##### Curriculum Vitae *June, 2022*

##### Pasko Rakic

##### Born: May 15 1933, Ruma, Former Yugoslavia, American citizen

##### Degrees: MD (1960); PhD (1969) University of Belgrade Medical School

#### **Present Position:** Professor of Neuroscience and Neurology, Yale University School of Medicine

**Research Interests**: Developmental Neurobiology; Cellular and Molecular Mechanisms of Neuronal Proliferation, Migration, Axonal Navigation and Synaptogenesis; Genetic and Epigenetic Regulation of Neuronal Interactions during Development in Spontaneous and Induced Mutations; Neuropathology of Congenital Disorders; Brain Evolution.

# Professional Experience:

Resident in Neurosurgery, University Hospital, Belgrade (1961-1962)

Clinical and Research Fellow in Neurosurgery, Harvard Medical School, Boston (1962-1966)

Assistant Professor of Dev. Biology and Genetics, Biological Institute, Belgrade (1967-1969)

Assistant Professor of Neuropathology, Harvard Medical School, Boston (1969-1972)

# Associate Professor of Neuropathology, Harvard Medical School (1972-1978

Professor and Chairman of Neurobiology, Yale University School of Medicine (1978-2015)

Director, Kavli Institute for Neuroscience, Yale University (2004-2015)

Dorys McConnell Duberg Chair in Neuroscience, Yale University (1978 -present)

**Honors (Selected)**:

Member, National Academy of Sciences, United States (1985); Member, American Academy of Arts and Sciences, 1994; Member, National Academy of Medicine, United States (1999); Selby Fellow, Australian Academy of Science (1983); President, Society for Neuroscience (1996). Foreign member: Croatian Academy of Arts and Sciences (1990); Foreign member, Serbian Academy of Arts and Sciences (1985); Foreign member, Norwegian Academy of Science and Letters (2008); Member, Academia Europea (2014); Foreign member, Royal Society London, United Kingdom (2016); Foreign member, National Royal Academy of Medicine, Spain (2018); Connecticut Medal of Science (2019); Sterling Fellow, Yale University (2020).

**Awards (Selected)**:

Inaugural (2008) Kavli Neuroscience Prize; Bristol-Myers Squibb Neuroscience Award, 2002; Gerard Prize, SFN, 2002; Pasarow Foundation Award, 2001; Marta Philipson Award, Stockholm 2000; Karl Spencer Lashley Award, Amer. Philosophical Society, 1986; Grass Foundation Award, 1985; Francois I Medal, College de France, 1986; Kreig Cortical Discoverer Award, 1989; F.O. Schmitt Medal, 1992; Fyssen International Science Prize, Paris, 1992; Weinstein-Goldenson Scientific Award (United Cerebral Palsy Foundation) 1994; Henry Gray Award, AAA, 1996; Javits Award, 1984-91, 1991-97; Krieg Lifetime Achievement Award shared with Paul Allen, 2010; Max Cowan Award, 2013; Sandy Palay Award, 2014; Child Mind Institute Award, NYC, 2014; Becker Award “Gesellschaft fur Neuropadiatrie” 2014; Cajal Diploma, Cajal Institute, Madrid, Spain, 2015; The Charles Branch Brain Health Award, 2018; Connecticut Medal of Science, 2019; MERIT Award NIDA, Bethesda MD, 2020

**Honorary degrees:** MS, Yale University; Doctor Honoris Causa, Albert Sent-Georgyi University, Szeged (Hungary); Doctor Honoris Causa Universitatis Studiorum Zagrebiensis (Croatia); Doctor Honoris Causa, University of Buenos Aires (Argentina).

