References

Aadland J, Beatty WW, Maki RH (1985) Spatial memory of children and adults assessed in the radial maze. Develop Psychobiol 18:163–172

Abel LA, Levin S, Holzman PS (1992) Abnormalities of smooth pursuit and saccadic control in schizophrenia and affective disorders. Vision Res 32:1009–1014

Abernethy LJ, Palaniappan M, Cooke RW (2002) Quantitative magnetic resonance imaging of the brain in survivors of very low birth weight. Arch Disease Child 87:279–283

Altshuler LL, Conrad A, Kovelman JA, Scheibel A (1987) Hippocampal pyramidal cell orientation in schizophrenia. A controlled neurohistologic study of the Yakovlev collection. Arch Gen Psychiatry 44:1094–1098

Amaral DG, Lavenex P (2007) Hippocampal neuroanatomy. In: Per Andersen, Richard Morris, David Amaral, Tim Bliss, John O'Keefe (eds) The hippocampus book, pp 37–114

Amaral DG, Witter MP (1989) The three-dimensional organization of the hippocampal formation: a review of anatomical data. Neuroscience 31:571–591

Amaral DG, Insausti R, Cowan WM (1987) The entorhinal cortex of the monkey: I Cytoarchitectonic organization. J Comp Neurol 264:326–355

Amaral DG, Scharfman HE, Lavenex P (2007) The dentate gyrus: fundamental neuroanatomical organization (dentate gyrus for dummies). Prog Brain Res 163:3–22

Armstrong DD (1993) The neuropathology of temporal lobe epilepsy. J Neuropathol Exp Neurol 52:433–443

Arnold SE, Trojanowski JQ (1996) Human fetal hippocampal development: I. Cytoarchitecture, myeloarchitecture, and neuronal morphologic features. J Comp Neurol 367:274–292

Arnold SE, Hyman BT, Van Hoesen GW, Damasio AR (1991a) Some cytoarchitectural abnormalities of the entorhinal cortex in schizophrenia. Arch Gen Psychiatry 48:625–632

Arnold SE, Lee VM, Gur RE, Trojanowski JQ (1991b) Abnormal expression of two microtubule-associated proteins (MAP2 and MAP5) in specific subfields of the hippocampal formation in schizophrenia. PNAS 88:10850–10854

Arnold SE, Franz BR, Gur RC, Gur RE, Shapiro RM, Moberg PJ, Trojanowski JQ (1995) Smaller neuron size in schizophrenia in hippocampal subfields that mediate cortical-hippocampal interactions. Am J Psychiatry 152:738–748

Babb TL, Kupfer WR, Pretorius JK, Crandall PH, Levesque MF (1991) Synaptic reorganization by mossy fibers in human epileptic fascia dentata. Neuroscience 42:351–363

Bachevalier J (1990) Ontogenetic development of habit and memory formation in primates. Ann NY Acad Sci 608:457–477; discussion 477–484

Bachevalier J, Beauregard M (1993) Maturation of medial temporal lobe memory functions in rodents, monkeys and humans. Hippocampus 3 Spec No: 191–201

Bachevalier J, Mishkin M (1984) An early and a late developing system for learning and retention in infant monkeys. Behav Neurosci 98:770–778

Bachevalier J, Vargha-Khadem F (2005) The primate hippocampus: ontogeny, early insult and memory. Curr Opinion Neurobiol 15:168–174

Bachevalier J, Brickson M, Hagger C (1993) Limbic-dependent recognition memory in monkeys develops early in infancy. NeuroReport 4:77–80

