

# RE: [EXTERNAL] Re: SPAN initial rat imaging test

---

From: **Arbab, Ali** | AARBAB@augusta.edu

Friday, Mar 26, 9:11 AM

To: **Ayata, Cenk, M.D.** | cayata@mgh.harvard.edu, **Thedens, Daniel R** | dan-thedens@uiowa.edu

Cc: **Ryan Cabeen** | Ryan.Cabeen@loni.usc.edu, **Fahmeed Hyder** | fahmeed.hyder@yale.edu, **Huang, Shuning** | Shuning.Huang@uth.tmc.edu, **Joe Mandeville** | jbm@nmr.mgh.harvard.edu, **Adnan Bibic** | adnan.bibic@jhmi.edu, **Basavaraju Ganganna** | basavaraju.ganganna@yale.edu, **Mihailovic, Jelena** | jelena.mihailovic@yale.edu

We are routinely using hypertensive rats (older ~400-600gm) for brain imaging with the following parameters:

We are using a FOV of 26.6 and a slice thickness of 0.8mm. We have 35 slices in total.

For T2WI Turbo-rare TE/TR = 60/6100 ms

MSME T2map 15 echoes TE= 10, 20, .....150ms ; TR= 6000

Flair TE/TR = 22/10000ms

DTI 3D EPI TE/TR 22/800ms

High resolution 3D T1WI : Resolution is 0.150 isotropic. TE/TR = 3.5/21ms

---

*Ali S. Arbab, MD, PhD*

Professor, Georgia Cancer Center

1410 Laney Walker Blvd., CN-3315

Augusta, GA. 30912

Tel: 706-721-8909

---

**From:** Ayata, Cenk, M.D. <CAYATA@mgh.harvard.edu>

**Sent:** Thursday, March 25, 2021 9:17 PM

**To:** Thedens, Daniel R <dan-thedens@uiowa.edu>

**Cc:** Ryan.Cabeen@loni.usc.edu; Fahmeed Hyder <fahmeed.hyder@yale.edu>; Huang, Shuning <Shuning.Huang@uth.tmc.edu>; Joe Mandeville <jbm@nmr.mgh.harvard.edu>; Arbab, Ali <AARBAB@augusta.edu>; Adnan Bibic <adnan.bibic@jhmi.edu>; Basavaraju Ganganna <basavaraju.ganganna@yale.edu>; Mihailovic, Jelena <jelena.mihailovic@yale.edu>  
**Subject:** [EXTERNAL] Re: SPAN initial rat imaging test

## CAUTION: EXTERNAL SENDER

This email originated from an external source. Please exercise caution before opening attachments, clicking links, replying, or providing information to the sender. If you believe it to be fraudulent, contact the AU Cybersecurity Hotline at 72-CYBER (2-9237 / 706-722-9237) or [72CYBER@augusta.edu](mailto:72CYBER@augusta.edu).

---

Thanks, Dan, this is very helpful. I am cc'ing the MRI group for their thoughts and comments, and it would indeed be helpful if you can share the images with all cc'ed here. Ryan and I will take a look at the uploaded images as well. I suspect this will be a core discussion at the April 2 and 6 zooms.

Regards,

Cenk

On Mar 25, 2021, at 12:53, Thedens, Daniel R <[dan-thedens@uiowa.edu](mailto:dan-thedens@uiowa.edu)> wrote:

### External Email - Use Caution

I have uploaded a rat MRI study to the Pilot Stage 2, labelled "IR0001" (Iowa rat 0001). This is a Day 2 post-surgery.

The protocol I used was identical to the mouse protocol except that the field of view was increased to 25.6 mm (from 19.2) and the slice thickness was increased to 0.8mm (from 0.5mm). Matrix sizes were kept at 128x128 to keep the scan time the same. Voxel sizes are thus larger than in the mouse. I also added a second RARE\_anatomy\_192 scan that increased the matrix size to 192 x 192 in-plane and reduced averages from 4 to 3. This resulted in a very similar scan time and should have approximately the same SNR as in the mouse images.

Comments on this initial run:

- Overall image quality was good for RARE and T2 map sequences. This is not surprising given that the voxel volume is nearly 3x larger.
- The DWI scans are probably unusable in this set as there is a large amount of motion artifact. I can think of variety of causes, including vibration in the fixture, respiratory motion arising from sub-optimal positioning and restraint, or even reduced warm airflow causing the animal to shiver. I will need to investigate.
- The higher resolution RARE scan looks considerably more 'crisp' with the same duration.
- There is a decent amount of phase wrap in the images at this field of view, though it does not affect the brain. Still, in larger animals it might be excessive. I have historically done this with phase in the L/R direction, but I don't think there would be an issue swapping and it might alleviate the problem.
- It may be desirable to increase the matrix on the T2 and DWI, but since these are run at 1 average, this is very likely to require additional time unless we do anisotropic resolution in-plane (say 192 x 128).

Cenk, if you want to see the images and it's more convenient, I can put these at an externally accessible link for download.

--

Dan Thedens

[dan-thedens@uiowa.edu](mailto:dan-thedens@uiowa.edu)

---

Notice: This UI Health Care e-mail (including attachments) is covered by the Electronic Communications Privacy Act, 18 U.S.C. 2510-2521 and is intended only for the use of the individual or entity to which it is addressed, and may contain information that is privileged, confidential, and exempt from disclosure under applicable law. If you are not the intended recipient, any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately and delete or destroy all copies of the original message and attachments thereto. Email sent to or from UI Health Care may be retained as required by law or regulation. Thank you.

The information in this e-mail is intended only for the person to whom it is addressed. If you believe this e-mail was sent to you in error and the e-mail contains patient information, please contact the Mass General Brigham Compliance HelpLine at <http://www.massgeneralbrigham.org/complianceline> . If the e-mail was sent to you in error but does not contain patient information, please contact the sender and properly dispose of the e-mail.

Please note that this e-mail is not secure (encrypted). If you do not wish to continue communication over unencrypted e-mail, please notify the sender of this message immediately. Continuing to send or respond to e-mail after receiving this message means you understand and accept this risk and wish to continue to communicate over unencrypted e-mail.

---