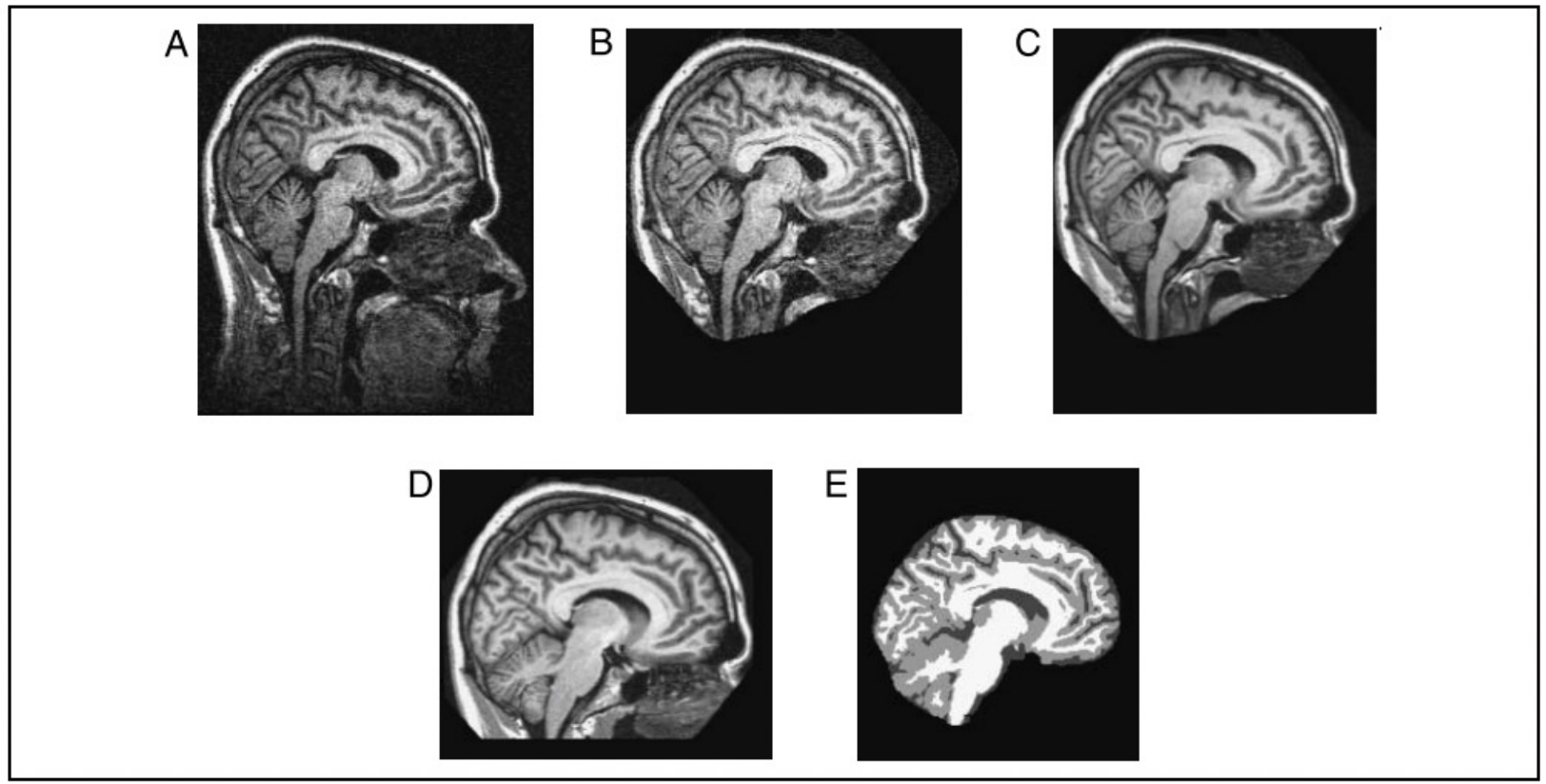
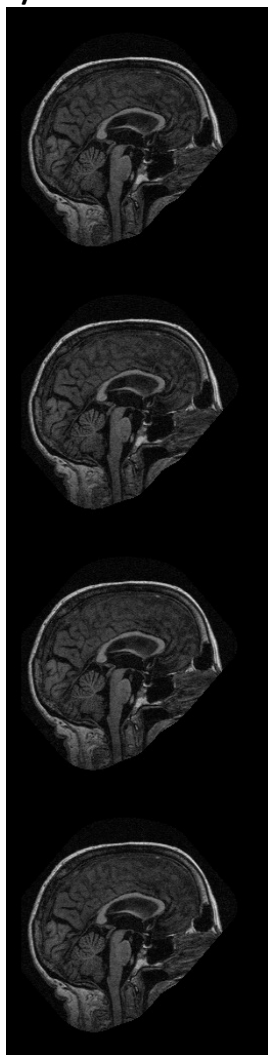