Bailey PA, Bonin GV (1951) The isocortex of man. University of Illinois Press VI:1–301
Bailey A, Luthert P, Dean A, Harding B, Janota I, Montgomery M, Rutter M, Lantos P (1998) A clinicopathological study of autism. Brain 121(Pt 5):889–905
Baker LL, Barkovich AJ (1992) The large temporal horn: MR analysis in developmental brain anomalies versus hydrocephalus. Amer J Neurorad 13:115–122
Bauman M, Kemper TL (1985) Histoanatomic observations of the brain in early infantile autism. Neurology 35:866–874
Bayer SA, Altman J (2004) Atlas of human central nervous system development. Volume 2. The human brain during the third trimester. CRC Press, LLC USA
Bearden CE, van Erp TG, Dutton RA, Lee AD, Simon TJ, Cannon TD, Emanuel BS, McDonald-McGinn D, Zackai EH, Thompson PM (2008) Alterations in midline cortical thickness and gyrification patterns mapped in children with 22q11.2 deletions. Cereb Cortex 19:115–126
Benes FM (1989) Myelination of cortical-hippocampal relays during late adolescence. Schizo Bull 15:585–593
Benes FM (2000) Emerging principles of altered neural circuitry in schizophrenia. Brain Res Brain Res Rev 31:251–269
Benes FM, Berretta S (2000) Amygdalo-entorhinal inputs to the hippocampal formation in relation to schizophrenia. Ann NY Acad Sci 911:293–304
Benes FM, Sorensen I, Bird ED (1991) Reduced neuronal size in posterior hippocampus of schizophrenic patients. Schizoph Res 17:597–608
Benes FM, Kwok EW, Vincent SL, Todtenkopf MS (1998) A reduction of nonpyramidal cells in sector CA2 of shizophrenics and manic depressives. Biol Psychiatry 44:88–97
Bernasconi N, Bernasconi A, Caramanos Z, Andermann F, Dubeau F, Arnold DL (2000) Morphometric MRI analysis of the parahippocampal region in temporal lobe epilepsy. Ann NY Acad Sci 911:495–500
Blumberg HP, Kaufman J, Martin A, Whiteman R, Zhang JH, Gore JC, Charney DS, Krystal JH, Peterson BS (2003) Amygdala and hippocampal volumes in adolescents and adults with bipolar disorder. Arch Gen Psychiatry 60:1201–1208
Bobinski M, de Leon MJ, Wegiel J, Desanti S, Convit A, Saint Louis LA, Rusinek H, Wisniewski HM (2000) The histological validation of post mortem magnetic resonance imaging-determined hippocampal volume in Alzheimer's disease. Neuroscience 95:721–725
Bonilha L, Kobayashi E, Cendes F, Min Li L (2004) Protocol for volumetric segmentation of medial temporal structures using high-resolution 3-D magnetic resonance imaging. Human Brain Map 22:145–154
Braak H (1980) Architectonics of the human telencephalic cortex. Stud Brain Funct 4
Brisse H, Fallet C, Sebag G, Nessmann C, Blot P, Hassan M (1997) Supratentorial parenchyma in the developing fetal brain: in vitro MR study with histologic comparison. Amer J Neurorad 18:1491–1497
Brodmann (1909) Vergleichende Lokalisationslehre. Leipzig JA Barth. In: Charles R Noback, William Montagna (eds) The primate brain advances in primatology, vol 1
Cannon TD, Mednick SA, Parnas J, Schulsinger F, Praestholm J, Vestergaard A (1994) Developmental brain abnormalities in the offspring of schizophrenic mothers. II. Structural brain characteristics of schizophrenia and schizotypal personality disorder. Arch Gen Psychiatry 51:955–962
Cascio C, Styner M, Smith RG, Poe MD, Gerig G, Hazlett HC, Jomier M, Bammer R, Piven J (2006) Reduced relationship to cortical white matter volume revealed by tractography-based segmentation of the corpus callosum in young children with developmental delay. Am J Psychiatry 163:2157–2163
Christison GW, Casanova MF, Weinberger DR, Rawlings R, Kleinman JE (1989) A quantitative investigation of hippocampal pyramidal cell size, shape, and variability of orientation in schizophrenia. Arch Gen Psychiatr 46:1027–1032
Conrad AJ, Abebe T, Austin R, Forsythe S, Scheibel AB (1991) Hippocampal pyramidal cell disarray in schizophrenia as a bilateral phenomenon. Arch Gen Psychiatry 48:413–417

de la Monte SM, Hedley-Whyte ET (1990) Small cerebral hemispheres in adults with Down's syndrome: contributions of developmental arrest and lesions of Alzheimer's disease. J Neuropathol Exp Neurol 49:509–520

Debbane M, Glaser B, David MK, Feinstein C, Eliez S (2006a) Psychotic symptoms in children and adolescents with 22q11.2 deletion syndrome: Neuropsychological and behavioral implications. Schizoph Res 84:187–193

Debbane M, Schaer M, Farhoumand R, Glaser B, Eliez S (2006b) Hippocampal volume reduction in 22q11.2 deletion syndrome. Neuropsychologia 44:2360–2365

Deipolyi AR, Mukherjee P, Gill K, Henry RG, Partridge SC, Veeraraghavan S, Jin H, Lu Y, Miller SP, Ferriero DM, Vigneron DB, Barkovich AJ (2005) Comparing microstructural and macrostructural development of the cerebral cortex in premature newborns: diffusion tensor imaging versus cortical gyration. NeuroImage 27:579–586

Dowlatshahi D, MacQueen G, Wang JF, Chen B, Young LT (2000) Increased hippocampal supragranular Timm staining in subjects with bipolar disorder. NeuroReport 11:3775–3778

Du F, Whetsell WO Jr, Abou-Khalil B, Blumenkopf B, Lothman EW, Schwarcz R (1993) Preferential neuronal loss in layer III of the entorhinal cortex in patients with temporal lobe epilepsy. Epilepsy Res 16:223–233

Duffy CJ, Rakic P (1983) Differentiation of granule cell dendrites in the dentate gyrus of the rhesus monkey: a quantitative Golgi study. J Comp Neurol 214:224–237

Eriksson PS, Perfilieva E, Bjork-Eriksson T, Alborn AM, Nordborg C, Peterson DA, Gage FH (1998) Neurogenesis in the adult human hippocampus. Nat Med 4:1313–1317

