MRI PROCEDURE ID: STOP1MR	STUDY NAME: Effects of Maintenance Treatment with Olanzapine vs. Placebo on Brain Structure
SCANNER	GE Discovery MR750 3T
SOFTWARE VERSION	23\LX\MR DV22.0.V02.1122.a; M4
SUBJECT POSITION	Supine
SUBJECT ENTRY	Head First
COIL	8HR BRAIN (GE Standard 8-Channel Head Coil)
SAR	First Level

- Options preset by the scanner are indicated in **GRAY** text.

PULSE SEQUENCE OVERVIEW: (37:12min, not including Prescan/Positioning time)

i. 3 Plane Localizer (00:20)
ii. Sagittal T1 BRAVO (04:41)
iii. ASSET Calibration (00:06)
iv. Axial HOS (00:09)
v. Axial Sprl Resting State (07:04)
vi. MRS – SgACC (05:04)
vii. MRS – LTDC (05:04)
viii. Axial DTI 60+5 (09:41)
ix. Oblique Axial Dual Echo FSE-XL (02:21)
x. Oblique Axial T2 Flair (03:53)

3 PLANE LOCALIZER (00:20)	
IMAGING PARAMETERS	
Imaging Mode	2D
Plane	3 - Plane
Pulse Sequence	SSFSE
Imaging Options	Extended Dynamic Range(EDR), ARC, Sequential
SCAN PARAMETERS	
Freq FOV	24.00
Phase FOV	1.00
Slice Thickness	5.00
Location	SI/RL/AP
Center	0.0/0.0/A20.0
Spacing	0.0/0.0/0.0
# Slices	10/10/10
Freq Direction	Unswap
Locs Before Pause	0
TR	Minimum
Chemical Saturation	None
DETAILS PARAMETERS	
TE	100
Frequency	384
Phase	192
Bandwidth	83.33
Shim	Auto
Phase Correct	Off
ACCELERATION	
Phase	2
Slice	1
ADVANCED	
User CV1(Fractional NEX optimization)	0.00(off)
User CV2(Max No. of echoes available for SSFSE)	240
User CV6(BTK / Pre BTK activation)	0.00 (BTK)
NOTE	
This is the stock sequence, settings are pretty close to those provided by GE.	

SAGITTAL T1 BRAVO (04:41)	
IMAGING PARAMETERS	
Imaging Mode	3D
Plane	Sagittal
Application	BRAVO
Pulse Sequence	FSPGR
Imaging Options	Extended Dynamic Range(EDR), Ir Prepared, ARC
SCAN PARAMETERS	
Freq FOV	23.00
Phase FOV	0.90
Slice Thickness	0.90
Freq Direction	S/I
TR	6.7
# of Slabs	1
Locs per Slab	200
Chemical Saturation	None
DETAILS PARAMETERS	
# of TEs	1
TE	3.0
Flip Angle	8
Prep Time	650
Frequency	256
Phase	256
NEX	1
Bandwidth	31.25
Shim	Auto
Phase Correct	Off
ACCELERATION	
Phase	2
Slice	1
ADVANCED	
User CV4(Image Acq Delay (sec))	0.00
User CV5(Whole Volume Excitation)	1.00(on)
NOTE	
Sensitive to head motion Increase Phase FOV=1 in order to fit entire Brain.	

ASSET CALIBRATION (00:06)	
IMAGING PARAMETERS	
Imaging Mode	2D
Plane	Axial
Pulse Sequence	Fast GRE (Calibration Scan)
SCAN PARAMETERS	
Freq FOV	30.0
Phase FOV	1.00
Slice Thickness	6.00
Freq Direction	R/L
# Slices	40 (or more to cover)
Chemical Saturation	None
DETAILS PARAMETERS	
Number of TEs	1
TE #1	2.1
Bandwidth	31.2
Shim	Auto
Phase Correct	Off
NOTE	
The calibration scan is for PD/Dual Echo/DTI Scans	

