

3 Plane Localizer	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	2D
	Patient Position	Supine	Pulse Sequence	Gradient Echo
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	Seq, Fast
	SCAN TIMING		SCAN RANGE	
	Plane	3-PLANE	FOV	26.0
	Series Description	3 Plane Localizer	Slice Thickness	5.0
	Number of Echoes	1	Slice Spacing	0.0
	IMAGE ENHANCE		ACQ TIMING	
	Filter Choice	None	Freq	256
	GATING/TRIGGER		Phase	128
	Auto Trigger Type	Off	Freq DIR	Unswap
	MULTI-PHASE		NEX	1.00
	Seperate Series	0	Phase FOV	1.00
	Mask Phase	0	Auto Shim	Auto
	Mask Pause	0	Phase Correction	No
	DIFFUSION		FMRI	
	Recon All Images	On	PSD Trigger	Internal
	CONTRAST		Slice Order	Interleaved
	Contrast Yes/No	No	View Order	Bottom/Up
			# of Repetitions REST	0
			# of Repetitions ACTIVE	0
			SAT	
			Tag Type	None
			TRICKS	
		Pause On/Off	On	
		Auto Subtract	0	
		Auto SCIC	Off	

3 Plane Localizer

Calibration Scan	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	3D
	Patient Position	Supine	Pulse Sequence	SPGR
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	Fast, Calib, ZIP2, EDR
	Plane		IMAGE ENHANCE	
	Plane	AXIAL	Filter Choice	None
	Series Description	Calibration Scan	GATING/TRIGGER	
	SCAN RANGE		Auto Trigger Type	Off
	FOV	30.0	MULTI-PHASE	
	Slice Thickness	9.4	Seperate Series	0
	Overlap Locations	0	Mask Phase	0
	ACQ TIMING		Mask Pause	0
	Freq DIR	R/L	DIFFUSION	
	Auto Shim	Auto	Recon All Images	On
	Phase Correction	No	CONTRAST	
	FMRI		Contrast Yes/No	No
	PSD Trigger	Internal		
	Slice Order	Interleaved		
	View Order	Bottom/Up		
	# of Repetitions REST	0		
	# of Repetitions ACTIVE	0		
	SAT			
	Tag Type	None		
	TRICKS			
	Pause On/Off	On		
Auto Subtract	0			
Auto SCIC	Off			
OTHERS				
Protocol Notes	Please do not oblique. Please do not reduce the number of slices. Please do not adjust protocol values.			

Calibration Scan

Accelerated Sag IR-FSPGR (MSV21)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	3D
	Patient Position	Supine	Pulse Sequence	SPGR
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, Asset, IrP
	SCAN TIMING		SCAN RANGE	
	Plane	SAGITTAL	FOV	25.6
	Series Description	Accelerated Sag IR-FSPGR (MSV21)	Slice Thickness	1.0
	Flip Angle	11	Location per Slab	200
	TE	Min Full	Overlap Locations	0
	Number of Echoes	1	ACQ TIMING	
	TI	400	Freq	256
	Receiver Bandwidth	31.25	Phase	256
	IMAGE ENHANCE		Freq DIR	S/I
	Filter Choice	None	NEX	1.00
	GATING/TRIGGER		Phase FOV	1.00
	Auto Trigger Type	Off	Auto Shim	On
	FMRI		Phase Correction	No
	PSD Trigger	Internal	USER CVS	
	Slice Order	Interleaved	User CV6	1.00
	View Order	Bottom/Up	User CV23	100.00
	# of Repetitions REST	0	MULTI-PHASE	
	# of Repetitions ACTIVE	0	Seperate Series	0
	SAT		Trigger Delay without AV	0
	Tag Type	None	Mask Phase	0
	TRICKS		Mask Pause	0
	Pause On/Off	On	DIFFUSION	
	Auto Subtract	0	Recon All Images	On
	Auto SCIC	2	CONTRAST	
OTHERS		Contrast Yes/No	No	
Protocol Notes	Please do not oblique. Please do not reduce the number of slices. Please do not adjust protocol values.			

