**List of Abbreviations**

The abbreviations are consistent with those used in our atlas of the adult rat brain (Swanson, 1992a). Italicized abbreviations in illustrations indicate presumptive structures (for example, *ACB* refers to the presumptive nucleus accumbens).

1-6 cerebral cortex, layers 1-6

aa1 aortic arch, first

AAA anterior amygdaloid area

ac anterior commissure

ACA anterior cingulate area

ACB nucleus accumbens

aco anterior commissure, olfactory limb

ACVII accessory facial nucleus

ADP anterodorsal preoptic nucleus

ae epithelial area (Hines, ‘22)

AI agranular insular area

alv alveus

act anterior commissure, temporal limb

ae epithelial area

AH Ammon's horn

AHso Ammon’s horn, stratum oriens

Ahsp Ammon’s horn, pyramidal layer

AHA anterior hypothalamic area

AHNa anterior hypothalamic nucleus, anterior part

AHNc anterior hypothalamic nucleus, central part

AHNd anterior hypothalamic nucleus, dorsal part

AHNp anterior hypothalamic nucleus, posterior part

AI agranular insular area

ain area intercalata (Hines, ‘22)

AL pituitary gland, anterior lobe

ALL allantois

alr anterolateral ridge

alv alveus

AMB nucleus ambiguus

AMBd nucleus ambiguus, dorsal division

AMBv nucleus ambiguus, ventral division

AMN amnion

AMY amygdala

ANT anterior level, hypothalamus

AOB accessory olfactory bulb

AOBgl accessory olfactory bulb, glomerular layer

AOBmi accessory olfactory bulb, mitral layer

AON anterior olfactory nucleus

AONe anterior olfactory nucleus, external part

AONl anterior olfactory nucleus, lateral part

AONm anterior olfactory nucleus, medial part

AONpv anterior olfactory nucleus, posteroventral part

AP area postrema

apd ansa peduncularis

APL alar plate

APN anterior pretectal nucleus

AQ cerebral aqueduct

AQir cerebral aqueduct, isthmal recess

AR amygdalar ridge

arb arbor vitae

arc archenteron

ard dorsal arch, telencephalic vesicle

ARH arcuate nucleus hypothalamus

ARsbv amygdalar ridge, subventricular layer

art histological artifact

AT anterior tegmental nucleus

ATL atlas

ATN anterior nuclei, dorsal thalamus

AUD auditory areas

avec ventral angle, caudal

aver ventral angle, rostral

AVP anteroventral preoptic nucleus

B Barrington's nucleus

BA bed nucleus accessory olfactory tract

BAC bed nucleus anterior commissure

BAP basal plate

bar1 1st branchial arch

BG basal nuclei (ganglia), telencephalon

bic brachium of the inferior colliculus

BLAa basolateral nucleus amygdala, anterior part

BLAp basolateral nucleus amygdala,posterior part

BMAa basomedial nucleus amygdala, anterior part

BMAp basomedial nucleus amygdala, posterior part

BNsbv basal nuclei, subventricular layer

bpo1-3 branchial pouches 1-3

BRP brain plate

bsc brachium of the superior colliculus

BST bed nuclei stria terminalis

BSTpr bed nuclei stria terminalis, principal nucleus

BSTse bed nuclei stria terminalis, posterior division, strial extension

C central canal, spinal cord/medulla

Ca caudal

CA1-3 fields CA1-CA3, Ammon's horn

CA1-3slm fields CA1-CA3, stratum lacunosum-moleculare

CA1-3so fields CA1-CA3, stratum oriens

CA1-3sp fields CA1-CA3, pyramidal layer

CA1-3sr fields CA1-CA3, stratum radiatum

cal callosal layer, cortical neural tube (Bayer and Altman, '91)

cas corticoamygdalar sulcus (GAB)

