

The Human Connectome Project
Laboratory of Neuro Imaging at USC and
Martinos Center for Biomedical Imaging at Massachusetts General Hospital
Funded by National Institute of Health
NIH Blueprint for Neuroscience Research

The logo features a stylized, colorful, and abstract representation of a brain or neural network, composed of overlapping, wavy lines in shades of yellow, orange, red, and blue. The text "Human Connectome Project" is overlaid on this graphic in a bold, black, sans-serif font.

Human Connectome Project

The MGH-USC Human Connectome Project (HCP) scanner protocol is a purpose-built set of imaging sequences for the 3.0 Tesla Siemens Connectom scanner based at the Martinos Center at MGH. While these sequences are not suitable for use on other imaging platforms, we share them here for the interested researcher to examine and explore.

SIEMENS MAGNETOM ConnectomA syngo MR D11

\\USER\INVESTIGATORS\Qiuyun\Default\AAHScout_64
 TA:0:14 PAT:3 Voxel size:1.6x1.6x1.6 mm Rel. SNR:1.00 :fl

Properties

Prio Recon Off
 Before measurement
 After measurement
 Load to viewer On
 Inline movie Off
 Auto store images On
 Load to stamp segments Off
 Load images to graphic segments On
 Auto open inline display Off
 Wait for user to start Off
 Start measurements single

Routine

Nr. of slab groups 1
 Slabs 1
 Dist. factor 20 %
 Position L0.0 A10.0 H0.0 mm
 Orientation Sagittal
 Phase enc. dir. A >> P
 Phase oversampling 0 %
 Slice oversampling 0.0 %
 FoV read 260 mm
 FoV phase 100.0 %
 Slice thickness 1.6 mm
 TR 3.15 ms
 TE 1.37 ms
 Averages 1
 Concatenations 1
 Filter Prescan Normalize
 Coil elements BOT;TOP
 AutoAlign Head

Contrast

Flip angle 8 deg
 Averaging mode Short term
 Measurements 1
 Reconstruction Magnitude

Resolution

Base resolution 160
 Phase resolution 100 %
 Phase partial Fourier 6/8
 PAT mode GRAPPA
 Accel. factor PE 3
 Ref. lines PE 24
 Reference scan mode Integrated
 Image Filter Off
 Distortion Corr. Off
 Accel. factor 3D 1
 Unfiltered images Off
 Prescan Normalize On
 Normalize Off
 B1 filter Off
 Raw filter Off
 Elliptical filter Off
 Slice resolution 69 %
 Slice partial Fourier 6/8

Geometry

Nr. of slab groups 1
 Slabs 1
 Dist. factor 20 %
 Position L0.0 A10.0 H0.0 mm

Phase enc. dir.	A >> P
Phase oversampling	0 %
Slice oversampling	0.0 %
Slices per slab	128
Multi-slice mode	Sequential
Series	Ascending
Nr. of sat. regions	0
Position mode	L-P-H
Special sat.	None
Table position	P
System	
Body	Off
TOP	On
BOT	On
Position mode	L-P-H
Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Adaptive Combine
Auto Coil Select	Default
Shim mode	Tune up
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto
? Ref. amplitude 1H	0.000 V
Position	Isocenter
Rotation	0.00 deg
R >> L	350 mm
A >> P	263 mm
F >> H	350 mm
Frequency 1H	123.256655 MHz
Correction factor	1
SRFExcit 1H	54.667 V
Gain	Low
Table position	0 mm
Img. Scale. Cor.	1.000
Physio	
Inline	
Distortion correction	Off
Sequence	
Introduction	On
Dimension	3D
Averaging mode	Short term
Multi-slice mode	Sequential
Asymmetric echo	Weak
Contrasts	1
Bandwidth	540 Hz/Px
RF pulse type	Fast
Gradient mode	Normal
Excitation	Non-sel.
RF spoiling	On
TX/RX delta frequency	0 Hz
TX Nucleus	None
TX delta frequency	0 Hz
Coil elements	BOT;TOP
Acquisition duration	0 ms
Mode	Off
BOLD	
Time to center	6.2 s
Subtract	Off

Save images	On
Autoscaling	Off
Scaling factor	1
Offset	0
Subtrahend	1
Subtraction indices	
StdDev	Off
Std-Dev-Sag	Off
Std-Dev-Cor	Off
Std-Dev-Tra	Off
Std-Dev-Time	Off
MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Radial MIP	Off
Save original images	On
Distortion Corr.	Off
Contrasts	1
Save original images	On
Number of radial views	1
Axis of radial views	L-R
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

