>
<input type="checkbox"/> <b>ASL analysis/viz (ASL Image analysis and visualization)</b>
<input type="checkbox"/> <b>Data archive (Data archival and backup)</b>
<input type="checkbox"/> <b>Data transfer (Secure Data transmission)</b>
<input type="checkbox"/> <b>DTI Analysis/Viz (DTI Image analysis and visualization)</b>
<input type="checkbox"/> <b>fMRI analysis/Viz (fMRI Image analysis and visualization)</b>
<input type="checkbox"/> <b>MRS quantification (Metabolite quantification)</b>
<input type="checkbox"/> <b>MRS spectroscopy (MR spectra processing)</b>

*Note 1: Please indicate the services you are requesting.*

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*Please briefly describe the specific services requested.*

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6.3 CORE 3 (Data Analysis and Visualization) (continued)  
 6.3.2 Animal Subject Projects

<i>Services<sup>1</sup></i> <i>(unscheduled)</i>
<input type="checkbox"/> <b>Anatomic Image (Anatomic Image analysis and visualization)</b>
<input type="checkbox"/> <b>Artifact correction (Data artifact correction preprocessing)</b>
<input type="checkbox"/> <b>ASL analysis/viz (ASL Image analysis and visualization)</b>
<input type="checkbox"/> <b>Data archive (Data archival and backup)</b>
<input type="checkbox"/> <b>Data transfer (Secure Data transmission)</b>
<input type="checkbox"/> <b>DTI Analysis/Viz (DTI Image analysis and visualization)</b>
<input type="checkbox"/> <b>fMRI analysis/Viz (fMRI Image analysis and visualization)</b>
<input type="checkbox"/> <b>MRS quantification (Metabolite quantification)</b>
<input type="checkbox"/> <b>MRS spectroscopy (MR spectra processing)</b>
<input type="checkbox"/> <b>Other (specify)</b>
<input type="checkbox"/> <b>Other (specify)</b>

*Note 1: Please indicate the services you are requesting.*

*Please briefly describe the specific services requested.*

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6.4 CORE 4 (Multimodality)

6.4.1 Human Subject Projects

<i>Services Resources<sup>1</sup></i> <i>(unscheduled)</i>
<input type="checkbox"/> <b>Histological Processing</b>
<input type="checkbox"/> <b>Histology consulting</b>

*Note 1: Please indicate the services you are requesting.*

<i>Equipment / Room Resources</i> <i>(scheduled)</i>	<i>Typical Session Length / Range<sup>1</sup></i>	<i>Number of Sessions...<sup>2</sup></i>	<i>...per (time period)<sup>2</sup></i>
<b>Serial reconstruction and registration (NeuroLucida)</b>			

*Note 1: List the length of a typical session in hours, if known. Use a range of hours if the session length varies.*

*Note 2: List the timing of sessions. Some examples: 1 time per week, 2 times per month.*

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6.4 CORE 4 (Multimodality) (continued)  
 6.4.2 Animal Subject Projects

<i>Services Resources<sup>1</sup></i> <i>(unscheduled)</i>
<input type="checkbox"/> Micro CT
<input type="checkbox"/> MR compatible implant design and manufacture
<input type="checkbox"/> Histological Processing
<input type="checkbox"/> Histology consulting

*Note 1: Please indicate the services you are requesting.*

<i>Equipment / Room Resources</i> <i>(scheduled)</i>	<i>Typical Session Length / Range<sup>1</sup></i>	<i>Number of Sessions...<sup>2</sup></i>	<i>...per (time period)<sup>2</sup></i>
<b>In-vivo electrophysiology rig ()</b>			
<b>In-vivo Optical Imaging Rig ()</b>			
<b>Microinjection/Iontophoresis ()</b>			
<b>Serial reconstruction and registration (NeuroLucida)</b>			

*Note 1: List the length of a typical session in hours, if known. Use a range of hours if the session length varies.*  
*Note 2: List the timing of sessions. Some examples: 1 time per week, 2 times per month.*

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6.5 CORE 5 (Chemistry and Contrast Agents)

6.5.1 Animal Subject Projects

<i>Services Resources<sup>1</sup></i> <i>(unscheduled)</i>
<input type="checkbox"/> <b>Antibody Fragmentation and Purification</b>
<input type="checkbox"/> <b>Antibody modification (eg. DOTA and polyamine coupling)</b>
<input type="checkbox"/> <b>Chemistry Consultation</b>
<input type="checkbox"/> <b>Peptide synthesis (diamine inserts and DOTA inserts)</b>

