

# BIAC New User Orientation

Marissa Bruce | Duke-UNC Brain Imaging and Analysis Center

# Agenda

- Introductions
- Facilities
- Scheduling
- Calendar Entries
- MR Safety
- Scan Session
- BIAC Resources
- BIAC Billing System
- FAQs

# Introductions

# Welcome to BIAC!

- The Brain Imaging and Analysis Center (BIAC) was created in 1998 as the key component of the campus-wide neuroimaging initiative
- We are now home to more than sixty researchers and staff members from throughout Duke University and UNC-Chapel Hill, and across diverse disciplines



# Introductions: Todd & MR Technologists



Susan



Lamont

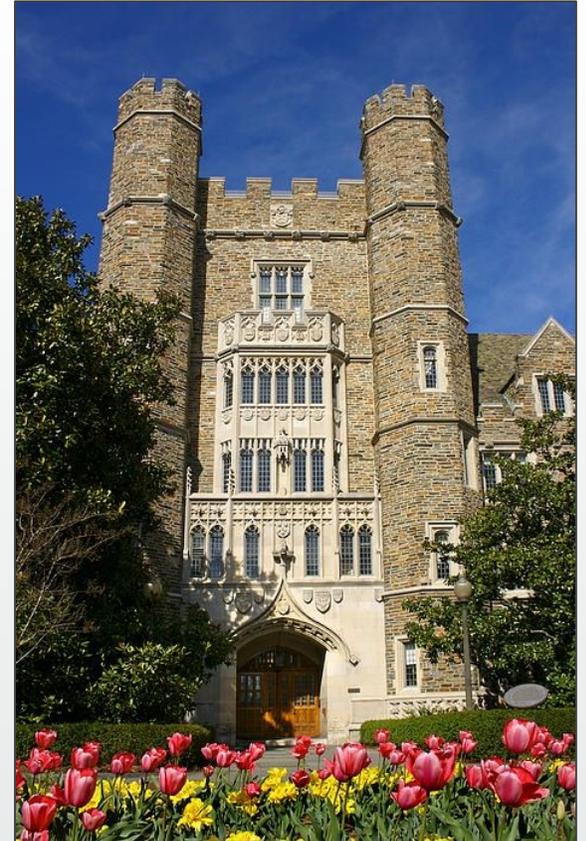


Jennifer

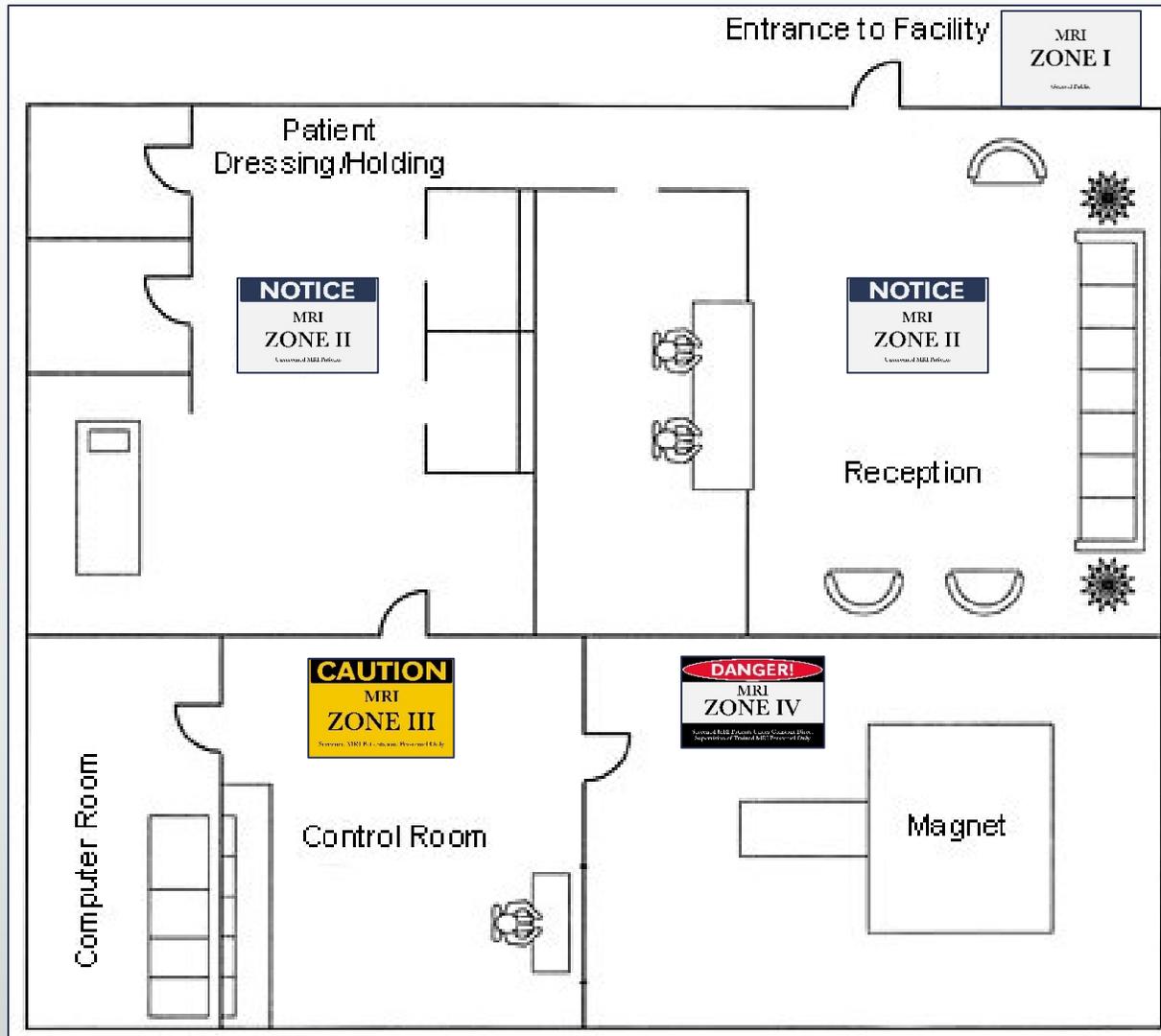
# Facilities

# Where is BIAC located?

- The main BIAC offices are housed in the Davison Building, fourth floor (Duke Hospital South Green Zone)
- Duke Hospital North houses our research-dedicated MRI suites



# Zone Locations & Entry Requirements



- **Zone I**
  - All areas accessible to the general public
- **Zone II**
  - Areas between the public-accessible Zone I and restricted areas of Zone III and IV
- **Zone III**
  - Area where free access by unscreened non-MR personnel or ferromagnetic objects or equipment can result in serious injury or death
- **Zone 4**
  - MR scanner room