Evans AC (2006) The NIH MRI study of normal brain development. NeuroImage 30:184–202

Falkai P, Bogerts B, Rozumek M (1988) Limbic pathology in schizophrenia: the entorhinal region–a morphometric study. Biol Psychiatry 24:515–521

Fatemi SH, Earle JA, McMenomy T (2000) Reduction in Reelin immunoreactivity in hippocampus of subjects with schizophrenia, bipolar disorder and major depression. Mol Psychiatry 5 (654–663):571

Fatemi SH, Earle JA, Stary JM, Lee S, Sedgewick J (2001) Altered levels of the synaptosomal associated protein SNAP-25 in hippocampus of subjects with mood disorders and schizophrenia. NeuroReport 12:3257–3262

Feinberg I (1982) Schizophrenia: caused by a fault in programmed synaptic elimination during adolescence? J Psych Res 17:319–334

Ferrer I, Gullotta F (1990) Down's syndrome and Alzheimer's disease: dendritic spine counts in the hippocampus. Acta Neuropathol 79:680–685

Filiminoff IN (1947) A rational subdivision of the cerebral cortex. In: Charles R Noback, William Montagna (eds) The primate brain advances in primatology, vol 1, pp 296–311

Forman MS, Squier W, Dobyns WB, Golden JA (2005) Genotypically defined lissencephalies show distinct pathologies. J Neuropathol Exp Neurol 64:847–857

Galaburda AM, Wang PP, Bellugi U, Rossen M (1994) Cytoarchitectonic anomalies in a genetically based disorder: Williams syndrome. NeuroReport 5:753–757

Gertz SD (1972) Structural variations in the rostral human hippocampus. Johns Hopkins Med J 130:367–376

Giedd JN, Snell JW, Lange N, Rajapakse JC, Casey BJ, Kozuch PL, Vaituzis AC, Vauss YC, Hamburger SD, Kaysen D, Rapoport JL (1996a) Quantitative magnetic resonance imaging of human brain development: ages 4–18. Cereb Cortex 6:551–560

Giedd JN, Vaituzis AC, Hamburger SD, Lange N, Rajapakse JC, Kaysen D, Vauss YC, Rapoport JL (1996b) Quantitative MRI of the temporal lobe, amygdala, and hippocampus in normal human development: ages 4–18 years. J Comp Neurol 366:223–230

Gogtay N (2008) Cortical brain development in schizophrenia: insights from neuroimaging studies in childhood-onset schizophrenia. Schizoph Res 34:30–36

Gogtay N, Giedd JN, Lusk L, Hayashi KM, Greenstein D, Vaituzis AC, Nugent TF 3rd, Herman DH, Clasen LS, Toga AW, Rapoport JL, Thompson PM (2004a) Dynamic mapping of human cortical development during childhood through early adulthood. PNAS 101:8174–8179

Gogtay N, Sporn A, Clasen LS, Nugent TF 3rd, Greenstein D, Nicolson R, Giedd JN, Lenane M, Gochman P, Evans A, Rapoport JL (2004b) Comparison of progressive cortical gray matter loss in childhood-onset schizophrenia with that in childhood-onset atypical psychoses. Arch Gen Psychiatry 61:17–22

Gogtay N, Nugent TF 3rd, Herman DH, Ordonez A, Greenstein D, Hayashi KM, Clasen L, Toga AW, Giedd JN, Rapoport JL, Thompson PM (2006) Dynamic mapping of normal human hippocampal development. Hippocampus 16:664–672

Gogtay N, Lu A, Leow AD, Klunder AD, Lee AD, Chavez A, Greenstein D, Giedd JN, Toga AW, Rapoport JL, Thompson PM (2008) Three-dimensional brain growth abnormalities in childhood-onset schizophrenia visualized by using tensor-based morphometry. PNAS 105: 15979–15984

Gonçalves-Pereira PM, Insausti R, Artacho-Perula E, Salmenpera T, Kalviainen R, Pitkanen A (2005) MR volumetric analysis of the piriform cortex and cortical amygdala in drug-refractory temporal lobe epilepsy. Amer J Neurorad 26:319–332

Graterón L, Insausti AM, García-Bragado F, Arroyo-Jiménez MM, Marcos P, Martínez-Marcos A, Blaizot X, Artacho-Pérula E, Insausti R (2002) Postnatal development of the human entorhinal cortex. In: Menno Witter, Floris Wouterlood (eds) The parahippocampal region, pp 21–31

Hanke J (1997) Sulcal pattern of the anterior parahippocampal gyrus in the human adult. Annals Anat 179:335–339

Haynes RL, Folkerth RD, Keefe RJ, Sung I, Swzeda LI, Rosenberg PA, Volpe JJ, Kinney HC (2003) Nitrosative and oxidative injury to premyelinating oligodendrocytes in periventricular leukomalacia. J Neuropathol Exp Neurol 62:441–450