Accelerated Sag IR-FSPGR (MSV21)

Sagittal 3D FLAIR (MSV23)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	3D
	Patient Position	Supine	Pulse Sequence	Cube T2 FLAIR
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, ARC, IrP
	SCAN TIMING		SCAN RANGE	
	Plane	SAGITTAL	FOV	25.6
	Series Description	Sagittal 3D FLAIR (MSV23)	Slice Thickness	1.0
	TE	104.0	Location per Slab	200
	Number of Echoes	1	Overlap Locations	0
	TR	5000.0	ACQ TIMING	
	TI	1508	Freq	256
	Echo Train Length	182	Phase	256
	Receiver Bandwidth	31.25	Freq DIR	S/I
	IMAGE ENHANCE		NEX	1.00
	Filter Choice	None	Phase FOV	1.00
	GATING/TRIGGER		Auto Shim	Auto
	Auto Trigger Type	Off	Phase Correction	No
	FMRI		USER CVS	
	PSD Trigger	Internal	User CV5	1.00
	Slice Order	Interleaved	MULTI-PHASE	
	View Order	Bottom/Up	Seperate Series	0
	# of Repetitions REST	0	Mask Phase	0
	# of Repetitions ACTIVE	0	Mask Pause	0
	SAT		DIFFUSION	
	Tag Type	None	Recon All Images	On
Fat/Water Saturation	Fat	CONTRAST		
TRICKS		Contrast Yes/No	No	
Pause On/Off	On			
Auto Subtract	0			
Auto SCIC	2			
OTHERS				
Protocol Notes	Please do not oblique. Please do not reduce the number of slices. Please do not adjust protocol values.			

Sagittal 3D FLAIR (MSV23)

Sagittal 3D T2 Cube (MSV23)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	3D
	Patient Position	Supine	Pulse Sequence	Cube
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, FR, ARC
	SCAN TIMING		SCAN RANGE	
	TE	Maximum	FOV	25.6
	Number of Echoes	1	Slice Thickness	1.0
	TR	2500.0	Location per Slab	200
	Echo Train Length	100	Overlap Locations	0
	Receiver Bandwidth	62.50	ACQ TIMING	
	IMAGE ENHANCE		Freq	256
	Filter Choice	None	Phase	256
	GATING/TRIGGER		Freq DIR	S/I
	Auto Trigger Type	Off	NEX	1.00
	MULTI-PHASE		Phase FOV	1.00
	Seperate Series	0	Auto Shim	Auto
	Mask Phase	0	Phase Correction	No
	Mask Pause	0	FMRI	
	DIFFUSION		PSD Trigger	Internal
	Recon All Images	On	View Order	Bottom/Up
	CONTRAST		# of Repetitions REST	0
	Contrast Yes/No	No	# of Repetitions ACTIVE	0
			SAT	
			Tag Type	None
			TRICKS	
		Pause On/Off	On	
		Auto Subtract	0	
		Auto SCIC	2	
		OTHERS		
		Protocol Notes	Please do not oblique. Please do not reduce the number of slices. Please do not adjust protocol values.	

Sagittal 3D T2 Cube (MSV23)

Axial T2 Star (MSV21)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	2D
	Patient Position	Supine	Pulse Sequence	Gradient Echo
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	FC, EDR
	SCAN TIMING		SCAN RANGE	
	Plane	AXIAL	FOV	22.0
	Series Description	Axial T2 Star (MSV21)	Slice Thickness	4.0
	Flip Angle	20	Slice Spacing	0.0
	TE	20.0	ACQ TIMING	
	Number of Echoes	1	Freq	256
	TR	650.0	Phase	192
	Receiver Bandwidth	25.00	Freq DIR	A/P
	IMAGE ENHANCE		NEX	1.00
	Filter Choice	None	# of Acq. Before Pause	0
	GATING/TRIGGER		Phase FOV	1.00
	Auto Trigger Type	Off	Auto Shim	Auto
	MULTI-PHASE		Phase Correction	No
	Seperate Series	0	FMRI	
	Mask Phase	0	PSD Trigger	Internal
	Mask Pause	0	Slice Order	Interleaved
	DIFFUSION		View Order	Bottom/Up
	Recon All Images	On	# of Repetitions REST	0
	CONTRAST		# of Repetitions ACTIVE	0
	Contrast Yes/No	No	SAT	
			Tag Type	None
		TRICKS		
		Pause On/Off	On	
		Auto Subtract	0	
		Auto SCIC	2	
		OTHERS		
		Protocol Notes	Please do not oblique. Please do not reduce the number of slices. Please do not adjust protocol values.	