Figure 1. Typical MRI data set. (A) Individual scan before defacing. (B) Same scan after defacing. Note that the defacing process leaves the cranial vault intact while identifying facial features are removed. (C) Averaged motion-corrected image. Note improved signal-to-noise ratio. (D) Atlas-registered gain-field-corrected image. (E) Tissue classification image.

../RAW



OAS1_0001_MR1_mpr-1_anon_sag_66

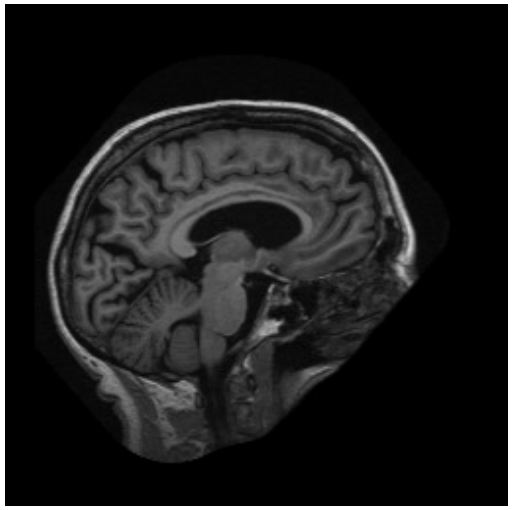
OAS1_0001_MR1_mpr-2_anon_sag_66

OAS1_0001_MR1_mpr-3_anon_sag_66

OAS1_0001_MR1_mpr-4_anon_sag_66

“3-4 images corresponding to multiple repetitions of the same structural protocol within a single session to increase signal-to-noise”

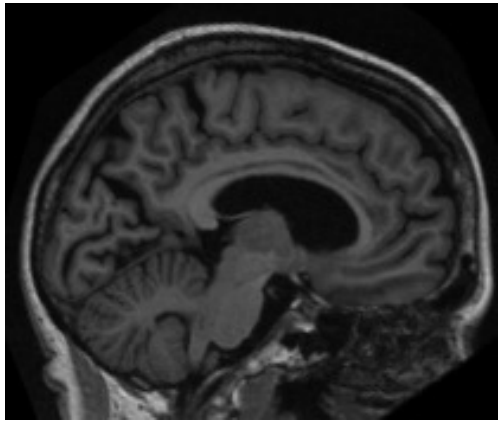
../PROCESSED/MPRAGE/SUBJ_111



OAS1_0001_MR1_mpr_n4
_anon_sbj_111_sag_88

“an average image that is a motion-corrected coregistered average of all available data”