Haynes RL, Borenstein NS, Desilva TM, Folkerth RD, Liu LG, Volpe JJ, Kinney HC (2005) Axonal development in the cerebral white matter of the human fetus and infant. J Comp Neurol 484:156–167

Heckers S, Heinsen H, Heinsen Y, Beckmann H (1990a) Morphometry of the parahippocampal gyrus in schizophrenics and controls. Some anatomical considerations. J Neural Transm Gen Sect 80:151–155

Heckers S, Heinsen H, Heinsen YC, Beckmann H (1990b) Limbic structures and lateral ventricle in schizophrenia. A quantitative postmortem study. Arch Gen Psychiatry 47:1016–1022

Heckers S, Heinsen H, Geiger B, Beckmann H (1991) Hippocampal neuron number in schizophrenia. A stereological study. Arch Gen Psychiatry 48:1002–1008

Hevner RF, Kinney HC (1996) Reciprocal entorhinal-hippocampal connections established by human fetal midgestation. J Comp Neurol 372:384–394

Houser CR (1990) Granule cell dispersion in the dentate gyrus of humans with temporal lobe epilepsy. Brain Res 535:195–204

Huttenlocher PR, Dabholkar AS (1997) Regional differences in synaptogenesis in human cerebral cortex. J Comp Neurol 387:167–178

Insausti R (1996) Alteraciones estructurales de la corteza entorrinal e hipocampo en la esquizofrenia. Evidencia o sospecha? Boletín SENC Sociedad Española de Neurociencia 5:17–19

Insausti R, Amaral DG (2004) Hippocampal formation. In: Paxinos and Mai (eds) The human nervous system, pp 871–906

Insausti R, Amaral DG (2008) Entorhinal cortex of the monkey: IV. Topographical and laminar organization of cortical afferents. J Comp Neurol 509:608–641

Insausti R, Muñoz M (2001) Cortical projections of the non-entorhinal hippocampal formation in the cynomolgus monkey (*Macaca fascicularis*). Eur J NeuroSci 14:435–451

Insausti R, Amaral DG, Cowan WM (1987) The entorhinal cortex of the monkey: III. Subcortical afferents. J Comp Neurol 264:396–408

Insausti R, Tunon T, Sobreviela T, Insausti AM, Gonzalo LM (1995) The human entorhinal cortex: a cytoarchitectonic analysis. J Comp Neurol 355:171–198

Insausti R, Insausti AM, Sobreviela MT, Salinas A, Martinez-Penuela JM (1998a) Human medial temporal lobe in aging: anatomical basis of memory preservation. Microsc Res Tech 43:8–15

Insausti R, Juottonen K, Soininen H, Insausti AM, Partanen K, Vainio P, Laakso MP, Pitkanen A (1998b) MR volumetric analysis of the human entorhinal, perirhinal, and temporopolar cortices. Amer J Neurorad 19:659–671

Insausti AM, Megias M, Crespo D, Cruz-Orive LM, Dierssen M, Vallina IF, Insausti R, Florez J (1998c) Hippocampal volume and neuronal number in Ts65Dn mice: a murine model of Down syndrome. Neurosci Lett 253:175–178

Jakob H, Beckmann H (1986) Prenatal developmental disturbances in the limbic allocortex in schizophrenics. J Neural Trans 65:303–326

Jakob H, Beckmann H (1994) Circumscribed malformation and nerve cell alterations in the entorhinal cortex of schizophrenics. Pathogenetic and clinical aspects. J Neural Trans Gen Sect 98:83–106

Judas M, Rados M, Jovanov-Milosevic N, Hrabac P, Stern-Padovan R, Kostovic I (2005) Structural, immunocytochemical, and MR imaging properties of periventricular crossroads of growing cortical pathways in preterm infants. Amer J Neurorad 26:2671–2684

Kappeler C, Dhenain M, Phan Dinh Tuy F, Saillour Y, Marty S, Fallet-Bianco C, Souville I, Souil E, Pinard JM, Meyer G, Encha-Razavi F, Volk A, Beldjord C, Chelly J, Francis F (2007) Magnetic resonance imaging and histological studies of corpus callosal and hippocampal abnormalities linked to doublecortin deficiency. J Comp Neurol 500:239–254

Khazipov R, Esclapez M, Caillard O, Bernard C, Khalilov I, Tyzio R, Hirsch J, Dzhala V, Berger B, Ben-Ari Y (2001) Early development of neuronal activity in the primate hippocampus in utero. J Neurosci 21:9770–9781

Klingler J (1948) Die makroskopische anatomi der Ammonsformation. Denkschr Schweiz Naturforch Ges 78:1–80

Kostovic I, Petanjek Z, Judas M (1993) Early areal differentiation of the human cerebral cortex: entorhinal area. Hippocampus 3:447–458

Kostovic I, Judas M, Rados M, Hrabac P (2002) Laminar organization of the human fetal cerebrum revealed by histochemical markers and magnetic resonance imaging. Cereb Cortex 12:536–544