SIEMENS MAGNETOM ConnectomA syngo MR D11

 \\USER\INVESTIGATORS\Qiuyun\Default\MEMPRAGE_pat2
 TA:6:02 PAT:2 Voxel size:1.0x1.0x1.0 mm Rel. SNR:1.00 :tfl_me

Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Wait for user to start	Off
Start measurements	single

Routine

Nr. of slab groups	1
Slabs	1
Dist. factor	50 %
Position	R0.8 P18.4 F16.7 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	Head > Basis
Phase oversampling	0 %
Slice oversampling	0.0 %
FoV read	256 mm
FoV phase	100.0 %
Slice thickness	1.00 mm
TR	2530.0 ms
TE 1	1.15 ms
Averages	1
Concatenations	1
Filter	Prescan Normalize
Coil elements	BOT;TOP

Contrast

Magn. preparation	Non-sel. IR
TI	1100 ms
Flip angle	7.0 deg

Fat suppr.	None
Water suppr.	None
Averaging mode	Long term
Measurements	1
Reconstruction	Magnitude
Multiple series	Each measurement
Resolution	
Base resolution	256
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	Off
PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	32
Reference scan mode	Integrated
Image Filter	Off
Distortion Corr.	Off
Accel. factor 3D	1
Unfiltered images	Off
Prescan Normalize	On
Normalize	Off
B1 filter	Off
Raw filter	Off
Elliptical filter	Off
Slice resolution	100 %
Slice partial Fourier	Off
Geometry	
Nr. of slab groups	1
Slabs	1
Dist. factor	50 %
Position	R0.8 P18.4 F16.7 mm
Phase enc. dir.	A >> P
Phase oversampling	0 %
Slice oversampling	0.0 %
Slices per slab	176
Multi-slice mode	Single shot
Series	Interleaved
Nr. of sat. regions	0
Position mode	L-P-H
Fat suppr.	None
Water suppr.	None
Special sat.	None
Table position	P
System	
Body	Off
TOP	On
BOT	On
Position mode	L-P-H
Positioning mode	REF
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Adaptive Combine
AutoAlign	Head > Basis
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto
? Ref. amplitude 1H	0.000 V
Position	R0.8 P18.4 F16.7 mm

Rotation	0.00 deg
F >> H	256 mm
A >> P	256 mm
R >> L	176 mm
Frequency 1H	123.256655 MHz
Correction factor	1
SLoopIRns1 1H	552.817 V
Gain	Low
Table position	0 mm
Img. Scale. Cor.	1.000
Physio	
1st Signal/Mode	None
Magn. preparation	Non-sel. IR
TI	1100 ms
Dark blood	Off
Resp. control	Off
Inline	
Distortion correction	Off
Sequence	
Introduction	Off
Dimension	3D
Elliptical scanning	Off
Averaging mode	Long term
Multi-slice mode	Single shot
Reordering	Linear
Asymmetric echo	Allowed
Contrasts	4
Bandwidth 1	651 Hz/Px
Flow comp. 1	No
Echo spacing	9.4 ms
Turbo factor	176
RF pulse type	Fast
Gradient mode	Fast
Excitation	Non-sel.
RF spoiling	On
Readout polarity	Positive
Readout trajectory	Bipolar
Add. scale factor	2.0
Gradient spoiling	Integral
Gradient moment factor	3.0
Siemens reconstruction	On
Save raw k-space data	Off
Averaging	RMS
TX/RX delta frequency	0 Hz
TX Nucleus	None
TX delta frequency	0 Hz
Coil elements	BOT;TOP
Acquisition duration	0 ms
Mode	Off
BOLD	
Subtract	Off
Save images	On
Autoscaling	Off
Scaling factor	1
Offset	0
Subtrahend	1
Subtraction indices	
StdDev	Off
Std-Dev-Sag	Off
Std-Dev-Cor	Off
Std-Dev-Tra	Off
Std-Dev-Time	Off
MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Radial MIP	Off

Save original images	On
Distortion Corr.	Off
Contrasts	4
Save original images	On
Number of radial views	1
Axis of radial views	L-R
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off

SIEMENS MAGNETOM ConnectomA syngo MR D11

 \\USER\INVESTIGATORS\Qiuyun\Default\fmRI_resting_state_GSP
 TA:6:06 PAT:Off Voxel size:3.0×3.0×3.0 mm Rel. SNR:1.00 :epfid

Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Wait for user to start	On
Start measurements	single