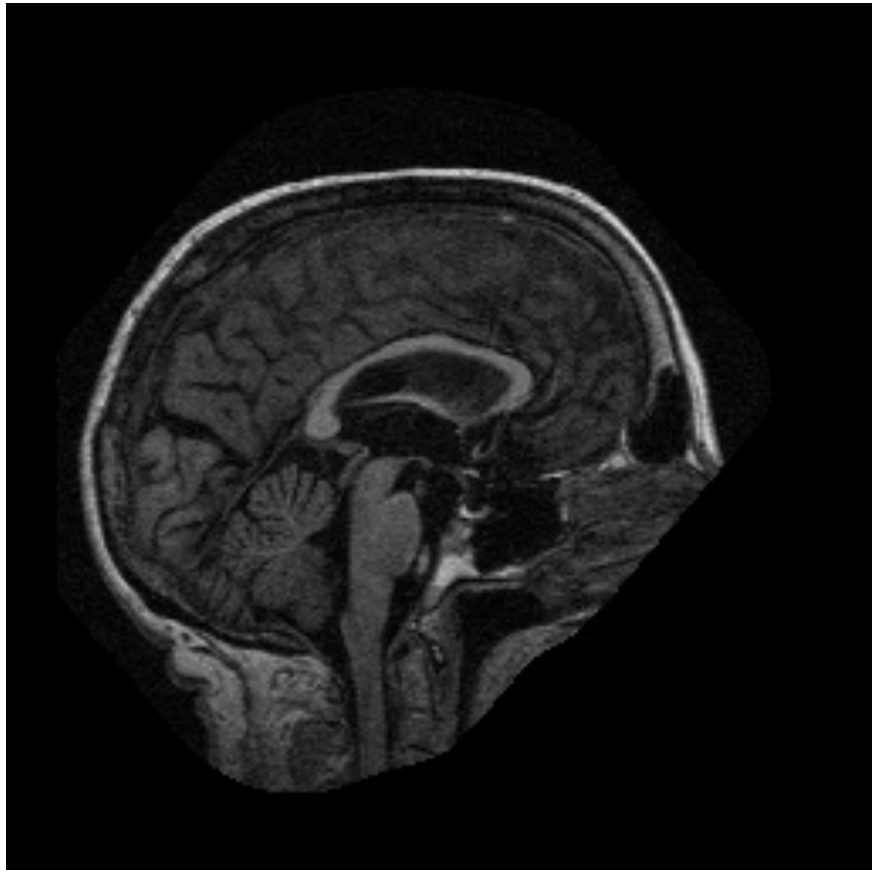
../PROCESSED/MPRAGE/T88_111

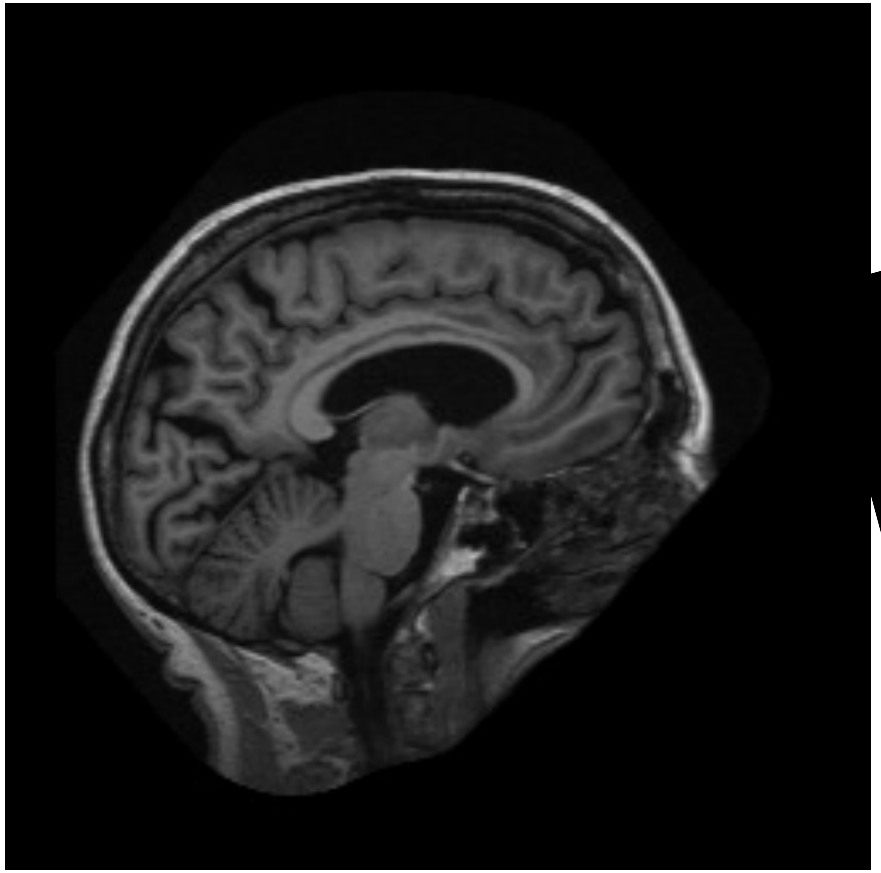


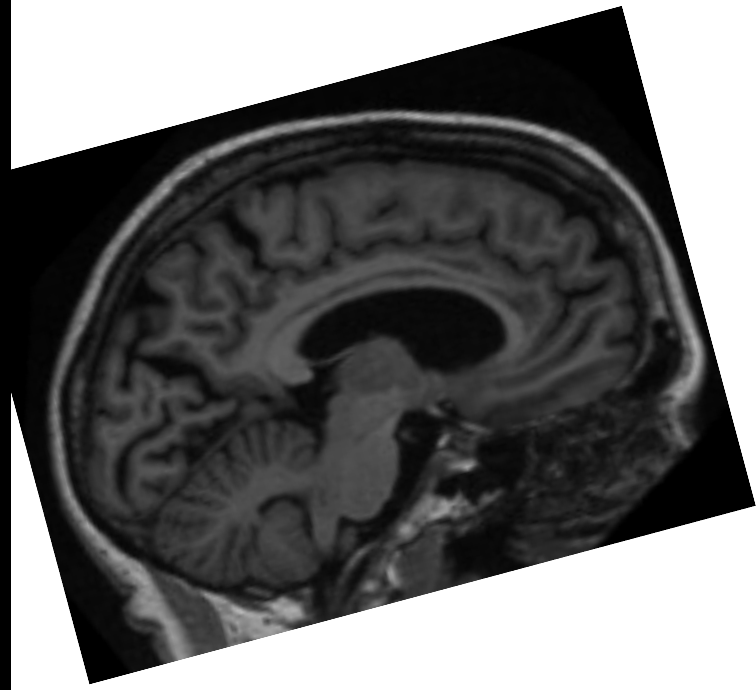
OAS1_0001_MR1_mpr_n4
_anon_111_t88_gfc_cor_110

“a gain-field corrected atlasregistered image to the 1988 atlas space of Talairach and Tournoux (Buckner et al., 2004)”

“resulting transformation nonetheless places the brains in the same coordinate system and bounding box as the original atlas”

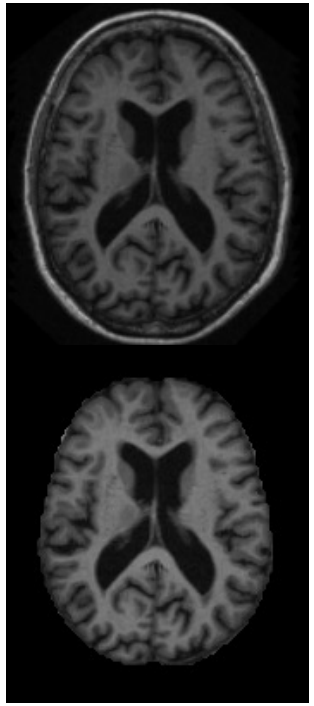






“resulting transformation places the brains in the same coordinate system and bounding box as the original atlas”