# Mock Scanner (Mock I)



# Testing Room (Test I)



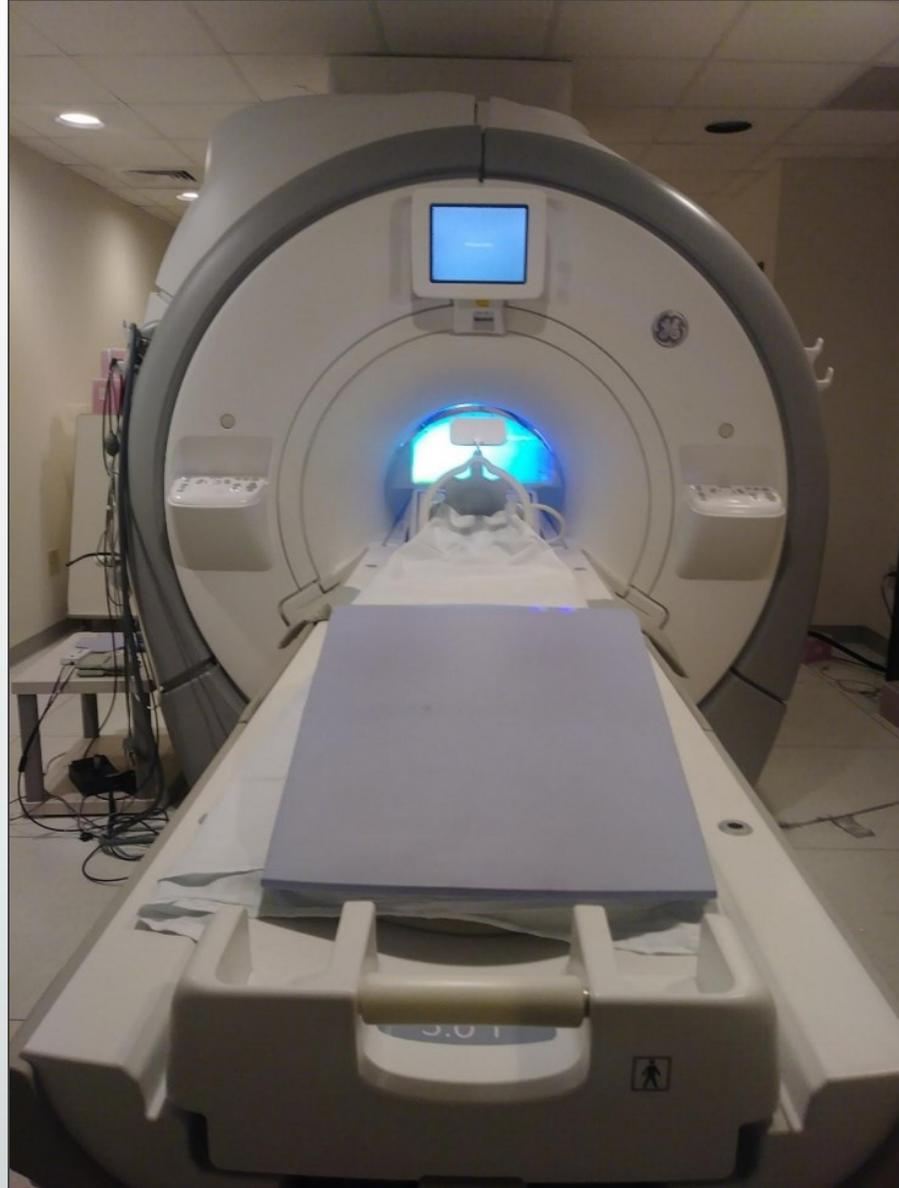
# DHNI



# DAVI



# BIAC5



# BIAC6



# Scheduling

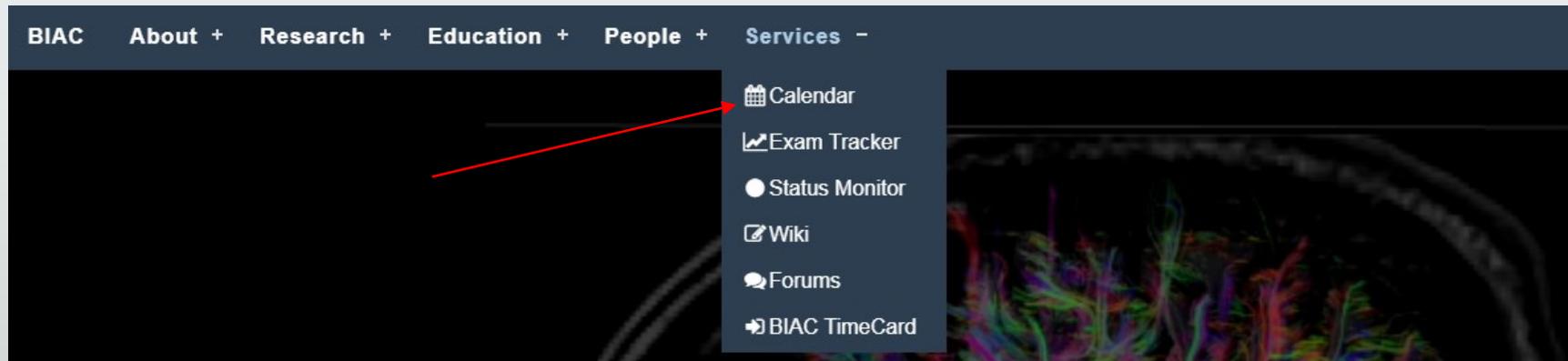
# Accounts

- **BIAC Computer Access** - Use your DHE account to log on to BIAC computers. If you need access to BIAC computers, send an email to [help@biac.duke.edu](mailto:help@biac.duke.edu). Please include the following information:
  - First name
  - Preferred name (nickname)
  - Last name
  - [Duke NetID](#) (required; request one [here](#))
  - DHE account (required; when requesting NetID at above link, also specify you need a DHE account in the Comments field)
  - Duke Unique ID (7-digit number on the back of your [Duke ID](#))
  - Duke Card # (if you need card key access; 9-digit number on the back of your [Duke ID](#))
  - Institution (Duke, UNC, Other-specify)
  - Department (BIAC, CCN, Radiology, Psychology, Psychiatry, Other-specify)
  - Position (Faculty, Staff, Postdoc, Grad Student, Undergrad, Fellow, Resident, Med Student, Other)
  - Current Email Address (Duke or UNC address preferred)
  - Renewal period (3/6/9/12 months)
  - BIAC Sponsor (BIAC faculty/staff/postdoc or other faculty running an experiment at BIAC)
  - BIAC Sponsor Email
  - **Please have your Sponsor send us a confirmation email.**
- **BIAC Compute Cluster Access** - Use your DHE account to log on to the [BIAC Linux Cluster](#). All registered BIAC Users will have usage privileges.

- <https://wiki.biac.duke.edu/biac:accounts>

# Scheduling

- Most often, the experimenter (i.e. the person running the subject) schedules a session on a BIAC scanner
- We strongly encourage you to enter real participant information
  - If a subject is lost and calls the BIAC office, having their name in the calendar helps us find out where they need to be
- It is the expectation that you have a participant when you reserve a slot



# Scheduling: Study Details

## Study Details

[Experiment Info Page for Screen.01](#)

Date	6/1/2015	Monday	*Start Time	11:30 AM	*End Time	12:30 PM
*Scanner	MOCK1		*Experiment	Screen.01	*Experimenter	Marissa Bruce
Subject			<input type="button" value="Change Subject"/>	*Subject Type	Human	
Notes	<div style="border: 1px solid #ccc; height: 40px;"></div>					

\*Required fields.

# Scheduling

- How far in advance can you schedule?

**Experiment Information for Screen.01**

Go back to [main calendar view](#).  
 Show [all experiments](#) user "mcb104" has access to.  
 View [disk quota information](#) for this experiment.

**Summary**  
 This experiment is currently valid.  
 This experiment's scheduling window allows you to schedule through 7/30/2019.  
 This experiment has 2 incomplete calendar entries ([see below](#)).

You may contact the [BIAC Scientific Review Committee](#) to request more time or to renew your experiment.  
 See [SOP109: Approval for BIAC Scanner Use](#) for more details.

Experiment	Scanner	Investigator	Responsible Investigator	Department	Start Date	End Date	Title
Screen.01	MOCK1	<a href="#">Allen Song</a>	<a href="#">Allen Song</a>	BIAC	9/20/2004	9/13/2019	Screening for Participation in MRI Subject Pool

Experiment	Time Allocated (hours)	Time Left (hours)	Time Used (hours)	Lost Time [Claimed] (hours)	Total Time (hours)	Scheduling Window (5/28/2019 - 6/18/2019)			Scheduling Window (6/19/2019 - 7/30/2019)		
						Window Size (days)	Max Study Size (hours)	Max Weekly Time (hours)	Window Size (days)	Max Study Size (hours)	Max Weekly Time (hours)
Screen.01	4500	431	4069	0 [0]	4069	21	4	None	42	4	6

Experiment	IRB Protocol	Principal Investigator	Start Date	End Date
Screen.01	00010672R11	<a href="#">Allen Song</a>	8/22/2018	9/13/2019

Experiment	Name	Username	Scheduling Permissions
Screen.01	<a href="#">Sharena Ballard</a>	sb237	Read, View Transactions, View Billing
Screen.01	<a href="#">Marissa Bruce</a>	mcb104	Read, Write, View Transactions
Screen.01	<a href="#">Lamont Conyers</a>	conye001	Read, Write, View Transactions
Screen.01	<a href="#">Francis Favorini</a>	favorini	Read, Write, Delete Anytime, Edit Anytime, Schedule Anytime, View Transactions, View Billing
Screen.01	<a href="#">Amanda Griffin</a>	ane5	Read, Write, Delete Anytime, Edit Anytime, Schedule Anytime, View Transactions, View Billing
Screen.01	<a href="#">Todd Harshbarger</a>	tth6	Read, Write, View Transactions
Screen.01	<a href="#">Jen Louya</a>	jel76	Read, Write, View Transactions
Screen.01	<a href="#">Susan Music</a>	som2	Read, Write, View Transactions
Screen.01	<a href="#">Elena Musty</a>	em123	Read, View Transactions, View Billing
Screen.01	<a href="#">Allen Song</a>	asong	Read, Write, View Transactions

Experiment	Directory	Name	Username	Data Permissions
Screen.01	None	None	None	None

View [disk quota information](#) for this experiment.