**Eponymous Lectures**: Jenkins Memorial (Oxford, UK); Ariens Kappers (Royal Netherlands Academy); Gordon Holmes (London); Pickney Harmon (Cajal Club), Bernard Sacks (AAPN), Grass Foundtion (SFN); Yesup (Columbia Univ), Philip Bard (Johns Hopkins), Key Note Speaker (IBRO); Sally Harrington Goldwater; C.N.Woolsey (Madison); Ramon y Cajal lecture, Cajal Institute, Madrid; R.J. Terry (UWSL St. Louis); D.O. Hebb (Montreal); Cotzias (Am. Academy of Neurology); Mountcastle (Johns Hopkins); Talarich Lecture (Toronto); Hunt-Wilson (AANS); Special Presidential Lecture (SFN); Storer Lecture UC Davis; Key-note Speaker (Soc. Genetic Psychiatry); Sherington Cenntenial (Oxford, UK); Helmoltz (Utrecht); Key Note Speaker (Soc. Biological Psychiatry); James Arthur (Am. Museum of Natural History); Nobel Forum, Stockholm (Sweden); Pontifical Academy (Vatican, Italy); Key-note at Soc. Biological Psychiatry; Janelia Farm (HHMI); E.G. Jones Memorial, UC Davis; Zach Hall, USC, Los Angeles, CA; Kennedy (Vanderbilt); Key-note, Swedish Society of Human Genetics, Uppsala, Sweden; Laureate Lecture, Pittsburgh, PA; Key-note, British Genetic Society, London, UK; Darwin’s Centennial (Cambridge, UK); Royal Society, London. UK. History of Neuroscienece, SFN. Numerous additional plenary and eponymous lectures in 35 countries.

**Professional Societies**: American Association of Advancement of Science (Fellow); American Association of Anatomists; Association of Research in Vision and Ophthalmology, Cajal Club (President, 1992); International Brain Research Organization (IBRO); International Society for Developmental Neuroscience, International Society of Psychiatric Genetics, Neuroscience Research Program; Society for Neuroscience (President, 1996), American College of Neuropsychopharmacolgy (ACNP).

**Editorial Boards**: Advances in Neurology (1988-present); Brain Research (1977-present ); Exp.Brain.Res. (1977-2019); Glia (1988-2003); J. Cognitive Science (1988-2008); J. Comp. Neurology (1979-present); J. Neurocytology (l975-98); J. Neuroscience (1981-1990 and 1999-2004); Neuroscience (1973-present ); Neuroscience Research (1996-2001); Network Neuroscience, Advisory Board (2018-present); Cerebral Cortex, Co-founder and Editor-in-Chief (1991-present).

**Advisory Activities:** *Board Member:* Kuratorium, Max-Planck Institute, Germany, 1982-1996; Councilor, Society for Neuroscience, l980-1984; United Nations Commission on Radiological Protection (ICRP), 1983; U.S. National Committee for IBRO, 1982-1988, Chairman, 1988-1992; British Neurological Research Trust, 1988-1993; Board of Trustees, Neuroscience Institute, Rockefeller University (1988-1991); Frontier Research Program, RIKEN, Tokyo, Japan, 1992-1995; External Evaluation Committee, Max-Delbruck Center for Molecular Medicine, Berlin, Chairman, 1998; Advisory Board, National Alliance for Autism Research, 1994-19 ; March of Dimes Basil O’Connor Award Committee, 1994-1999; AAAS Biological Sciences Committee, 1997-2000; Hyseq Inc., Sunnyvale, 1988-2001; Wright Foundation, Geneva, Paterson Medical Foundation, 2006-; 1996-99; Board, Mutagenesis Center, Jackson Laboratory Bar Harbor, 1999-2004; National Institute of Biological Sciences, Bejing, China. 2007-2010; Wolfson Neurology Initiative, 2011; Allan Institute for Brain Science, Seattle, WA 2013-2015; Croatian Brain Institute, 1995-present; Research Council, Brain and Behavior Research Foundation, 2006-present.

***NIH Study Sections****:* Neurology A, l978-1982; Visual Sciences B, 1984-1988; NIH Special Foreign Currency Grants, l972-1978; Special Consultant NIH Program Project Review Section, l977; Advisor to NIDA, Grant Review Panel, l975-1977; Technical Review Panel on Neuroscience, NIDA-ADAMHA, l979; NIMH Panel on Neural Development, 1993; NIH/SCR/DBD, 2014.

