

B. Basic Fiber Systems of the Rat CNS

CRANIAL & SPINAL NERVES (& RELATED)

olfactory nerve (In) [1]

 lateral olfactory tract (lot) [2]

 dorsal limb (lotd) [3]

 anterior commissure, olfactory limb (aco) [4]

 terminal nerve (tn) [5]

 vomeronasal nerve (von) [6]

optic nerve (IIIn) [7]

 accessory optic tract (aot) [8]

 brachium of the superior colliculus (bsc) [9]

 commissure of the superior colliculus (csc) [10]

 optic chiasm (och) [11]

 optic tract (opt) [12]

 tectothalamic pathway (ttp) [13]

oculomotor nerve (IIIIn) [14]

 medial longitudinal fascicle (mlf) [15]

 posterior commissure (pc) [16]

trochlear nerve (IVn) [17]

 decussation of the trochlear nerve (IVd)

abducens nerve (VIIn) [18]

trigeminal nerve (Vn) [19]

 motor root of the trigeminal nerve (moV) [20]

 sensory root of the trigeminal nerve (sV) [21]

 mesencephalic tract of the trigeminal nerve (mtV) [22]

 spinal tract of the trigeminal nerve (sptV) [23]

facial nerve (VII_n) [24]

intermediate nerve (iVII_n) [25]

genu of the facial nerve (gVII_n)

vestibulocochlear nerve (VIII_n) [26]

efferent cochleovestibular bundle (cvb) [27]

vestibular nerve (vVIII_n) [28]

cochlear nerve (cVIII_n) [29]

trapezoid body (tb) [30]

intermediate acoustic stria (ias) [31]

dorsal acoustic stria (das) [32]

lateral lemniscus (ll) [33]

commissure of the inferior colliculus (cic) [34]

brachium of the inferior colliculus (bic) [35]

glossopharyngeal nerve (IX_n) [36]

vagus nerve (X_n) [37]

solitary tract (ts) [38]

accessory spinal nerve (XI_n) [39]

hypoglossal nerve (XII_n) [40]

ventral roots (vrt) [41]

dorsal roots (drt) [42]

cervicothalamic tract (cett) [43]

dorsolateral fascicle (dl) [44]

ventral commissure of the spinal cord (vc) [45]

dorsal columns (dc) [46]

cuneate fascicle (cuf)

gracile fascicle (grf)

internal arcuate fibers (iaf) [47]

medial lemniscus (ml) [48]

spinothalamic tract (stt) [49]

lateral spinothalamic tract (sttl) [50]

ventral spinothalamic tract (sttv) [51]

spinocervical tract (scrt) [52]

spino-olivary pathway (sop) [53]

spinoreticular pathway (srp) [54]

spinovestibular pathway (svp) [55]

spinotectal pathway (stp) [56]

spinohypothalamic pathway (shp) [57]

spinoencephalic pathway (step) [58]

hypothalamohypophysial tract (hht) [59]

CEREBELLUM (CB)

cerebellar commissure (cbc) [60]

cerebellar peduncles (cbp) [61]

superior cerebellar peduncle (scp) [62]

decussation of the scp (dscp) [63]

uncinate fascicle (uf) [64]

ventral spinocerebellar tract (sctv) [65]

middle cerebellar peduncle (mcp) [66]

inferior cerebellar peduncle (icp) [67]

dorsal spinocerebellar tract (sctd) [68]

cuneocerebellar tract (cct) [69]

juxtarestiform body (jrb) [70]

bulbocerebellar tract (bct)

olivocerebellar tract (oct) [71]

reticulocerebellar tract (ret) [72]

trigemocerebellar tract (tct) [73]

arbor vitae (arb) [74]