**Please fix the following incomplete calendar entries!**

Experiment	Date	Start	End	Scanner	Experimenter
<a href="#">Screen.01</a>	9/21/2006	1:00 PM	2:00 PM	MOCK1	Maura Styczynski
<a href="#">Screen.01</a>	9/21/2006	12:00 PM	12:30 PM	MOCK1	Maura Styczynski

# Scheduling: Last Minute Scheduling

- Last minute scheduling
  - If a last minute scan is scheduled at the beginning or end of the day, please contact the MR Techs to ensure that coverage will be provided
  - We recommend 1-2 hours notice



# MR Tech Schedule

- Normal tech coverage
- Be sure to check the notes (in blue) at the top of the scanner schedule to see exceptions to the normal tech schedule

**Thursday**  
**5/23/2019**  
[Single tech coverage 3p-6p](#)

Susan   
 Lamont   
 Jennifer 

**MR Tech Schedule**

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8:00 AM - 9:00 AM						***
9:00 AM - 10:00 AM						
10:00 AM - 11:00 AM						
11:00 AM - 12:00 PM						
12:00 PM - 1:00 PM						
1:00 PM - 2:00 PM						
2:00 PM - 3:00 PM						
3:00 PM - 4:00 PM						
4:00 PM - 5:00 PM						
5:00 PM - 6:00 PM						
6:00 PM - 7:00 PM						
7:00 PM - 8:00 PM						

\*\*\* - We will cover every other Saturday. For those weeks with Saturday coverage, Jenn will not cover Thursdays. When there is no Saturday coverage, there will be Thursday evening coverage.

**BIAC Scanner Schedule**

[Experiment Info Page](#)  
[MR Tech and Pre-Sold Slots Schedule](#)

Scanner:

Start Time:

Stop Time:

# Null.01

- Should **ONLY** be used to avoid double-booking a MR Tech
- The experimenter is responsible for placing Null.01 on the opposite scanner during single MR Tech coverage
- If you think someone forgot to schedule a Null.01, please contact the BIAC office before scheduling your study
- In the event of a double-booking, the study that scheduled first (**but failed to add a Null**) will be **rescheduled**

# Null.01

- Be sure to check the notes (in blue) at the top of the scanner schedule to see exceptions to the normal tech schedule
  - If your study starts at a time when there are 2 techs available and continues to a time when only 1 is available, you need to put a Null.01 on the opposite calendar for just the time there is only 1 tech available

**BIAC Scanner Schedule**

[Experiment Info Page](#)  
[MR Tech and Pre-Sold Slots Schedule](#)

Scanner:

Start Time:

Stop Time:

	Sunday 5/10/2015	Monday 5/11/2015	Tuesday 5/12/2015	Wednesday 5/13/2015	Thursday 5/14/2015	Friday 5/15/2015	Saturday 5/16/2015
	<a href="#">Add item</a>	<a href="#">No tech 8-Noon. Single tech coverage noon-10pm.</a>	<a href="#">Add item</a>	<a href="#">Normal tech coverage to 4pm one tech after 4pm</a> <a href="#">Luke Out at 1230 pm.</a>	<a href="#">One tech 2-6, no tech after 6.</a>	<a href="#">Add item</a>	<a href="#">Add item</a>
8:00 AM			UserTest.01	QA.04			
9:00 AM			ConUp.01 Emma Dowd 8:30 AM-10:00 AM 19765			SAT.01 Hanna Oh 8:30 AM-10:00 AM 19775	
10:00 AM			UserTest.01 Jessica Stanek	UserTest.01 Jessica Stanek	SAT.01 Hanna Oh 9:30 AM-11:00 AM	UserTest.01	QA.04

# Calendar Entries

# Calendar Entries

- Who is responsible for completing calendar entries?
  - The experimenter running the study (NOT the MR Tech)
- What about if I use MockI, TestI, DHNI, and DAVI?
  - Those entries still need to be completed!
- Calendar items YOU are required to complete:
  - Actual Start and End Times
  - Experimenter
  - Exam Number(s)
  - MR Tech
  - Subject Name\*\*
  - Subject Type
  - Consent Form Signed
  - Problem (if applicable)
  - Lost Time (if BIAC problem)





# Calendar Entries: Completed Items

- **Exam Number(s)**
  - The MR Tech will have this number at the time of the scan
  - The Experimenter should enter this number in the calendar
- **Experimenter**
  - Enter the actual person at the scanner running the session
- **MR Tech**
  - The Experimenter should enter the Tech name in the calendar entry
- **Subject Name**
  - Experimenter should enter this info prior to the scan
- **Problem (if applicable)**
  - The Experimenter should enter any problem that arises. Use the “problem details” field to elaborate further

# Calendar Entries: Completed Items

## Study Details

[Experiment Info Page](#)

Schedule ID 121497

Study ID 190514\_00000

Scheduled Times 2:00 PM - 4:00 PM

Date 5/14/2019 Tuesday

→ \*Actual Start Time 2:00 PM

→ \*Actual End Time 4:00 PM

Scanner BIAC5

→ \*Experiment

→ \*Experimenter None

→ \*First Exam # 00000

\*Last Exam # 00000

→ \*MR Tech None

→ Subject

Change Subject

→ \*Subject Type None

→ Consent Form Signed

→ \*Amount Paid \$ 0.00

→ \*Problem None

Completed

→ Lost Time 0 minutes

Problem Details

Notes

\*Required fields.

Save Don't Save Cancel Study Delete Study Undo Changes Un-Cancel Study

# Null.01

- Do **NOT** use Null.01 for the following situations:
  - As a placeholder for an experiment
  - User Tests
- Do **NOT** list any subject information/PHI in the Null.01 calendar entry. Only list the Experimenter's name so that it can be matched to the actual scan on the opposite scanner
  - All users have access to Null.01 calendar entries. If you list the subject's information in the Null.01 entry, you have just publicized PHI
- **If you delete/cancel a scan, remember to delete/cancel the Null.01 on the opposite scanner if it was used**

# Claiming Lost Time

- Lost Time should only be claimed if you are unable to use all or any part of your data due to a BIAC-related problem
- BIAC will enter lost time for the following situations:
  - No Tech Available\*
  - BIAC Scanner Down
  - Severe Weather (Duke Policy Activated)
- If your scan encountered a BIAC problem, please be sure to submit a trouble ticket ASAP so that the problem can be investigated and avoided for future scans!

# Trouble Tickets

- Trouble tickets can be submitted by clicking on the “Services” tab on the BIAC Homepage or by visiting [www.biac.duke.edu/services/](http://www.biac.duke.edu/services/)

The screenshot shows the BIAC homepage with the following elements:

- Header:** Duke-UNC Brain Imaging and Analysis Center (BIAC) logo and a background image of a scanner.
- Navigation:** About | Research | Education | People | Facilities | Services
- Services Button:** A large circular button labeled "Services".
- Service Grid:** A grid of icons for various services:
  - Scanner Calendar (calendar icon)
  - Trouble Ticket (yellow tag icon with "TROUBLE" text)
  - Exam Tracker (LOG icon with "MESSAGE" text)
  - Status Monitor (cylinder and sphere icon)
  - Documentation Wiki (notepad icon)
  - Forums (people icon)
  - BIAC Time Card (clock icon)
- Right Sidebar:** A vertical list of service links: Scanner Calendar, Trouble Ticket, Exam Tracker, Status Monitor, Documentation Wiki, Forums, and Time Card.