***Consultant for****:* National Science Foundation; Atomic Energy Control Board (Canada); Canadian Medical Research Council; The March of Dimes Foundation; J.S. Guggenheim Memorial Foundation; Huntington Chorea Foundation; Human Frontier Foundation; Brain & Behavior Research Foundation-NARSAD; Allen Institute for Brain Science, Seattle WA

**Grants**: Principal Investigator: Regeneration of the CNS (1974-1977); Neuropathology of Congenital Disorders; Human Frontier Research Grant (1990-1993); Director, Javits Center of Excellence in Neuroscience (1985-1990); Program Project on Developmental Neurobiology of Neocortex (1982-2003); Stress Activated Protein Kinase in Neuronal Apoptosis (1999-2009); Notch Signaling in the Brain (2001-2011); Neurogenetic Processes in Fetal Brain (1970-2016); Prenatal Development of the Visual System (1977-2019); Origin of Species-specific Cortical Distinctions (2008-present).

**Organizer of international symposia:** Local Circuit Neurons (1975); Development and Modifiability of the Neocortex (1981); Determinants of Neuronal Connections (1983); Principles of Neuronal Migration (1984); Brain Beyond Genes (1986); Developmental Determinants of Pattern Formation (1987); Dahlem Conference on Neurobiology of Neocortex (1987); Functions of Glia (1989); Specification of Cerebral Cortex (1991); Domains of Vision (1996); Genetic Factors Controlling Forebrain Development (2000); Prefrontal Cortex, Working Memory, Flexible Behavior', in memoriam of Patricia S. Goldman-Rakic (2006); FENS-Development and Plasticity of Cortical Representation **(2011).**

**Teaching Experience:** Core Neuroscience Course, Harvard (l970-1977); Development of the CNS, Harvard (l970-1977); Advanced Human Neuroscience, Harvard (1970-1977); Neuroscience Course, Stanford (l976); Principles of Development, Belgrade Univ. (l971-1973). Principles of Neurobiology (Cold Spring Harbor, 1977); Development of the Nervous System (Cold Spring Harbor, 1978-1986); Molecular Neurobiology of Human Diseases (Cold Spring Harbor, 1988, 1989); Neurobiology (MBL, Woods Hole, 1978); Advanced Study Institute Summer Schools, Crete (Greece, l978, 1997), Varenna (Italy, l98l, 1991), Porto (Portugal, l982); International School of Biophysics, Erice (Italy, 1985), Trieste (Italy, 1986, 1988, 1990, 2001); Neurobiology (MBL, Woods Hole, 1984-1994); IBRO Summer School, Zadar (Croatia, 2005); Development of the CNS, Yale (l979-1994); Basic Neurosciences, Yale (1985,1987); Director of the Neuroscience Core Curriculum Course, Yale (l978- 2010); Mentor for Ph.D. Neurobiology and Neuroscience students at Harvard and Yale Universities.

**Graduate Students (GS) and Postdoctoral Fellows (PF) selected from over 50, eight of which became Chairs of Departments or Directors of Institutes:**

Richard Nowakowski, GS, Professor & Chairman, Dept. Neurobiology. UF Tallahassee, Fl

Carla Shatz, PF, Professor and Director Bio-X Stanford University, Palo Alto, CA

Ivica Kostovic, PF, Director, Croatian Brain Institute, University of Zagreb, Croatia

Pat Levitt, PF, Professor, University of Southern California, Los Angeles, CA

Anthony LaMantia, GS, Professor & Chairman Neuroscience Inst., GWU, Washington, DC

Nada Zecevic, GS, Professor, University of Connecticut, Farmington, CT

Jean-Pierre Bourgeois, PF, Researcher CNRS, Pasteur Institute, Paris, France

Rodrigo Kuljis, PF, Professor and Chair of Neurology, University of Miami, Miami, FL

Robert Williams, PF, Chair, Computational Genomics, UT-Oak Ridge National Laboratory

Douglas Meinecke, PF, Chief, Developmental Neuroscience Program, NIMH, Bethesda, MD

Hitoshi Komuro, PF, Associate Professor, Cleveland Clinic Foundation, Cleveland, OH