*Note 1: Please indicate the services you are requesting.*

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**7.0 MR Instrument Time**

**Magnets (scheduled)**

*Please estimate the total hours and session timing your project will need. Magnet time is not funded via NCC or BTRR, but the CMRR may grant limited unfunded magnet time. Please indicate your funding for magnet time.*

<i>Magnet / Subject</i>	<i>Funded Hours<sup>1</sup></i>	<i>Unfunded Hours<sup>1</sup></i>	<i>Typical Session Length / Range<sup>2</sup></i>	<i>Number of Sessions...<sup>3</sup></i>	<i>...per (time period)<sup>3</sup></i>	<i>Funding CUFS<sup>4</sup></i>
<b>7.1 Human / Primate</b>						
9.4T 65cm bore						
7T 90cm bore						
4T 90cm bore						
3T 90cm bore						
<b>7.2 Animal</b>						
9.4T 31cm bore						
4.7T 40cm bore						
<b>7.3 Other/unsure</b>						

*Note 1: Please list the total number of hours requested for the first year, and whether they are funded or unfunded.*

*Note 2: List a typical session length in hours. Use a range of hours if the session length varies.*

*Note 3: Specify the session timing. Some examples: 1 session per week, 2 sessions per month, 8 sessions per year.*

*Note 4: CUFS is a UMN accounting term for funding account.*

*For more information on magnet rates and specifications, please visit <http://www.cmrr.umn.edu/projects/outreach>*

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**8.0 Attachments**

**8.1 Attachments**

*Please email materials (PDF format only) to support your request for services.*

File Name(s)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Application for Biotechnology Research Resource (BTRR) Support**  
Center for Magnetic Resonance Research (CMRR), University of Minnesota, Minneapolis, MN  
And

**Application for Neuroscience Core Center (NCC) Support**  
Center for Magnetic Resonance Research (CMRR), University of Minnesota, Minneapolis, MN  
Mayo Clinic College of Medicine, Rochester, MN

**9.0 PHI Management Plan**

*Some human studies projects collect, transport, and use protected health information (PHI). In order to comply with University and federal regulations, please indicate below how you plan to manage PHI on your project, at least as it relates to CMRR equipment. If you would like to consult with CMRR about PHI use on your project, and about protecting PHI, please indicate so below.*

**9.1 Standard 3T/NCC PHI policy**

*The standard policy is no PHI entered on the scanner, no PHI stored at CMRR, no use or storage of unencrypted PHI on laptops. Use of encrypted media for data transportation and storage is strongly encouraged.*

Project will follow the standard 3T/NCC PHI policy.  Yes  No

*If not following the standard 3T/NCC PHI policy, please answer the questions in sections 9.2 - 9.4.*

**9.2 Collection of PHI**

Will your project enter PHI on any CMRR computer?  Yes  No  
What PHI will you enter?

**9.3 Transmission/Transportation of PHI**

Will your project transmit or transport PHI from the CMRR?  Yes  No  
Will your project use secure transmission to a remote DICOM server?  Yes  No  
Will your project write PHI to encrypted portable media?  Yes  No  
Will your project write PHI to unencrypted portable media<sup>1</sup>?  Yes  No  
What type of portable media will you use (CD/DVD, USB key, portable hard drive)?

**9.4 Storage/Use of PHI**

Will your project store PHI?  Yes  No  
Will your project store PHI on-site at the CMRR?  Yes  No  
Will the PHI be stored in an encrypted form?  Yes  No  
Will the PHI be stored in an unencrypted form?  Yes  No  
What type of media will you use for storage (RAID Disk, CD/DVD)?

Will the PHI be used/stored on a laptop in an encrypted form?  Yes  No  
Will the PHI be used/stored on a laptop in an unencrypted form<sup>2</sup>?  Yes  No

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**9.5 PHI Consulting**

Do you need assistance with PHI management for your project?  Yes  No

*Note 1. Unencrypted portable media are vulnerable to loss. This is strongly discouraged. Options for encryption are readily available.*

*Note 2. Laptops with unencrypted PHI are against University of Minnesota PHI policy.*