A red arrow points from the "Services" button to the "Trouble Ticket" icon in the grid.

# Experiment Information

- If your experiment is not available in the drop-down list, you should check the Experiment Info page for details

**Study Details**

[Experiment Info Page for Screen.01](#)

Date: 5/24/2019 Friday

\*Scanner: MOCK1

Subject: [Redacted]

\*Start Time: 11:00 AM

\*Experiment: Screen.01

\*End Time: 12:00 PM

\*Experimenter: Marissa Bruce

\*Subject Type: Human

Change Subject

Notes

\*Required fields.

Add Don't Add

### BIAC Scanner Schedule

[Experiment Info Page](#)  
[MR Tech and Pre-Sold Slots Schedule](#)

Scanner: BIAC5

Start Time: 8:00 AM

Stop Time: 10:00 PM

# Experiment Information

- 1. Has your experiment expired?

- 2. Has the experiment run out of hours?

- 3. Is the IRB protocol expired?

- 4. Do you have any incomplete calendar entries?

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Screen.01	<a href="#">Jen Louya</a>	jel76	Read, Write, View Transactions
Screen.01	<a href="#">Susan Music</a>	som2	Read, Write, View Transactions
Screen.01	<a href="#">Elena Musty</a>	em123	Read, View Transactions, View Billing
Screen.01	<a href="#">Allen Song</a>	asong	Read, Write, View Transactions

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<a href="#">Screen.01</a>	9/21/2006	12:00 PM	12:30 PM	MOCK1	Maura Styczynski

# Common Scheduling/Calendar Errors

- Not knowing who is responsible for what
- Scheduled without subject
- Experiment has no hours left
- Experiment/IRB protocol has expired
- Improper Null.01 use
- Improper UserTest.01 use
  - This is NOT a placeholder for an experiment
- Incomplete calendar entries
  - No subject info
  - Missing exam number
  - MR Tech not listed
  - Lost time not claimed properly
  - MockI/TestI/DHNI/DAVI entries are not completed

# MR Safety

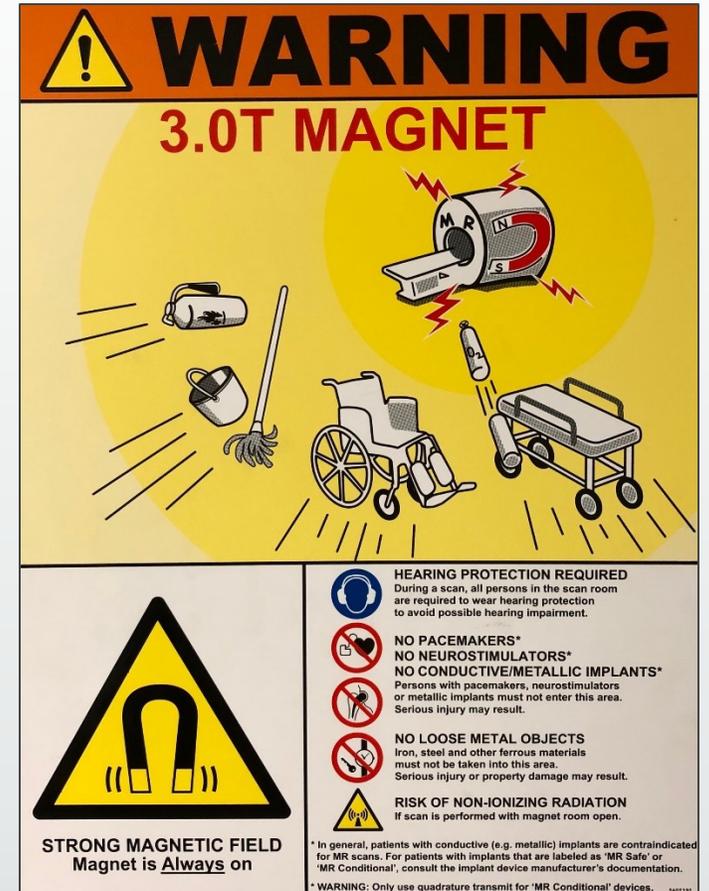
# MR Safety

- 24 hrs/day
- 365 days/year
- The magnetic field is on even when the magnet is **NOT** in use.
- Even if the electrical portion of the machine is off, the magnetic field is still up
- The MR technologist has final say in who may be allowed to go into the operation and/or scanner room.



# MR Safety

- The force of the field is measured in Tesla (T)
  - Our scanners are measured at 3.0 Tesla (T)
- The force of the field is greatest at the center of the magnet.
  - The magnetic FORCE INCREASES as you move closer to the center of the magnet
- What is not attracted to the magnet outside the fringe field can be attracted to the magnet as you move closer to the center of the machine



**Subject Safety is our #1 Concern!**

# MR Safety: Medical Implants

- Medical Implants
  - Review Dr. Frank Shellock's MRI contraindication database: [www.mrisafety.com](http://www.mrisafety.com)
  - At least 3 days before your exam, email **Todd and all 3 MR Techs** with the device model and manufacturer of any medical implants
    - They will reply via email regarding eligibility
  - It is the Experimenter's responsibility to get approval prior to the scan!

**Magnetic Resonance Imaging**  
**Tips for Scanning Patients with Implants**

• Follow your site's process for screening the patient  
• Identify the manufacturer and model of any implanted devices  
• Locate the MRI safety information in the device manufacturer's labeling

Look for one of these icons:

**MR** MR Safe. Patients with MR Safe devices have no scanning restrictions.

**MR** MR Conditional. For patients with MR Conditional devices, implant conditions should be matched with the MR system information.  
• Consult your MR system manual for MR system information  
• Ensure that the MR system meets all conditions provided in the MR Conditional labeling  
• If conditions are not met, the patient should not be scanned

**MR** MR Unsafe. Patients with MR Unsafe devices should not be scanned. Assume any unidentified implant is MR Unsafe.

• Document device information in the medical record  
• Consult a physician for any risk/benefit decisions  
For MR Conditional devices:  
• Follow all pre-scan conditions, such as special programming modes

**DURING**

• For MR Conditional devices, follow all scan conditions such as specific absorption rate (SAR) restrictions or patient positioning instructions  
• Monitor the patient at all times

**AFTER**

• Assess the patient for discomfort or injuries  
• Follow any post-scan conditions, such as device checks or programming

FDA U.S. FOOD & DRUG ADMINISTRATION  
SMRT A WORLD OF MEDICAL PROFESSIONALS

# MR Safety: Pregnancy Tests

- Women of childbearing potential must receive a urine pregnancy test immediately prior to each MRI Scan
- Very limited exceptions:
  - Females who have not yet menstruated
  - Post-menopausal females
  - Females who have had a hysterectomy
- Supplies are available at the scanners
- Experimenter should facilitate urine collection
- MR Tech will perform pregnancy test
- Participant sex must be listed on the calendar!



# Scan Session

# Scanner Access

- \* **NEW** \* How to get BIAC Level I Access:
  - (1) Read and sign off on all relevant SOPs on the *Signature Sheet: Level I MRI Access*
  - (2) Read the *MRI Safety Tutorial* and watch *MRI Safety Video*
  - (3) Complete the online *Safety Quiz*
  - (4) Complete the *MRI Safety Screening* form
  - (5) Attend *BIAC New User Orientation*
  - (6) Return completed forms to BIAC
  - (7) Email [help@biac.duke.edu](mailto:help@biac.duke.edu) with your Duke Unique ID and your HID-Activated Card Number

# Pre-Scan Screening

- All subjects must be either phone screened or interviewed for MRI safety in person before being scheduled for a scan
  - Highly recommended to administer official BIAC MRI Safety Screening Form
- Any questions or concerns about MRI safety found in the initial screening should be addressed with **Todd and all 3 MR Techs** at least 48 hours before the scan (note: at least 72 hours for implant information)

# Pre-Scan Screening

- MRI Techs typically are meeting subjects for the first time the day of the scan and are a last line of defense
- Responsibility to determine initial MRI safety and subject quality is up to individual lab faculty and staff (unless using BIAC volunteer registry)
- Thorough review of medical history
  - May require obtaining medical record authorization to review make and model of any implanted metal or part of medical history
  - Emphasis on reviewing and researching any past surgeries as many subjects may not know they have implanted metal after certain procedures (i.e. wire sutures or a screw/pin)
  - Even if implants are deemed safe for scanning, they may cause artifacts

# Examples of Pre-Screening Resources

## ■ Phone Screening Script

### **BIAC Phone Screening**

#### **Part I: Initial Contact**

Good morning/afternoon, my name is Marissa Bruce and I'm calling from the Duke Brain Imaging and Analysis center. Are you free now to hear more about our studies?

