

## AAL Single-Subject Atlas

The **AAL-VOIs** atlas is the automatic anatomical labeling result [5] of the spatially normalized, single subject, high resolution T<sub>1</sub> MRI data set provided by the Montreal Neurological Institute (MNI)[6]. It includes 120 structure definitions. By merging some small structures an **AAL-Merged** atlas was created. Both **AAL-VOIs** and **AAL-Merged** can be used alternatively to the N30R83 atlas. There is a slight asymmetry in the AAL VOIs which corresponds to the natural asymmetry of normal brains and which is also part of the MNI template.

In general, it should be noted that from a theoretical point of view a maximum probability atlas is preferable, because it accounts for the normal variation of the human brain anatomy.

### AAL-VOIs Atlas

The following 120 brain structures are included in the AAL-VOIs atlas. The first column indicates the label number, the second the name and abbreviation). For paired structures the first and second numbers refer to the left and right part, respectively.

#### Temporal Lobe

37; 38	Hippocampus (HIP)
39; 40	Parahippocampus (PHIP)
41; 42	Amygdala (AMYG)
55; 56	Fusiform gyrus (FUSI)
79; 80	Heschl gyrus (HES)
81;82	Superior temporal gyrus (T1)
83; 84	Temporal pole: superior temporal gyrus (T1P)
85; 86	Middle temporal gyrus (T2)
87; 88	Temporal pole: middle temporal gyrus (T2P)
89; 90	Inferior temporal gyrus (T3)

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#### Posterior Fossa

91; 92	Cerebellum crus 1
93; 94	Cerebellum crus 2
95; 96	Cerebellum 3
97; 98	Cerebellum 4 5
99; 100	Cerebellum 6
101; 102	Cerebellum 7
103; 104	Cerebellum 8
105; 106	Cerebellum 9
107; 108	Cerebellum 10
109	Vermis 12

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110	Vermis 3
111	Vermis 4 5
112	Vermis 6
113	Vermis 7
114	Vermis 8
115	Vermis 9
116	Vermis 10
117	Cerebellar white matter
118	Medulla
119	Midbrain
120	Pons

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### Insula and Cingulate Gyri

29; 30	Insula (IN)
31; 32	Cingulate gyrus, anterior part (ACIN)
33; 34	Cingulate gyrus, mid part (MCIN)
35; 36	Cingulate gyurs, posterior part (PCIN)

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### Frontal Lobe

1; 2	Precentral gyrus (PRE)
3; 4	Superior frontal gyrus, dorsolateral (F1)
5; 6	Superior frontal gyrus, orbital (F1O)
7; 8	Middle frontal gyrus (F2)
9; 10	Middle frontal gyrus, orbital (F2O)
11; 12	Inferior frontal gyrus, opercular (F3OP)
13; 14	Inferior frontal gyrus, triangular (F3T)
15; 16	Inferior frontal gyrus, orbital (F3O)
17; 18	Rolandic operculum (RO)
19; 20	Supplementary motor area (SMA)
21; 22	Olfactory cortex (OC)
23; 24	Superior frontal gyrus, medial (F1M)
25; 26	Superior frontal gyrus, medial orbital (F1MO)
27; 28	Gyrus rectus (GR)
69; 70	Paracentral lobule (PCL)

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### Occipital Lobe

43; 44	Calcarine fissure and surrounding cortex (V1)
45; 46	Cuneus (Q)
47; 48	Lingual gyrus (LING)
49; 50	Superior occipital lobe (O1)
51; 52	Middle occipital lobe (O2)
53; 54	Inferior occipital lobe (O3)

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## Parietal Lobe

57; 58	Postcentral gyrus (POST)
59; 60	Superior parietal gyrus (P1)
61; 62	Inferior parietal gyrus (P2)
63; 64	Supramarginal gyrus (SMG)
65; 66	Angular gyrus (AG)
67; 68	Precuneus (PQ)

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## Central Structures

53; 54	Caudate nucleus (CAU)
55; 56	Putamen (PUT)
57; 58	Pallidum (PAL)
59; 60	Thalamus (THA)

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## AAL-Merged Atlas

The following 71 brain structures are covered the AAL-Merged atlas. For paired structures the first and second numbers refer to the left and right part, respectively.

## Temporal Lobe

65; 66	Temporal, superior, mid, inferior, poles (T1, T1A, T2, T2A, T3)
29; 30	Amygdala (AMYG)
27; 28	Hippocampus and parahippocampus (HIP, PHIP)
39; 40	Fusiform gyrus (FUSI)
61; 62	Heschl gyrus (HES)

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## Posterior Fossa

67	Vermis
68; 69	Cerebellum crus
70; 71	Cerebellum
72	Cerebellar white matter
73	Medulla
74	Midbrain
75	Pons

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## Insula and Cingulate Gyri

19; 20	Insula (IN)
21; 22	Cingulate gyrus, anterior part (ACIN)
23; 24	Cingulate gyrus, mid part (MCIN)
25; 26	Cingulate gyurs, posterior part (PCIN)

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### Frontal Lobe

1; 2	Precentral gyrus (PRE)
3; 4	Rolandic operculum (RO)
5; 6	Supplementary motor area (SMA)
7; 8	Olfactory cortex (OC)
11; 12	Superior frontal gyrus (F1, F1O, F1M)
13; 14	Middle frontal gyrus (F2, F2O, FMO)
15; 16	Inferior frontal gyrus (F3OP, F3T, F3O)
17; 8	Gyrus rectus (GR)
51; 52	Paracentral lobule (PCL)

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### Occipital Lobe

31; 32	Calcarine fissure and surrounding cortex (V1)
33; 34	Cuneus (Q)
35; 36	Lingual gyrus (LING)
37; 38	Lateral remainder of occipital lobe (O1, O2, O3)

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### Parietal Lobe

41; 42	Postcentral gyrus (POST)
45; 46	Supramarginal gyrus (SMG)
47; 48	Angular gyrus (AG)
49; 50	Precuneus (PQ)
63; 64	Parietal, superior and inferior (P1, P2)

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### Central Structures

53; 54	Caudate nucleus (CAU)
55; 56	Putamen (PUT)
57; 58	Pallidum (PAL)
59; 60	Thalamus (THAL)

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In comparison to the the original AAL atlas the following subregions were pooled:

- Vermis: Vermis\_1\_2, Vermis\_3, Vermis\_4\_5, Vermis\_6, Vermis\_7, Vermis\_8, Vermis\_9, Vermis\_10.

- Cerebellum crus: Cerebellum\_Crus1, Cerebellum\_Crus2.
- Cerebellum: Cerebellum\_3, Cerebellum\_4\_5, Cerebellum\_6, Cerebellum\_7b, Cerebellum\_8, Cerebellum\_9, Cerebellum\_10.
- Frontal Mid: Frontal\_Mid, Frontal\_Mid\_Orb, Frontal\_Med\_Orb.
- Frontal Sup: Frontal\_Sup, Frontal\_Sup\_Orb, Frontal\_Sup\_Medial.
- Frontal Inf: Frontal\_Inf\_Oper, Frontal\_Inf\_Tri, Frontal\_Inf\_Orb.
- Hippocampus and parahippocampus.
- Occipital: Occipital\_Sup, Occipital\_Mid, Occipital\_Inf.
- Parietal: Parietal\_Sup, Parietal\_Inf.
- Temporal: Temporal\_Sup, Temporal\_Pole\_Sup, Temporal\_Mid, Temporal\_Pole\_Mid, Temporal\_Inf.