



**Bispebjerg  
Hospital**



### **CURRICULUM VITAE**

Full name: Bente Pakkenberg  
Born: January 3, 1949.  
Nationality: Danish  
Birth place: Holstebro, Denmark

### **Title, position and present institution:**

Professor, DMSci (dr.med), Director, Research Laboratory for Stereology & Neuroscience, Department of Neurology, Bispebjerg-Frederiksberg Hospital, Nielsine Niensens Vej 6B, Building 11B, DK-2400 Copenhagen NV, Denmark.

Education: MD from the University of Copenhagen 1976.

DMSci., University of Copenhagen, 1991: Stereological quantitation of human brains from normal and schizophrenic individuals

### **Appointments:**

Clinical Education: 1976-83: Clinical staff fellow in neuromedicine, surgery, psychiatry, and internal medicine. 1986-88: Residency (hoveduddannelse) in neuromedicine, neurosurgery and neurophysiology at Rigshospitalet, Copenhagen. Research positions: 1983-86 Research fellow, Neurological Research Laboratory, KKHH. 1988- Director, Research Laboratory for Stereology & Neuroscience.

### **University duties:**

2015-2020, clinical professor in Neurology with special focus on Neurostereology at Faculty of Health and Medical Sciences, University of Copenhagen.

2012 – Affiliated Adjunct Faculty Member, The Lieber Institute for Brain Development, Johns Hopkins Medical Campus, Baltimore Maryland, USA.

2002-2007 adj. professor in Neurostereology at the University of Aarhus. Serve as evaluator on lecturer/assistant and professor positions both in Denmark and abroad.

More than 25 years' experience with project management and management of research projects.

### **Publications:**

Published >180 scientific papers of which most are Medline indexed stereological papers. H-index: 45 (Web of science). Average citations per Item: 60.6; Sum of times cited without selfcitation  $\geq$  12,000. Referee for a large number of international neuroscience journals. Work as world expert in neurostereology.

### **Opponent: *Disputatser:***

1992: Det Medicinske Fakultet, Roger Bjurn, Universitetet i Bergen.

1996: Det Medicinske Fakultet, Christer Kjellström, Göteborg Universitet.

2005: Trine Tandrup: Unbiased estimates of number and size of rat dorsal root ganglion cells in studies of structure and cell survival. Aarhus Universitet.

2006: Det Medicinske Fakultet, Alison McCormack: The Non-Human Primate as a Model of Human Parkinsonism. Karolinska Institutet.

**Opponent/chair Ph.d:**

1999: Kerry A. Galvin: Treatment strategies for hypoxic/ischemic injury in the immature rat striatum: a stereological study. University of Otago, Dunedin, New Zealand.

1999: Helle Vibeke Clausen: The fetal-placental unit in heavy smokers: morphology and function. Københavns Universitet.

2002: Rong Zhang: A stereological study of the normal rat striatum and thalamus, with especial focus on the striatal cholinergic interneurons. University of Otago, Dunedin, New Zealand.

2004: Matthew Vernon Covey: Neuroprotective strategies after third trimester hypoxic-ischemic brain injury, and the development of an animal model of second trimester hypoxic-ischemic brain injury. University of Otago, Dunedin, New Zealand.

2005: Marie Agnete Larsen: Bismuth. Aspects of localisation, transport and toxicity following bismuth uptake in cell cultures and mouse brain. Aarhus Universitet.

2007: Katja Krabbe: MR Investigations in Parkinsonism. Københavns Universitet.

2012: Vlassaks Evi. Elucidating the underlying mechanisms of inflammation caused by perinatal asphyxia and chorioamnionitis. Maastricht Universitet.

2014: Asif Manzoor Khan: "Microglial Cell Senescence in Alzheimer-like Pathology in Mice" Odense University Hospital.

2015: Gitte Nykjær Nikolajsen: "Prophylactic Docosahexaenoic Acid Therapy in the Treatment of Alzheimer's Disease". Aarhus University.

2019: Freja Gam Østergaard (Chair): "Changes in Visual Processing as Biomarkers for Parkinson's Disease." Københavns Universitet.

**Supervisor PhD/Disputats (latest years):**

Solveig Walløe Hansen, PhD, March 2014

Anna Kirstine Schou Karlsen, PhD, May 2014

Lisette Salvesen, PhD, 2014

Nina Eriksen, PhD, 2014

Kaspar Russ, PhD, 2014

Jesper Riise, PhD, 2015

Jonas Folke, PhD student 2016-2018

Christian Skoven, PhD student 2016-2019

Rasmus Rydbirk, PhD student 2017-2019

**Student thesis (special/bachelor) (latest years)**

Christina Brix Skautrup, cand.scient. 2014

Esther Kjær Needham, cand.scient. 2014

Ann-Sophie Wiese, cand.scient. 2014

Heidi S. Hansen, cand.scient. 2014.

Rasmus Krarup Sigaard stud.med. 2014

Charlotte Havelund Nykjær, stud.med. 2015

Jonas Folke, cand.scient. 2015

Johanne Lind Alemu, stud.scient. . mol.biomedicine 2016

Maria Kristina Palner stud.scient. 2015

Anne Nielsen stud.scient. 2016

Elisabeth Lynnerup Rusholdt, stud.med. 2016-2017

Thomas Jong Dae Sahlström, stud.med. 2016-2017  
 Tobias Christian Clausen, stud.med. 2017  
 Marlene Bidstrup, stud.scient. 2017-2018  
 Tanya Rhona Vigen, stud.scient. 2017-2018

#### **International collaborations:**

International collaborations are p.t. conducted with Columbia University, New York; Department of anatomy, New York (prof. A. Dwork), USA. Division of Medical and Radiological Sciences, College of Medicine and Veterinary Medicine, University of Edinburgh (prof. N. Roberts); The Lieber Institute for Brain Development, Johns Hopkins Medical Campus, Baltimore, Maryland, USA (profs. D. Weinberger, T. Hyde, J. Kleinmann). Collaboration with the industry involves Department of Neuroscience and Pharmacology, Lundbeck A/S..