Routine

Nr. of slice groups	1
Slices	47
Dist. factor	0 %
Position	L3.2 P14.4 H7.0 mm
Orientation	T > C-22.4
Phase enc. dir.	A >> P
AutoAlign	Head > Brain
Phase oversampling	0 %
FoV read	214 mm
FoV phase	100.0 %
Slice thickness	3.0 mm
TR	3000 ms
TE	30.0 ms
Averages	1
Concatenations	1
Filter	Prescan Normalize
Coil elements	BOT;TOP

Contrast

MTC	Off
Flip angle	85 deg
Fat suppr.	Fat sat.
Averaging mode	Long term
Measurements	120
Delay in TR	0 ms
Reconstruction	Magnitude
Multiple series	Off

Resolution

Base resolution	72
Phase resolution	100 %
Phase partial Fourier	Off
Interpolation	Off
PAT mode	None
Distortion Corr.	Off
Hamming	Off
Unfiltered images	On
Prescan Normalize	On
Raw filter	Off
Elliptical filter	Off

Geometry

Nr. of slice groups	1
Slices	47
Dist. factor	0 %
Position	L3.2 P14.4 H7.0 mm
Phase enc. dir.	A >> P
Phase oversampling	0 %
Multi-slice mode	Interleaved
Series	Interleaved
Nr. of sat. regions	0
Position mode	L-P-H
Fat suppr.	Fat sat.
Special sat.	None
Special sat.	None
Table position	P

System

Body	Off
TOP	On
BOT	On
Position mode	L-P-H
Positioning mode	FIX
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Sum of Squares
AutoAlign	Head > Brain
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto
? Ref. amplitude 1H	0.000 V
Position	L3.2 P14.4 H7.0 mm
Rotation	0.00 deg
R >> L	214 mm
A >> P	214 mm
F >> H	141 mm
Frequency 1H	123.256655 MHz
Correction factor	1
SincRFPulse 1H	353.860 V
Gain	High
Table position	0 mm
Img. Scale. Cor.	1.000

Physio

1st Signal/Mode	None
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Inline

Distortion correction	Off
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Sequence

Introduction	Off
Averaging mode	Long term
Multi-slice mode	Interleaved
Bandwidth	2240 Hz/Px
Free echo spacing	Off
Echo spacing	0.51 ms
EPI factor	72
RF pulse type	Normal
Gradient mode	Fast
TX/RX delta frequency	0 Hz
TX Nucleus	None
TX delta frequency	0 Hz
Coil elements	BOT;TOP
Acquisition duration	0 ms

BOLD

GLM Statistics	Off
Dynamic t-maps	Off
Starting ignore meas	0
Ignore after transition	0
Model transition states	On
Temp. highpass filter	On
Threshold	4.00
Paradigm size	20
Motion correction	Off
Spatial filter	Off
Delay in TR	0 ms
Distortion Corr.	Off

SIEMENS MAGNETOM ConnectomA syngo MR D11

 \\USER\INVESTIGATORS\Qiuyun\Default\ep2d_diff_qb64_blk
 TA:11:44 PAT:3 Voxel size:1.5x1.5x1.5 mm Rel. SNR:1.00 :epse

Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Wait for user to start	On
Start measurements	single

Routine

Nr. of slice groups	1
Slices	96
Dist. factor	0 %
Position	R0.9 P15.0 F0.4 mm
Orientation	T > C-25.0
Phase enc. dir.	A >> P
AutoAlign	Head > Brain
Phase oversampling	0 %
FoV read	210 mm
FoV phase	100.0 %
Slice thickness	1.5 mm
TR	8800 ms
TE	57.0 ms
Averages	1
Concatenations	1
Filter	Prescan Normalize
Coil elements	BOT;TOP

Contrast

MTC	Off
Magn. preparation	None
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Delay in TR	0 ms
Reconstruction	Magnitude
Multiple series	Off

Resolution

Base resolution	140
Phase resolution	100 %
Phase partial Fourier	6/8
Interpolation	Off
PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	84

