

Table C. Basic Fiber Systems of the Rat CNS [1]

CRANIAL & SPINAL NERVES (& RELATED)

terminal nerve (tn) [2]

olfactory nerve (In) [3]

vomeronasal nerve (von) [4]

 lateral olfactory tract (lot) [5]

 dorsal limb (lotd) [6]

 anterior commissure, olfactory limb (aco) [7]

optic nerve (IIIn) [8]

 accessory optic tract (aot) [9]

 brachium of the superior colliculus (bsc) [10]

 commissure of the superior colliculus (csc) [11]

 optic chiasm (och) [12]

 optic tract (opt) [13]

 tectothalamic pathway (ttp) [14]

oculomotor nerve (IIIIn) [15]

 medial longitudinal fascicle (mlf) [16]

 posterior commissure (pc) [17]

trochlear nerve (IVn) [18]

 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 (VIIIn) [24]
 intermediate nerve (iVIIIn) [25]
 genu of the facial nerve (gVIIIn)
vestibulocochlear nerve (VIIIIn) [26]
 efferent cochleovestibular bundle (cvb) [26]
 vestibular nerve (vVIIIIn) [28]
 cochlear nerve (cVIIIIn) [29]
 trapezoid body (tb) [30]
 intermediate acoustic stria (ias) [30]
 dorsal acoustic stria (das) [31]
 lateral lemniscus (ll) [32]
 commissure of the inferior colliculus (cic) [33]
 brachium of the inferior colliculus (bic) [34]
glossopharyngeal nerve (IXn) [35]
vagus nerve (Xn) [36]
 solitary tract (ts) [37]
accessory spinal nerve (XIIn) [38]
hypoglossal nerve (XIIIn) [39]
ventral roots (vrt) [40]

dorsal roots (drt) [41]

cervicothalamic tract (cett) [42]

dorsolateral fascicle (dl) [43]

ventral commissure of the spinal cord (vc) [44]

dorsal columns (dc) [45]

cuneate fascicle (cuf)

gracile fascicle (grf)

internal arcuate fibers (iaf) [46]

medial lemniscus (ml) [46]

spinothalamic tract (stt) [47]

lateral spinothalamic tract (sttl) [48]

ventral spinothalamic tract (sttv) [48]

spinocervical tract (scrt) [49]

spino-olivary pathway (sop) [50]

spinoreticular pathway (srp) [51]

spinovestibular pathway (svp) [52]

spinotectal pathway (stp) [53]

spinohypothalamic pathway (shp) [54]

spinoencephalic pathway (step) [55]

hypothalamohypophysial tract (hht) [56]

CEREBELLUM (CB)

cerebellar commissure (cbc) [57]

cerebellar peduncles (cbp) [57]

superior cerebellar peduncle (scp) [57]

decussation of the scp (dscp) [58]

uncinate fascicle (uf) [59]

ventral spinocerebellar tract (sctv) [60]

middle cerebellar peduncle (mcp) [60]

inferior cerebellar peduncle (icp) [61]

dorsal spinocerebellar tract (sctd) [62]

cuneocerebellar tract (cct) [63]

juxtarestiform body (jrb) [64]

bulbocerebellar tract (bct)

olivocerebellar tract (oct) [65]

reticulocerebellar tract (rct) [66]

trigemino-cerebellar tract (tct) [67]

arbor vitae (arb) [68]

LATERAL FOREBRAIN BUNDLE SYSTEM (lfbs) [69]

corpus callosum (cc) [70]

anterior forceps (fa)

external capsule (ec)

extreme capsule (ee)

genu (ccg)

posterior forceps (fp)

rostrum (ccr)

splenium (ccs)

corticospinal tract (cst) [70]

internal capsule (int) [71]

cerebral peduncle (cpd) [72]

thalamic peduncles (tp) [72]

corticotectal tract (cte) [73]

corticorubral tract (crt) [74]

corticopontine tract (cpt) [75]

corticobulbar tract (cbt) [76]

pyramidal decussation (pyd) [77]

pyramidal tract, crossed (py) [78]

pyramidal tract, uncrossed (cstu) [79]

EXTRAPYRAMIDAL FIBER SYSTEMS (eps)

basal nuclei-related

pallidothalamic pathway (pap) [80]

nigrostriatal tract (nst) [81]

nigrothalamic fibers (ntt) [82]

pallidotegmental fascicle (ptf) [83]

striatonigral pathway (snp) [84]

subthalamic fascicle (stf) [85]

tectospinal pathway (tsp) [86]

direct tectospinal pathway (tspd)

dorsal tegmental decussation (dtd)

crossed tectospinal pathway (tspc)

rubrospinal tract (rust) [87]

ventral tegmental decussation (vtd)

rubroreticular tract (rrt)

central tegmental bundle (ctb) [88]

reticulospinal tract (rst) [89]

reticulospinal tract , lateral part (rstl) [90]

reticulospinal tract, medial part (rstm) [91]

vestibulospinal pathway (vsp) [92]