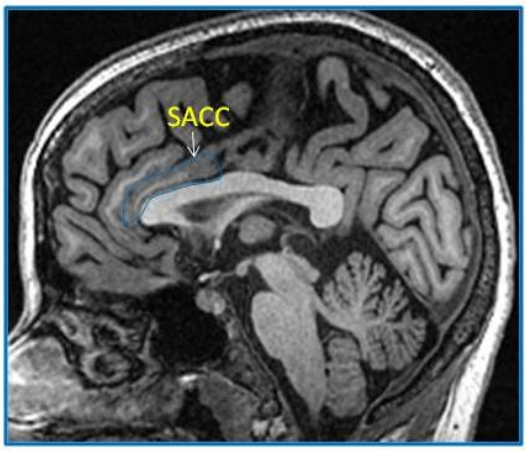
AXIAL HOS (00:09)	
IMAGING PARAMETERS	
Imaging Mode	2D
Plane	Axial
Pulse Sequence	GRE
PSD Name	sprl_hos
SCAN PARAMETERS	
Freq FOV	24.0
Slice Thickness	5.8
Spacing	0.0
Freq Direction	A/P
TR	1558
# of Slices	31-41
Chemical Saturation	None
DETAILS PARAMETERS	
# of TEs	1
TE #1	7.0
Flip Angle	60
Frequency	64
NEX	1
Shim	Off
Phase Correct	Off
ADVANCED	
User CV0(# of Interleaves)	2.00
User CV1(No of temporal frames)	2.00
User CV2(External trigger)	0.00 (no)
User CV3(Xfer data – script number)	99.00
User CV4(Recon size)	64
User CV5(Map delay factor)	0.50
NOTE	
Run after fMRI slices are prescribed. Shim regions should be well within the brain.	

AXIAL SPRL RESTING STATE (07:04)	
IMAGING PARAMETERS	
Imaging Mode	2D
Plane	Axial
Pulse Sequence	GRE/Fast GRE
PSD Name	sprlio
SCAN PARAMETERS	
Freq FOV	22.0
Slice Thickness	5.00
Spacing	0.0
Freq Direction	A/P
TR	2000
# of Slices	31
Chemical Saturation	None
DETAILS PARAMETERS	
# of TEs	1
TE #1	30
Flip Angle	60
Frequency	64
Bandwidth	125
Shim	Off
Phase Correct	Off
Table Delta	0.00
ADVANCED	
User CV0(# of Interleaves)	1.00
User CV1(# of temporal frames)	210 (Time Points)
User CV2(External trigger)	0.00 (no)
User CV3(Recon script number)	35.00
User CV4(Cluster slice acquisition)	0.00 (no)
User CV5(# of extra shots before data Acq)	2.00
User CV6(gType)	2.00 (Spiral out + Spiral In)
User CV10(Record physio data)	0.00 (Off)
User CV11(Realtime Mode)	0.00 (no)
User CV12(Short rf pulse)	0.00 (no)
NOTE	
Resting State Scan	

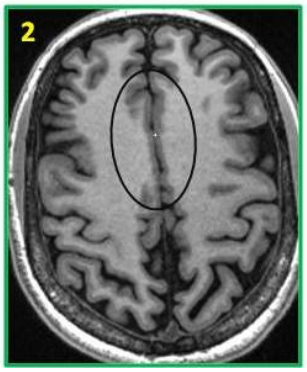
MRS – Single Voxel	
IMAGING PARAMETERS	
Imaging Mode	MRS
Plane	Oblique
Pulse Sequence	PROBE - P
Imaging Options	Extended Dynamic Range(EDR)
SCAN PARAMETERS	
Freq FOV	24.0
Voxel Thickness	20
CSI Slice Thickness	20
Voxel Dimensions	**00 X 00 X 00 (RL X AP X SI)**
Freq Direction	Unswap
TR	**2000 (05:04)**
# CSI Slice	1
DETAILS PARAMETERS	
# of TEs	1
TE	**35**
Frequency	1
Phase	1
NEX	8
Shim	Auto
Phase Correct	off
ADVANCED	
User CV3(Scan Mode)	1.00
User CV4(Total no of scans)	192
User CV17(AWS optimization)	0.00 (off)
User CV18(ROI edge sat mask)	7 (1=SI; 2=AP; 4=RL)
NOTE	
MRS – SACC (B/L Supra Genual ACC)	**20X30X15 (RLXAPXSI)**
MRS – LTDC (Left DLPFC)	**30X30X15 (RLXAPXSI)**