**If yes,**  
Great. Would you be free to do the phone screening now?

**If no,**  
Is there a better time for you to do the phone screening?

#### **Part II: BIAC Research Summary**

**If yes,**  
Our research uses functional magnetic resonance imaging to take pictures of your brain while you are doing a psychology experiment. We study the areas of the brain associated with things like memory, attention, and perception. We have a number of studies going on at any one time, and our studies are **conducted** at the MRI center at Duke Hospital.

If you participate in our studies, you will come to the MRI center and lie down on your back in a MRI machine (which is like a small open-ended tunnel).

The machine uses radio waves to take the pictures of your brain. The radio waves and magnetic fields used in MRI are **not themselves harmful**, but they do pose a risk in some cases, such as if you have a pacemaker.

Most studies take between 1-2 hours, and pay about \$20 per hour, but the duration and payment depends on the particular experiment. **Are you still interested in participating?**

**If yes,**  
In order to participate and be entered into our database (so that you can be contacted for our studies), the first step is a 5-10 minute phone screening and the second step is to come into the Duke Children's Hospital for a one hour compensated in-person screening. You will receive \$20 and a parking pass for the hospital garage. During the screening, we will collect a health history, have you fill out some questionnaires to see if you are eligible for our studies, and conduct an MRI simulation. **Would you be interested in this screening?**

**If no,**  
Thank you for taking the time to reach out to us and have a great day!

#### **Part II: Screening Questions**

**If yes,**  
Before you can participate in the in-person screening, I need to go over a set of questions with you. If you do not want to answer a question, you do not have to answer it, but then you will not be able to participate.

#### **1. Have you done any previous MRI studies or ever been in a MRI scanner?**

**"Yes"**, Ask the subject when and where the session was conducted. Note: prior participation in MRI does not ensure safety!

**"No"**, Be especially careful with any subject who has not been in the scanner.

Revised: 03/04/2019

#### **2. Do you have any of the following metal objects in your body?**

a. Implants: pacemakers, cochlear/ear, insulin pump, etc.

b. Instruments: metal working, bullet/shrapnel, etc.

**"Yes"**, If they have any implanted metal, then they should not participate in the study or go into the scanner room without approval from Dr. Song. Remember, the scanner room itself can be a dangerous environment for subjects with implanted metal (e.g., pacemakers), so it is important to screen these subjects ahead of time. **[STOP SCREENING – CANNOT PARTICIPATE]**

#### **3. Do you have any of the following metal objects in your body?**

a. Surgical: pins in bones, clamps, valves, catheters, etc.

**"Yes"**, Inquire about the type of implant and the type of metal. If they have any implanted metal that is not MR-compatible then they should not participate in the study or go into the scanner room without approval from Dr. Song. Remember, the scanner room itself can be a dangerous environment for subjects with implanted metal (e.g., pacemakers), so it is important to screen these subjects ahead of time.

#### **4. Have you ever worked with metal (e.g. grinding, fabricating)**

**"Yes"**, Ask the subject if he or she was ever around metal shavings. If **"Yes"**, **[STOP SCREENING – CANNOT PARTICIPATE]**

#### **5. Have you ever had an injury to the eye involving metal or invasive eye surgery?**

**"Yes"**, **[STOP SCREENING – CANNOT PARTICIPATE]**

#### **6. Are you pregnant or think you may be pregnant? (women only)**

**"Yes"**, **[STOP SCREENING – CANNOT PARTICIPATE]**

#### **7. Do you have any permanent makeup or tattoos?**

**"Yes"**, **[STOP SCREENING – CANNOT PARTICIPATE, tattoos below the neck are ok]**

#### **8. Do you have any body piercing that cannot be removed?**

**"Yes"**, **[STOP SCREENING – CANNOT PARTICIPATE]**

**"No"**, I have piercings but they are removable." Tell the subject that they should leave all piercings and jewelry at home, or in lockers outside the MR center.

The following questions may preclude the subject's participation in some studies, or may suggest some potential problems:

#### **9. Do you have dental braces, dental implants, or a permanent retainer?**

**"Yes, I have permanent metal dental work."** We currently do not run subjects with permanent dental work because of the potential for an imaging artifact. In addition, some permanent retainers are held in place by magnets.

**"Yes, but it is removable."** All removable metal dental work should be removed before entering the MR room.

**"Are fillings OK?"** Gold and silver fillings are OK for entering the scanner room.

#### **10. Do you feel anxious in small spaces? Would you classify yourself as being claustrophobic? (\*emphasize\*)**

**"Yes"**, Explain the MR environment to them, and describe the study. Tell them that they will in the scanner bore for at least 90 minutes, but will be able to talk with the experimenters in the next room. Let the subject make a decision about whether to participate.

#### **11. Do you use any prescription medications, for example, anti-depressants, anti-anxiety or any hypertension medications?**

Because of the potential effects of some medications upon brain neuronal activity and blood flow, we also ask subjects about the drugs they might be taking

Revised: 03/04/2019

#### **Part III: Result of Phone Screening**

**If they qualify,**  
That is all of the questions. At this point, if you are still interested, we can schedule you for a visit to our MRI facility at Duke for the in-person screening.

**If they do NOT qualify,**  
Unfortunately, you are not eligible to participate in our MRI studies. Because these studies are for research and of no medical benefit to you we must take additional precautions to ensure your safety. If you have any further questions or concerns, you can contact our director, Dr. Allen Song at 681-9337.

#### **Part IV: Voicemail**

Hello,

This is Marissa Bruce from the Brain Imaging and Analysis Center at Duke. I am calling to conduct a quick 5 minute phone screening to see if you are eligible for our studies. If you would like, please give us a call back at 919.681.9344 any time Monday through Friday between 8am-4:30pm. If you prefer, please send an email to volunteer at b-i-a-c dot duke dot edu. That is b-o-i-l-a-n-t-e-e-y at b-i-a-c dot duke dot edu. **Thank you for your time!**

Revised: 03/04/2019

# Examples of Pre-Screening Resources

## ■ BIAC MRI Safety Screening Form

Protocol: \_\_\_\_\_ Exam Number: \_\_\_\_\_ Date: \_\_\_\_\_

**Duke-UNC Brain Imaging and Analysis Center:  
MRI Safety Screening**

All individuals entering the MRI suite must fill out this information to the best of their knowledge. Any potential contraindications must be reviewed with the individual's medical record and the BIAC MR Safety Committee before being cleared to enter the scanner bore.

**Part I: For all individuals entering the scanner room**

Name \_\_\_\_\_ Birthdate \_\_\_\_\_  
Last name First name M.I.