Kovelman JA, Scheibel AB (1984) A neurohistological correlate of schizophrenia. Biol Psychiatry 19:1601–1621

Kraus C (1962) Changes in paraffin sections caused by the microtome and the resulting distortion (a contribution to the technical treatment of the brain). J Hirnforsch 5:23–38

Kroenke CD, Van Essen DC, Inder TE, Rees S, Bretthorst GL, Neil JJ (2007) Microstructural changes of the baboon cerebral cortex during gestational development reflected in magnetic resonance imaging diffusion anisotropy. J Neurosci 27:12506–12515

Lavenex P, Banta Lavenex P, Amaral DG (2007) Postnatal development of the primate hippocampal formation. Develop Neurosci 29:179–192

Lorente de Nó R (1934) Studies on the structure of the cerebral cortex II. Continuation of the study of the ammonic system. J Physiol Neurol 46:113–177

Mathern GW, Babb TL, Mischel PS, Vinters HV, Pretorius JK, Leite JP, Peacock WJ (1996) Childhood generalized and mesial temporal epilepsies demonstrate different amounts and patterns of hippocampal neuron loss and mossy fibre synaptic reorganization. Brain 119(Pt 3):965–987

Mohedano M, Martinez-Marcos A, Pro-Sistiaga P, Blaizot X, Arroyo-Jimenez MM, Marcos P, Artacho-Pérula E, Insausti R (2008) Convergence of unimodal and polymodal sensory input to the entorhinal cortex in the fascicularis monkey. Neuroscience 151:255–271

Montenegro MA, Kinay D, Cendes F, Bernasconi A, Bernasconi N, Coan AC, Li LM, Guerreiro MM, Guerreiro CA, Lopes-Cendes I, Andermann E, Dubeau F, Andermann F (2006) Patterns of hippocampal abnormalities in malformations of cortical development. J Neurol Neurosurg Psychiatry 77:367–371

Mouritzen-Dam A (1979) Shrinkage of the brain during histological procedures with fixition in formaldehhyde solutions of different concentrations. J Hirnforsch 20:115–119

Mouritzen-Dam A (1992) The possible pathological importance of dysgenesis, heterotopia and other cellular displacements in the brain. Epilepsy Res Suppl 9:61–65

Noulhiane M, Piolino P, Hasboun D, Clemenceau S, Baulac M, Samson S (2007) Autobiographical memory after temporal lobe resection: neuropsychological and MRI volumetric findings. Brain 130:3184–3199

Novak K, Czech T, Prayer D, Dietrich W, Serles W, Lehr S, Baumgartner C (2002) Individual variations in the sulcal anatomy of the basal temporal lobe and its relevance for epilepsy surgery: an anatomical study performed using magnetic resonance imaging. J Neurosurgery 96:464–473

Nugent TF 3rd, Herman DH, Ordonez A, Greenstein D, Hayashi KM, Lenane M, Clasen L, Jung D, Toga AW, Giedd JN, Rapoport JL, Thompson PM, Gogtay N (2007) Dynamic mapping of hippocampal development in childhood onset schizophrenia. Schizoph Res 90:62–70

Overman WH (1990) Performance on traditional matching to sample, non-matching to sample, and object discrimination tasks by 12- to 32-month-old children. A developmental progression. Ann NY Acad Sci 608:365–385; discussion 385–393

Overman W, Bachevalier J, Turner M, Peuster A (1992) Object recognition versus object discrimination: comparison between human infants and infant monkeys. Behav Neurosci 106:15–29

Pakkenberg B (1993) Total nerve cell number in neocortex in chronic schizophrenics and controls estimated using optical disectors. Biol Psychiatr 34:768–772

Pruessner JC, Li LM, Serles W, Pruessner M, Collins DL, Kabani N, Lupien S, Evans AC (2000) Volumetry of hippocampus and amygdala with high-resolution MRI and three-dimensional analysis software: minimizing the discrepancies between laboratories. Cereb Cortex 10:433–442

Pruessner JC, Kohler S, Crane J, Pruessner M, Lord C, Byrne A, Kabani N, Collins DL, Evans AC (2002) Volumetry of temporopolar, perirhinal, entorhinal and parahippocampal cortex from high-resolution MR images: considering the variability of the collateral sulcus. Cereb Cortex 12:1342–1353

Quester R, Schroder R (1997) The shrinkage of the human brain stem during formalin fixation and embedding in paraffin. J Neurosci Meth 75:81–89

Rados M, Judas M, Kostovic I (2006) In vitro MRI of brain development. Eur J Radiol 57:187–198

Rakic P, Nowakowski RS (1981) The time of origin of neurons in the hippocampal region of the rhesus monkey. J Comp Neurol 196:99–128

Rapoport JL, Giedd JN, Blumenthal J, HamburgerS JN, Fernandez T, Nicholson R, Bedwell J, Lenane M, Zijdenbos A, Paus T, Evans A (1999) Progressive cortical change during adolescence in childhood-onset schizophrenia. A longitudinal magnetic resonance imaging study. Arch Gen Psychiatry 56:649–654