Eva Anton, PF, Professor, University of North Carolina Chapel Hill, NC

Chia-Yi (Alex) Kuan, GS; PF, Professor, University of Virginia, Charlottesville, VA

Tarik Hydar, PF, Professor, Boston University, Boston, MA

Nenad Sestan, GS: PF, Professor, Yale University, New Haven, CT

Skirmantas Janusonis, PF, Associate Professor, UC Santa Barbara, CA

Matthew Sarkisian, PF, Associate Professor, University of Florida, Gainesville, FL

Alvaro Duque PF, Research Scientist, Yale University, New Haven, CT

Jon Arellano, PF, Research Scientist, Yale University, New Haven, CT

Hong Li, PF, Research Scientist, Yale University, New Haven, CT

Anita Huttner, GS, Associate Professor of Pathology, Yale New Haven Hospital, CT

Yury Morozov, PF, Research Scientist, Yale University, New Haven, CT

Masaaki Torri, PF, Associate Professor, George Washington University, Washington, DC

Joshua Breunig, GS, PF, Associate Professor, Cedars-Sinai MC, Los Angeles, CA

Kazue Hashimoto-Torri, PF, Associate Professor GWU, Washington, DC

**SCIENTIFIC PUBLICATIONS**  ***(listed chronologically)*:**

Divac I, Rakic P, Mihailovic L. l965 Inhibition and caudate nucleus. *Yugoslav Physiol. Pharmacol. Acta* l: 79-86

Hamlin H, Rakic P, Yakovlev PI. l965 Stereotactic imprecision. *Confin. Neurol*. 26: 426-436

Riechert T, Story JL, French LA, et al., 1965 Some refinements of stereotaxic therapy for dyskinesias and results of clinical evaluation. *Stereotactic and Functional Neurosurgery* 26: 272-281

Rakic P. l965 Mesocoelic recess in the human brain. *Neurol*. l5: 708-7l57

Rakic P. l968 Studies on the proliferation, migration, and differentiation of neuroblasts during neurohistogenesis in mammals, particularly man. Thesis for Sc.D. degree (in Serbo-Croatian), Belgrade, l9l pages

Rakic P, Yakovlev PI. l968 Development of the corpus callosum and cavum septi in man. *J. Comp. Neurol.* l32: 45-72

Rakic P, Sidman RL.1968 Supravital DNA synthesis in the developing human and mouse brain. *J. Neuropath.* *Exp. Neurol.* 27: 246-276

Rakic P, Sidman RL. l968 Subcommissural organ and adjacent ependyma: autoradiographic study of their origin in the mouse brain. *Am. J. Anat*. l22: 3l7-335

Rakic P, Sidman, RL. l969 Telencephalic origin of pulvinar neurons in the fetal human brain. *Z. Anat. Entwickl.-Gesch.* l29: 53-82

Rakic P, Sidman RL. l970 Histogenesis of cortical layers in human cerebellum, particularly the lamina dissecans. *J. Comp. Neurol.* l39: 473-500

Rakic P. l97l Neuron-glia relationship during granule cell migration in developing cerebellar cortex. A Golgi and electronmicroscopic study in Macacus rhesus. *J. Comp. Neurol*. l4l: 283-3l2

Rakic P. l97l Guidance of neurons migrating to the fetal monkey neocortex. *Brain Res.* 33:47l-476

Rakic P. l972 Mode of cell migration to the superficial layers of fetal monkey neocortex. *J. Comp. Neurol.* l45: 6l-84

Rakic P. l972 Extrinsic cytological determinants of basket and stellate cell dendritic pattern in cerebellar molecular layer. *J. Comp. Neurol.* l46: 335-354

Rakic P, Sidman RL. l973 Weaver mutant mouse cerebellum; defective neuronal migration secondary to specific abnormality of Bergmann glia. *Proc*. *Natl. Acad. Sci. (USA)* 70: 240-244

Rakic P. l973 Kinetics of proliferation and latency between final cell division and onset of differentiation of cerebellar stellate and basket neurons. *J. Comp. Neurol.* l47: 523-546