CB cerebellum

cbc cerebellar commissure

CBm cerebellum, molecular layer

CBog cerebellum, outer granule cell layer

cbs corticobasal sulcus

CBX cerebellar cortex

CBXg cerebellar cortex, inner granule cell layer

CBXm cerebellar cortex, molecular layer

CBXog cerebellar cortex, outer granule cell layer

CBXp/g cerebellar cortex, Purkinje/inner granule cell layers

cc corpus callosum

cha choroidal area (Hines, ‘22)

cic commissure of the inferior colliculus

cing cingulum bundle

ccg corpus callosum, genu

ccr corpus callosum, rostrum

ccs corpus callosum, splenium

CEA central nucleus amygdala

cf cephalic flexure

chf choroid fissure

chp choroid plexus

CL central lateral nucleus thalamus

CLA claustrum

CLI central linear nucleus raphé

CM central medial nucleus thalamus

CMVE caudal medullary vellum

CN cochlear nuclei

CNG cingulate region

COA cortical nucleus amygdala

COApl cortical nucleus amygdala, posterolateral part

COApm cortical nucleus amygdala, posteriomedial part

cor cornea

cos conjunctival sac

CP caudoputamen

cpd cerebral peduncle

cpl cortical plate

cps cerebellopontine sulcus

CS superior central nucleus raphé

CSl superior central nucleus raphé, lateral part

CSm superior central nucleus raphé, medial part

csc commissure of the superior colliculus

css corticostriatal sulcus

cst corticospinal tract

CTX1 cerebral cortex, layer 1

CTXcpl cerebral corte, cortical plate

CTXil cerebral corte, intermediate layer

CTXild cerebral corte, intermediate layer, deep sublayer

CTXl cerebral cortex, lateral part

CTXm cerebral cortex, medial part

CTXsbv cerebral cortex, subventricular layer

CTXsp cerebral cortex, subplate

CTXven cerebral cortex, ventricular layer

CU cuneate nucleus

cuf cuneate fascicle

CUN cuneiform nucleus

cvb efferent cochleovestibular bundle

dc dorsal columns

DCN dorsal column nuclei

DCO dorsal cochlear nucleus

DG dentate gyrus

DGlb dentate gyrus, lateral blade

Dgmb dentate gyrus, medial blade

Dgmo dentate gyrus, molecular layer

DGpo dentate gyrus, polymorph layer

DGsg dentate gyrus, granule cell layer

DH dorsal horn

dhc dorsal hippocampal commissure

DI diencephalon

dl dorsolateral fascicle

DMH dorsomedial nucleus hypothalamus

DMHa dorsomedial nucleus hypothalamus, anterior part

DMHp dorsomedial nucleus hypothalamus, posterior part

DMHv dorsomedial nucleus hypothalamus, ventral part

dmj dimesencephalic junction

DMX dorsal motor nucleus vagus nerve

DNC deep cerebellar nuclei

Do dorsal

DOR dorsal thalamus

DORc dorsal thalamus, caudodorsal part (e12)

DORr dorsal thalamus, rostroventral part (e12)

DR dorsal nucleus raphé

drp diencephalic roof plate

DRG dorsal root ganglion

dscp decussation superior cerebellar peduncle

dtd dorsal tegmental decussation

dtj ditelencephalic junction

DTN dorsal tegmental nucleus [Gudden]