Reference scan mode	Separate
Distortion Corr.	Off
Prescan Normalize	On
Normalize	Off
Raw filter	Off
Elliptical filter	Off
Dynamic Field Corr.	Off
Geometry	
Nr. of slice groups	1
Slices	96
Dist. factor	0 %
Position	R0.9 P15.0 F0.4 mm
Phase enc. dir.	A >> P
Phase oversampling	0 %
Multi-slice mode	Interleaved
Series	Interleaved
Nr. of sat. regions	0
Position mode	L-P-H
Fat suppr.	Fat sat.
Special sat.	None
Fat sat. mode	Strong
Special sat.	None
Table position	P
System	
Body	Off
TOP	On
BOT	On
Position mode	L-P-H
Positioning mode	FIX
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
AutoAlign	Head > Brain
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto
? Ref. amplitude 1H	0.000 V
Position	R0.9 P15.0 F0.4 mm
Rotation	0.00 deg
R >> L	210 mm
A >> P	210 mm
F >> H	144 mm
Frequency 1H	123.256655 MHz
Correction factor	1
ACS SincRFPulse 1H	62.446 V
Gain	High
Table position	0 mm
Img. Scale. Cor.	1.000
Physio	
1st Signal/Mode	None
Magn. preparation	None
Resp. control	Off
Inline	
Distortion correction	Off
Sequence	
Introduction	Off
Averaging mode	Long term
Multi-slice mode	Interleaved
Bandwidth	1984 Hz/Px

Optimization	None
Free echo spacing	Off
Echo spacing	0.63 ms
EPI factor	140
RF pulse type	Low SAR
Gradient mode	Fast
Directions	HCP_xc_64_cnst
Preparation	1 TRs
Init. Low-B Reps	1
Dynamic B0 Correction	Off
Complex Coil Combine	On
Grad Min Rise	10 ms.m/T
Max Diff Grad	243 mT/m
R0/PE Grads	Standard
Auto-scale images	On
R0 ramp sampling	On
Force segmented ACS	Off
TX/RX delta frequency	0 Hz
TX Nucleus	None
TX delta frequency	0 Hz
Coil elements	BOT;TOP
Acquisition duration	0 ms

BOLD

Delay in TR	0 ms
Diffusion mode	Free
Diff. weightings	2
b-value 1	0 s/mm ²
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
FA maps	Off
Mosaic	On
Tensor	Off
Distortion Corr.	Off
b-Value >=	0 s/mm ²
Exponential ADC Maps	Off
Invert Gray Scale	Off
Calculated Image	Off
Calculated bValue	1400 s/mm ²

SIEMENS MAGNETOM ConnectomA syngo MR D11

 \\USER\INVESTIGATORS\Qiuyun\Default\ep2d_diff_qb64_b3k
 TA:11:44 PAT:3 Voxel size:1.5x1.5x1.5 mm Rel. SNR:1.00 :epse

Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Wait for user to start	On
Start measurements	single

Routine

Nr. of slice groups	1
Slices	96
Dist. factor	0 %
Position	R0.9 P15.0 F0.4 mm
Orientation	T > C-25.0
Phase enc. dir.	A >> P
AutoAlign	Head > Brain
Phase oversampling	0 %

FoV read	210 mm
FoV phase	100.0 %
Slice thickness	1.5 mm
TR	8800 ms
TE	57.0 ms
Averages	1
Concatenations	1
Filter	Prescan Normalize
Coil elements	BOT;TOP
Contrast	
MTC	Off
Magn. preparation	None
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Delay in TR	0 ms
Reconstruction	Magnitude
Multiple series	Off
Resolution	
Base resolution	140
Phase resolution	100 %
Phase partial Fourier	6/8
Interpolation	Off
PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	84
Reference scan mode	Separate
Distortion Corr.	Off
Prescan Normalize	On
Normalize	Off
Raw filter	Off
Elliptical filter	Off
Dynamic Field Corr.	Off
Geometry	
Nr. of slice groups	1
Slices	96
Dist. factor	0 %
Position	R0.9 P15.0 F0.4 mm
Phase enc. dir.	A >> P
Phase oversampling	0 %
Multi-slice mode	Interleaved
Series	Interleaved
Nr. of sat. regions	0
Position mode	L-P-H
Fat suppr.	Fat sat.
Special sat.	None
Fat sat. mode	Strong
Special sat.	None
Table position	P
System	
Body	Off
TOP	On
BOT	On
Position mode	L-P-H
Positioning mode	FIX
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
AutoAlign	Head > Brain
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off

Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto
? Ref. amplitude 1H	0.000 V
Position	R0.9 P15.0 F0.4 mm
Rotation	0.00 deg
R >> L	210 mm
A >> P	210 mm
F >> H	144 mm
Frequency 1H	123.256655 MHz
Correction factor	1
ACS SincRFPulse 1H	62.446 V
Gain	High
Table position	0 mm
Img. Scale. Cor.	1.000
Physio	
1st Signal/Mode	None
Magn. preparation	None
Resp. control	Off
Inline	
Distortion correction	Off
Sequence	
Introduction	Off
Averaging mode	Long term
Multi-slice mode	Interleaved
Bandwidth	1984 Hz/Px
Optimization	None
Free echo spacing	Off
Echo spacing	0.63 ms
EPI factor	140
RF pulse type	Low SAR
Gradient mode	Fast
Directions	HCP_xc_64_cnst
Preparation	1 TRs
Init. Low-B Reps	1
Dynamic B0 Correction	Off
Complex Coil Combine	On
Grad Min Rise	10 ms.m/T
Max Diff Grad	243 mT/m
R0/PE Grads	Standard
Auto-scale images	On
R0 ramp sampling	On
Force segmented ACS	Off
TX/RX delta frequency	0 Hz
TX Nucleus	None
TX delta frequency	0 Hz
Coil elements	BOT;TOP
Acquisition duration	0 ms
BOLD	
Delay in TR	0 ms
Diffusion mode	Free
Diff. weightings	2
b-value 1	0 s/mm ²
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
FA maps	Off
Mosaic	On
Tensor	Off
Distortion Corr.	Off
b-Value >=	0 s/mm ²
Exponential ADC Maps	Off
Invert Gray Scale	Off
Calculated Image	Off
Calculated bValue	1400 s/mm ²

SIEMENS MAGNETOM ConnectomA syngo MR D11

\\USER\INVESTIGATORS\Qiuyun\Default\ep2d_diff_qb128_b5k
 TA:21:51 PAT:3 Voxel size:1.5×1.5×1.5 mm Rel. SNR:1.00 :epse

Properties

Prio Recon Off
 Before measurement
 After measurement
 Load to viewer On
 Inline movie Off
 Auto store images On
 Load to stamp segments Off
 Load images to graphic segments Off
 Auto open inline display Off
 Wait for user to start On
 Start measurements single

Routine

Nr. of slice groups 1
 Slices 96
 Dist. factor 0 %
 Position R0.9 P15.0 F0.4 mm
 Orientation T > C-25.0
 Phase enc. dir. A >> P
 AutoAlign Head > Brain
 Phase oversampling 0 %
 FoV read 210 mm
 FoV phase 100.0 %
 Slice thickness 1.5 mm
 TR 8800 ms
 TE 57.0 ms
 Averages 1
 Concatenations 1
 Filter Prescan Normalize
 Coil elements BOT;TOP

Contrast

MTC Off
 Magn. preparation None
 Fat suppr. Fat sat.
 Fat sat. mode Strong
 Averaging mode Long term
 Delay in TR 0 ms
 Reconstruction Magnitude
 Multiple series Off

Resolution

Base resolution 140
 Phase resolution 100 %
 Phase partial Fourier 6/8
 Interpolation Off
 PAT mode GRAPPA
 Accel. factor PE 3
 Ref. lines PE 84
 Reference scan mode Separate
 Distortion Corr. Off
 Prescan Normalize On
 Normalize Off
 Raw filter Off
 Elliptical filter Off
 Dynamic Field Corr. Off

Geometry

Nr. of slice groups 1
 Slices 96
 Dist. factor 0 %
 Position R0.9 P15.0 F0.4 mm
 Phase enc. dir. A >> P
 Phase oversampling 0 %
 Multi-slice mode Interleaved

Series	Interleaved
Nr. of sat. regions	0
Position mode	L-P-H
Fat suppr.	Fat sat.
Special sat.	None
Fat sat. mode	Strong
Special sat.	None
Table position	P
System	
Body	Off
TOP	On
BOT	On
Position mode	L-P-H
Positioning mode	FIX
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
AutoAlign	Head > Brain
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto
? Ref. amplitude 1H	0.000 V
Position	R0.9 P15.0 F0.4 mm
Rotation	0.00 deg
R >> L	210 mm
A >> P	210 mm
F >> H	144 mm
Frequency 1H	123.256655 MHz
Correction factor	1
ACS SincRFPulse 1H	62.446 V
Gain	High
Table position	0 mm
Img. Scale. Cor.	1.000
Physio	
1st Signal/Mode	None
Magn. preparation	None
Resp. control	Off
Inline	
Distortion correction	Off
Sequence	
Introduction	Off
Averaging mode	Long term
Multi-slice mode	Interleaved
Bandwidth	1984 Hz/Px
Optimization	None
Free echo spacing	Off
Echo spacing	0.63 ms
EPI factor	140
RF pulse type	Low SAR
Gradient mode	Fast
Directions	HCP_xc_128_cnst
Preparation	1 TRs
Init. Low-B Reps	1
Dynamic B0 Correction	Off
Complex Coil Combine	On
Grad Min Rise	10 ms.m/T
Max Diff Grad	243 mT/m
R0/PE Grads	Standard
Auto-scale images	On