Sidman RL, Rakic P. l973 Neuronal migration with special reference to developing human brain: a review. *Brain Res.* 62: l-35

Rakic P, Sidman, RL. l973 Sequence of developmental abnormalities leading to granule cell deficit in cerebellar cortex of weaver mutant mice. *J. Comp. Neurol.* l52: l03-l32

Rakic P, Sidman RL. l973 Organization of cerebellar cortex secondary to deficit of granular cells in weaver mutant mice. *J. Comp. Neurol*. l52: l33-l62

Cooper IS, Riklan M, Rakic P. eds. 1974 The Pulvinar LP- Complex. Charles C. Thomas, Springfield, 290 pages.

Rakic P. l974 Embryonic development of the LP-pulvinar complex in man. In: The Pulvinar LP- Complex*.* (Cooper IS, Riklan M, Rakic P. eds.) Charles C. Thomas, Springfield, pp. 3-25

Nowakowski RS, Rakic P. l974 Clearance rate of exogenous 3H-thymidine from the plasma of pregnant rhesus monkeys. *Cell and Tissue Kinetics* 7: l89-l94

Rakic P. l974 Neurons in the monkey visual cortex: Systematic relation between time of origin and eventual disposition. *Science* l83: 425-427

Rakic P, Stensaas LJ, Sayre EP, Sidman RL. l974 Computer-aided three-dimensional reconstruction and quantitative analysis of cells from serial electronmicroscopic montages of fetal monkey brain. *Nature* 250: 3l-34

Rakic P. l974 Intrinsic and extrinsic factors influencing the shape of neurons and their assembly into neuronal circuits. In: Frontiers in Neurology and Neuroscience Research. (Seeman P. Brown GM. eds.) Toronto Univ. Press, pp. ll2-l32

Sidman RL, Rakic P. l974 Neuronal migrations in human brain development. In: Pre- and Post-Natal Development of the Human Brain*.* (Berenberg S, Caniaris M, Masse NP. eds.) *Modern Problems in Pediatrics* l3: l3-43

Rakic P. l975 Timing of major ontogenetic events in the visual cortex of the rhesus monkey. In: *Brain Mechanisms in Mental Retardation.* (Buchwald NA, Brazier M. eds.) Academic Press, New York, pp. 3-40

Rakic P. 1975 Local circuit neurons. *Neuroscience Research Program Bulletin* 13: 1-399. Published as a book in 1976 by MIT Press, Cambridge, l6l pages

Nowakowski RS, LaVail JH, Rakic P. l975 The correlation of the time of origin of neurons with their axonal projection: The combined use of 3H-thymidine autoradiography and horseradish peroxidase histochemistry. *Brain Res.* 99: 363-368

Rakic P. l975 Role of cell interaction in development of dendritic patterns. In: Physiology and Pathology of Dendrites. (Kreutzberg G. ed.) Raven Press, New York, Advances in Neurology l2: ll7-l34

Rakic P. l975 Cell migration and neuronal ectopias in the brain. In: Morphogenesis and Malformation of the Brain and Face*.* (Bergsma D. ed.) Birth Defects: Original Series. Vol. 9. Liss, New York, pp. 95-l29

Rakic P. l975 Effects of local cellular environments on the differentiation of local circuit neurons. *Neuroscience Research Program Bulletin*. l3: 400-407

Rakic P. l976 Synaptic specificity in the cerebellar cortex: Study of anomalous circuits induced by a single gene mutation in mice. In: The Synapse. *Cold Spring Harbor Symposia on Quantitative Biology* 40: 333-346

Zecevic N, Rakic P. l976 Differentiation of Purkinje cells and their relationship to other components of developing cerebellar cortex in man. *J. Comp. Neurol.* l67: 27-48

Rakic P. l976 Prenatal genesis of connections subserving ocular dominance in the rhesus monkey. *Nature* 26l: 467-47l

Rakic P. l976 Differences in the time of origin and in eventual distribution of neurons in areas l7 and l8 of the visual cortex in the rhesus monkey. *Exp*. *Brain Res.* Suppl. l: 244-248