ec external capsule

ECD ectoderm

ECU external cuneate nucleus

edu endolymphatic duct

ee extreme capsule

em external medullary lamina thalamus

ems external mesencephalic-diencephalic sulcus

EN endoderm

ENT entorhinal area

ENTm entorhinal area, medial part

ENTl entorhinal area, lateral part

eom extraocular muscles

EP endopiriform nucleus

EPI epithalamus

epe ependymal layer

ets external thalamic sulcus

EW Edinger-Westphal nucleus

eyl eyelid

fa corpus callosum, anterior forceps

FB forebrain

FBV forebrain ventricle

fi fimbria

FF fields of Forel

FG foregut

fp corpus callosum, posterior forceps

fpl floor plate

fr fasciculus retroflexus

FRO frontal region

FRP frontal pole

FS fundus of the striatum

fx columns of the fornix

fxpr precommissural fornix

GEN geniculate nuclei, dorsal thalamus

GIX glossopharyngeal, vagal ganglia

GP globus pallidus

GPl globus pallidus, lateral segment

GPm globus pallidus, medial segment

GR gracile nucleus

GRN gigantocellular reticular nucleus

GU gustatory area

GV trigeminal ganglion

GVII, VIII facial, vestibulocochlear ganglia

gVIIn genu of the facial nerve

GvVIII vestibular ganglion

H heart

HB hindbrain

hbc habenular commissure

hd hepatic diverticulum

hf hippocampal fissure

HG hindgut

HIP hippocampal region

Hn Hensen’s node

hp hypophysial placode

HPFv hippocampal formation, ventral region

hrp hindbrain roof plate

hs hippocampal sulcus

HY hypothalamus

IA intercalated nuclei amygdala

IAD interanterodorsal nucleus thalamus

IC inferior colliculus

icp inferior cerebellar peduncle

IF interfascicular nucleus

IG induseum griseum

IGL lat. genicul. complex, intergenicuate leaflet

IH intermediate gray spinal cord

III oculomotor nucleus

IIn optic nerve

il cerebral cortex, intermediate layer

ild cerebral cortex, intermediate layer, deep sublayer

ils cerebral cortex, intermediate layer, superficial sublayer

IL pituitary gland, intermediate lobe

ILA infralimbic area

im internal medullary lamina thalamus

In olfactory nerve

INC interstitial nucleus of Cajal

INF infundibulum

INS insular region

int internal capsule

IO inferior olivary complex

IOda inferior olivary complex, dorsal accessory olive

IOma inferior olivary complex, medial accessory olive

IOpr inferior olivary complex, principal olive

IPN interpeduncular nucleus

isl islands of Calleja (olfactory tubercle)

islm major island of Calleja

ISN inferior salivatory nucleus

ISO isocortex

ISO1 isocortex, layer 1

ISOcpl isocortex, cortical plate

ISOild isocortex, intermediate layer, deep sublayer

ISOilv isocortex, intermediate layer, ventral extension

ISOsbv isocortex, subventricular layer

ISOsp isocortex, subplate

ISOven isocortex, ventricular layer

IV trochlear nucleus

IVF interventricular foramen

IVn trochlear nerve

IX, Xn glossopharyngeal, vagus nerves

LA lateral nucleus amygdala

lam lamina terminalis

LAV lateral vestibular nucleus

Lb bony labyrinth

LC locus coeruleus

LD lateral dorsal nucleus thalamus

LDT laterodorsal tegmental nucleus

le lens

let epithelial lamina, telencephalon (Hines)

lf lateral funiculus

LG lateral geniculate complex

LGd lateral geniculate complex, dorsal part

LGv lateral geniculate compex, ventral part

LH lateral habenula

LHA lateral hypothalamic area

ll lateral lemniscus

LM lateral mammillary nucleus

Lme membranous labyrinth

lot lateral olfactory tract

LP lateral posterior nucleus thalamus

LPO lateral preoptic area

LRN lateral reticular nucleus

LRNm lateral reticular nucleus, magnocellular part

LRNp lateral reticular nucleus, parvicellular part

LS lateral septal nucleus

LSd lateral septal nucleus, dorsal part

LSI lateral septal nucleus, intermediate part

LSv lateral septal nucleus, ventral part

LT lateral terminal n. accessory optic tract

M mouth (oral cavity)

MA magnocellular preoptic nucleus

MAM mammillary level, hypothalamus

mar marginal layer, neural tube

MARN magnocellular reticular nucleus

MAX maxillary process

MB midbrain

MBO mammillary body

mcp middle cerebellar peduncle

mct medial corticohypothalamic tract

MD mediodorsal nucleus thalamus

MDRN medullary reticular nucleus

MDRNd medullary reticular nucleus, dorsal part

MDRNv medullary reticular nucleus, ventral part

mds mesencephalic-diencephalic sulcus

ME median eminence

MEA medial nucleus amygdala

MEAa medial nucleus amygdala, anterior part

MEAp medial nucleus amygdala, posterior part

MEApd medial nucleus amygdala, posterodorsal part

MEPO median preoptic nucleus

MEV mesencephalic nucleus of the trigeminal

mem1 mesomere 1

mem 2 mesomere 2

MES mesoderm

mfb medial forebrain bundle

MG medial geniculate complex

MH medial habenula

MID midline nuclei, dorsal thalamus

ml medial lemniscus

mlf medial longitudinal fascicle

MM medial mammillary nucleus

MMme medial mammillary nucleus, median part

MN mandibular process

mns median sulcus, telencephalon medium (Rakic & Yakovlev)