Raymond GV, Bauman ML, Kemper TL (1996) Hippocampus in autism: a Golgi analysis. Acta Neuropathol 91:117–119

Raz N, Torres IJ, Briggs SD, Spencer WD, Thornton AE, Loken WJ, Gunning FM, McQuain JD, Driesen NR, Acker JD (1995) Selective neuroanatomic abnormalities in Down's syndrome and their cognitive correlates: evidence from MRI morphometry. Neurology 45:356–366

Rose M (1927) Der Allocortex bei Mensch und Tier. I und II. J F Psych u Neur 34:1–111

Rosene DL, Hoesen Van GW (1987) The hippocampal formation of the primate brain. A review of some comparative aspects of cytoarchitecture and connections. In: EG Jones and A Peters (eds) Cerebral Cortex, vol 6, pp 345–456

Rosoklija G, Toomayan G, Ellis SP, Keilp J, Mann JJ, Latov N, Hays AP, Dwork AJ (2000) Structural abnormalities of subicular dendrites in subjects with schizophrenia and mood disorders: preliminary findings. Arch Gen Psychiatry 57:349–356

Saitoh O, Karns CM, Courchesne E (2001) Development of the hippocampal formation from 2 to 42 years: MRI evidence of smaller area dentata in autism. Brain 124:1317–1324

Sato N, Hatakeyama S, Shimizu N, Hikima A, Aoki J, Endo K (2001) MR evaluation of the hippocampus in patients with congenital malformations of the brain. Amer J Neurorad 22:389–393

Schumann CM, Buonocore MH, Amaral DG (2001) Magnetic resonance imaging of the post-mortem autistic brain. J Autism Developm Dis 31:561–568

Schumann CM, Hamstra J, Goodlin-Jones BL, Kwon H, Reiss AL, Amaral DG (2007) Hippocampal size positively correlates with verbal IQ in male children. Hippocampus 17:486–493

Seress L (2001) Morphological changes of the human hippocampal formation from midgestation to early childhood. In: Nelson AA, Luciana M (eds) Handbook of developmental cognitive neuroscience. MIT Press, Cambridge, MA, pp 45–47

Seress L, Mrzljak L (1987) Basal dendrites of granule cells are normal features of the fetal and adult dentate gyrus of both monkey and human hippocampal formations. Brain Res 405:169–174

Seress L, Ribak CE (1995a) Postnatal development and synaptic connections of hilar mossy cells in the hippocampal dentate gyrus of rhesus monkeys. J Comp Neurol 355:93–110

Seress L, Ribak CE (1995b) Postnatal development of CA3 pyramidal neurons and their afferents in the Ammon's horn of rhesus monkeys. Hippocampus 5:217–231

Seress L, Abraham H, Tornoczky T, Kosztolanyi G (2001) Cell formation in the human hippocampal formation from mid-gestation to the late postnatal period. Neuroscience 105:831–843

Shaw P, Eckstrand K, Sharp W, Blumenthal J, Lerch JP, Greenstein D, Clasen L, Evans A, Giedd J, Rapoport JL (2007a) Attention-deficit/hyperactivity disorder is characterized by a delay in cortical maturation. PNAS 104:19649–19654

Shaw P, Greenstein D, Lerch J, Clasen L, Lenroot R, Gogtay N, Evans A, Rapoport J, Giedd J (2006) Intellectual ability and cortical development in children and adolescents. Nature 440:676–679

Shaw P, Lerch JP, Pruessner JC, Taylor KN, Rose AB, Greenstein D, Clasen L, Evans A, Rapoport JL, Giedd JN (2007b) Cortical morphology in children and adolescents with different apolipoprotein E gene polymorphisms: an observational study. Lancet Neurol 6:494–500

Shaw P, Kabani NJ, Lerch JP, Eckstrand K, Lenroot R, Gogtay N, Greenstein D, Clasen L, Evans A, Rapoport JL, Giedd JN, Wise SP (2008) Neurodevelopmental trajectories of the human cerebral cortex. J Neurosci 28:3586–3594

Sidman RL, Rakic P (1973) Neuronal migration, with special reference to developing human brain: a review. Brain Res 62:1–35

Skranes J, Vangberg TR, Kulseng S, Indredavik MS, Evensen KA, Martinussen M, Dale AM, Haraldseth O, Brubakk AM (2007) Clinical findings and white matter abnormalities seen on diffusion tensor imaging in adolescents with very low birth weight. Brain 130:654–666

Sloviter RS (1994) The functional organization of the hippocampal dentate gyrus and its relevance to the pathogenesis of temporal lobe epilepsy. Ann Neurol 35:640–654

Sowell ER, Thompson PM, Leonard CM, Welcome SE, Kan E, Toga AW (2004) Longitudinal mapping of cortical thickness and brain growth in normal children. J Neurosci 24:8223–8231

Squire LR, Stark CE, Clark RE (2004) The medial temporal lobe. Ann Rev Neurosci 27: 279–306