#### **Awards and Honors:**

1993: Fabrikant Ulrik Brinch og hustru Marie Brinch's grant  
 1997: Anna Bochart's grant of honor  
 1997: His Royal Highness Prince Henrik's Foundation  
 2003: Stockbroker Henry Hansen and wife's foundation  
 2008: Alzheimer Research Grant for Basic Research  
 2016: Kaj Hansens Foundation: The Dana Lim prize

#### **Board member:**

2008-: Bispebjerg og Frederiksberg Hospitalers Forskningsudvalg/Forretningsudvalg.  
 2010-: Warware Larsens Fond  
 2013-: Torben Fog og Erik Triers fond  
 2006-2011: Det Medicinske Selskab i København.  
 2007-2015: Scleroseforeningens Forskningsudvalg  
 2008-2013: Medical Research Council, Det Frie Forskningsråd/Sundhed og Sygdom  
 2012-2017: Udvalgene Vedrørende Videnskabelig Uredelighed

#### **Research interests:**

Stereological quantitation of the normal human brain from fetal life to old age. To that end we have established the first and largest postmortem brain bank to obtain stereological data of the normal and diseased human brain.  
 Stereological quantitation of brains in animal models  
 Experimental studies of organs other than the brain  
 Studies of comparative neurology  
 Molecular biology

#### **Stereology:**

Act as an international expert in the techniques of morphology/ neuro-stereology and have taught/organized/coorganized  $\geq 80$  national or international stereology courses. Served as president of The International Society of Stereology from 1996-2000 and has been on the board of Acta Stereologica/Image Analysis and Stereology, and Journal of Microscopy. Is director of The Bispebjerg Brain Bank, the largest brain bank for stereological research.

#### **Future plans:**

We have been setting up a molecular unit at the research laboratory at Bispebjerg Hospital to be able to unite the techniques of stereology with the methods of molecular biology. Our aims are to apply stereology and molecular biology to animal models of brain disorders. Secondly to perform translational studies on animal models and postmortem human brains with special focus on neurodegenerative diseases.

### Publications

1. Regeur L, **Pakkenberg B**, Pakkenberg H, Fog R. Combined pharmacotherapy of Gilles de la Tourette's Syndrome. *Acta Neurol Scand* 65: suppl.90, 308-309, 1982
2. Fog R, Regeur L, **Pakkenberg B**, Pakkenberg H. Tardive Tourette syndrome in schizophrenic patients treated with antipsychotic drugs. *Acta Neurol Scand* 65: 235-236, 1982
3. Fog R, Pakkenberg H, Regeur L, **Pakkenberg B**. "Tardive" Tourette Syndrome in relation to longterm neuroleptic treatment of multiple tics, pp. 419-421 i: Gilles de la Tourette's Syndrome (eds. Thomas N. Chase, Arnold J. Friedhoff) Raven Press, N.Y., 1982
4. **Pakkenberg B**, Regeur L, Fog R, Pakkenberg H. Gilles de la Tourette's Syndrom - erfaring med 18 patienter. *Ugeskrift for Læger* 144: 3078-3081, 1982
5. **Pakkenberg B**, Regeur L, Fog R, H Pakkenberg. Tics hos børn og voksne. *Månedsskrift for praktisk lægegering* 2: 77-81, 1985
6. Pakkenberg H, **Pakkenberg B**, Fog R. Effect of electrical convulsions on uridine labeling and activity pattern in nerve cells in mice. *Experimental Neurol* 89: 115-122, 1985
7. Regeur L, **Pakkenberg B**, Fog R, Pakkenberg H. Clinical features and long-term treatment with pimozide in 65 patients with Gilles de la Tourette's Syndrome. *J Neurol, Neurosurg and Psychiatry* 49: 791-795, 1986
8. Pakkenberg H, **Pakkenberg B**, Kjeldsen C. The effect of N-methyl-4-phenyl-1,2,3,6-tetrahydropyridine on uridine uptake in the mouse brain. *Brain Res* 362: 192-194, 1986
9. Pakkenberg H, **Pakkenberg B**. Clozapine in the treatment of tremor. *Acta Neurol Scand* 73: 295-297, 1986
10. **Pakkenberg B**, Bolvig TG, Pakkenberg H. Meige's Syndrome: A neuropsychiatric disorder. *Comprehensive Psychiatry* 28: 309-314, 1987
11. **Pakkenberg B**. Post-mortem study of chronic schizophrenic brains. *Brit J Psychiatry* 151: 744-752, 1987
12. **Pakkenberg B**, Gundersen HJG. Disector-Cavalieri combination providing unbiased and efficient estimators of total number of particles unaffected by tissue shrinkage. *Acta Stereol* 6: 49-52, 1987
13. **Pakkenberg B**, Gundersen HJG. Total number of neurons and glial cells in human brain nuclei estimated by the disector and the fractionator. *J Microsc* 150: 1-20, 1988