MEDIAL FOREBRAIN BUNDLE SYSTEM (mfbs) [93]

amygdala-related

amygdalar capsule (amc) [94]

ansa peduncularis (apd) [95]

anterior commissure, temporal limb (act) [96]

stria terminalis (st) [97]

hippocampus-related

fornix system (fxs) [98]

alveus (alv) [99]

dorsal fornix (df) [100]

fimbria (fi) [101]

precommissural fornix (fxpr) [102]

diagonal band (db) [103]

postcommissural fornix (fxpo)

medial corticothalamohippocampal tract (mct) [104]

columns of the fornix (fx) **[105]**

hippocampal commissures (hc)

dorsal hippocampal commissure (dhc) **[106]**

angular bundle (ab) **[107]**

ventral hippocampal commissure (vhc) **[108]**

perforant path (per) **[109]**

cingulate gyrus-related

cingulum bundle (cing) **[110]**

hypothalamus-related

medial forebrain bundle (mfb) **[111]**

supraoptic commissures (sup) **[112]**

anterior (supa)

dorsal (supd)

ventral (supv)

supramammillary decussation (smd) **[113]**

periventricular bundle of the hypothalamus (pvbh) **[114]**

mammillary-related

principal mammillary tract (pm) **[115]**

mammillothalamic tract (mtt) **[116]**

mammillotegmental tract (mtg) **[117]**

mammillary peduncle (mp) **[118]**

dorsal thalamus-related

periventricular bundle of the thalamus (pvbt) **[119]**

epithalamus-related

stria medullaris (sm) [120]

fasciculus retroflexus (fr) [121]

habenular commissure (hbc) [122]

midbrain-related

dorsal longitudinal fascicle (dlf) [123]

dorsal tegmental tract (dt) [124]

MISCELLANEOUS

dorsal commissure of the spinal cord (dcm)

external medullary lamina of the thalamus (em) [125]

fasciculus proprius (fpr)

filum terminale (ft) [126]

internal medullary lamina of the thalamus (im) [127]

middle thalamic commissure (mtc) [128]

Table C Annotations

- 1 Fiber systems are difficult to see clearly in Nissl-stained material such as that used for the Atlas (although darkfield illumination helps considerably). For photomicrographs of fiber-stained sections illustrating most of the structures listed here see Kruger et al. 1995.
- 2 Bojsen-Møller 1975; Schwanzel-Fukuda et al. 1985; Demski and Schwanzel-Fukuda 1987.
- 3 Switzer et al. 1985; Doucette 1991.

- 4 Vaccarezza et al. 1981; Halpern 1987. It may be thought of as a specialization of the olfactory nerve from a specialized region of the olfactory epithelium, the vomeronasal organ. It ends in the accessory olfactory bulb, whose axons travel through a localized region of the lateral olfactory tract called the accessory olfactory tract (Scalia and Winans 1975).
- 5 Gurdjian 1925.
- 6 Switzer et al. 1985.
- 7 Gurdjian 1925; Haberly and Price 1978b.
- 8 Crespo et al. 1985; Reese 1987a.
- 9 Hayhow et al. 1960; Terubayashi and Fujisawa 1984.
- 10 Optic tract fibers that continue on past the lateral geniculate complex.
- 11 Bucher and Nauta 1954; Jen and Au 1986.
- 12 Jeffery 1989.
- 13 Reese 1987b.
- 14 Taylor et al. 1986; Harting et al. 1991a.
- 15 Hebel and Stromberg 1986.
- 16 Rhines and Windle 1941.
- 17 Bucher and Nauta 1954.
- 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 Zeman and Innes 1963; Irvine 1986.
- 33 Fay-Lund and Osen 1985.
- 34 Zeman and Innes 1963.
- 35 Contreras et al. 1980; Hebel and Stromberg 1986; Furusawa et al. 1991.
- 36 Torvik 1956; Contreras et al. 1980; Hebel and Stromberg 1986; Altschuler et al. 1991.
- 37 Torvik 1956; Contreras et al. 1980.
- 38 Brichta et al. 1987.
- 39 Müntener et al. 1980.
- 40 Waibl 1973; Hebel and Stromberg 1986.
- 41 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.
- 42 Giesler et al. 1988.
- 43 Chung et al. 1987.
- 44 Waibl 1973.
- 45 Cliffer and Giesler 1989.