LATERAL FOREBRAIN BUNDLE SYSTEM (lfbs) [75]

corpus callosum (cc) [76]

anterior forceps (fa)

external capsule (ec)

extreme capsule (ee)

genu (cgg)

posterior forceps (fp)

rostrum (ccr)

splenium (ccs)

corticospinal tract (cst) [77]

internal capsule (int) [78]

cerebral peduncle (cpd) [79]

thalamic peduncles (tp) [80]

corticotectal tract (cte) [81]

corticorubral tract (crt) [82]

corticopontine tract (cpt) [83]

corticobulbar tract (cbt) [84]

pyramidal decussation (pyd) [85]

pyramidal tract, crossed (py) [86]

pyramidal tract, uncrossed (cstu) [87]

EXTRAPYRAMIDAL FIBER SYSTEMS (eps)

basal ganglia-related

pallidothalamic pathway (pap) [88]

nigrostriatal tract (nst) [89]

nigrothalamic fibers (ntt) [90]

pallidotegmental fascicle (ptf) [91]

striatonigral pathway (snp) [92]

subthalamic fascicle (stf) [93]

tectospinal pathway (tsp) [94]

direct tectospinal pathway (tspd)

dorsal tegmental decussation (dtd)

crossed tectospinal pathway (tspc)

rubrospinal tract (rust) [95]

ventral tegmental decussation (vtd)

rubroreticular tract (rrt)

central tegmental bundle (ctb) [96]

reticulospinal tract (rst) [97]

reticulospinal tract , lateral part (rstl) [98]

reticulospinal tract, medial part (rstm) [99]

vestibulospinal pathway (vsp) [100]

MEDIAL FOREBRAIN BUNDLE SYSTEM (mfbs) [101]

amygdala-related

ansa peduncularis (apd) [102]

anterior commissure, temporal limb (act) [103]

stria terminalis (st) [104]

hippocampus-related

fornix system (fxs) [105]

alveus (alv) [106]

dorsal fornix (df) [107]

fimbria (fi) [108]

precommissural fornix (fxpr) [109]

diagonal band (db) [110]

postcommissural fornix (fxpo)

 medial corticohypothalamic tract (mct) **[111]**

 columns of the fornix (fx) **[112]**

hippocampal commissures (hc)

 dorsal hippocampal commissure (dhc) **[113]**

 angular bundle (ab) **[114]**

 ventral hippocampal commissure (vhc) **[115]**

 perforant path (per) **[116]**

cingulate gyrus-related

 cingulum bundle (cing) **[117]**

hypothalamus-related

 medial forebrain bundle (mfb) **[118]**

 supraoptic commissures (sup) **[119]**

 anterior (supa)

 dorsal (supd)

 ventral (supv)

 supramammillary decussation (smd) **[120]**

 periventricular bundle of the hypothalamus (pvbh) **[121]**

mammillary-related

 principal mammillary tract (pm) **[122]**

 mammillothalamic tract (mtt) **[123]**

 mammillotegmental tract (mtg) **[124]**

 mammillary peduncle (mp) **[125]**

thalamus-related

 periventricular bundle of the thalamus (pvbt) **[126]**

habenula-related

 stria medullaris (sm) **[127]**

fasciculus retroflexus (fr) [128]

habenular commissure (hbc) [129]

midbrain-related

dorsal longitudinal fascicle (dlf) [130]

dorsal tegmental tract (dtg) [131]

MISCELLANEOUS

dorsal commissure of the spinal cord (dcm)

external medullary lamina of the thalamus (em) [132]

fasciculus proprius (fpr)

filum terminale (ft) [133]

internal medullary lamina of the thalamus (im) [134]

middle commissure of the thalamus (mtc) [135]

Basic Fiber Systems of the Rat CNS (Footnote Annotations)

- 1 Switzer et al. 1985; Doucette 1991.
- 2 Gurdjian 1925.
- 3 Switzer et al. 1985.
- 4 Gurdjian 1925; Haberly and Price 1978b.
- 5 Bojsen-Møller 1975; Schwanzel-Fukuda et al. 1985; Demski and Schwanzel-Fukuda 1987.
- 6 Vaccarezza et al. 1981; Halpern 1987.
- 7 Crespo et al. 1985; Reese 1987a.
- 8 Hayhow et al. 1960; Terubayashi and Fujisawa 1984.
- 9 Optic tract fibers that continue on past the lateral geniculate complex.
- 10 Bucher and Nauta 1954; Jen and Au 1986.
- 11 Jeffery 1989.