14. Pakkenberg H, **Pakkenberg B**, Fog R, Eldrup E. The MPTP effect on uridine uptake in murine nerve cells. *Brain Res* 460: 146-149, 1988
15. Teasdale TW, **Pakkenberg B**. The association between intelligence level and brain volume measures: A negative finding. *Scand J Psychology* 29: 123-125, 1988
16. Gundersen HJG, Bendtsen TF, Korbo L, Marcussen N, Møller A, Nielsen K, Nyengaard JR, **Pakkenberg B**, Sørensen FB, Vesterby A, West M. Some new, simple and efficient stereological methods and their use in pathological research and diagnosis. Review article. *APMIS* 96: 379-394, 1988
17. Gundersen HJG, Bagger P, Bendtsen TF, Evans SM, Korbo L, Marcussen N, Møller A, Nielsen K, Nyengaard JR, **Pakkenberg B**, Sørensen FB, Vesterby A, West MJ. The new stereological tools: Disector, fractionator, nucleator and point sampled intercepts and their use in pathological research and diagnosis. Review article. *APMIS* 96: 857-881, 1988
18. The Scandinavian Oxcarbazepine Study Group. A double-blind study comparing oxcarbazepine and carbamazepine in patients with newly diagnosed, previously untreated epilepsy. *Epilepsy Research* 3: 70-76, 1989
19. **Pakkenberg B**. What happens in the leucotomised brain: A post-mortem morphological study of brains from schizophrenic patients. *J Neurol, Neurosurg and Psychiatry* 52: 156-161, 1989
20. **Pakkenberg B**, Boesen J, Albeck M, Gjerris F. Unbiased and efficient estimation of total ventricular volume of the brain obtained from CT scans by a stereological method. *Neuroradiology* 31: 413-417, 1989
21. **Pakkenberg B**, Gundersen HJG. New stereological method for obtaining unbiased and efficient estimates of total nerve cell number in human brain areas. *APMIS* 97: 677-681, 1989
22. Regeur L, **Pakkenberg B**. Optimizing sampling designs for volume measurements of components of human brain using a stereological method. *J Microsc* 155: 113-121, 1989
23. **Pakkenberg B**, Evans SM, Møller A, Brændgaard H, Gundersen HJG. Total number of neurons in human neocortex related to age and sex estimated by way of optical disectors. *Acta Stereol* 8: 251-256, 1989
24. Korbo L, **Pakkenberg B**, Ladefoged O, Gundersen HJG, Arlien-Søborg P, Pakkenberg H. An efficient method for estimating the total number of neurons in rat brain cortex. *J Neurosc Meth* 31: 93-100, 1990
25. **Pakkenberg B**. Pronounced reduction of total neuron number in mediodorsal thalamic nucleus and nucleus accumbens in schizophrenics. *Arch Gen Psychiatry* 47: 1023-1028, 1990

26. **Pakkenberg B**, Møller A, Gundersen HJG, Mouritzen Dam A, Pakkenberg H. The absolute number of nerve cells in substantia nigra in normal subjects and in patients with Parkinson's disease estimated with an unbiased stereological method. *J Neurol, Neurosurg and Psychiat* 54: 30-33, 1991
27. **Pakkenberg B**, Evans SM, Møller A, Brændgaard H, Gundersen HJG. Sex and age differences in total neuron number in human brain neocortex estimated using optical disectors. *Proceedings of the XIth International Congress of Neuropathology, "Neuropathology" Suppl.4*: 493-495, 1991
28. Pakkenberg H, **Pakkenberg B**. Tourette's Syndrome in Twins (Letter to the Editor). *Movement Disorders* 6: 384, 1991
29. **Pakkenberg B**. Stereological quantitation of human brains from normal and schizophrenic individuals (disputats). *Acta Neurol Scand Suppl* 137: 20-33, 1991
30. Andersen BB, Korbo L, **Pakkenberg B**. A quantitative study of the human cerebellum with unbiased stereological techniques. *J Comp Neurol* 326: 549-560, 1992
31. **Pakkenberg B**. The volume of the mediodorsal thalamic nucleus in treated and untreated schizophrenics. *Schizophr Res* 7: 95-100, 1992
32. **Pakkenberg B**, Andersen BB, Badsberg Jensen, Korbo L, Mouton PA, Møller A, Regeur L, Øster S. The impact of the new stereology on the neurosciences - neurostereology. *Acta Stereologica* 11, suppl. I: 157-164, 1992
33. **Pakkenberg B**. Quantification of human brains from schizophrenics. In: M.R.Trimble and T.G. Bolwig (eds) *The temporal lobes and limbic system - basic and clinical perspectives*, Wrightson Biomedical Publishing Ltd., pp. 239-246, 1992
34. Tariq MH, Mouton PR, **Pakkenberg B**. Application of the rotator principle to a well-defined region in human and rat brains. *Acta Stereol* 11, suppl I: 165-167, 1992
35. Øster S, Christoffersen P, Gundersen HJG, Nielsen JO, **Pakkenberg B**, Pedersen C. Cerebral atrophy in AIDS - a stereological study. *Acta Neuropathol* 85: 617-622, 1993
36. **Pakkenberg B**. Leucotomized schizophrenics lose neurons in the mediodorsal thalamic nucleus. *Neuropathol Applied Neurobiology* 19: 373-380, 1993
37. Badsberg Jensen G, **Pakkenberg B**. Do alcoholics drink their neurons away? *The Lancet* 342: 1201-1204, 1993
38. **Pakkenberg B**. Total nerve cell number in neocortex in chronic schizophrenics and controls estimated using optical disectors. *Biol Psychiatry* 34: 768-772, 1993
39. Badsberg Jensen G, **Pakkenberg B**. No neocortical nerve cell loss in brains from chronic alcoholics. *Acta Stereol* 12/2: 317-320, 1993
40. **Pakkenberg B**, Gundersen HJG. Total number of neurons in specific cortical layers in the human brain. *Acta Stereol* 12/2: 271-276, 1993