MO motor areas

MOBgl main olfactory bulb, glomerular layer

MOBgr main olfactory bulb, granule cell layer

MOBipl main olfactory bulb, inner plexiform layer

MOBmar main olfactory bulb, marginal layer

MOBmi main olfactory bulb, mitral layer

MOBmtl main olfactory bulb, mantle layer

MOBopl main olfactory bulb, outer plexiform layer

MOBsbv main olfactory bulb, subventricular layer

MOBven main olfactory bulb, ventricular layer

MOp primary motor area

MOs secondary motor areas

moV motor root of the trigeminal nerve

mp mammillary peduncle

MPO medial preoptic area

MPN medial preoptic nucleus

MPNc medial preoptic nucleus, central part

MRN mesencephalic reticular nucleus

mrp medullary roof plate

MS medial septal nucleus

MSC medial septal complex

mtg mammillotegmental tract

mtl mantle layer, neural tube

mtt mammillothalamic tract

mtV mesencephalic tract of the trigeminal

MV medial vestibular nucleus

MVE medullary vellum

MY medulla

NB nucleus brachium inferior colliculus

nch notochord

ncp notochordal plate

NCR neural crest

ND nucleus of Darkschewitsch

NDB nucleus of the diagonal band

NE neuroepithelium

nfo neural fold

ng neural groove

NI nucleus incertus

NIS nucleus intercalatus

NL pituitary gland, neural lobe

NLL nucleus of the lateral lemniscus

NOT nucleus of the optic tract

NLOT nucleus of the lateral olfactory tract

NPC nucleus of the posterior commissure

NPL neural plate

NPLdi neural plate, diencephalic part

NR nucleus of Roller

NSM bed nucleus stria medullaris

nsp nasal septum

NTB nucleus of the trapezoid body

NTS nucleus of the solitary tract

NTSco nucleus of the solitary tract, commissural part

NTSge nucleus of the solitary tract, gelatinous part

NTSl nucleus of the solitary tract, lateral part

NTSm nucleus of the solitary tract, medial part

OB olfactory bulb

OBgl olfactory bulb, glomerular layer

OBgr olfactory bulb, granule cell layer

OBmi olfactory bulb, mitral layer

OBmtl olfactory bulb, mantle layer

Obopl olfactory bulb, outer plexiform layer

OBsbv olfactory bulb, subventricular layer

OCB occipital bone

OCC occipital region

och optic chiasm

OCP occipital pole

ole olfactory epithelium

OLF olfactory (rhinal) cortex

olp olfactory placode

olpi olfactory pit

OLV olfactory vesicle

OP olivary pretectal nucleus

opf optic fovea (optic fossa)

opm oropharyngeal membrane

opt optic tract

OPV optic vesicle

ORB orbital area

ORP oral plate

os optic stalk

OT olfactory tubercle

OT3 olfactory tubercle, layer 3

P pons

PA posterior nucleus amygdala

PAA piriform-amygdaloid area

PAB parietal bone

PAG periaqueductal gray

PAL pallidum

PAR parasubiculum

PARN parvicellular reticular nucleus

PAS parasolitary nucleus

PAT paratrigeminal nucleus

PB parabrachial nucleus

PBB pontobulbar body

PBG parabigeminal nucleus

pc posterior commissure

PCG pontine central gray

pch prechordal plate

PCN paracentral nucleus thalamus

PERI perirhinal area

PF parafascicular nucleus

PFR prefrontal region

PG pontine gray (basal)

PGRNd paragigantocellular reticular n., dorsal part

PGRNl paragigantocellular reticular n., lateral part

PH posterior hypothalamic nucleus

PIN pineal gland

PIR piriform area

PL prelimbic area

PLT palate

pm principal mammillary tract

PMC premammillary nuclear complex

PMd dorsal premammillary nucleus

PMv ventral premammillary nucleus

pmz pallidal migratory zone

PO posterior complex thalamus

pof pontine flexure

pog postotic groove [Adelmann]

