

Lifespan HCP-Development and HCP-Aging Siemens Prisma protocol package

Version 2019.01.14

This package contains the Lifespan HCP-Development and HCP-Aging protocols for import into a Siemens 3T Prisma. These “Connectomic/HCP-Style” acquisitions are substantially similar to those used for the ‘Young-Adult’ HCP (HCP-YA), but differ in some important respects that were motivated or necessitated by hardware (scanner) changes, the need to reduce the total amount of scanning per participant, and/or the additional challenges of working with young and elderly populations (Harms et al., 2018; <https://www.ncbi.nlm.nih.gov/pubmed/30261308>).

This package contains protocols exported under VE11C, intended for use with Siemens 32-channel head coil. Two different versions are provided:

- 1) HCP_VE11C_CMRRmb_CMRRmbPCASL_MartinosT1T2vNav_2019.01.14.exar1

This is the complete version of the HCP-D/A protocol and requires 3 separate C2P packages to be installed first:

- a) The “CMRR Multiband EPI 6 Month” package:

<https://www.cmrr.umn.edu/multiband>

This package provides the sequences for multiband accelerated fMRI and dMRI, as well as the spin echo EPI sequence used for correcting for susceptibility distortion.

Information on how to obtain a license for the CMRR Multiband package can be found here :

http://license.umn.edu/technologies/cmrr_center-for-magnetic-resonance-research-software-for-siemens-mri-scanners

- b) The “CMRR MB-EPI PCASL” package:

http://license.umn.edu/technologies/cmrr_center-for-magnetic-resonance-research-software-for-siemens-mri-scanners

This provides the sequences for the multiband accelerated pseudo-continuous arterial spin labeling.

- c) The “ABCD” package from the Athinoula A. Martinos Center:

<https://martinos.org/c2p>

This provides the sequences for the navigator-corrected T1w and T2w acquisitions, which HCP-D/A is using.

(It will also incidentally provide the specific fMRI and dMRI MB sequences that the ABCD Study is using; these are not used as part of the HCP-D/A protocols).

2) HCP_VE11C_CMRRmb_NoPCASL_SiemensT1T2_2019.01.14.exar1

This version only requires the “CMRR Multiband EPI 6 Month” package (item 1a above). The T1w and T2w acquisitions in this protocol have been replaced with Siemen’s product sequences, using parameters that are broadly similar [but lacking the navigator correction, and using only a single-echo (rather than 4-echo) acquisition for the T1w scan]. Additionally, the PCASL scan has been removed from the protocol.

Questions about this protocol can be posted to the HCP-Users List:

<http://humanconnectome.org/contact/#subscribe>

Happy scanning!

M.P. Harms, E. Yacoub

Jan 14, 2019