41. Regeur L, Badsberg Jensen G, Pakkenberg H, Evans SM, **Pakkenberg B**. No global neocortical nerve cell loss in brains from patients with senile dementia of Alzheimer's type. *Neurobiol Aging* 15: 347-352. Peer commentaries and authors' response: 353-380, 1994
42. **Pakkenberg B**, Regeur L, Gundersen HJG. Quantitative Structural Changes in the Ageing Brain. In: JRM Copeland, MT Abou-Saleh, DG Blazer (eds) *Principles and Practice of Geriatric Psychiatry*, John Wiley & Sons, Chichester, New York, Brisbane, Toronto, Singapore pp. 55-57, 1994
43. Mouton PR, **Pakkenberg B**, Gundersen HJG, Price DL. Absolute number and size of pigmented locus coeruleus neurons in young and aged individuals. *J Chem Neuroanat* 7: 185-190, 1994
44. **Pakkenberg B**, Søbørg C, Andersen BB. Stereological quantitation of the schizophrenic brain. In: R Fog, J Gerlach, R Hemmingsen (eds) *Schizophrenia - An Integrated View*, Munksgaard, København, pp. 139-146, 1995
45. **Pakkenberg B**, Gundersen HJG. Solutions to old problems in the quantitation of the central nervous system. *Journal of the Neurological Sciences* 129 (suppl.): 65-67, 1995
46. Pakkenberg H, Andersen BB, Burns RS, **Pakkenberg B**. A stereological study of substantia nigra in young and old rhesus monkeys. *Brain Res* 693: 201-206, 1995
47. Oster S, Christoffersen P, Gundersen HJG, Nielsen JO, Pedersen C, **Pakkenberg B**. Six billion neurons lost in AIDS - A stereological study of the neocortex. *APMIS* 103: 525-529, 1995
48. Pakkenberg H, **Pakkenberg B**. No clinical progression in a non-addict MPTP-patient in a 20-year period (letter). *Parkinsonism & Related Disorders* 2: 107, 1996
49. Bundgaard MJ, Regeur L, Troncoso J, West MJ, **Pakkenberg B**. Cell volume of neocortical neurons from patients with Alzheimer's disease. *Acta Stereol* 15: 119-124, 1996
50. Petersen PM, **Pakkenberg B**, Giwercman A. The human testis studied using stereological methods. *Acta Stereol* 15: 181-185, 1996
51. Gredal O, **Pakkenberg B**, Nielsen M: Muscarinic, N-methyl-D-aspartate (NMDA) and benzodiazepine receptor binding sites in cortical membranes from amyotrophic lateral sclerosis patients. *Journal of the Neurological Sciences* 143: 121-125, 1996
52. **Pakkenberg B**, Gundersen HJG, Mortensen EL, Lauritzen MJ, Jeune B, Regeur L, West MJ, Schwartz TW. Den normale hjerne: ny viden på flere fronter. *Ugeskrift for Læger* 159: 723-727, 1997
53. **Pakkenberg B**, Gundersen HJG. Neocortical neuron number in humans: effect of sex and age. *J Comp Neurol* 384: 312-320, 1997
54. Weber UJ, Bock T, Buschard K, **Pakkenberg B**. Total number and size distribution of alpha motor neurons in medulla of normal and EMC-virus infected mice. A stereological study. *J Anat* 191: 347-353, 1997