Axial T2 Star (MSV21)

Axial 3D pCASL 1025 (Eyes Open) (MSV23)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	3D
	Patient Position	Supine	Pulse Sequence	3DASL
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, Spiral
	SCAN TIMING		SCAN RANGE	
	Plane	AXIAL	FOV	24.0
	Series Description	Axial 3D pCASL 1025 (Eyes Open) (MSV23)	Slice Thickness	4.0
	IMAGE ENHANCE		ACQ TIMING	
	Number of Echoes	1	Freq	768
	Receiver Bandwidth	62.50	Phase	6
	Filter Choice	None	Freq DIR	R/L
	GATING/TRIGGER		NEX	1.00
	Auto Trigger Type	Off	Auto Shim	Auto
	MULTI-PHASE		Phase Correction	No
	Seperate Series	0	FMRI	
	Delay after Acquisition without AV	0	PSD Trigger	Internal
	Mask Phase	0	Slice Order	Interleaved
	Mask Pause	0	View Order	Bottom/Up
	DIFFUSION		# of Repetitions REST	0
	Recon All Images	On	# of Repetitions ACTIVE	0
	CONTRAST		SAT	
	Contrast Yes/No	No	Tag Type	None
			TRICKS	
			Pause On/Off	On
			Auto Subtract	0
		Auto SCIC	Off	

Axial 3D pCASL 1025 (Eyes Open) (MSV23)

Axial 3D pCASL 1525 (Eyes Open) (MSV23)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	3D
	Patient Position	Supine	Pulse Sequence	3DASL
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, Spiral
	SCAN TIMING		SCAN RANGE	
	Plane	AXIAL	FOV	24.0
	Series Description	Axial 3D pCASL 1525 (Eyes Open) (MSV23)	Slice Thickness	4.0
	IMAGE ENHANCE		ACQ TIMING	
	Number of Echoes	1	Freq	768
	Receiver Bandwidth	62.50	Phase	6
	Filter Choice	None	Freq DIR	R/L
	GATING/TRIGGER		NEX	1.00
	Auto Trigger Type	Off	Auto Shim	Auto
	MULTI-PHASE		Phase Correction	No
	Seperate Series	0	FMRI	
	Delay after Acquisition without AV	0	PSD Trigger	Internal
	Mask Phase	0	View Order	Bottom/Up
	Mask Pause	0	# of Repetitions REST	0
	DIFFUSION		# of Repetitions ACTIVE	0
	Recon All Images	On	SAT	
	CONTRAST		Tag Type	None
	Contrast Yes/No	No	TRICKS	
			Pause On/Off	On
			Auto Subtract	0
			Auto SCIC	Off

Axial 3D pCASL 1525 (Eyes Open) (MSV23)

Axial 3D pCASL 2025 (Eyes Open) (MSV23)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	3D
	Patient Position	Supine	Pulse Sequence	3DASL
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, Spiral
	SCAN TIMING		SCAN RANGE	
	Plane	AXIAL	FOV	24.0
	Series Description	Axial 3D pCASL 2025 (Eyes Open) (MSV23)	Slice Thickness	4.0
	IMAGE ENHANCE		ACQ TIMING	
	Number of Echoes	1	Freq	768
	Receiver Bandwidth	62.50	Phase	6
	Filter Choice	None	Freq DIR	R/L
	GATING/TRIGGER		NEX	1.00
	Auto Trigger Type	Off	Auto Shim	Auto
	MULTI-PHASE		Phase Correction	No
	Seperate Series	0	FMRI	
	Delay after Acquisition without AV	0	PSD Trigger	Internal
	Mask Phase	0	View Order	Bottom/Up
	Mask Pause	0	# of Repetitions REST	0
	DIFFUSION		# of Repetitions ACTIVE	0
	Recon All Images	On	SAT	
	CONTRAST		Tag Type	None
	Contrast Yes/No	No	TRICKS	
			Pause On/Off	On
			Auto Subtract	0
			Auto SCIC	Off