Divac I, LaVail JH, Rakic P, Winston K. l977 Heterogeneous afferents to the inferior parietal lobule of the rhesus monkey revealed by retrograde transport method. *Brain Res*. l23: l97-207

Rakic P. l977 Genesis of the dorsal lateral geniculate nucleus in the rhesus monkey: site and time of origin, kinetics of proliferation, routes of migration and pattern of distribution of neurons. *J. Comp. Neurol*. l76: 23-52

Rakic P. l977 Prenatal development of the visual system in the rhesus monkey. *Phil. Trans. Roy. Soc. Lond. B*. 278: 245-260

Rakic P. l978 Neuronal migration and contact guidance in primate telencephalon. *Postgraduate Medical Journal* 54: 25-40

Caviness VS, Jr, Rakic P. l978 Mechanisms of cortical development: a view from mutations in mice. *Ann. Rev. Neurosci*. l: 297-326.

Lenn JN, Halfon N, Rakic P. l978 Development of the interpeduncular nucleus in the midbrain of rhesus monkey and human. *Anat. Embryol*. l52: 273-289

Knyihar E, Csillik B, Rakic P. l978 Transient synaptic contacts in the embryonic primate spinal cord. *Science* 202: l206-l209

Goldman PS, Rakic P. l979 Impact of the outside world upon the developing primate brain. Perspective from neurobiology. *Bulletin of the Menninger Foundation* 43: 20-28

Brand S, Rakic P. l979 Genesis of the primate neostriatum: 3H-thymidine autoradiographic analysis of the time of neuron origin in the rhesus monkey. *Neuroscience* 4: 767-778

Schmechel DE, Rakic P. l979 A Golgi study of radial glial cells in developing monkey telencephalon. *Anat. Embryol*. l56: ll5-l52

Rakic P. l979 Genesis of visual connections in the rhesus monkey. In: Developmental Neurobiology of Vision. (Freeman R. ed.) Plenum, New York, pp. 249-260

Nowakowski RS, Rakic P. l979 Mode of migration of neurons to the hippocampus: A Golgi and electron microscopic analysis in fetal rhesus monkey. *J. Neurocytol*. 8: 697-7l8

Rakic P. l980 Genetic and epigenetic determinants of local neuronal circuits in the mammalian central nervous system. In: Neurosciences Fourth Study Program (Schmitt FO, Worden FG. eds.) MIT Press Cambridge, MA pp. l09-l27

Schmechel DE, Rakic, P l979 Arrested proliferation of radial glial cells during midgestation in rhesus monkey. *Nature* 227: 303-305

Levitt P, Rakic P. l980 Immunoperoxidase localization of glial fibrillary acid protein in radial glial cells and astrocytes of the developing rhesus monkey brain. *J. Comp. Neurol*. l93: 8l5-840

Kostovic I, Rakic P. l980 Cytology and time of origin of interstitial neurons in the white matter in infant and adult human and monkey telencephalon. *J. Neurocytol*. 9: 2l9-242

Brand S, Rakic P. l980 Neurogenesis of the nucleus accumbens septi and neighboring septal nuclei in the rhesus monkey: a combined 3H-thymidine and electron microscopic study. *Neurosci.* 5: 2l25-2l38

Rakic P. l98l Developmental events leading to laminar and areal organization of the neocortex. In: The Organization of Cerebral Cortex (Schmitt FO, Worden FG, Adelman G, Dennis SG. eds.) MIT Press, Cambridge, pp. 7-28

Rakic P, Nowakowski RS. l98l Time of origin of neurons in the hippocampal region of the rhesus monkey. *J. Comp. Neurol*. l96: 99-l24

Nowakowski RS, Rakic P. l98l Site of origin and route of migration in the hippocampal region of the rhesus monkey. *J. Comp. Neurol*. l96: l25-l54

Cooper J, Rakic P. l98l Neurogenetic gradients in the superior and inferior colliculi of the rhesus monkey. *J. Comp. Neurol*. 202: 309-334

