

WHS rat brain atlas v4 label hierarchy					Abbreviation
1000	Brain				Brain
	1001	White matter			wmt
		1050	Olfactory white matter		olf
			180	lateral olfactory tract	lot
		67	corpus callosum and associated subcortical white matter		cc-ec-cing-dwm
		1002	Anterior commissure		ac
			36	anterior commissure, anterior limb	aca
			37	anterior commissure, posterior limb	acp
			73	anterior commissure, intrabulbar part	aci
		1003	Hippocampal white matter		hiw
			6	alveus of the hippocampus	alv
			38	ventral hippocampal commissure	vhc
			52	fornix	f
			59	fimbria of the hippocampus	fi
		1004	Corticofugal pathways		cfp
			1	corticofugal tract and corona radiata	ic-cp-lfp-py
			85	pyramidal decussation	pyx
		1005	Medial lemniscus		ml
			34	medial lemniscus, unspecified	ml-u
			84	medial lemniscus decussation	mlx
		1006	Thalamic tracts		tht
			1051	External medullary lamina	eml
				249 external medullary lamina, unspecified	eml-u
				157 external medullary lamina, auditory radiation	eml-ar
			291	internal medullary lamina	iml
			290	intramedullary thalamic area	ima

		270	superior cerebellar peduncle and prerubral field	scp-pr
		239	pretectothalamic lamina	ptl
		53	mammillotegmental tract	mtg
		54	commissural stria terminalis	cst
		60	fasciculus retroflexus	fr
		61	stria medullaris thalami	sm
		62	stria terminalis	st
		80	habenular commissure	hbc
		63	posterior commissure	pc
		1007	Facial nerve	7n
		35	facial nerve, unspecified	7n-u
		72	ascending fibers of the facial nerve	asc7
		57	genu of the facial nerve	g7
		1008	Optic fiber system and supraoptic decussation	ofs
		41	optic nerve	2n
		42	optic tract and optic chiasm	opt-och
		83	supraoptic decussation	sox
		1009	White matter of the tectum	tew
		46	commissure of the superior colliculus	csc
		68	brachium of the superior colliculus	bsc
		69	inferior colliculus, commissure	cic
		146	inferior colliculus, brachium	bic
		1010	Cerebellar and precerebellar white matter	cbt
		7	inferior cerebellar peduncle	icp
		78	middle cerebellar peduncle	mcp
		79	transverse fibers of the pons	tfp
		1011	White matter of the brainstem	bsw
		1012	Lateral lemniscus	ll

				140	lateral lemniscus, commissure				ll-c	
				141	lateral lemniscus, unspecified				ll-u	
			129	acoustic striae					as	
			130	trapezoid body					tz	
			76	spinal trigeminal tract					sp5t	
	1013	Gray matter							GM	
		1052	Telencephalon						Tel	
				1053	Laminated pallium				LamP	
					1020	Olfactory bulb			OB	
						64	Glomerular layer of the accessory olfactory bulb		GIA	
						65	Glomerular layer of the olfactory bulb		GI	
						66	Olfactory bulb, unspecified		OB-u	
						502	Nucleus of the lateral olfactory tract		NLOT	
					1015	Cerebral cortex			Cx	
						1055	Hippocampal region		HR	
							1021	Hippocampal formation		HF
								99	Fasciola cinereum	FC
								100	Subiculum	SUB
								1022	Cornu Ammonis	CA
								98	Cornu ammonis 1	CA1
								97	Cornu ammonis 2	CA2
								95	Cornu ammonis 3	CA3
								96	Dentate gyrus	DG
							1023	Parahippocampal region		PHR
								108	Postrhinal cortex	POR
								109	Presubiculum	PrS
								110	Parasubiculum	PaS
								1024	Perirhinal cortex	PER
								112	Perirhinal area 35	PER35