../PROCESSED/MPRAGE/T88_111



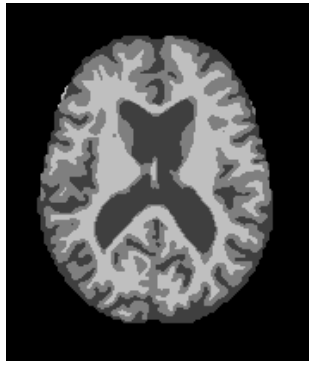
OAS1_0001_MR1_mpr_n4
_anon_111_t88_gfc_tra_90

"a gain-field corrected atlasregistered image to the 1988 atlas space of Talairach and Tournoux (Buckner et al., 2004)"

OAS1_0001_MR1_mpr_n4
_anon_111_t88_masked_gfc_tra_90

"a masked version of the atlas-registered image in which all non-brain voxels have been assigned an intensity value of 0"

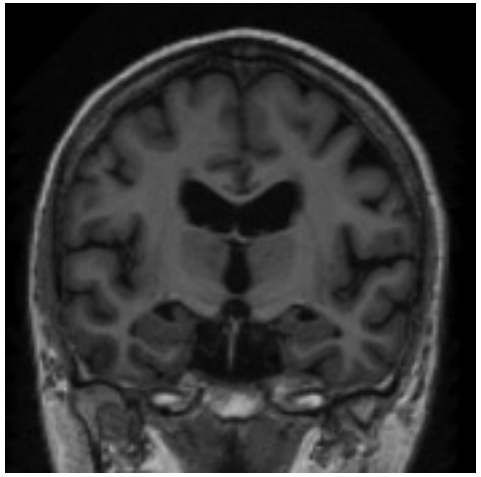
../FSL_SEG



OAS1_0001_MR1_mpr_n4
_anon_111_t88_masked_gfc_fseg_tra_90

"a grey/white/CSF segmented image (Zhang et al., 2001)"