Shatz CJ, Rakic P. l98l The genesis of efferent connections from the visual cortex of the fetal rhesus monkey. *J. Comp. Neurol*. l96: 287-307

Rakic P. l98l Development of visual centers in the primate brain depends on binocular competition before birth. *Science* 2l4: 928-93l

Levitt P, Cooper ML, Rakic P. l98l Coexistence of neuronal and glial precursor cells in the cerebral ventricular zone of the fetal monkey: An ultrastructural immunoperoxidase analysis. *J. Neurosci*. l: 27-39

Rakic P. l98l Neuron-glial interaction during brain development. *Trends in Neuroscience* 4: l84-l87

Gould BB, Rakic P. l98l The total number, time of origin and kinetics of proliferation of neurons comprising the deep cerebellar nuclei in the rhesus monkey. *Exp. Brain Res*. 44: l95-206

Ogren MP, Rakic P. l98l The prenatal development of the pulvinar in the monkey: 3H-thymidine autoradiographic and morphometric analyses. *Anat. Embryol*. l62: 1-20

Rakic P. l982 The role of neuronal-glial interaction during brain development. In: Neuronal-glial Cell Interrelationships*.* (Sears TA. ed.) Dahlem Konferenzen, Springer, Berlin, pp. 25-38

Levitt P, Rakic P. l982 The time of genesis, embryonic origin and differentiation of the brainstem monoamine neurons in the rhesus monkey. *Dev. Brain Res*. 4: 35-57

Rakic P, Goldman-Rakic PS. l982 Development and Modifiability of the Cerebral Cortex. (Edited volume for MIT Press, Cambridge, MA). *Neurosciences Res. Prog. Bull.* 20: 429-6ll

Csillik B, Knyihar E, Rakic P. l982 Transganglionic degenerative proliferation in the Rolando substance of the primate spinal cord: discoupling and restoration of synaptic connectivity in the central nervous system after peripheral nerve lesions. *Folia Morphologica (Csr)* 30: l89-l94

Strichartz GR, Aguayo AJ, Cowan WM, Distel H, Lim L, McKhann GM, Mugnaini E, Rakic P, Rickmann MJ, Spitzer NC, Webster H deF. 1982 Ontogeny. State of the art report. In: Neuron-glial Cell Interrelationships. (Sears TA, ed.) Springer, Berlin, pp. 93-114

Sidman RL, Rakic P. l982 Development of the human central nervous system. In: Histology and Histopathology of the Nervous System. (Haymaker W, Adams RD. eds.) CC. Thomas, Sprinfield, IL pp. 3-l45 wtyler@bu.edu

Knyihar-Csillik E, Csillik B, Rakic P. l982 Ultrastructure of normal and degenerating glomerular terminals of dorsal root axons in the substantia gelatinosa of the rhesus monkey. *J. Comp. Neurol*. 2l0: 357-375

Knyihar-Csillik E, Csillik B, Rakic, P. l982 Preterminal synaptology of dorsal root glomerular terminals in the substantia gelatinosa of the spinal cord in the rhesus monkey. *J. Comp. Neurol*. 2l0: 376-399

Rakic P. 1982 La migration neurale. In: Naissance du Cerveau. Compte Rendi- Monaco 4. Corps Medical Imp. Lafayette, pp. 13-18

Rakic P. l982 Early developmental events: cell lineages, acquisitions of neuronal positions, and areal and laminar development. *Neurosciences Res. Prog. Bull*. 20: 439-45l

Duffy CJ, Rakic P. l983 Differentiation of granule cells in the dentate gyrus of the rhesus monkey: a quantitative Golgi study. *J. Comp. Neurol*. 214: 224-337

Levitt P, Cooper ML, Rakic P. l983 Early divergence and changing proportions of neuronal and glial precursor cells in the primate cerebral ventricular zone. *Dev. Biology* 96: 472-484

Rakic P, Riley KP. l983 Overproduction and elimination of retinal axons in the fetal rhesus monkey. *Science* 209: 1441-1444

Rakic P, Riley KP. 1983 Regulation of axon numbers in the primate optic nerve by prenatal binocular competition. *Nature* 305: 135-137