- 12 Reese 1987b.
- 13 Taylor et al. 1986; Harting et al. 1991a.
- 14 Hebel and Stromberg 1986.
- 15 Rhines and Windle 1941.
- 16 Bucher and Nauta 1954.
- 17 Hebel and Stromberg 1986.
- 18 Hebel and Stromberg 1986.
- 19 Erzurumlu and Killackey 1983; Hebel and Stromberg 1986.
- 20 Jacquin et al. 1983.
- 21 Torvik 1956; Marfurt and Rajchert 1991.
- 22 Rokx et al. 1986a.
- 23 Torvik 1956; Marfurt and Rajchert 1991.
- 24 Martin et al. 1977; Hebel and Stromberg 1986.
- 25 Contreras et al. 1980; Hebel and Stromberg 1986.
- 26 Hebel and Stromberg 1986.
- 27 Strutz 1982; White and Warr 1983; Osen et al. 1984.
- 28 Mehler and Rubertone 1985.
- 29 Harrison and Feldman 1970; Webster 1985.
- 30 Zeman and Innes 1963; Harrison and Feldman 1970; Adams and Warr 1976.
- 31 Harrison and Feldman 1970.
- 32 Harrison and Feldman 1970.
- 33 Zeman and Innes 1963; Irvine 1986.
- 34 Fay-Lund and Osen 1985.
- 35 Zeman and Innes 1963.
- 36 Contreras et al. 1980; Hebel and Stromberg 1986; Furusawa et al. 1991.
- 37 Torvik 1956; Contreras et al. 1980; Hebel and Stromberg 1986; Altschuler et al. 1991.
- 38 Torvik 1956; Contreras et al. 1980.

- 39 Brichta et al. 1987.
- 40 Müntener et al. 1980.
- 41 Waibl 1973; Hebel and Stromberg 1986.
- 42 Waibl 1973; Hebel and Stromberg 1986; Neuhuber and Zenker 1989; Arvidsson and Pfaller 1990; Rivero-Melián and Grant 1990; Silverman and Kruger 1990; LaMotte et al. 1991.
- 43 Giesler et al. 1988.
- 44 Chung et al. 1987.
- 45 Waibl 1973.
- 46 See Cliffer and Giesler 1989.
- 47 Massopust et al. 1985.
- 48 Massopust et al. 1985.
- 49 Giesler et al. 1981; Burstein et al. 1990a.
- 50 Giesler et al. 1981.
- 51 Giesler et al. 1981.
- 52 Baker and Giesler 1984; Giesler et al. 1988.
- 53 Swenson and Castro 1983; Molinari and Starr 1989.
- 54 Nahin 1987.
- 55 Mehler and Rubertone 1985.
- 56 Yeziarski 1988; Lima and Coimbra 1989; Zhang et al. 1990; Yeziarski and Mendez 1991.
- 57 Burstein et al. 1987, 1990b.
- 58 Burstein et al 1987; Burstein and Giesler 1989.
- 59 Swanson 1987.
- 60 Voogd et al. 1985.
- 61 Voogd et al. 1985.
- 62 Voogd et al. 1985.