../PROCESSED/MPRAGE/T88_111



OAS1_0001_MR1_mpr_n4_anon_111_t88_gfc_sag_95

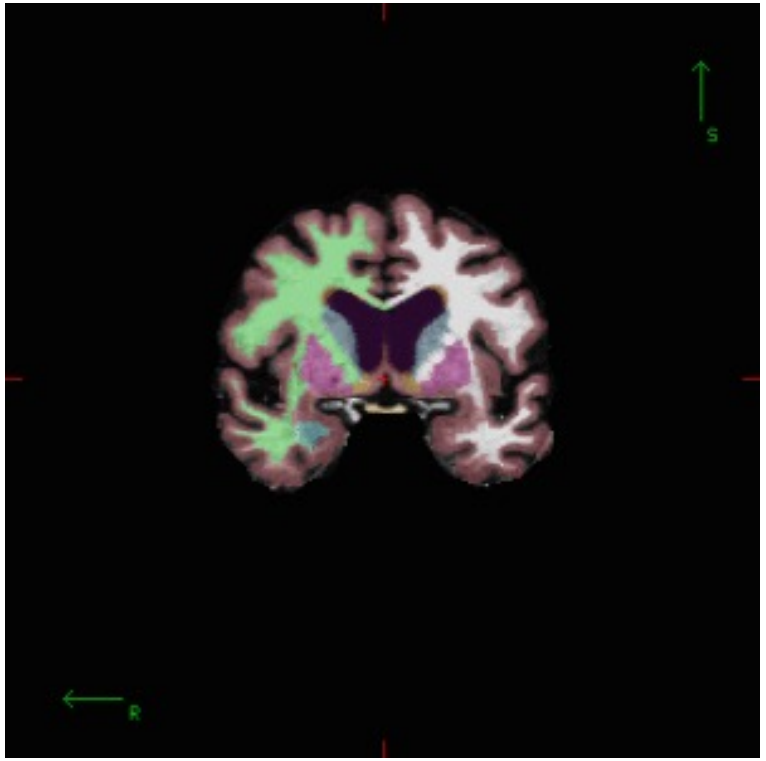
Table 4. Measures Included in the Data Set

Age	Age at time of image acquisition (years)
Sex	Sex (male or female)
Education	Years of education
Socioeconomic status	Assessed by the Hollingshead Index of Social Position and classified into categories from 1 (*highest status*) to 5 (*lowest status*) (Hollingshead, 1957)
MMSE score	Ranges from 0 (*worst*) to 30 (*best*) (Folstein, Folstein, & McHugh, 1975)
CDR scale	0 = no dementia, 0.5 = very mild AD, 1 = mild AD, 2 = moderate AD (Morris, 1993)
Atlas scaling factor	Computed scaling factor (unitless) that transforms native-space brain and skull to the atlas target (i.e., the determinant of the transform matrix) (Buckner et al., 2004)
eTIV	Estimated total intracranial volume (cm^3) (Buckner et al., 2004)
nWBV	Expressed as the percent of all voxels in the atlas-masked image that are labeled as gray or white matter by the automated tissue segmentation process (Fotenos et al., 2005)