Axial 3D pCASL 2025 (Eyes Open) (MSV23)

Axial 3D pCASL 2525 (Eyes Open) (MSV23)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	3D
	Patient Position	Supine	Pulse Sequence	3DASL
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, Spiral
	SCAN TIMING		SCAN RANGE	
	Plane	AXIAL	FOV	24.0
	Series Description	Axial 3D pCASL 2525 (Eyes Open) (MSV23)	Slice Thickness	4.0
	IMAGE ENHANCE		ACQ TIMING	
	Number of Echoes	1	Freq	768
	Receiver Bandwidth	62.50	Phase	6
	Filter Choice	None	Freq DIR	R/L
	GATING/TRIGGER		NEX	1.00
	Auto Trigger Type	Off	Auto Shim	Auto
	MULTI-PHASE		Phase Correction	No
	Seperate Series	0	FMRI	
	Delay after Acquisition without AV	0	PSD Trigger	Internal
	Mask Phase	0	View Order	Bottom/Up
	Mask Pause	0	# of Repetitions REST	0
	DIFFUSION		# of Repetitions ACTIVE	0
	Recon All Images	On	SAT	
	CONTRAST		Tag Type	None
	Contrast Yes/No	No	TRICKS	
			Pause On/Off	On
			Auto Subtract	0
			Auto SCIC	Off

Axial 3D pCASL 2525 (Eyes Open) (MSV23)

Axial 3D pCASL 3025 (Eyes Open) (MSV23)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	3D
	Patient Position	Supine	Pulse Sequence	3DASL
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	EDR, Fast, Spiral
	SCAN TIMING		SCAN RANGE	
	Plane	AXIAL	FOV	24.0
	Series Description	Axial 3D pCASL 3025 (Eyes Open) (MSV23)	Slice Thickness	4.0
	IMAGE ENHANCE		ACQ TIMING	
	Number of Echoes	1	Freq	768
	Receiver Bandwidth	62.50	Phase	6
	Filter Choice	None	Freq DIR	R/L
	GATING/TRIGGER		NEX	1.00
	Auto Trigger Type	Off	Auto Shim	Auto
	MULTI-PHASE		Phase Correction	No
	Seperate Series	0	FMRI	
	Delay after Acquisition without AV	0	PSD Trigger	Internal
	Mask Phase	0	View Order	Bottom/Up
	Mask Pause	0	# of Repetitions REST	0
	DIFFUSION		# of Repetitions ACTIVE	0
	Recon All Images	On	SAT	
	CONTRAST		Tag Type	None
	Contrast Yes/No	No	TRICKS	
			Pause On/Off	On
			Auto Subtract	0
			Auto SCIC	Off

Axial 3D pCASL 3025 (Eyes Open) (MSV23)

Axial DTI (MSV21)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	2D
	Patient Position	Supine	Pulse Sequence	Spin Echo
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	EPI, DIFF, Asset
	SCAN TIMING		SCAN RANGE	
	TE	Minimum	FOV	23.2
	Number of Echoes	1	Slice Thickness	2.0
	TR	15859.0	Slice Spacing	0.0
	Number of Shots	1	ACQ TIMING	
	IMAGE ENHANCE		Freq	116
	Filter Choice	None	Phase	116
	GATING/TRIGGER		Freq DIR	R/L
	Auto Trigger Type	Off	Phase FOV	1.00
	FMRI		Auto Shim	Auto
	PSD Trigger	Internal	Phase Correction	Yes
	Slice Order	Interleaved	USER CVS	
	View Order	Bottom/Up	User CV5	1.00
	# of Repetitions REST	0	User CV17	1.00
	# of Repetitions ACTIVE	0	TR Min	2000.0
	SAT		TR Max	17000.0
	Tag Type	None	MULTI-PHASE	
	Fat/Water Saturation	Fat	Seperate Series	0
	TRICKS		Mask Phase	0
	Pause On/Off	On	Mask Pause	0
	Auto Subtract	0	DIFFUSION	
Auto SCIC	Off	Optimized TE	Yes	
		Diffusion Directions	Tensor	
		Number of Diffusion Directions	32	
		Number of T2 Images	4	
		Dual Spin Echo	Off	
		Diffusion Tenser Processing Output	No Selection	
		Recon All Images	Off	
		CONTRAST		
		Contrast Yes/No	No	