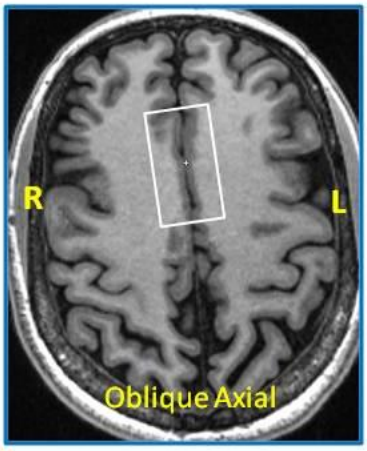
B/L SACC (Supra Genual Cingulate Cortex)

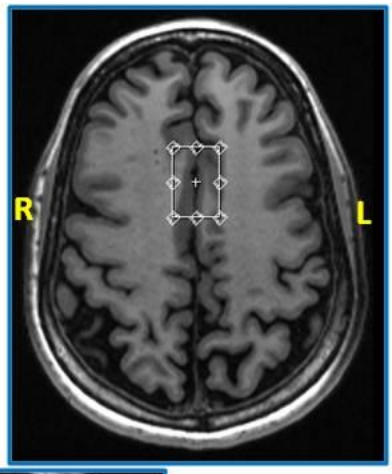
Voxel Size
RL X AP X SI
20 X 30 X 15

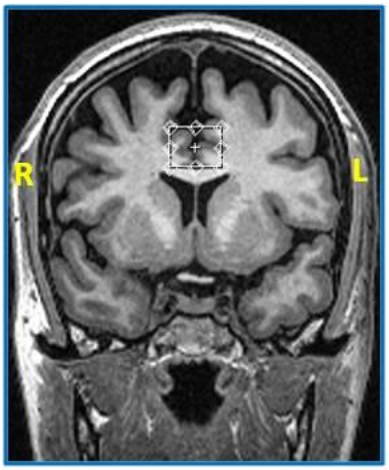


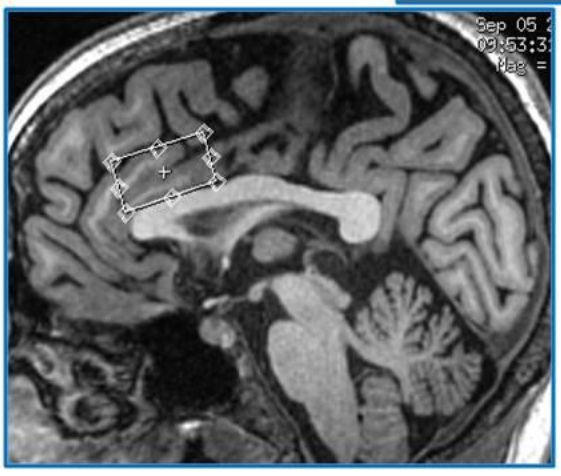
- **Reformate** Axial and Coronal Images from Sag T1 BRAVO.
- Axial and Coronal images are parallel to AC-PC line and RL/AP/SI tilt corrected.
- Make an Oblique axial slice parallel to Supra Genual Cingulate Cortex (SACC)