- 63 Caughell and Flummerfelt 1977.
- 64 Voogd et al. 1985.
- 65 Yamada et al. 1991.
- 66 Voogd et al. 1985.
- 67 Voogd et al. 1985.
- 68 Yamada et al. 1991.
- 69 Massopust et al. 1985.
- 70 Voogd et al. 1985.
- 71 Azizi and Woodward 1987.
- 72 Chan-Palay et al. 1977.
- 73 Huerta et al. 1983; Mantle-St. John and Tracey 1987.
- 74 Williams et al. 1989.
- 75 Gurdjian 1927.
- 76 Carpenter and Sutin 1983; Williams et al. 1989.
- 77 Carpenter and Sutin 1983; Williams et al. 1989.
- 78 Saper 1984. The internal capsule in the rat corresponds to the posterior limb of the internal capsule in humans.
- 79 Gurdjian 1927.
- 80 Gurdjian 1927.
- 81 Lund 1966; Harvey and Worthington 1990.
- 82 Brown 1974.
- 83 Mihailoff et al. 1985.
- 84 Zimmerman et al. 1964; Kuypers 1981; Wiesendanger 1981.
- 85 Zeman and Innes 1963.
- 86 Leenen et al. 1985; Kuang and Kalil 1990. In the rat, the crossed corticospinal tract travels through ventral parts of the dorsal funiculus.
- 87 Vahlsing and Ferringa 1980; Casale et al. 1988.

- 88 Carter and Fibiger 1978.
- 89 Fallon and Moore 1978; Björklund and Lindvall 1984.
- 90 Clavier et al. 1976.
- 91 Jackson and Crossman 1981; Yasui et al. 1990.
- 92 Nauta and Domesick 1979.
- 93 Ricardo 1980; Canteras et al. 1990.
- 94 Redgrave et al. 1987, 1990.
- 95 Waldron and Gwyn 1969.
- 96 Bebin 1956.
- 97 Carpenter and Sutin 1983; Williams et al. 1989.
- 98 Newman 1985a.
- 99 Newman 1985b.
- 100 Mehler and Rubertone 1985.
- 101 This “system” is meant to include the medial forebrain bundle as it is traditionally viewed (Gurdjian 1925; Nauta and Haymaker 1969; Nieuwenhuys et al. 1982), its extension through the brainstem into the spinal cord (e.g., Saper et al. 1976b; Swanson and McKellar 1979), and the major fiber tracts that feed into it.
- 102 Nauta and Haymaker 1969.
- 103 Horel and Stelzner 1981.
- 104 Gurdjian 1925; DeOlmos 1972.
- 105 Swanson et al. 1987.
- 106 Cajal 1909/1911.
- 107 Powell and Cowan 1955.
- 108 Wyss et al. 1980.
- 109 Swanson and Cowan 1977.

- 110 Craigie 1925; Crosby et al. 1962. The vertically-oriented fibers in the medial septal nucleus and vertical limb of the nucleus of the diagonal band are sometimes referred to as Zuckerkandel's bundle.
- 111 Gurdjian 1927; Canteras and Swanson 1992b.
- 112 Swanson and Cowan 1977.
- 113 Blackstad 1956.
- 114 Cajal 1909/1911.
- 115 Wyss et al. 1980.
- 116 Lorente de Nó 1934.
- 117 Krieg 1947; White 1959.
- 118 Gurdjian 1925, 1927; Nauta and Haymaker 1969; Nieuwenhuys et al. 1982.
- 119 Gurdjian 1927; Tsang 1940; Nauta and Haymaker 1969.
- 120 Gurdjian 1927; Nauta and Haymaker 1969.
- 121 Gurdjian 1927; Krieg 1932; Sutin 1966.
- 122 Gurdjian 1927; Fry and Cowan 1972.
- 123 Gurdjian 1927; Cruce 1975; Seki and Zyo 1984.
- 124 Allen and Hopkins 1990.
- 125 Gurdjian 1927; Cowan et al. 1964; Shibata 1987.
- 126 Gurdjian 1927; Krieg 1932.
- 127 Gurdjian 1925; Swanson and Cowan 1979.
- 128 Gurdjian 1925; Herkenham and Nauta 1979; Contestabile et al. 1987.
- 129 Gurdjian 1925.
- 130 Nauta and Haymaker 1969.
- 131 Lindvall and Björklund 1974.
- 132 Jones 1985.
- 133 Waibl 1973.
- 134 Krieg 1944.

135 Fibers crossing the midline of the thalamus, in the massa intermedia (Herrick 1915).