								113	Perirhinal area 36	PER36
							1025	Entorhinal cortex		EC
								114	Medial entorhinal cortex	MEC
								115	Lateral entorhinal cortex	LEC
						1056	Piriform cortex		PIR	
							181	Piriform cortex, layer 1		PIR1
							182	Piriform cortex, layer 2		PIR2
							183	Piriform cortex, layer 3		PIR3
						1057	Cingulate region		CgR	
							1018	Cingulate cortex		Cg
								411	Cingulate area 1	Cg1
								10	Cingulate area 2	Cg2
							1058	Retrosplenial cortex		RS
								427	Retrosplenial dysgranular area	RSD
								430	Retrosplenial granular area	RSG
						1059	Insular region		INS	
							1060	Agranular insular cortex		AI
								409	Agranular insular cortex, ventral area	AI-v
								410	Agranular insular cortex dorsal area	AI-d
								424	Agranular insular cortex, posterior area	AI-p
							414	Dysgranular insular cortex		DI
							416	Granular insular cortex		GI
						1061	Frontal region		Front	
							77	Frontal association cortex		FrA
							1062	Orbitofrontal cortex		Orb
								403	Medial orbital area	MO
								402	Ventral orbital area	VO
								400	Ventrolateral orbital area	VLO
								401	Lateral orbital area	LO

								404	Dorsolateral orbital area		DLO
							1063	Mediofrontal cortex			MFC
								405	Prelimbic area		PrL
								413	Infralimbic area		IL
							1064	Motor cortex			M
								408	Primary motor area		M1
								406	Secondary motor area		M2
								407	Frontal association area 3		Fr3
						1065	Parietal region				Par
							1066	Somatosensory cortex			SS
								1067	Primary somatosensory area		S1
									420	Primary somatosensory area, face representation	S1-f
									425	Primary somatosensory area, barrel field	S1-bf
									418	Primary somatosensory area, dysgranular zone	S1-dz
									417	Primary somatosensory area, forelimb representation	S1-fl
									423	Primary somatosensory area, hindlimb representation	S1-hl
									429	Primary somatosensory area, trunk representation	S1-tr
								422	Secondary somatosensory area		S2
							1068	Posterior parietal cortex			PPC
								433	Parietal association cortex, medial area		mPPC
								432	Parietal association cortex, lateral area		lPPC
								436	Parietal association cortex, posterior area		PtP
						1069	Occipital region				Oc
							1070	Visual cortex			Vis
								442	Primary visual area		V1
								1071	Secondary visual area		V2
									448	Secondary visual area, medial part	V2M
									443	Secondary visual area, lateral part	V2L
						1072	Temporal region				Te

							444	Temporal association cortex		TeA
							1019	Auditory cortex		Au
								151	Primary auditory area	Au1
								1073	Secondary auditory area	Au2
								152	Secondary auditory area, dorsal part	Au2-d
								153	Secondary auditory area, ventral part	Au2-v
				1074	Non-laminated pallium					N-LamP
					412	Clastrum				CLA
					500	Endopiriform nucleus				Endo
					501	Amygdaloid area, unspecified				Am-u
				1075	Subpallium					SubPAL
					1076	Striatum				Str
						197	Caudate putamen			CPu
						1077	Nucleus accumbens			NAC
						184	Nucleus accumbens, core			NAC-c
						192	Nucleus accumbens, shell			NAC-sh
						199	Ventral striatal region, unspecified			VSR-u
					1028	Pallidum				PAL
						1078	Globus pallidus external			GPe
						195	Globus pallidus external, medial part			GPe-m
						198	Globus pallidus external, lateral part			GPe-l
						32	Entopeduncular nucleus			EP
						193	Ventral pallidum			VP
					1079	Basal forebrain region				BRF
						82	Basal forebrain region, unspecified			BFR-u
						93	Bed nucleus of the stria terminalis			BNST
						40	Septal region			Sep
						3	Subthalamic nucleus			STh
		1080	Diencephalon							Dien