R0 ramp sampling	On
Force segmented ACS	Off
TX/RX delta frequency	0 Hz
TX Nucleus	None
TX delta frequency	0 Hz
Coil elements	BOT;TOP
Acquisition duration	0 ms
BOLD	
Delay in TR	0 ms
Diffusion mode	Free
Diff. weightings	2
b-value 1	0 s/mm ²
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
FA maps	Off
Mosaic	On
Tensor	Off
Distortion Corr.	Off
b-Value >=	0 s/mm ²
Exponential ADC Maps	Off
Invert Gray Scale	Off
Calculated Image	Off
Calculated bValue	1400 s/mm ²

SIEMENS MAGNETOM ConnectomA syngo MR D11

 \\USER\INVESTIGATORS\Qiuyun\Default\ep2d_diff_qb128_b10k_set1
 TA:21:51 PAT:3 Voxel size:1.5x1.5x1.5 mm Rel. SNR:1.00 :epse

Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Wait for user to start	On
Start measurements	single

Routine

Nr. of slice groups	1
Slices	96
Dist. factor	0 %
Position	R0.9 P15.0 F0.4 mm
Orientation	T > C-25.0
Phase enc. dir.	A >> P
AutoAlign	Head > Brain
Phase oversampling	0 %
FoV read	210 mm
FoV phase	100.0 %
Slice thickness	1.5 mm
TR	8800 ms
TE	57.0 ms
Averages	1
Concatenations	1
Filter	Prescan Normalize
Coil elements	BOT;TOP

Contrast

MTC	Off
Magn. preparation	None
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term

Delay in TR	0 ms
Reconstruction	Magnitude
Multiple series	Off
Resolution	
Base resolution	140
Phase resolution	100 %
Phase partial Fourier	6/8
Interpolation	Off
PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	84
Reference scan mode	Separate
Distortion Corr.	Off
Prescan Normalize	On
Normalize	Off
Raw filter	Off
Elliptical filter	Off
Dynamic Field Corr.	Off
Geometry	
Nr. of slice groups	1
Slices	96
Dist. factor	0 %
Position	R0.9 P15.0 F0.4 mm
Phase enc. dir.	A >> P
Phase oversampling	0 %
Multi-slice mode	Interleaved
Series	Interleaved
Nr. of sat. regions	0
Position mode	L-P-H
Fat suppr.	Fat sat.
Special sat.	None
Fat sat. mode	Strong
Special sat.	None
Table position	P
System	
Body	Off
TOP	On
BOT	On
Position mode	L-P-H
Positioning mode	FIX
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
AutoAlign	Head > Brain
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto
? Ref. amplitude 1H	0.000 V
Position	R0.9 P15.0 F0.4 mm
Rotation	0.00 deg
R >> L	210 mm
A >> P	210 mm
F >> H	144 mm
Frequency 1H	123.256655 MHz
Correction factor	1
ACS SincRFPulse 1H	62.446 V
Gain	High
Table position	0 mm
Img. Scale. Cor.	1.000

Physio	
1st Signal/Mode	None
Magn. preparation	None
Resp. control	Off
Inline	
Distortion correction	Off
Sequence	
Introduction	Off
Averaging mode	Long term
Multi-slice mode	Interleaved
Bandwidth	1984 Hz/Px
Optimization	None
Free echo spacing	Off
Echo spacing	0.63 ms
EPI factor	140
RF pulse type	Low SAR
Gradient mode	Fast
Directions	HCP_xc_128_cnst
Preparation	1 TRs
Init. Low-B Reps	1
Dynamic B0 Correction	Off
Complex Coil Combine	On
Grad Min Rise	10 ms.m/T
Max Diff Grad	243 mT/m
R0/PE Grads	Standard
Auto-scale images	On
R0 ramp sampling	On
Force segmented ACS	Off
TX/RX delta frequency	0 Hz
TX Nucleus	None
TX delta frequency	0 Hz
Coil elements	BOT;TOP
Acquisition duration	0 ms
BOLD	
Delay in TR	0 ms
Diffusion mode	Free
Diff. weightings	2
b-value 1	0 s/mm ²
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off
FA maps	Off
Mosaic	On
Tensor	Off
Distortion Corr.	Off
b-Value >=	0 s/mm ²
Exponential ADC Maps	Off
Invert Gray Scale	Off
Calculated Image	Off
Calculated bValue	1400 s/mm ²