55. Tang Y, Nyengaard JR, **Pakkenberg B**, Gundersen HJG. Age-induced white matter changes in the human brain: a stereological investigation. *Neurobiol Aging* 18: 609-615, 1997
56. Friis H, Andersen CB, Vennervald BJ, Christensen NØ, **Pakkenberg B**. The use of a stereological method to estimate the volume of *Schistosoma mansoni* granulomas: the effect of zinc deficiency. *Ann Tropic Medicine & Parasitology* 92: 785-792, 1998
57. Fischer CP, Gundersen HJG and **Pakkenberg B**. Preferential loss of large neocortical neurons during HIV infection - a study of the size distribution of neocortical neurons in the human brain. *Brain Res* 828; 119-126, 1999
58. Pakkenberg H, Burns RS, **Pakkenberg B**. Age changes in number of pigmented neurons in the monkey locus coeruleus. *Acta Stereol* 18; 123-130, 1999
59. MacKay CE, **Pakkenberg B**, Roberts N. Comparison of compartment volumes estimated from MR images and physical sections of formalin fixed cerebral hemispheres. *Acta Stereol* 18; 149-159, 1999
60. Bock T, Svenstrup K, **Pakkenberg B** and Buschard K. Unbiased estimation of total beta-cell number and mean beta-cell volume in rodent pancreas. *APMIS* 107; 791-799, 1999
61. Regeur L, Korbo L, Bang N, **Pakkenberg B**. Decreased volume of the cerebral ventricles on CT images in Gilles de la Tourette's syndrome. *Behav Neurol* 11; 139-147, 1998/1999
62. Thune JJ and **Pakkenberg B**. Stereological studies of the schizophrenic brain. (Proceedings from Nobel Symposium in Stockholm). *Brain Res Rev* 31; 200-204, 2000
63. Gredal O, Pakkenberg H, Karlsborg M & **Pakkenberg B**. Unchanged total number of neurons in motor cortex and neocortex in amyotrophic lateral sclerosis: a stereological study. *Journal of Neuroscience Methods* 95; 171-176, 2000
64. Samuelsen GB, Bogdanovic N, Laursen H, Græm N, Falck Larsen J & **Pakkenberg B**. Total cell number in fetal brain. *Image Analysis & Stereology* 19; 35-38, 2000
65. Petersen PM, Giwercman A, Gundersen HJG & **Pakkenberg B**. Efficient and unbiased tools for quantitating Leydig and Sertoli cells in the testis from testes biopsies. *Image Analysis & Stereology* 19; 113-117, 2000
66. Iida H, Law I, **Pakkenberg B**, Krarup-Hansen A, Eberl S, Holm S, Hansen AK, Gundersen HJG, Thomsen C, Svarer C, Ring P, Friberg L & Paulson OB. Quantitation of regional cerebral blood flow corrected for partial volume effect using O-15 water and PET. I. Theory, error analysis, and stereologic comparison. *J Cerebr Blood flow and Metabolism* 20; 1237-1251, 2000
67. Petersen PM & **Pakkenberg B**. Stereological quantitation of Leydig and Sertoli cells in the testis from young and old men. *Image Analysis & Stereology* 19; 215-218, 2000
68. Espersen C, **Pakkenberg B**, E. Harder, G. Pallesen, J. Gerstoft, B.K. Pedersen & H. Ullum. High levels of CD8- positive lymphocytes expressing CD45RO, granzyme B, and Ki-67 in



lymph nodes of HIV-infected individuals are not associated with increased mortality. *AIDS Research and Human Retroviruses* 17; 287-293, 2001

69. Bundgaard MJ, Regeur L, Troncoso J, West MJ & **Pakkenberg B**. Size of neocortical neurons in control subjects and in Alzheimer's disease. *J Anat* 198; 481-489, 2001
70. Thune JJ, Uylings HBM & **Pakkenberg B**. No deficit in total number of neurons in the prefrontal cortex in schizophrenics. *J Psychiat Res* 35; 15-21, 2001
71. Skau M, Buschard K, **Pakkenberg B**, Bock T: Linear correlation between the total islet mass and the volume-weighted mean islet volume. *Diabetes* 50; 1763-1770, 2001
72. Svenstrup K, Skau M, **Pakkenberg B**, Buschard K, Bock T: Postnatal development of beta-cells in rats. *APMIS* 110; 372-8, 2002
73. Canan S, **Pakkenberg B**, Kaplan S & Aslan H: A stereological investigation on the effects of forebrain ischemia on hippocampal neuron number in chick. *Neuroscience Research Communications* 30; 27-33, 2002
74. Cabello CR, Thune JJ, Pakkenberg H, **Pakkenberg B**. Ageing of substantia nigra in humans: cell loss may be compensated by hypertrophy. *Neuropathol Appl Neurobiol* 28; 283-91, 2002
75. Samuelsen GB, Larsen KB, Bogdanovic N, Laursen H, Græm N, Larsen JF & **Pakkenberg B**. The changing number of cells in the human fetal forebrain and its subdivisions: A stereological analysis. *Cerebral Cortex* 13; 115-22, 2003
76. **Pakkenberg B**, Pelvig D, Marner L, Bundgaard MJ, Gundersen HJG, Nyengaard JR, Regeur L. Aging and the human neocortex. *Exp Gerontol* 38; 95-99, 2003
77. Garcia-Finana M, Cruz-Orive LM, Mackay CE, **Pakkenberg B**, Roberts N. Comparison of MR imaging against physical sectioning to estimate the volume of human cerebral compartments. *NeuroImage* 18; 505-16, 2003
78. Andersen BB, **Pakkenberg B**. Stereological quantitation in cerebella from people with schizophrenia. *Br J Psychiatry* 182; 354-61, 2003
79. Marner L, Nyengaard J, Tang Y, **Pakkenberg B**. Marked loss of myelinated nerve fibers in the human brain with age. *J Comp Neurol* 462; 144-52, 2003
80. Bock T, **Pakkenberg B**, Buschard K. Increased islet volume but unchanged islet number in ob/ob mice. *Diabetes* 52; 1716-22, 2003
81. Pelvig DP, Pakkenberg H, Regeur L, **Pakkenberg B**. Neocortical glial cell numbers in Alzheimer's disease. *Dement Geriatr Cogn Disord* 16; 212-19, 2003
82. Marner L, **Pakkenberg B**. Total length of nerve fibers in prefrontal and global white matter of chronic schizophrenics. *J Psychiatr Res* 37; 539-47, 2003