POL posterior limiting nucleus thalamus

POR periolivary region

POST postsubiculum

PP peripeduncular nucleus

ppa paraphysial arch

ppl cortical neural tube, preplate

PPN pedunculopontine nucleus

pps pallidopreoptic sulcus

PLR pallidal ridge

PLRsbv pallidal ridge, subventricular layer

pos preotic sulcus

PR perireuniens nucleus

PRE presubiculum

PRE2 presubiculum, layer 2

PRN pontine reticular nucleus

PRO preoptic region

PRP nucleus prepositus

prs primitive streak

PRT pretectal region

PSCH suprachiasmatic preoptic nucleus

PSR pallidostriatal ridge

PSV principal sensory nucleus of the trigeminal

PT parataenial nucleus

PTL parietal region

PTLp parietal region, posterior association areas

pts pallidothalamic sulcus

PV periventricular nucleus hypothalamus

PVa periventricular nucleus hypothalamus, anterior part

PVi periventricular nucleus hypothalamus, intermediate region

PVH paraventricular nucleus hypothalamus

PVHdp paraventricular nucleus hypothalamus, dorsal parvicellular part

PVHf paraventricular nucleus hypothalamus, forniceal part

PVHlp paraventricular nucleus hypothalamus, lateral parvicellular part

PVHmp paraventricular nucleus hypothalamus, medial parvicellular part

PVHpm paraventricular nucleus hypothalamus, posterior magnocellular part

PVHpv paraventricular nucleus hypothalamus, periventricular part

PVp posterior periventricular n. Hypothalamus

PVpo preoptic periventricular nucleus

PVT paraventricular nucleus thalamus

py pyramidal tract

pyd pyramidal decussation

R retina

RAP brainstem raphé

RCH retrochiasmatic area

REm nucleus reuniens, median part

rep reticular promontory (Altman and Bayer)

rf rhinal fissure

RH rhomboid nucleus

rh1-7 secondary rhombomeres 1-7

rhA-C primary rhombomerec A-C

rhA1 primary rhombomere A1

RHL rhombic lip

ri rhinal incisure

RL rostral linear nucleus raphé

RM nucleus raphé magnus

RMVE rostral medullary vellum

RN red nucleus

Rne-mtl neural retina, mantle layer

Rne-ven neural retina, ventricular layer

rnp rostral neuropore

Ro rostral

RO nucleus raphé obscurus

RP Rathke’s pouch

RPA nucleus raphé pallidus

Rpi retina, pigmented layer

rpl roof plate

RR mesencephalic reticular n., retrorubral area

RS reticular nucleus spinal cord

RSP retrosplenial area

RT reticular nucleus thalamus

rust rubrospinal tract

SAG nucleus sagulum

SBC subicular complex

sbp subplate, cortical neural tube

SBPV subparaventricular zone hypothalamus

sbv subventricular layer

SC superior colliculus

SCdg superior colliculus, deep gray layer

SCdw superior colliculus, deep white layer

SCig superior colliculus, intermediate gray layer

SCiw superior colliculus, intermediate white layer

SCop superior colliculus, optic layer

SCsg superior colliculus, superficial gray layer

SCzo superior colliculus, zonal layer

SCH suprachiasmatic nucleus

SCO subcommissural organ

scp superior cerebellar peduncle

sct spinocerebellar tracts

sctv ventral spinocerebellar tract

SE somatic ectoderm

sem septum ependymale (Hines, '22)

SEP septal region

ses septal sulcus

SF septofimbrial nucleus

sfi fimbrial sulcus

SFO subfornical organ

SGN suprageniculate nucleus

SH septohippocampal nucleus

shb habenular sulcus

she hemispheric sulcus

shy hypothalamic sulcus

SI substantia innominata

sin infundibular sulcus

sl sulcus limitans

SLD sublaterodorsal nucleus

slf superior longitudinal fascicle

sm stria medullaris

smd supramammillary decussation

sme sulcus medullaris

smi middle diencephalic sulcus (Herrick, ‘10)

smt median sulcus, telencephalon medium (Rakic & Yakovlev

SMT submedial nucleus thalamus

SN substantia nigra

SO supraoptic nucleus

SOC superior olivary complex

SOCl superior olivary complex, lateral part

SOCm superior olivary complex, medial part

som1... somite, first, ...