SIEMENS MAGNETOM ConnectomA syngo MR D11

 \\USER\INVESTIGATORS\Qiuyun\Default\ep2d_diff_qb128_b10k_set2
 TA:21:51 PAT:3 Voxel size:1.5x1.5x1.5 mm Rel. SNR:1.00 :epse

Properties	
Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off

Wait for user to start	On
Start measurements	single
Routine	
Nr. of slice groups	1
Slices	96
Dist. factor	0 %
Position	R0.9 P15.0 F0.4 mm
Orientation	T > C-25.0
Phase enc. dir.	A >> P
AutoAlign	Head > Brain
Phase oversampling	0 %
FoV read	210 mm
FoV phase	100.0 %
Slice thickness	1.5 mm
TR	8800 ms
TE	57.0 ms
Averages	1
Concatenations	1
Filter	Prescan Normalize
Coil elements	BOT;TOP
Contrast	
MTC	Off
Magn. preparation	None
Fat suppr.	Fat sat.
Fat sat. mode	Strong
Averaging mode	Long term
Delay in TR	0 ms
Reconstruction	Magnitude
Multiple series	Off
Resolution	
Base resolution	140
Phase resolution	100 %
Phase partial Fourier	6/8
Interpolation	Off
PAT mode	GRAPPA
Accel. factor PE	3
Ref. lines PE	84
Reference scan mode	Separate
Distortion Corr.	Off
Prescan Normalize	On
Normalize	Off
Raw filter	Off
Elliptical filter	Off
Dynamic Field Corr.	Off
Geometry	
Nr. of slice groups	1
Slices	96
Dist. factor	0 %
Position	R0.9 P15.0 F0.4 mm
Phase enc. dir.	A >> P
Phase oversampling	0 %
Multi-slice mode	Interleaved
Series	Interleaved
Nr. of sat. regions	0
Position mode	L-P-H
Fat suppr.	Fat sat.
Special sat.	None
Fat sat. mode	Strong
Special sat.	None
Table position	P
System	
Body	Off
TOP	On
BOT	On
Position mode	L-P-H
Positioning mode	FIX
Table position	H

Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Coil Combine Mode	Adaptive Combine
AutoAlign	Head > Brain
Auto Coil Select	Default
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto
? Ref. amplitude 1H	0.000 V
Position	R0.9 P15.0 F0.4 mm
Rotation	0.00 deg
R >> L	210 mm
A >> P	210 mm
F >> H	144 mm
Frequency 1H	123.256655 MHz
Correction factor	1
ACS SincRFPulse 1H	62.446 V
Gain	High
Table position	0 mm
Img. Scale. Cor.	1.000
Physio	
1st Signal/Mode	None
Magn. preparation	None
Resp. control	Off
Inline	
Distortion correction	Off
Sequence	
Introduction	Off
Averaging mode	Long term
Multi-slice mode	Interleaved
Bandwidth	1984 Hz/Px
Optimization	None
Free echo spacing	Off
Echo spacing	0.63 ms
EPI factor	140
RF pulse type	Low SAR
Gradient mode	Fast
Directions	HCP_xc_alt_128_cnst
Preparation	1 TRs
Init. Low-B Reps	1
Dynamic B0 Correction	Off
Complex Coil Combine	On
Grad Min Rise	10 ms.m/T
Max Diff Grad	243 mT/m
R0/PE Grads	Standard
Auto-scale images	On
R0 ramp sampling	On
Force segmented ACS	Off
TX/RX delta frequency	0 Hz
TX Nucleus	None
TX delta frequency	0 Hz
Coil elements	BOT;TOP
Acquisition duration	0 ms
BOLD	
Delay in TR	0 ms
Diffusion mode	Free
Diff. weightings	2
b-value 1	0 s/mm ²
Diff. weighted images	On
Trace weighted images	Off
ADC maps	Off

FA maps	Off
Mosaic	On
Tensor	Off
Distortion Corr.	Off
b-Value >=	0 s/mm ²
Exponential ADC Maps	Off
Invert Gray Scale	Off
Calculated Image	Off
Calculated bValue	1400 s/mm ²

SIEMENS MAGNETOM ConnectomA syngo MR D11

\\USER\INVESTIGATORS\Qiuyun\Default\t2_spc_WashU_Connectome_0p7iso
 TA:6:48 PAT:2 Voxel size:0.7x0.7x0.7 mm Rel. SNR:1.00 :spc