Address \_\_\_\_\_ City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_ Phone (H)(\_\_\_\_) \_\_\_\_\_ (W)(\_\_\_\_) \_\_\_\_\_ (C)(\_\_\_\_) \_\_\_\_\_

1. Have you ever had an injury to the eye involving a metallic object (e.g. metallic slivers, shavings, foreign body)?  No  Yes  
 If yes, please describe: \_\_\_\_\_

2. Have you ever worked with metal (grinding, fabricating, etc.)?  No  Yes  
 If yes, please describe: \_\_\_\_\_

3. Have you ever had surgery (including eye surgery)?  No  Yes  
 If yes, please describe: \_\_\_\_\_

4. Have you had any previous MRI studies or been in a MR scanner?  No  Yes  
 If yes, please list (most recent first): Body part \_\_\_\_\_ Date \_\_\_\_\_ Facility \_\_\_\_\_  
 If yes, did you have any problems? \_\_\_\_\_

**Before you may enter the scanner room, you must remove all metallic objects.**

All contents of pockets, including back pockets  Shoes that contain any metal (e.g., steel tipped)  
 Wrist watch, any bracelets  Hearing aids or other electronic devices  
 Hair pins, clips, weaves, fasteners  Pagers, cell phones, PDAs  
 Pins or badges on shirt  Dentures or removable retainer  
 Belt with metal (e.g., buckle)  Necklaces, chains

**Part II: For all individuals entering the scanner bore**

1. Are you claustrophobic?  No  Yes

2. Do you have an IUD or diaphragm containing metal?  No  Yes

3. Are you pregnant, experiencing late menstrual period, or undergoing fertility treatment?  No  Yes

4. Do you currently have a fever or other acute illness?  No  Yes

5. Please list any surgeries or other invasive medical procedures in as much detail as possible:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Revised: 7/28/2017 Page 1 of 3

Protocol: \_\_\_\_\_ Exam Number: \_\_\_\_\_ Date: \_\_\_\_\_

6. Are you currently taking or have you recently taken any medication?  No  Yes  
 If yes, please list \_\_\_\_\_

7. Do you have anemia or any diseases that affect your blood?  No  Yes  
 If yes, please describe \_\_\_\_\_

8. Do you have a history of stroke, seizures, brain tumor, head trauma, or other neurological disorder?  No  Yes  
 If yes, please describe \_\_\_\_\_

9. Do you wear glasses or contact lenses?  No  Yes  
 If yes, please specify prescription (if known) \_\_\_\_\_

10. Do you have a breathing disorder (e.g., asthma, apnea), heart condition, or movement disorder?  No  Yes

Height \_\_\_\_\_ Weight \_\_\_\_\_ Handedness \_\_\_\_\_

**WARNING:** Certain implants, devices, or objects may be hazardous to you and/or may interfere with the MR procedure (i.e., MRI, MR angiography, functional MRI, MR spectroscopy). Do not enter the MR system room or MR environment if you have any questions or concerns regarding an implant, device, or on object. Consult the MRI Technologist or Radiologist BEFORE entering the MR system room. The MR magnet is ALWAYS on.

**Please mark on the figure(s) below the location of any implant or metal inside of or on your body.**

Revised: 7/28/2017 Page 2 of 3

Protocol: \_\_\_\_\_ Exam Number: \_\_\_\_\_ Date: \_\_\_\_\_

**Please indicate if you have any of the following:**

Yes  No Aneurysm clip(s)  
 Yes  No Cardiac pacemaker  
 Yes  No Implanted cardioverter defibrillator (ICD)  
 Yes  No Electronic implant or device  
 Yes  No Magnetically-activated implant or device  
 Yes  No Neurostimulation system  
 Yes  No Spinal cord stimulator  
 Yes  No Internal electrodes or wires  
 Yes  No Bone growth/bone fusion stimulator  
 Yes  No Cochlear, otologic, or other ear implant  
 Yes  No Insulin or infusion pump  
 Yes  No Implanted drug infusion device  
 Yes  No Any type of prosthesis (eye, penile, etc.)  
 Yes  No Heart valve prosthesis  
 Yes  No Eyelid spring or wire  
 Yes  No Artificial or prosthetic limb  
 Yes  No Metallic stent, filter, or coil  
 Yes  No Shunt (spinal or intraventricular)  
 Yes  No Vascular access port and/or catheter  
 Yes  No Radiation seeds or implants  
 Yes  No Medication patch (Nicotine, Nitroglycerine)  
 Yes  No Any metallic fragment or foreign body  
 Yes  No Wire mesh implant  
 Yes  No Tissue expander (i.e. breast)  
 Yes  No Surgical staples, clips, or metallic sutures  
 Yes  No Joint replacement (hip, knee, etc.)  
 Yes  No Bone/joint pin, screw, nail, wire, plate, etc.  
 Yes  No Dentures or partial plates  
 Yes  No Tattoo or permanent makeup  
 Yes  No Body piercing or jewelry  
 Yes  No Hearing aid (remove before entering MRI)  
 Yes  No Other implant \_\_\_\_\_

**IMPORTANT INSTRUCTIONS**

Before entering the MR environment or MR system room, you must remove all metallic objects including hearing aids, dentures, partial plates, keys, cell phone, eyeglasses, beeper, hair pins, barrettes, jewelry, body piercing jewelry, watch, safety pins, paperclips, money clip, credit cards, bank cards, magnetic strip cards, coins, pens, pocket knife, nail clipper, tools, clothing, with metal fasteners, and clothing with metallic threads. You will be asked to wear ear plugs to protect your hearing during the scan.

Please consult the MRI Technologist or Radiologist if you have any question or concern BEFORE you enter the MR system room.

I attest that the above information is correct to the best of my knowledge. I read and understand the contents of this form and had the opportunity to ask questions regarding the information on this form and regarding the MR procedure that I am about to undergo.

Signature of Person Completing Form \_\_\_\_\_ Signature of Person Screening Subject/Patient \_\_\_\_\_ Date \_\_\_\_\_

Form Completed by: Self Parent/guardian Other relative Physician

Revised: 7/28/2017 Page 3 of 3

# Scan Session: UserTest.0I

- UserTest.0I = free testing time
- UserTest.0I = no MRI data, but you can...
  - Set up your protocol
  - Test scanner triggering
  - Time your task
  - See what your stimuli looks like inside the scanner
- UserTest.0I can be scheduled <24 hours in advance
  - Paid study CAN schedule over a User Test!
  - **Please note if you will or will not need a MR Tech**
- We highly recommend scheduling a UserTest.0I prior to your first participant!

# Scan Session: Planning your Time

- A scheduled session must include:
  - (1) **Protocol time**: the time it takes to run a protocol
  - (2) **Breaks**: if there is a short resting period between runs
  - (3) **Set-up time**: the time it takes to review the screening forms and getting the participant set up
  - (4) **Exit time**: the time it takes to get a participant out of the scanner
- Typically allot 15 min beyond your protocol time

# Day of Scan Procedure

Step 1: Escort subject to MRI hallway and ask them to place all belongings into lockers

Step 2: Ask subject to remove all metal objects from their person and place in locker (jewelry, bobby pins, etc.)

Step 3: Ask subject to pat and empty any and all pockets

**All subjects should be MRI ready before entering the console room**

Step 4: If scanning a woman of childbearing potential, conduct the urine pregnancy test

Step 5: Walk subject to console room and have them fill out the *BIAC MRI Safety Sheet*

Step 6: Ask subject to re-check for any metal on their person or in their pockets

Step 7: MRI Tech will review form and begin their scanning procedure

# Scan Session:Visitors

- Visitors and family members are never allowed in the console room
- What are your options?
  - Schedule time in Test I, DHNI, or Mock I\*
  - Parent/guardian can wait outside BIAC5
  - Parent/guardian can wait outside the office suite
  - Parent/guardian can wait in the Children's Hospital Lobby
  - Parent/guardian can sit in the magnet room, if...
    - MR Safety Screening Form completed
    - No contraindications to scanning

# Data Quality and Movement

- When screening subjects before the MRI, incorporating a mock scan can help identify if subjects will be able to remain still for the duration of the scan
- Be observant of medical conditions that may cause greater than normal movement (ex. Bronchitis in the winter months or a common cold)
- Experimenters at the scanner should be observing data acquisition and noting if there are any artifacts
  - If subject movement – remind subject to be still, or if it continues end scan early
  - If artifact from MRI – immediately submit a trouble ticket for review from BIAC Help

# Data Quality and Movement

- Utilize free UserTest sessions on calendar to run through protocol multiple times before beginning data collection
- Consult with BIAC to ensure scanning protocol is correct before booking scanner time
- Data should be reviewed for QA **as soon as possible** after collection
- Utilize the online trouble ticket system to alert BIAC to potential issues with scanning or reach out to Dr. Todd Harshbarger
  - If using a BIAC Volunteer subject, alert Marissa Bruce as well
  - BIAC is not responsible for artifacts related to subject motion

# Scan Session: Hospital Courtesies

- At the hospital, patients and their transporters have the right of way
- Please be sure to wait if patients are in the middle of the MR hallway
- ID Badge must be visibly worn at all times



# Scan Session: Experimenter Courtesies

- Please be sure to wait until the scan before yours is finished, and the participants have exited the console room before entering
- What are your options?
  - Schedule Test I / DHNI / Mock I\* and wait in those rooms
  - Please check the calendar prior to entering a room!
- Please do not wait in the hallways
- Scans are not allowed to run over the scheduled time

# Scan Session: Experimenter Courtesies

- Do NOT train/consent/test subjects in the hallways
  - This includes the round table by BIAC 5
- If it is necessary to talk with a member from another lab, pull them aside and do not talk to them in front of their subjects
- Additionally, a subject may be from a sensitive or vulnerable population and require the undivided attention of the lab team.