Stephan H, Andy OJ (1970) The allocortex in primates. In: Noback and Montana (eds) The primate brain, vol 1, pp 109–134

Tanzi RE (1996) Neuropathology in the Down's syndrome brain. Nat Med 2:31–32

Thompson PM, Vidal C, Giedd JN, Gochman P, Blumenthal J, Nicolson R, Toga AW, Rapoport JL (2001) Mapping adolescent brain change reveals dynamic wave of accelerated gray matter loss in very early-onset schizophrenia. PNAS 98:11650–11655

Trenerry MR, Jack CR Jr, Sharbrough FW, Cascino GD, Hirschorn KA, Marsh WR, Kelly PJ, Meyer FB (1993) Quantitative MRI hippocampal volumes: association with onset and duration of epilepsy, and febrile convulsions in temporal lobectomy patients. Epilepsy Res 15:247–252

Uecker A, Obrzut JE (1993) Hemisphere and gender differences in mental rotation. Brain Cogn 22:42–50

Van Essen DC (2004) Surface-based approaches to spatial localization and registration in primate cerebral cortex. NeuroImage 23(Suppl 1):S97–S107

Vargha-Khadem F, Isaacs E, Mishkin M (1994) Agnosia, alexia and a remarkable form of amnesia in an adolescent boy. Brain 117(Pt 4):683–703

Vargha-Khadem F, Gadian DG, Watkins KE, Connelly A, Van Paesschen W, Mishkin M (1997) Differential effects of early hippocampal pathology on episodic and semantic memory. Science 277:376–380

Weiss S (1991) Morphometry and magnetic resonance imaging of the human brain in normal controls and Down's syndrome. Anat Rec 231:593–598

West JR, Chen WJ, Pantazis NJ (1994) Fetal alcohol syndrome: the vulnerability of the developing brain and possible mechanisms of damage. Met Brain Dis 9:291–322

Witter MP, Amaral DG (2004) Hippocampal formation. In: George Paxinos (ed) The rat nervous system, pp 635–393

Witter MP, Groenewegen HJ, Lopes da Silva FH, Lohman AH (1989) Functional organization of the extrinsic and intrinsic circuitry of the parahippocampal region. Prog Neurobiol 33: 161–253

Subject Index

A
Adolescence, 74, 76, 77
Alveus, 41, 59
Amygdala, 16, 19, 61, 63, 65, 68, 72, 73, 77
Amygdalo-hippocampal transitional area (AHTA), 19
Amygdaloid complex, 9, 11, 15, 21, 23, 25, 66
Anterior-posterior commissure line (AC-PC), 5, 7
Apolipoprotein E, 74
Archicortex, 48
Association cortex, 72, 74, 77
Atrophy, 63, 69, 75
Attention-deficit/hyperactivity disorder (ADHD), 77
Autism, 2, 68

B
Band of Giacomini, 19, 27, 30, 32, 34
Bipolar disorder, 76–77
Brainstem, 10–12

C
CA1, 2, 16, 19, 26, 29, 41, 42, 45, 47, 48, 51, 59, 71, 75
CA2, 26, 40–42, 45, 48, 59, 77
CA3, 2, 16, 19, 24, 26, 30, 38–42, 45, 48, 59, 73
Childhood-onset schizophrenia (COS), 76
Choroidal fissure, 11, 19, 60, 65
Collateral sulcus, 9, 11, 16, 19, 64, 68
Cortical mantle, 10, 12, 13, 16, 18, 48
Cytoskeleton, 45, 76

D
Declarative memory, 2, 71
Delayed non-match to sample (DNMS), 71, 72
Dendrites, 30, 37, 38, 41, 42, 48
Dendritic tree, 37, 38
Dentate gyrus (DG), 1, 2, 16, 19, 24, 26–38, 41, 42, 45, 48, 59, 73, 75
Developmental amnesia, 63, 75
Developmental delay, 77–78
Diffusion anisotropy, 72, 73
Diffusion tensor imaging (DTI), 72, 78
Digitationes hippocampi, 16, 19, 21, 25, 65
Down syndrome, 2

E
Entorhinal cortex (EC), 1, 2, 7, 11, 15, 16, 18, 19, 21, 23–26, 45, 48, 51, 53, 55, 57, 59–61, 63, 65, 66, 68, 72, 74–77
Epilepsy, 1, 30, 75
Episodic memory, 75

F
Fasciola cinerea, 24, 30
Fimbria, 19, 24, 27, 30, 41
Fornix, 27, 41

G
Glial cells, 30, 37, 41
Granule cell layer, 16, 29, 30, 37, 38, 41, 59
Growth, 1, 10, 12, 13, 18, 24–26, 37, 41, 42, 45, 48, 65, 71–78
Gyri Andreae Retzii, 19
Gyrus ambiens, 11, 13, 19, 23, 24, 65, 66, 68
Gyrus fasciolaris, 24
Gyrus intralimbicus, 16, 19, 21, 24, 27, 63–66, 68
Gyrus semilunaris, 11, 15, 18, 24, 25, 64, 65, 68
Gyrus uncinatus, 11, 16, 19