Properties

Prio Recon	Off
Before measurement	
After measurement	
Load to viewer	On
Inline movie	Off
Auto store images	On
Load to stamp segments	Off
Load images to graphic segments	Off
Auto open inline display	Off
Wait for user to start	Off
Start measurements	single

Routine

Nr. of slab groups	1
Slabs	1
Position	R0.8 P18.4 F16.7 mm
Orientation	Sagittal
Phase enc. dir.	A >> P
AutoAlign	Head > Basis
Phase oversampling	10 %
Slice oversampling	0.0 %
FoV read	224 mm
FoV phase	100.0 %
Slice thickness	0.70 mm
TR	3200 ms
TE	561.0 ms
Concatenations	1
Filter	Raw filter, Prescan Normalize
Coil elements	BOT;TOP

Contrast

MTC	Off
Magn. preparation	None
Fat suppr.	None
Water suppr.	None
Restore magn.	Off
Measurements	1
Reconstruction	Magnitude
Multiple series	Each measurement

Resolution

Base resolution	320
Phase resolution	100 %
Phase partial Fourier	Allowed
Interpolation	Off
PAT mode	GRAPPA
Accel. factor PE	2
Ref. lines PE	32
Reference scan mode	Integrated
Image Filter	Off
Distortion Corr.	Off
Accel. factor 3D	1
Unfiltered images	Off

Prescan Normalize	On
Normalize	Off
B1 filter	Off
Raw filter	On
Intensity	Weak
Slope	25
Elliptical filter	Off
Slice resolution	80 %
Slice partial Fourier	Off
Geometry	
Nr. of slab groups	1
Slabs	1
Position	R0.8 P18.4 F16.7 mm
Phase enc. dir.	A >> P
Phase oversampling	10 %
Slice oversampling	0.0 %
Slices per slab	256
Series	Interleaved
Nr. of sat. regions	0
Position mode	L-P-H
Fat suppr.	None
Water suppr.	None
Special sat.	None
Special sat.	None
Table position	P
Restore magn.	Off
System	
Body	Off
TOP	On
BOT	On
Position mode	L-P-H
Positioning mode	FIX
Table position	H
Table position	0 mm
MSMA	S - C - T
Sagittal	R >> L
Coronal	A >> P
Transversal	F >> H
Save uncombined	Off
Coil Combine Mode	Adaptive Combine
AutoAlign	Head > Basis
Auto Coil Select	Off
Shim mode	Standard
Adjust with body coil	Off
Confirm freq. adjustment	Off
Assume Dominant Fat	Off
Assume Silicone	Off
Adjustment Tolerance	Auto
? Ref. amplitude 1H	0.000 V
Position	R0.8 P18.4 F16.7 mm
Rotation	0.00 deg
F >> H	224 mm
A >> P	224 mm
R >> L	180 mm
Frequency 1H	123.256655 MHz
Correction factor	1
SRFExcit 1H	307.500 V
! Gain	High
Table position	0 mm
Img. Scale. Cor.	1.000
Physio	
1st Signal/Mode	None
Trigger delay	0 ms
Magn. preparation	None
Dark blood	Off
Resp. control	Off
Inline	

Distortion correction	Off
Sequence	
Introduction	On
Dimension	3D
Elliptical scanning	Off
Reordering	Linear
Bandwidth	744 Hz/Px
Flow comp.	No
Allowed delay	30 s
Echo spacing	3.55 ms
Adiabatic-mode	Off
Turbo factor	314
Echo train duration	1111
RF pulse type	Normal
Gradient mode	Fast
Excitation	Non-sel.
Flip angle mode	T2 var
TX/RX delta frequency	0 Hz
TX Nucleus	None
TX delta frequency	0 Hz
Coil elements	BOT;TOP
Acquisition duration	0 ms
Organ under exam.	None
BOLD	
Subtract	Off
Save images	On
Autoscaling	Off
Scaling factor	1
Offset	0
Subtrahend	1
Subtraction indices	
StdDev	Off
Std-Dev-Sag	Off
Std-Dev-Cor	Off
Std-Dev-Tra	Off
Std-Dev-Time	Off
MIP-Sag	Off
MIP-Cor	Off
MIP-Tra	Off
MIP-Time	Off
Radial MIP	Off
Save original images	On
Distortion Corr.	Off
Save original images	On
Number of radial views	1
Axis of radial views	L-R
MPR Sag	Off
MPR Cor	Off
MPR Tra	Off