- 46 Massopust et al. 1985.
- 47 Giesler et al. 1981; Burstein et al. 1990a.
- 48 Giesler et al. 1981.
- 49 Baker and Giesler 1984; Giesler et al. 1988.
- 50 Swenson and Castro 1983; Molinari and Starr 1989.
- 51 Nahin 1987.
- 52 Mehler and Rubertone 1985.
- 53 Yeziarski 1988; Lima and Coimbra 1989; Zhang et al. 1990; Yeziarski and Mendez 1991.
- 54 Burstein et al. 1987, 1990b.
- 55 Burstein et al 1987; Burstein and Giesler 1989.
- 56 Swanson 1987.
- 57 Voogd 1995; Voogd et al. 1996.
- 58 Caughell and Flummerfelt 1977.
- 59 Voogd 1995; Voogd et al. 1996.
- 60 Yamada et al. 1991.
- 61 Voogd 1995; Voogd et al. 1996.
- 62 Yamada et al. 1991.
- 63 Massopust et al. 1985.
- 64 Voogd 1995; Voogd et al. 1996.
- 65 Azizi and Woodward 1987.
- 66 Chan-Palay et al. 1977.
- 67 Huerta et al. 1983; Mantle-St. John and Tracey 1987.
- 68 Williams et al. 1989.

- 69 Gurdjian 1927.
- 70 Carpenter and Sutin 1983; Williams et al. 1989.
- 71 Saper 1984. The internal capsule in the rat corresponds to the posterior limb of the internal capsule in humans.
- 72 Gurdjian 1927.
- 73 Lund 1966; Harvey and Worthington 1990.
- 74 Brown 1974.
- 75 Mihailoff et al. 1985.
- 76 Zimmerman et al. 1964; Kuypers 1981; Wiesendanger 1981.
- 77 Zeman and Innes 1963.
- 78 Leenen et al. 1985; Kuang and Kalil 1990. In the rat, the crossed corticospinal tract travels through ventral parts of the dorsal funiculus.
- 79 Vahlsing and Ferringa 1980; Casale et al. 1988.
- 80 Carter and Fibiger 1978.
- 81 Fallon and Moore 1978; Björklund and Lindvall 1984.
- 82 Clavier et al. 1976.
- 83 Jackson and Crossman 1981; Yasui et al. 1990.
- 84 Nauta and Domesick 1979.
- 85 Ricardo 1980; Canteras et al. 1990.
- 86 Redgrave et al. 1987, 1990.
- 87 Waldron and Gwyn 1969.
- 88 Bebin 1956.
- 89 Carpenter and Sutin 1983; Williams et al. 1989.

- 90 Newman 1985a.
- 91 Newman 1985b.
- 92 Mehler and Rubertone 1985.
- 93 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.
- 94 This fiber tract is often confused with the external capsule, which forms the medial border of the amygdalar basolateral complex, in the rat; we have not found a name for it in the literature.
- 95 Nauta and Haymaker 1969.
- 96 Horel and Stelzner 1981.
- 97 Gurdjian 1925; DeOlmos 1972.
- 98 Swanson et al. 1987.
- 99 Cajal 1995.
- 100 Powell and Cowan 1955.
- 101 Wyss et al. 1980.
- 102 Swanson and Cowan 1977.
- 103 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.
- 104 Gurdjian 1927; Canteras and Swanson 1992b.
- 105 Swanson and Cowan 1977. They are often called the anterior columns of the fornix.
- 106 Blackstad 1956.

- 107 Cajal 1995.
- 108 Wyss et al. 1980.
- 109 Lorente de Nó 1934.
- 110 Krieg 1947; White 1959.
- 111 Gurdjian 1925, 1927; Nauta and Haymaker 1969; Nieuwenhuys et al. 1982.
- 112 Gurdjian 1927; Tsang 1940; Nauta and Haymaker 1969. It is probably more accurate on embryological and connectional grounds to refer to them as postoptic decussations.
- 113 Gurdjian 1927; Nauta and Haymaker 1969.
- 114 Gurdjian 1927; Krieg 1932; Sutin 1966.
- 115 Gurdjian 1927; Fry and Cowan 1972.
- 116 Gurdjian 1927; Cruce 1975; Seki and Zyo 1984.
- 117 Allen and Hopkins 1990.
- 118 Gurdjian 1927; Cowan et al. 1964; Shibata 1987.
- 119 Gurdjian 1927; Krieg 1932.
- 120 Gurdjian 1925; Swanson and Cowan 1979.
- 121 Gurdjian 1925; Herkenham and Nauta 1979; Contestabile et al. 1987.
- 122 Gurdjian 1925.
- 123 Nauta and Haymaker 1969.
- 124 Lindvall and Björklund 1974.
- 125 Jones 1985.
- 126 Waibl 1973.
- 127 Krieg 1944.
- 128 Fibers crossing the midline of the thalamus, in the massa intermedia (Herrick 1915).