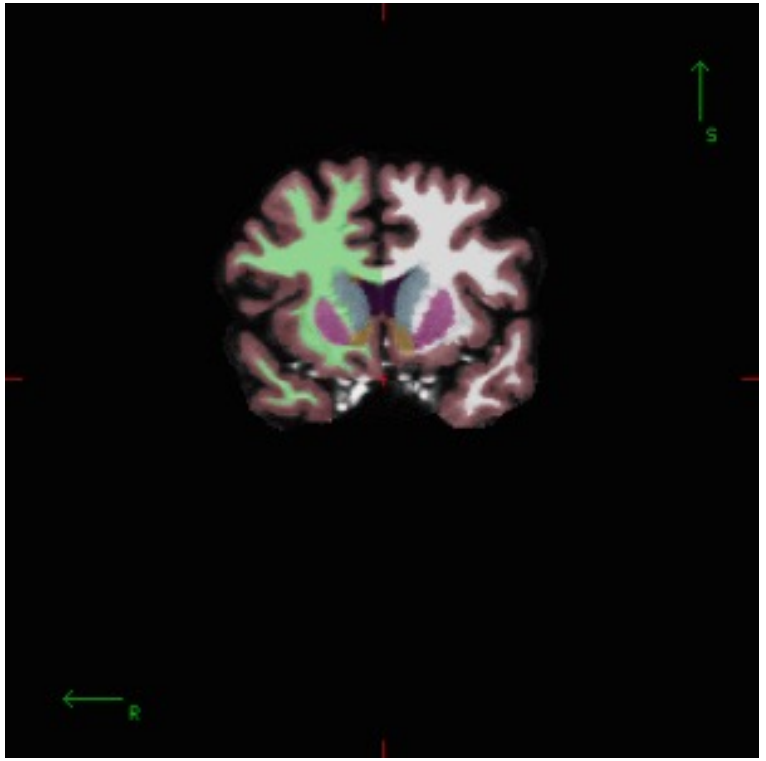
Freesurfer

- Software used for 3D segmentation of MRI scans
- folders contain even more files per patient (scripts etc)
- colorized snapshots at specified locations
- slice positions do not match perfectly

Patient1, Slice2

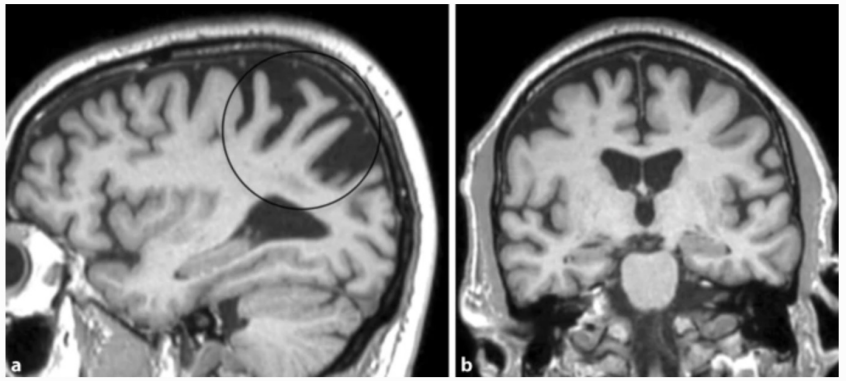


Patient2, Slice2

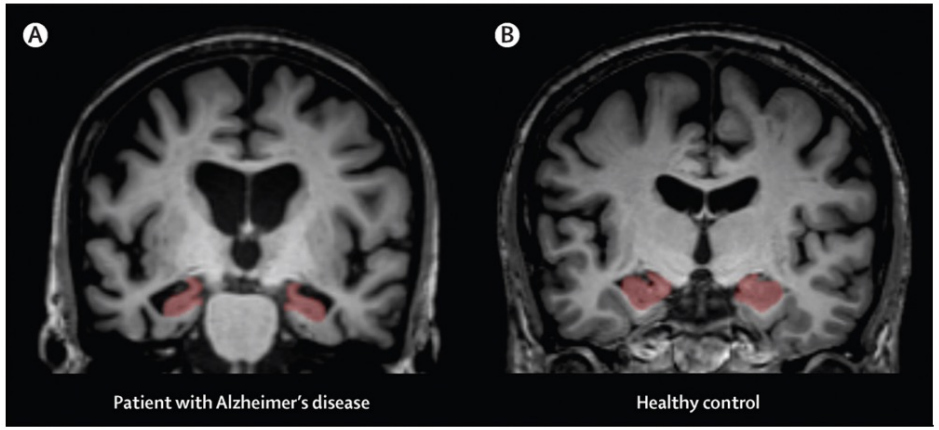


ImageJ script functionalities

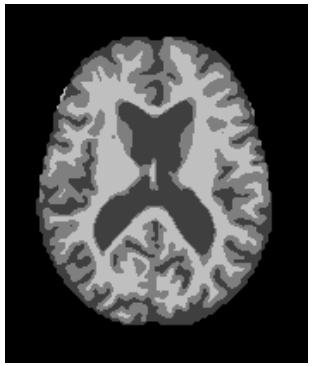
- Extract regions from side, front or top views
- Extract single slices
- Combine different slices in one image?
- Potentially train models on several images per patient?
- Separate models for each image, combine into meta-model?



Parietal lobe shrinkage



Hippocampal volume loss



Grey matter volume reduction?

Correlation of nWBV and CDR?

ImageJ script functionalities

1. Ask for correct directory structure
2. Ask what slices to extract from which side
3. Ask what regions to extract

IN

OUT

Extracts

> Hippocampus
>> 0001_hippo.gif
>> 0002_hippo.gif
>> 0003_hippo.gif
>> …

> Parietal_Lobe
> Ventricles
> Cortex
> Temporal lobe

Slices

> x_100
>> 0001_x_100
>> 0002_x_100
>> 0003_x_100