Rakic P. l983 Geniculo-cortical connections in primates: Normal and experimentally altered development. *Progress in Brain Res*. 58: 393-404

Cooper ML, Rakic P. l983 Gradients of cellular maturation and synaptogenesis in the superior colliculus of the fetal rhesus monkey. *J. Comp. Neurol*. 215: 165-186

Kostovic I, Rakic P. 1984 Development of prestriate visual projections in the monkey and human fetal cerebrum revealed by transient cholinesterase staining. *J. Neurosci.* 4: 25-42

Rakic P. 1984 Emergence of neuronal and glial cell lineages in primate brain. In: Cellular and Molecular Biology of Neural Development. (Black IB. ed.) Plenum, New York, pp. 29-50

Rakic P. 1984 Organizing principles for development of primate cerebral cortex. In: Organizing Principles for Brain Development. (Sharma S. ed.) Plenum, New York, pp. 21-48

Goldman-Rakic PS, Rakic P. 1984 Experimental modification of gyral patterns. In: Cerebral Dominance: The Biological Foundation. (Geschwind N, Galaburda AM. eds.) Harvard University Press, Cambridge, MA, pp. 179-192

Brand S, Rakic P. 1984 Cytodifferentiation and synaptogenesis in the neostriatum of the fetal and neonatal rhesus monkeys. *Anat. Embryol*. 169: 21-34

Levitt PR, Rakic P, Goldman-Rakic PS. 1984 Region-specific distribution of catecholamine afferents in primate cerebral cortex: A fluorescence histochemical analysis. *J. Comp. Neurol.* 225: 1-14

Eckenhoff MF, Rakic P. 1984 Radial organization of the hippocampal dentate gyrus: A Golgi, ultrastructural and immunohistochemical analysis in the developing rhesus monkey. *J. Comp. Neurol*. 223: 1-21

Levitt P, Rakic P, de Camilli P, Greengard, P. 1984 Emergence of cyclic guanosine 3':5'-monophosphate-dependent protein kinase immunoreactivity in developing rhesus monkey cerebellum: Correlative immunocytochemical and electron microscopic analysis. *J. Neurosci*. 4: 2553-2564

Rakic P. l984 Defective cell-to-cell interactions as causations of brain malformations. In: Malformations of Development. Biological and Psychological Sources and Consequences. (Gollin ES, ed.) Academic Press, New York, pp. 239-285

Rakic P. 1984 Neurogenesis in Primates. In: Nervous System Development and Repair. *Discussions in Neurosciences* 1: 43-48

Levitt PR, Rakic P, Goldman-Rakic PS. 1984 Comparative assessment of monoamine afferents in mammalian cerebral cortex. In: Monoamine Innervation of Cerebral Cortex. (Descarries L, Reader P, Jasper H, eds.) Liss, New York, pp. 41-59

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Rakic P. 1985 Mechanisms of neuronal migration in developing cerebellar cortex. In: Molecular Basis of Neural Development. (Edelman GE, Cowan WM, Gall E. eds.) Wiley and Sons, New York, pp. 139-160

Rakic P. 1985 Limits of neurogenesis in primates. *Science* 227: 1054-1056

Easter SS, Jr, Purves D, Rakic P, Spitzer NC. 1985 The changing view of neural specificity. *Science* 230: 507-511

Williams RW, Rakic P. 1985 Dispersion of growing axons within the optic nerve of the embryonic monkey. *Proc. Natl. Acad. Sci. (USA)* 82: 3906-3910

Rakic P. 1985 DNA synthesis and cell division in the adult primate brain. *Ann. N.Y. Acad. Sci*. 457: 193-211

Vinters HV, Gatti RA, Rakic P. 1985 Sequence of cellular events in cerebellar ontogeny relevant to expression of neuronal abnormalities in ataxia-telangiectasia. In: Ataxia-Telangiectasia: Genetics, Neuropathology and Immunology of a Degenerative Disease of Childhood. (Gatti RA, Swift M. eds.) Liss, New York, pp. 233-255

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