83. Andersen BB, Gundersen HJG, **Pakkenberg B**. The aging of the human cerebellum: a stereological study. *J Comp Neurol* 466; 356-365, 2003
84. Bock T, Kyhnel A, **Pakkenberg B**, Buschard K. The postnatal growth of the  $\beta$ -cell mass in pigs. *J Endocrinol* 179:245-52, 2003
85. Bock T, **Pakkenberg B**, Buschard K. The endocrine pancreas in non-diabetic rats after short-term and long-term treatment with the long-acting GLP-1 derivative NN2211. *APMIS* 111; 1117-24, 2003
86. Tang Y, Nyengaard JR, **Pakkenberg B**, Gundersen HJG. Stereology of neuronal connections (myelinated fibers of white matter and synapses of neocortex) in human brain. *Image Anal Stereol* 22; 171-82, 2003
87. Korbo L, Amrein I, Lipp H-P, Wolfer D, Regeur L & **Pakkenberg B**: No evidence for loss of hippocampal neurons in non- Alzheimer demented patients. *Acta Neurologica Scandinavica* 109; 132-39, 2004
88. Broholm H, Andersen B, Wanscher B, Frederiksen JL, Rubin I, **Pakkenberg B**, Larsson HBW, Lauritzen M. Nitric oxide synthase expression and enzymatic activity of multiple sclerosis. *Acta Neurol Scand* 109:261-9, 2004
89. Stark AK, Uylings HBM, Sanz-Arigita E, **Pakkenberg B**. Glial cell loss in the anterior cingulate cortex, a subregion of the prefrontal cortex, in subjects with schizophrenia. *Am J Psychiatry* 161; 882-8, 2004
90. Stark AK, **Pakkenberg B**. Histological changes of the dopaminergic nigrostriatal system in aging. *Cell Tissue Res.* 318;81-92, 2004
91. Larsen KB, Samuelsen GB, Bogdanovic N, Laursen H, Græm N, **Pakkenberg B**. Brain cell growth in the human fetal forebrain. In: Elsevier's Encyclopedia of Neuroscience, 3rd edition, eds. Adelman G and Smith BH. 2004
92. Tang Y, **Pakkenberg B**, Nyengaard JR. Myelinated nerve fibres in the subcortical white matter of cerebral hemispheres are preserved in alcoholic subjects, *Brain Res* 1029; 162-7, 2004
93. Pedersen KM, Marner L, Pakkenberg H, **Pakkenberg B**. No global loss of neocortical neurons in Parkinson's disease – a quantitative stereological study. *Movement Disorders* Vol.20 No.2; 164-171, 2005
94. Marner L, Sjøborg C, **Pakkenberg B**. Increased volume of the pigmented neurons in the locus coeruleus of schizophrenic subjects. A stereological study. *J Psychiat Res*, 39; 337-345, 2005
95. Bock T, **Pakkenberg B**, Buschard K. The genetic background determines size and structure of the endocrine pancreas. *Diabetes* 54; 133-137, 2005

96. Jelsing J, Rostrup E, Markenroth K, Paulson OB, Gundersen HJG, Hemmingsen R, **Pakkenberg B**. Assessment of in vivo MR imaging compared to physical sections in vitro – a quantitative study of brain volumes using stereology. *NeuroImage* 26; 57-65, 2005
97. Stark AK, Pelvig DP, Jørgensen A.M.B., Andersen B.B., **Pakkenberg B**. Measuring morphological and cellular changes in Alzheimer's dementia: A Review Emphasizing Stereology. *Curr Alzheimer Res* 2; 447-479, 2005
98. De Groot DMG, Hartgring S, van de Horst L, Moerkens M, Otto M, Bos- Kuijpers MHM, Kaufmann WSH, Lammers JHCM, O'Callaghan JP, Waalkens-Berendsen IDH, **Pakkenberg B**, Gundersen HJG. 2D and 3D assessment of neuropathology in rat brain after prenatal exposure to methylazoxymethanol, a model for developmental neurotoxicity. *J Reprod Toxicology* 20; 417-432, 2005
99. De Groot DMG, Bos-Kuijpers MHM, Kaufmann WSH, Lammers JHCM, O'Callaghan JP, **Pakkenberg B**, Pelgrim MTM, Waalkens-Berendsen IDH, Waanders MM, Gundersen HJG. Regulatory developmental neurotoxicity testing: a model study focussing on conventional neuropathology endpoints and other perspectives. *ETAP* 19; 745-755, 2005
100. Jelsing J, Olsen AK, Cumming P, Gjedde A, Hansen AK, Arnfred S, Hemmingsen R, **Pakkenberg B**. A volumetric screening procedure for the Göttingen minipig brain. *Exp Brain Res* 162; 428-435, 2005
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***Teaching/Stereology courses/PhD courses:***

Postgraduat: Nye stereologiske metoder i human CNS. Hvidovre Hospital, Rigshospitalet og KAS Gentofte 1986-1988.

Teoretisk undervisning af medicinstuderende på de neuromedicinske afdelinger, Hvidovre Hospital og Rigshospitalet, 1983-1988.

3-day Kursus i morfometri til praktisk patologi, København, oktober 1987.

Gilles de la Tourette's syndrom: de neuro-medicinske/pædiatriske afdelinger på FAC Hillerød, Hvidovre Hospital, KAS Gentofte og Rigshospitalet, 1983-87.

A-kursus i neurologi: kvantitative teknikker i CNS-anatomi, Hvidovre Hospital, København, marts 1988.

DNS-efteruddannelseskursus: Gilles de la Tourette's syndrom, København, marts 1988.

Kursus i nye morfometriske metoder, Tandlægehøjskolen, Panum Instituttet, marts-april 1988.

5-day Practical Course on Morphometry and Stereology in the Neuroscience, Århus, august 1988.

5-day Kursus i morfometri til praktisk patologi, Ebeltoft, maj 1988.

5-day Kursus i morfometri til praktisk patologi, København, maj 1989.