sopt optic sulcus (Grönberg, ‘01)

SPC sphenoid cartilage

SPF subparafascicular nucleus thalamus

SPFm subparafascicular nucleus thalamus, magnocellular part

SPFp subparafascicular nucleus thalamus, parvicellular part

spl cerebral cortex, subplate

SP spinal cord

SPIV spinal vestibular nucleus

SPP spinal (cord) plate

SPR septal ridge

SPRsbv septal ridge, subventricular layer

sps striatopallidal sulcus

sptV spinal tract of the trigeminal nerve

sptVIII spinal tract of the vestibular nerve

SPV spinal nucleus of the trigeminal

SR striatal ridge

SRsbv striatal sulcus, subventricular layer

SS somatosensory area

SSp primary somatosensory area

SSs supplemental somatosensory area

st stria terminalis

ste sulcus terminalis

stm pituitary gland, anterior lobe, stem cell region

STN subthalamic nucleus

sto stomodeum (stomatodeum)

STR striatum

SUB subiculum

SUBd-sp subiculum, dorsal part, pyramidal layer

SUBv-sp subiculum, ventral part, pyramidal layer

SUMl supramammillary nucleus, lateral part

SUMm supramammillary nucleus, medial part

sup supraoptic commissures

supo subcephalic pocket

SUT supratrigeminal nucleus

SUV superior vestibular nucleus

SYN synencephalon

sz stratum zonale thalamus

tb trapezoid body

TC tectum

TE temporal region

TEBp temporal bone, petrous part

TEM thalamic eminence

TEP temporal pole

TEv temporal region, ventral association areas

TG tegmentum

TH thalamus

the torus hemisphericus (Kuhlenbeck, ‘29)

TL telencephalon

TM tuberomammillary nucleus

tp thalamic peduncles

TR postpiriform transition area

TRN tegmental reticular nucleus, pontine gray

trp telencephalic roof plate

TRS triangular nucleus septum

ts solitary tract

tsp tectospinal pathway

TT taenia tecta

TTd taenia tecta, dorsal part

TTv taenia tecta, ventral part

TU tuberal nucleus, hypothalamus

TUB tuberal level, hypothalamus

V motor nucleus of the trigeminal nerve

V3 third ventricle

V3ir third ventricle, infundibular recess

V3m third ventricle, mammillary recess

V3pi third ventricle, pineal recess

V3r third ventricle, periventricular recess

v4 fourth ventricle

V4r fourth ventricle, lateral recess

VAL ventral anterior-lateral complex thalamus

vca anterior cardinal vein

VCO ventral cochlear nucleus

Ve ventral

ven ventricular layer

vf ventral funiculus

VH ventral horn spinal cord

vhc ventral hippocampal commissure

VI abducens nucleus

VII facial nucleus

VIIIn vestibulocochlear nerve

VIIIp otic placode

VIIIv otic vesicle

VIIn facial nerve

VIP velum interpositum

VIS visual areas

VISC visceral area

VL lateral ventricle

VLo lateral ventricle, olfactory part (rhinocele)

VM ventral medial nucleus thalamus

VMH ventromedial nucleus hypothalamus

Vn trigeminal nerve

Vn1 trigeminal nerve, ophthalmic branch

VNC vestibular nuclei

Vn-m trigeminal nerve, motor root

Vn-s trigeminal nerve, sensory root

VNT ventral thalamus

VO vomeronasal organ (Jacobson)

VP ventral posterior complex thalamus

VPM ventral posteromedial nucleus thalamus

VPMpc ventral posteromedial nucleus thalamus, parvicellular part

vr ventral ridge

Vre retinal ventricle

VTA ventral tegmental area [Tsai]

vtd ventral tegmental decussation

VTN ventral tegmental nucleus [Gudden]

vtr velum transversum

vVIIIn vestibular nerve

x nucleus x [Brodal and Pompeiano]

XII hypoglossal nucleus

y nucleus y [Brocal and Pompeiano]

YOS yolk sac

ZI zona incerta

ZIda zona incerta, dopaminergic group