H
Heterotopia, 76, 78
Hippocampal Formation (HF)
damage, 75
fissure, 16, 30, 41, 51, 65
growth, 72–74
volume, 73, 75, 77
Hippocampus
body of the, 16, 19, 21, 25–27, 65, 68, 73
head of the, 16, 19, 21, 24–26, 30, 32, 73
tail of the, 7, 19, 25–27, 30, 65, 68, 73
volume of the, 73, 75, 77
Human, 1, 2, 5, 11, 16, 24–26, 37, 48, 60, 61, 63, 71–73, 75–78
Hypoxia, 75

I
Induseum griseum, 24
Inferior temporal sulcus, 16
Insular cortex, 9
Intellectual quotient (IQ), 73
Intrarhinal sulcus, 9, 23, 67

L
Lamina dissecans, 50, 51, 60
Lamina principalis externa (Presubiculum), 50, 51
Lamina principalis interna (Presubiculum), 50, 51
Lateral geniculate nucleus (LGN), 7, 11, 12, 24, 63, 65, 68
Lateral ventricle, temporal horn, 7, 19, 41
Limen insulae, 7, 9, 15, 61, 62, 65, 68
Lissencephaly, 78

M
Magnetic resonance imaging (MRI), 6, 7, 11, 19, 24, 26, 61–68, 72–75, 78
Maturation, 1, 2, 30, 38, 42, 45, 60, 72, 74, 76–77
Medial temporal lobe (MTL), 7, 11, 13, 19, 25, 26, 61, 63, 65, 68, 71, 72
Medial temporal sclerosis, 75
Medial-to-lateral axis, 1
Memory, 1–3, 71–72, 75, 78
Microtubule-associated protein (MAP), 76
Middle temporal sulcus, 16
Molecular layer of DG, 16, 30, 41
Mossy fibers, 2, 38, 41, 42, 75, 77
Myelination, 72, 75

N
Neocortex, 1, 2, 24–26, 51, 73, 75, 78
Neurodevelopmental disorders, 2, 74
Neurogenesis, 2
Neuronal migration, 76, 78
Neurons, 30, 37, 38, 41, 42, 45, 48, 51, 55, 57, 59, 60, 71, 75, 76
Newborns, 5–7, 9–13, 15, 19, 24–26, 29, 30, 32, 37, 40, 41, 45, 47, 50, 53, 55, 57, 59, 61–66, 68
Nonhuman primate, 1, 2, 37, 41, 60, 71–72

O
Object recognition, 71

P
Paleocortex, 72
Parahippocampal gyrus, 12
Parahippocampal region (PHR), 9, 19, 24, 26, 61, 63
Parasubiculum, 1, 2, 26, 51–53, 59, 72
Perforant path, 2, 45
Periamygdaloid cortex (PAC), 11, 15, 16, 18
Periarchicortex, 51
Perirhinal cortex (PRC), 9, 16, 24, 61
Periventricular leukomalacia, 77, 78
Piriform cortex (PIR), 15
Polymorphic cell layer of DG, 38
Posterior parahippocampal cortex (PPH), 19, 24, 51, 59
Postnatal
cortical development, 74
development, 2, 24, 26, 37, 48, 51, 71–73
maturation, 38
Presubiculum, 1, 2, 26, 45, 48–51, 53, 72
Primate, 1, 2, 37, 41, 60, 71–72
Proliferation, 38
Pulvinar, 24, 65
Pyramidal cell layer, 32, 41, 45, 48

R
Reelin, 77
Rhinal sulcus, 11
Rostrocaudal axis, 1, 26

S
Schaffer collaterals, 2, 45
Schizophrenia, 2, 3, 76
Semantic memory, 75

Splenium of the corpus callosum, 24
Stillborns, 6, 7, 62
Stratum lacunosum-moleculare, 42, 71
Stratum lucidum, 2, 38, 41, 42
Stratum oriens, 41, 42, 59
Stratum pyramidale, 41, 42, 45, 59
Stratum radiatum, 41, 42, 45, 59, 71
Subgranular space of DG, 37, 59
Subiculum, 2, 16, 26, 45–48, 51, 59, 72, 73, 76, 77
Sulcus semiannularis, 11, 18, 24, 25, 64, 65, 68
Superior temporal gyrus, 9
Superior temporal sulcus, 16

T
TE (cortical area), 16, 72
Telencephalon, 10
Temporal lobe, 2, 6, 7, 9–13, 16, 18, 25, 26, 61, 63, 65, 68, 71, 72, 74, 75
Temporal pole, 7, 9, 11, 61, 74
Thorny excrecences, 38, 42

U
Uncus, 11, 12, 16, 19, 25, 26, 63, 65

V
Verrucae gyri hippocampi, 16

W
White matter, 16, 30, 41, 59, 75–78