			1081	Prethalamus			Thal-Pre	
				1033	Reticular (pre)thalamic nucleus			RT
					200	Reticular (pre)thalamic nucleus, unspecified		RT-u
					164	Reticular (pre)thalamic nucleus, auditory segment		RT-a
				1082	Zona incerta			ZI
					235	Zona incerta, dorsal part		ZI-d
					236	Zona incerta, ventral part		ZI-v
					257	Zona incerta, rostral part		ZI-r
					287	Zona incerta, caudal part		ZI-c
					238	Zona incerta, A13 dopamine cells		ZI-A13
					284	Zona incerta, A11 dopamine cells		ZI-A11
					280	Fields of Forel		FoF
					204	Pregeniculate nucleus		PrG
					281	Subgeniculate nucleus		SubG
					272	Intergeniculate leaflet		IGL
			1083	Epithalamus			Thal-EPI	
				206	Lateral habenular nucleus			LHb
				207	Medial habenular nucleus			MHb
				81	Nucleus of the stria medullaris			SMn
				43	Pineal gland			PG
			1084	Dorsal thalamus			Thal-D	
				1085	Anterior nuclei of the dorsal thalamus			ANT
					213	Anterodorsal thalamic nucleus		AD
					1086	Anteroventral thalamic nucleus		AV
						214	Anteroventral thalamic nucleus, dorsomedial part	AV-dm
						215	Anteroventral thalamic nucleus, ventrolateral part	AV-vl
					254	Anteromedial thalamic nucleus		AM
					255	Interanteromedial thalamic nucleus		IAM
				1087	Dorsal-caudal midline group of the dorsal thalamus			DC-MID

					242	Paraventricular thalamic nuclei (anterior and posterior)		PV	
					260	Intermediodorsal thalamic nucleus		IMD	
					211	Parataenial thalamic nucleus		PT	
					278	Subparafascicular nucleus		SPF	
					208	Posterior intralaminar nucleus		PIL	
				1088	Ventral midline group of the dorsal thalamus			V-MID	
					216	Rhomboid thalamic nucleus		Rh	
					219	Reuniens thalamic nucleus		Re	
					268	Retroreuniens thalamic nucleus		RRe	
					218	Xiphoid thalamic nucleus		Xi	
				1089	Mediodorsal nucleus of the dorsal thalamus			MD	
					232	Mediodorsal thalamic nucleus, lateral part		MD-l	
					233	Mediodorsal thalamic nucleus, central part		MD-c	
					240	Mediodorsal thalamic nucleus, medial part		MD-m	
				1090	Ventral nuclei of the dorsal thalamus			VENT	
					293	Ventral anterior thalamic nucleus		VA	
					221	Ventromedial thalamic nucleus		VM	
					231	Ventrolateral thalamic nucleus		VL	
					223	Angular thalamic nucleus		Ang	
					1091	Ventral posterior thalamic nucleus			VPN
						227	Ventral posteromedial thalamic nucleus	VPM	
						294	Ventral posterolateral thalamic nucleus	VPL	
						266	Ventral posterior nucleus of the thalamus, parvicellular part	VP-pc	
					222	Submedius thalamic nucleus		SMT	
				1092	Intralaminar nuclei of the dorsal thalamus			ILM	
					246	Paracentral thalamic nucleus		PCN	
					247	Central medial thalamic nucleus		CM	
					248	Central lateral thalamic nucleus		CL	
					267	Parafascicular thalamic nucleus		PF	