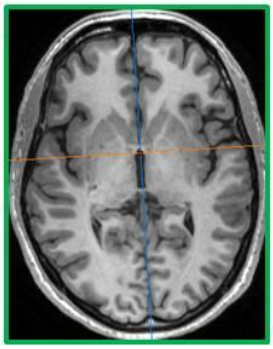


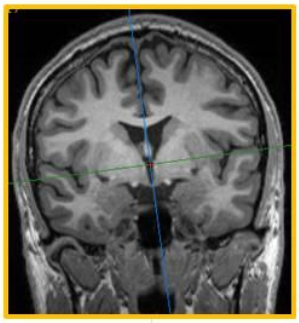


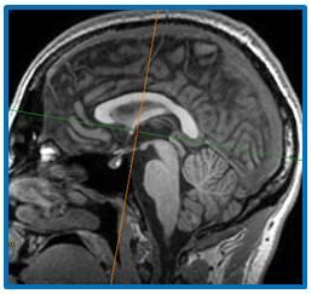


Exam Rx:
-On oblique axial place the voxel centered on the dot/cursor.
- Open all the three planes – Axial, Coronal and Sag.
- Make sure B/L SACC is covered on all three planes
-Stay away from corpus callosum, include grey matter of SACC.

LT.DLPFC
25 X 25 X 15
(AP/SI/RL)

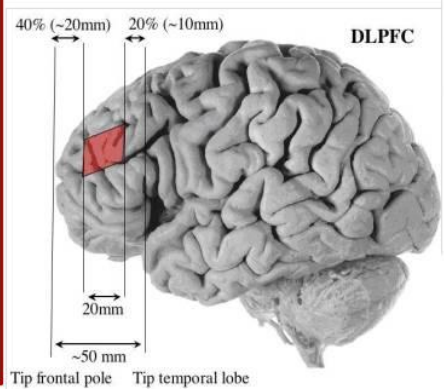


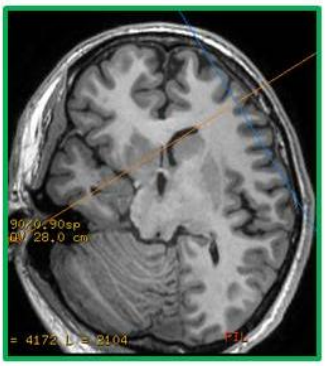


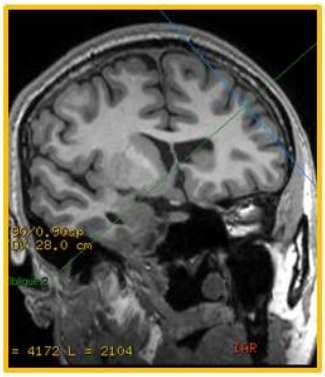


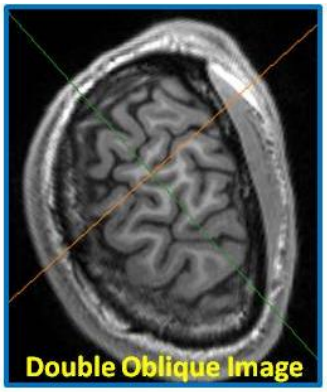
- ✓ *Correct Tilts : R/L – S/I – A/P*
- ✓ *Oblique to AC-PC*

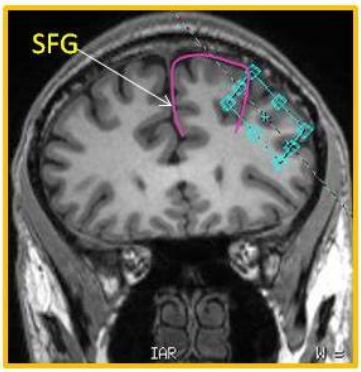
- ✓ *Locate Tip of Temporal and Frontal lobe.*
- ✓ *Average distance (percentage) from the tip of Temporal lobe to the posterior vertical boundary of the DLPFC is 20%.*
- ✓ *DLPFC is located between Superior and Inferior frontal Sulcus.*
- ✓ *Place the voxel on the double oblique image*
- ✓ *Stay away from Bone*