# Scan Session: Experimenter Courtesies

- After your session, please return all supplies, equipment, and furniture to where they should be so the room is ready for the next User
- If you have plugged in or reconfigured anything to a non-standard configuration, please make sure that you have returned everything to standard configurations

**CLEAN UP  
AFTER YOURSELF,  
YOUR MOTHER  
DOESN'T  
WORK HERE**

# BIAC Resources

# BIAC Resources: Stimulus Controls

- We have many peripherals available for you to use!

- Details instructions can be found here:  
<https://wiki.biac.duke.edu/biac:experimentalcontrol>

## BIAC Stimulus Control System Manual

### Stimulus Control System Layout

- Organization diagram
- Hardware connected to each PC

### Video display

- Using the video projector
- Using the DVD player
- Using the Video switch
- Using the Monitors

### Audio

- Using the audio headphones

### EyeTracker

- Eyetracking in the MRI scanner

### Galvanic skin resistance (GSR)

- Recording GSR in the MRI scanner

### Button Boxes

- Using the 8-button box
- Using the joystick button box

### Head Tracking Device

- Using the head tracker

### Troubleshooting

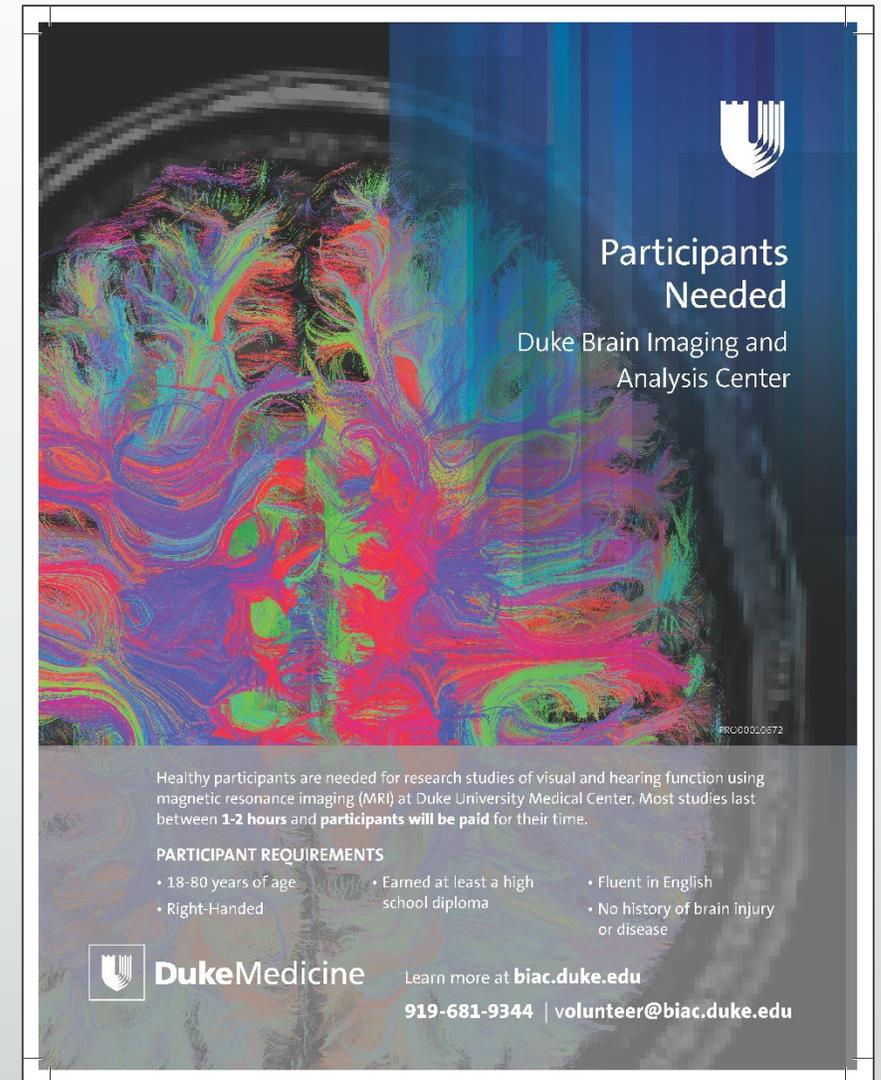
- Troubleshooting

#### Table of Contents

- BIAC Stimulus Control System Manual
- Stimulus Control System Layout
- Video display
- Audio
- EyeTracker
- Galvanic skin resistance (GSR)
- Button Boxes
- Head Tracking Device
- Troubleshooting

# BIAC Resources: Subject Recruitment

- BIAC maintains an active subject pool (~425 members)
- Healthy, “Normal” participants
- Criteria:
  - 18-80 years of age
  - Right-handed
  - Earned at least a high school diploma
  - English speaker (native/fluent)
  - No history of brain injury or disease
  - No anti-depressants, anti-anxiety, or hypertension medication use



Participants Needed  
Duke Brain Imaging and  
Analysis Center

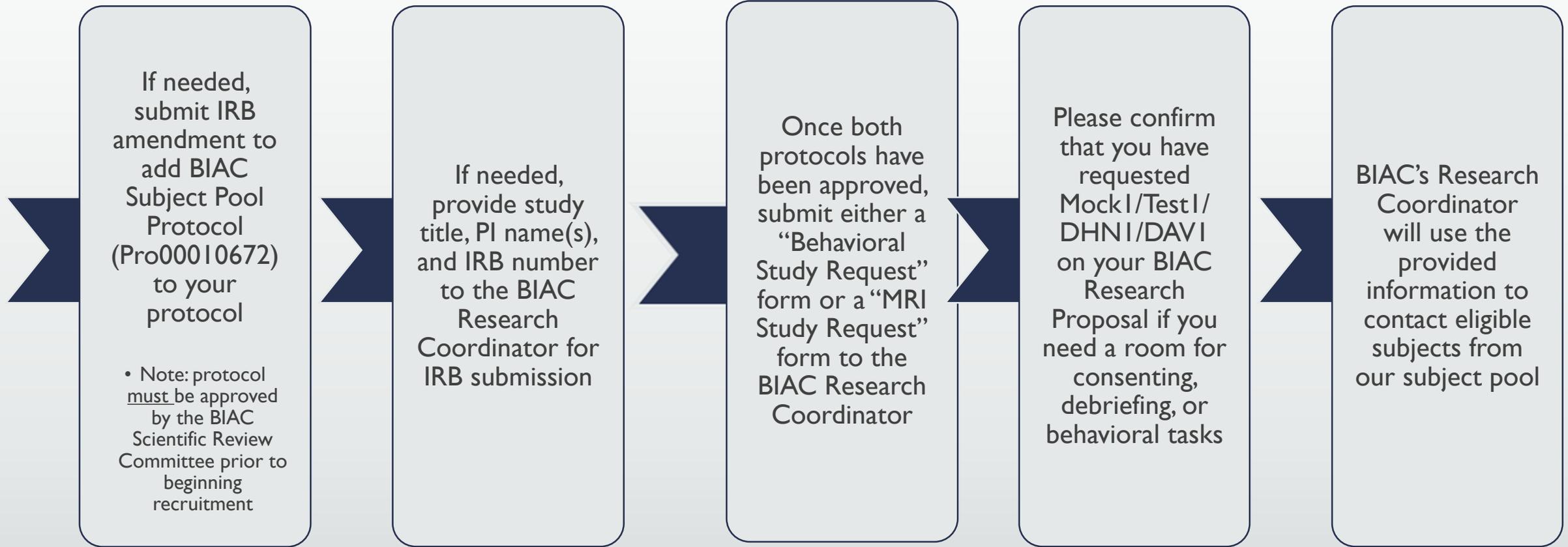
Healthy participants are needed for research studies of visual and hearing function using magnetic resonance imaging (MRI) at Duke University Medical Center. Most studies last between 1-2 hours and participants will be paid for their time.