Kursus i cellebiologiske teknikker - under Proteinlaboratoriet, Københavns Universitet, august 1989.

5-day Kursus i morfometri til praktisk patologi, Aalborg, maj 1990.

Kursus i cellebiologiske teknikker, Proteinlaboratoriet, Københavns Universitet, Stereologikursus, april 1990.

A-kursus i neuropsykiatri: Morfologiske forandringer ved psykoser. Hvidovre Hospital, København, oktober 1990.

Kursus i cellebiologi og basal cancerbiologi, Proteinlaboratoriet, Københavns Universitet, okt. 1990.

7-day First American Course in Stereology for the Neurosciences. University of Illinois, Illinois, USA, oktober 1990.

3-day Proteinlaboratoriet, Panum Institutet, stereologikursus, marts 1991.

13th ISS European Course on Stereology and 3D Microscopy. Perlor, Spanien, april 1991.

7-day 4th American Course on Stereology. University of California, Irvine, august 1991.

3-day Stereologikursus under Selskab For Patologi, Neurologisk Forskningslaboratorium, marts 1992.

A-kursus i neuropsykiatri. Kommunehospitalet, København, marts 1992.

Forskningsstrategier fra molekylærbiologi til klinik - eksemplificeret ved skizofreni. De lægevidenskabelige fakulteter i Århus og Odense, Århus Universitet, april 1992.

Neurostereologiske resultater i CNS. Nyere aspekter av neurotransmisjon i sentrale og perifere systemer. Det lægevidenskabelige fakultet, Universitetet i Bergen, maj 1992.

7-day New Stereological Methods, Scandem kursus, Liseleje, Danmark, maj 1992.

7-day Second Australian Stereology Course, Monash University, Melbourne, Australien, august 1992.

7-day Asia Pacific Workshop on Stereological Techniques for Biomedical Research. Hong Kong, 1992.

A-kursus i neuropsykiatri. Kommunehospitalet, oktober 1992.

A-kursus for patologer: Diagnostiske Metoder. Bartholin Institutet, november 1992.

5-day Kursus i morfometri til praktisk patologi under Dansk Selskab For Patologi, Liseleje, maj 1993.

3-day 1st European Short Course and Workshop on Computer-assisted Image Analysis & Measurement. Danmarks Teknologiske Institut, juni 1993.

Nordic Postgraduate Course on Molecular and Cellular Endocrinology of the Testis. Rigshospitalets afdeling for vækst og reproduktion, Panum Institut, august 1993.

7-day Sterio 93, Skalsky Dvur, Tjekket, august 1993.

3-day A-kursus i neuropsykiatri. Kommunehospitalet, oktober 1993.

Stereologisk éndagskursus, Neuropathologisk Institut, Göteborg, december 1993.

5-day Stereologikursus, Umeå Universitet, marts 1994.

7-day Stereologikursus (international coordinator): First Canadian - ISS stereology workshop. Banff, Canada, maj 1994.

2-day European Short Course and Workshop on Computer-assisted Image Analysis & Measurement. Danmarks Teknologiske Institut, juni 1994.

3-day Stereologikursus, Yale Medical School, Connecticut, august 1994.

Københavns Universitets Forskerkursus: Teorier og arbejdsmetoder i Ældreforskningen. Kommunehospitalet, september 1994.

A-kursus i neuropsykiatri. Kommunehospitalet, oktober 1994.

7-day 15th European Stereology Course. StereoSpring. Curia, Portugal, april 1995.

2-day 9th ICS - Satellite symposium: Stereology and labelling techniques. Bartholin Institut, København, august 1995.

5-day Stereology course, Ismir, december 1995.

5-day Kursus i morfometri til praktisk patologi under Dansk Selskab For Patologi, Liseleje, maj 1996.

2-day 4th European Short Course and Workshop on Computer-assisted Image Analysis & Measurement. Danmarks Teknologiske Institut, juni 1996.

4-day Stereology course, Umeå, Sverige, maj 1997.

5th European Short Course and Workshop on Computer-assisted Image Analysis & Measurement. Danmarks Teknologiske Institut, juni 1997.

5-day 16th Stereology Course. Rold, Denmark, august 1997.

5-day Stereologikursus, Låsby, oktober 1997.

3-day Stereology Workshop, American College of Veterinary Pathologists' 1997 Annual Meeting in Albuquerque, USA, november 1997.

7-day 17th Stereology Course. Schnorl, Holland, marts 1998.

7th European Short Course and Workshop on Computer-Assisted Image Analysis & Measurement. Dansk Teknologisk Institut, København, juni 1998

Syge og raske hjerner. Forskelle bestemt med den stereologiske metode. A-kursus på Rigshospitalet, februar 1999.

Om hjerneforskning. Forskelle mellem den syge og raske hjerne. Ph.D. kursus i Neurofarmakologi på Farmakologisk Institut, september 1999.

5-day Stereologikursus. Sandbjerg, Denmark, september 1999.

Koordineret klinisk forelæsning i biokemi for stud.med.'er på 5. semester. Panum Institutttet, oktober 1999.

7-day Stereology Course. Melbourne, Australia, oktober 1999.

3-day Stereology Course 2000. Antwerp, Belgium, March 2000.

Koordineret klinisk forelæsning i biokemi for stud.med.'er på 5. semester. Panum Institutttet, april 2000

5-day 18th European Stereology Course, Göttingen, Germany, August 19-25, 2000.

Koordineret klinisk undervisning i biokemi for stud.med.'er på 5. semester. Panum Institutttet, november 2000.