Voxel have to be placed inferior to Superior Frontal Gyrus (SFG)

AXIAL DW-EPI DTI 60+5 (09:41)	
IMAGING PARAMETERS	
Imaging Mode	2D
Plane	Axial
Pulse Sequence	DW-EPI
Imaging Options	Asset
SCAN PARAMETERS	
Freq FOV	37.0
Phase FOV	1.0
Slice Thickness	2.90
Spacing	0.0
Freq Direction	R/L
TR	8800
# of Slices	Max 86
Chemical Saturation	None
DETAILS PARAMETERS	
# of TEs	1
Num Shots	1
TE	Minimum
Frequency	128
Phase	128
Bandwidth	250
Phase Correct	On
DIFFUSION	
# b-Valve	1000
NEX for T2	1
Diffusion Direction	Tensor
# of Diffusion Direction	60
# of T2 Images	5
Recon All Images	On
Optimize TE	On
Dual Spin Echo	On
ACCELERATION	
Phase	2
Slice	1
ADVANCED	
User CV5(Recon Type)	1.00 (Homodyne)
User CV9(Shim Volume Mode)	0.00 (default)
RESEARCH CV	
rhmethod	1

OBLIQUE AXIAL DUAL ECHO FSE-XL (02:21)	
IMAGING PARAMETERS	
Imaging Mode	2D
Plane	Oblique
Pulse Sequence	FSE - XL
Imaging Options	Extended Dynamic Range(EDR), ASSET
SCAN PARAMETERS	
Freq FOV	22.0
Phase FOV	0.75
Slice Thickness	3.00
Spacing	Interleaved
Freq Direction	Unswap
TR	2500
# of Slices	Max 60
# of Acq	4
Chemical Saturation	Fat Classic
DETAILS PARAMETERS	
# of TEs	2
TE #1	11.1
TE #2	90.0
Echo Train Length	12
Frequency	256
Phase	192
NEX	1
Bandwidth	19.23
Shim	On
Phase Correct	On
ACCELERATION	
Phase	2
Slice	1
ADVANCED	
User CV6(Acq order)	0.00 (interleaved)
User CV7(Blurring cancellation)	0.00 (off)
User CV8(Legacy phase correction)	0.00 (off)
User CV9(Extreme high-resolution Optimization)	0.00 (off)
User CV14(Editable refocus flip angle)	0.00 (off)
User CV19(Fat Sat efficiency)	1.00 (darkest)
User CV21(Enhanced fine line suppression)	0.00 (off)
User CV22(Classic annefact suppression)	1.00 (on)

OBLIQUE AXIAL T2 FLAIR (03:53)	
IMAGING PARAMETERS	
Imaging Mode	2D
Plane	Oblique
Pulse Sequence	FSE; T2 FLAIR
Imaging Options	Extended Dynamic Range(EDR)
SCAN PARAMETERS	
Freq FOV	22.0
Slice Thickness	3.00
Spacing	0.0
Freq Direction	A/P
TR	9700
# of Slices	48
# of Acq	3
Chemical Saturation	None
DETAILS PARAMETERS	
# of TEs	1
TE #1	140
Echo Train Length	26
Inv. Time	2200
Frequency	256
Phase	192
NEX	1
Bandwidth	20.83
Shim	Auto
Phase Correct	Off
ADVANCED	
User CV3(Minimum Acq)	2.00
User CV8(Legacy phase correction)	0.00 (off)
User CV9(Extreme high-resolution Optimization)	0.00 (off)
User CV11(Extreme edge slice CSF suppression)	0.00 (off)
User CV14(Editable refocus flip angle)	0.00 (off)
User CV21(Enhanced fine line suppression)	0.00 (off)
User CV22(Classic annefact suppression)	1.00 (on)
NOTE	
Remove slices from the bottom as needed to achieve 48 slices.	