Axial DTI (MSV21)

Axial fcMRI (Eyes Open) (MSV21)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	2D
	Patient Position	Supine	Pulse Sequence	Gradient Echo
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	MPh, EPI, Asset
	SCAN TIMING		SCAN RANGE	
	Plane	AXIAL	FOV	22.0
	Series Description	Axial fcMRI (Eyes Open) (MSV21)	Slice Thickness	3.4
	Flip Angle	90	Slice Spacing	0.0
	TE	30.0	ACQ TIMING	
	Number of Echoes	1	Freq	64
	TR	3000.0	Phase	64
	Number of Shots	1	Freq DIR	R/L
	IMAGE ENHANCE		NEX	1.00
	Filter Choice	None	Phase FOV	1.00
	GATING/TRIGGER		Auto Shim	Off
	Auto Trigger Type	Off	Phase Correction	Yes
	FMRI		USER CVS	
	Initial State	Control	User CV0	1.00
	PSD Trigger	Internal	MULTI-PHASE	
	Slice Order	Interleaved	Slice per Location	100
	View Order	Bottom/Up	Phase Acquisition Order	Interleaved
	# of Repetitions REST	0	Delay after Acquisition	Minimum
	# of Repetitions ACTIVE	0	Seperate Series	0
	SAT		Delay after Acquisition without AV	2
	Tag Type	None	Mask Phase	0
Fat/Water Saturation	Fat	Mask Pause	0	
TRICKS		DIFFUSION		
Pause On/Off	On	Recon All Images	On	
Auto Subtract	0	CONTRAST		
Auto SCIC	Off	Contrast Yes/No	No	
OTHERS				
Protocol Notes	<p><i>*Instruct patient to keep eyes open during this scan and to focus on 1 spot. This is critical to the results!</i></p> <p><i>Cover brain in one acq, ensure slab is positioned from inferior to superior. Must have 48 slices, please do not subtract or add any slices. Do not oblique slices. (Do not change series description)</i></p>			

Axial fcMRI (Eyes Open) (MSV21)

HighResHippocampus (MSV21)	PATIENT POSITION		IMAGING PARAMETERS	
	Patient Entry	Head First	Imaging Mode	2D
	Patient Position	Supine	Pulse Sequence	FSE-XL
	Coil Configuration	32 Ch Head Coil;HD 8Ch High Res Brain Array by Invivo	Imaging Options	Fast, Asset
	SCAN TIMING		SCAN RANGE	
	Plane	OBLIQUE	FOV	17.5
	Series Description	HighResHippocampus (MSV21)	Slice Thickness	2.0
	Flip Angle	122	Slice Spacing	Intleave
	TE	50.0	ACQ TIMING	
	Number of Echoes	1	Freq	448
	TR	8020.0	Phase	448
	Echo Train Length	15	Freq DIR	Unswap
	Receiver Bandwidth	20.83	Fat Shift DIR	Normal
	IMAGE ENHANCE		NEX	1.00
	Filter Choice	None	# of Acq. Before Pause	0
	GATING/TRIGGER		Phase FOV	1.00
	Auto Trigger Type	Off	Auto Shim	Auto
	FMRI		Phase Correction	Yes
	PSD Trigger	Internal	USER CVS	
	Slice Order	Interleaved	User CV22	1.00
	View Order	Bottom/Up	MULTI-PHASE	
	# of Repetitions REST	0	Seperate Series	0
	# of Repetitions ACTIVE	0	Mask Phase	0
	SAT		Mask Pause	0
	Tag Type	None	DIFFUSION	
TRICKS		Recon All Images	On	
Pause On/Off	On	CONTRAST		
Auto Subtract	0	Contrast Yes/No	No	
Auto SCIC	2			
OTHERS				
Protocol Notes	This scan should be set up obliquely so that is a perpendicular to the hippocampal tail, covering from the front to back. Please refer to the ADNI3 MRI manual with questions.			

HighResHippocampus (MSV21)