**PARTICIPANT REQUIREMENTS**

- 18-80 years of age
- Right-Handed
- Earned at least a high school diploma
- Fluent in English
- No history of brain injury or disease

 **DukeMedicine** Learn more at [biac.duke.edu](http://biac.duke.edu)  
919-681-9344 | [volunteer@biac.duke.edu](mailto:volunteer@biac.duke.edu)

# BIAC Resources: Using BIAC Subject Pool



# BIAC Resources: Using BIAC Subject Pool

- Please be aware that we schedule and recruit for many BIAC studies.
- Please provide enough time for IRB amendment approval and/or contacting participants if you need subjects.
- Try to be flexible with your schedule, our scanners have extended hours Monday - Wednesday nights, plus availability on Thursday nights/Saturdays alternate.
- Keep in mind that many of our subjects are students, be mindful of the academic calendar (fall break, exams weeks, major holidays, spring break, etc.)

# BIAC Resources: Subject Feedback

- Please let us know if a subject does not show for a scan as they will no longer be contacted for our studies
- Please let us know if a subject performs extremely poorly on a task, is unusually unmotivated, or falls asleep during the scan
  - We have a two-strike policy with subjects for instances like these, so the more feedback—the better our recruitment can be
- Please let us know if the subject has trouble remaining still during the scan

# BIAC Billing System

# BIAC Billing System

- Each month, we generate invoices for each experiment through the BIAC Scanner Schedule System
  - Invoices will be emailed on the 1<sup>st</sup> business day of the following month
- Calendar entries must be fully documented by the end of the last day of every month. Once the invoices are generated, changes cannot be made.
  - This includes making any lost time claims and/or cancellations

# BIAC Billing System

- Invoices are sent to the individuals that were listed on the initial BIAC proposal form received by the Scientific Review Committee
- These individuals should review the invoices upon receipt and contact [billing@biac.duke.edu](mailto:billing@biac.duke.edu) to confirm the charges
- Payments will be processed within 2-4 days after the invoices are sent out
  - We will charge the last cost object (fund code) that we have on file for the study. If the funding source has changed, please notify BIAC as soon as you have the new fund code. Billing Contacts can view fund code in the Experiment Info Page
- **Updating calendar entries regularly will avoid the need for corrections on the invoices.**

# BIAC Billing System

## BIAC Scanner Time Invoice

Please remit payment to:

Center Attn: Billing Campus Box 3918 Durham, NC 27710	Brain Imaging and Analysis 919-681-7033 Fax billing@biac.duke.edu	919-681-9337
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**Department**     **BIAC**

**Responsible Investigator**     **Allen Song**    allen.song@duke.edu  
**Billing Contact** **Elena Musty**     elena.musty@duke.edu

**Experiment**     [REDACTED]     **Cost Object Investigato**     [REDACTED]

Scanner	Date	Start	End	Exam(s)	Canceled	Lost	TimeOverlap	Amount	Paid to	Amount	
								Credit	Billed	Date	Due

**Current Charges**

BIAC6	15-Apr-2019	2:30 PM	3:00 PM	00606	No	0 min.	0 min.	\$280.00	\$0.00	\$280.00
BIAC6	25-Apr-2019	3:30 PM	4:30 PM	00645	No	0 min.	0 min.	\$560.00	\$0.00	\$560.00

<b>Current charges through 4/30/2019 (2 studies)</b>	<b>\$840.00</b>
<b>Past Due charges (0 studies)</b>	<b>\$0.00</b>
<b>Development funds contributed by BIAC</b>	<b>\$0.00</b>
<b>Total for [REDACTED] (2 studies)</b>	<b>\$840.00</b>

<b>Current charges through 4/30/2019 (2 studies)</b>	<b>\$840.00</b>
<b>Past Due charges (0 studies)</b>	<b>\$0.00</b>
<b>Development funds contributed by BIAC</b>	<b>\$0.00</b>
<b>Total for Allen Song (2 studies)</b>	<b>\$840.00</b>

# BIAC Billing System: Helpful Definitions

- **Current Rates (effective 7/1/2018):**
  - Rate for Scans = \$560 per hour
  - Cancellation Fee Rate = \$140 per hour
    - Scans cancelled with less than 48 hours notice will incur the cancellation fee
- **Lost Time:** This is a credit for time/data lost due to a BIAC-related problem. The experimenter should claim this on the BIAC Scanner Schedule
- **Overlap Credit:** This is a credit granted when a paying study takes over a canceled slot and completes the scan
  - **Non-Paying Studies:**
    - UserTest, SysDevelop, SysService, QA, Demo

# BIAC Billing System: Cancellations

- Canceled scans incur a fee at the rate of \$140/hour (effective 7/1/2018)
  - Please note that this charge will only apply to those sessions which are canceled <48 hours of the session start time
- Sessions canceled with >48 hours notice, or due to scanner down time, will have no associated charges.
- If a BIAC MR Tech becomes unavailable for your scan, we will not charge you for the time.

# BIAC Billing System: Cancellations

- The cancellation fee can only be applied to the entire session
  - You will be charged the full rate for your scheduled time, even if you only use a portion of it.
- The earlier you cancel your study on the calendar, the more time another paying study has to take over the slot



# FAQs

# FAQs

- Q: I am at the scanner and my session ended and I need more time. What do I do?

# FAQs

- Q: I am at the scanner and my session ended and I need more time. What do I do?
  - A: If the MR Tech and scanner are available (no other session booked), you may continue your scan by adding additional time to the calendar. If you do not add it, the MR Tech will and you will be billed appropriately.
  - A: You can only add time in 30 minute increments. (i.e. If you schedule 30 minutes but need 45, you will pay for 1 hour. The time you schedule on the scanner should be adequate to cover time you enter the console room, until the time you leave. This includes the time for the subject to enter and exit the scanner.

# FAQs

- Q: I no longer need my full time slot, can I cancel a portion of my scheduled scan time for a reduced fee?

# FAQs

- Q: I no longer need my full time slot, can I cancel a portion of my scheduled scan time for a reduced fee?
  - A: You can cancel the portion on the calendar, however you will not receive a reduced fee unless a paying study takes over your time slot (overlap credit will apply). If you scheduled time and run your study, you will be charged for the entire scheduled slot regardless of how much time you use.

# FAQs

- Q: My subject has an implant/device/object but says they have had a MRI scan since then. Do I still need to get the MR Techs to clear it before their scan? Even if the scan was done at Duke?

# FAQs

- Q: My subject has an implant/device/object but says they have had a MRI scan since then. Do I still need to get the MR Techs to clear it before their scan? Even if the scan was done at Duke?
  - A: YES! You will still need to have the implant/device/object cleared by the MR Techs at least 3 days prior to the scan.
  - A: YES! Both 1.5T and 3T scanners are used clinically, so implants/devices/objects that were at one time cleared for 1.5T have not all been cleared for 3T.

Next Steps...

# Next Steps...

- Review the BIAC SOPs listed on the “Signature Sheet: Level I MRI Access” form:  
[https://www.biac.duke.edu/library/forms/BIAC\\_Level\\_I\\_MRI\\_Access\\_Signature\\_Sheet.pdf](https://www.biac.duke.edu/library/forms/BIAC_Level_I_MRI_Access_Signature_Sheet.pdf)
- Return completed and signed form to BIAC Main Office (in person, email, or fax)
- If you already have a *MRI Safety Form* on file, then you do NOT need to complete a new one

Questions?

Thank you for attending the  
BIAC New User Orientation!