					282	Ethmoid-Limitans nucleus	Eth
				1093	Posterior complex of the dorsal thalamus		PoC
					230	Posterior thalamic nucleus	Po
					210	Posterior thalamic nuclear group, triangular part	Po-t
				1094	Lateral posterior (pulvinar) complex of the dorsal thalamus		LP
					285	Lateral posterior thalamic nucleus, mediorostral part	LP-mr
					286	Lateral posterior thalamic nucleus, mediocaudal part	LP-mc
					283	Lateral posterior thalamic nucleus, lateral part	LP-l
				1095	Laterodorsal thalamic nuclei of the dorsal thalamus		LD
					228	Laterodorsal thalamic nucleus, dorsomedial part	LD-dm
					229	Laterodorsal thalamic nucleus, ventrolateral part	LD-vl
					205	Dorsal lateral geniculate nucleus	DLG
				1032	Medial geniculate complex of the dorsal thalamus		MG
					298	Medial geniculate body, ventral division	MG-v
					295	Medial geniculate body, dorsal division	MG-d
					150	Medial geniculate body, marginal zone	MG-mz
					297	Medial geniculate body, medial division	MG-m
					299	Medial geniculate body, suprageniculate nucleus	MG-sg
			1034	Hypothalamus			HY
				48	Hypothalamic region, unspecified		HTH-u
			1096	Pretectum			PreT
				94	Pretectal region		PRT
				163	Nucleus sagulum		Sag
		1097	Mesencephalon				Mes
			1035	Midbrain			MB
			1036	Tectum			Tc
				1037	Inferior colliculus		IC
					142	Inferior colliculus, dorsal cortex	DCIC
					143	Inferior colliculus, central nucleus	CNIC

						145	Inferior colliculus, external cortex	ECIC
					1038	Superior colliculus		Su
						50	Superficial gray layer of the superior colliculus	SuG
						55	Deeper layers of the superior colliculus	SuD
				1039	Tegmentum			Tg
					1098	Substantia nigra		SN
						187	Substantia nigra, reticular part	SN-r
						188	Substantia nigra, compact part	SN-c
						189	Substantia nigra, lateral part	SN-l
					196	Ventral tegmental area		VTA
					201	Peripeduncular nucleus		PP
					71	Interpeduncular nucleus		IP
					51	Periaqueductal gray		PAG
			47	Brainstem, unspecified				BS-u
		1099	Rhombencephalon					Rho
			1100	Metencephalon				Met
				58	Pontine nuclei			Pn
				1047	Cerebellum			Cb
					4	Molecular cell layer of the cerebellum		Cb-m
					5	Cerebellum, unspecified		Cb-u
				1101	Myelencephalon			Myel
				1043	Cochlear nucleus, ventral part			VCN
					158	Ventral cochlear nucleus, anterior part		AVCN
					159	Ventral cochlear nucleus, posterior part		PVCN
					160	Ventral cochlear nucleus, cap area		Cap
					123	Ventral cochlear nucleus, granule cell layer		GCL
				1044	Cochlear nucleus, dorsal part			DCN
					126	Dorsal cochlear nucleus, molecular layer		DCNM
					127	Dorsal cochlear nucleus, fusiform and granule layer		DCNFG

					128	Dorsal cochlear nucleus, deep core	DCND	
				75	Spinal trigeminal nucleus		Sp5n	
				56	Periventricular gray		PVG	
				1045	Superior olivary complex		SO	
					131	Nucleus of the trapezoid body	NTB	
					132	Superior paraolivary nucleus	SPN	
					133	Medial superior olive	MSO	
					134	Lateral superior olive	LSO	
					135	Superior periolivary region	SPR	
					136	Ventral periolivary nuclei	VPO	
				1046	Nuclei of the lateral lemniscus		NLL	
					137	Lateral lemniscus, ventral nucleus	VLL	
					138	Lateral lemniscus, intermediate nucleus	ILL	
					139	Lateral lemniscus, dorsal nucleus	DLL	
				74	Inferior olive		IO	
	1048	Ventricular system						V
		33	Ventricular system, unspecified					V-u
		125	4th ventricle					4V
		70	Central canal					CC
45	Spinal cord							SpC
1049	Inner ear							IE
	119	Vestibular apparatus						VeA
	120	Cochlea						Co
	121	Cochlear nerve						8cn
	122	Vestibular nerve						8vn
	162	Spiral ganglion						SpG