Koordineret klinisk forelæsning i biokemi for stud.med.'er på 5. semester. Panum Institutttet, marts 2001.

3-day Ph.d. kursus i stereologi. Bispebjerg Hospital, april 2001.

5-day Stereology Course, Pittsburgh, USA, maj 2001.

5-day Stereology Course, Bergen, Norge, maj 2001.

7-day Stereology Course, Split, Kroatien, september 2001.

Koordineret klinisk undervisning i biokemi for stud.med.'er på 5. semester. Panum Institutttet, oktober 2001.

5-day Stereology Course, Sandbjerg, Denmark, april 2002.

7-day Stereology Course, Hawks Nest, West Virginia, USA, maj 2002.

3-day PhD kursus i stereologi, Bispebjerg Hospital, marts 2003.

7-day Stereology Course, La Jolla, California, USA, april 2003.

7-day Stereology Course, Amsterdam, Holland, august 2003.

5-day Stereology Course, Kuopio, Finland, august 2003.

Klinisk undervisning i humanbiologi, 3. semester. Panum Institutttet, september 2003.

7-day Stereology Course, Gdansk, Polen, oktober 2003.

5-day PhD kursus i stereologi, Sandbjerg, april 2004.

7-day Stereology Course, Marburg, Germany, maj 2004.

7-day American Stereology Course, Minneapolis, USA, September 2004.

5-day Stereology Course, Tartu, Estland, November 2004.

Klinisk undervisning i humanbiologi, 3. semester. Panum Institutttet, august 2005.

7-day 1 ISS Brazilian Stereology Course, Sao Paolo, Brasilien, September 2005.

5-day Stereology Course, Mannasas, November 2005.

3-day Stereologikursus, Lund Universitet, Sverige, december 2005.

4-day Stereology Course, Sandbjerg Manor, september 2006.

7-day Olympus Stereology Course, Atlanta, GA, oktober 2006.

3-day "High Q Stereology & Neuroinflammation Workshop", New York, USA, januar 2007.

Det nyeste indenfor hjerneforskning. Sundhedsfaglig diplomuddannelse, CVU Øresund. Februar 2007.

Neurostereology – can you learn about the future by studying the past? Symposium in Future Stereology, Sandbjerg, september 2007.

3-day PhD kursus i stereologi, Bispebjerg Hospital, 2008.

Dansk Selskab for TMK, maj 2008: Nyt om hjerneforskning

3-day PhD kursus i stereologi, Bispebjerg Hospital, april 2008

Advanced Cell Biology and Neurobiology, Panum, april 2008: Stereology

Advanced Cell Biology and Neurobiology, Teilm Bygningen, september 2008: Stereology

Efter- og videreuddannelse af neurosygeplejersker, Herlev, oktober 2008: Det nyeste indenfor hjerneforskning

7-day Olympus Stereology Workshop 2008, Washington DC, USA, november 2008

Hjernen. Ungdommens Naturvidenskabelige Forening (UNF), HC Ørsted Institutet, december 2008

BIOSA: Den gale hjerne: Forskelle i hjernens tre-dimensionelle struktur, samspillet mellem cellyperne, og betydningen i skizofreni, februar 2009

Alzheimer's sygdom. Foredrag ved Lundbecks Alzheimersymposium. D. 28. oktober 2010, København.

OAK meeting, BRIC, København, juni 2010. Pathophysiology and brain injury.  
PhD course in Neuroanatomy, Hvidovre Hospital, September 2011

"Hjernen og intelligens". Folkeuniversitet, DPU, København, november 2011

U-faktor på Roskilde Gymnasium. Hjerneaktivitet. Maj 2011

The 13th International Congress for Stereology, Beijing, Kina, oktober 2011.

PhD course on Neuron Glia Interactions, June 25-27<sup>th</sup> 2013 in Copenhagen.

PhD course in Neuroanatomy, Linking magnetic resonance imaging (MRI) to the neuroanatomy of the human brain. Hvidovre Hospital, September 2014

Hjernen og kønsforskelle. Vin og Videnskab, Statens Naturhistoriske Museum. Oktober 2015.

PhD course in Neuroanatomy, Lifespan changes – Hvidovre Hospital, Januar 2016

2-day PhD Course in Quantitative Morphology and Histology, Shahid Beheshti University of Medical Sciences, Iran, maj 2016.

Neocortical neuron numbers – a lifetime history of our brain cells. FENS satellite Meeting: Cerebral Cortical Cell Types. The Cajal Club. University of Copenhagen, The Celebration Auditorium, Frederiksberg Campus, Juli 2016.

Foredrag og debat. Din fascinerende hjerne. FOF- Gentofte. Marts 2018

Deltager i Temalørdag, DR2, "Gal eller genial" november 2018

Global Excellence Seminar, MRI, Hvidovre Hospital. "Stereology applied to the central nervous system using histological sections and MRI". March 2019

15<sup>th</sup> International Congress for Stereology and Image Analysis, Aarhus University, May 2019



**Recent posters**

Karin Forsberg, Karin Graffmo, Bente Pakkenberg, Markus Weber, Martin W. Nielsen, Stefan L. Marklund, Thomas Brännström, and Peter M. Andersen. Cellular Inclusions of Misfolded wildtype-SOD1 are common in ALS patients with mutations in C9orf72 and other ALS/FTD-associated genes (poster). Neurodegenerative Diseases: New Insights and Therapeutic Opportunities  
Keystone Resort, Keystone, Colorado; juni 2019