The blood-cerebrospinal fluid barrier (BCSFB) is a dynamic transport interface between blood and the brain and is thought to be related to multiple diseases like Alzheimer’s disease. In this study, a non-invasive technique using MRI to quantitatively measure the rate of the blood water to CSF cross the BCFSB. The technique is the use of an arterial spin labeling MRI sequence but with an ultra-long echo time acquisition, low spatial image readout, because the signal decay of blood and CSF is significantly different. Therefore, the quantification of blood flow and blood-to-CSF rate could be computed by kinetic model via convolution of blood entering a voxel and its blood signal decay. The technique was evaluated on the mice. The experiment results confirm that the images taken with this method are co-localised with the choroid plexuses. Using vasopressin could reduce the signal, consistent with previous invasive findings. It indicates the sensitivity of this method in detecting the down-regulation of BCSFB function. This method is further applied to study the BCSFB function changes in aged mice. One critique about the research is that the factors including age and perfusion in the aged mouse analysis are confounding. More calculation is required to validate its significance in difference.

I think this presentation is quite perfect. Both the slides and the talk are well-organized and the logic is coherent. It’s pretty good and important to illustrate the concepts like BCSFB and ASL MRI, since people outside of this field are unfamiliar with them. Besides, The animation used to explain the modeling mechanism of this method is vivid and clear. I think one thing that could be improved is that the slide representing experiment results seems to be a little bit crowded. This should be due to the slides number limitation. So some highlights to address the important thing along the talk are desired and it could help the audience to follow up.