

#### 4. Annemarie Opprecht Parkinson Award 2008

### Curriculum Vitae John Hardy

#### Personal Information:

**Date of Birth:** 9th November 1954, Nelson, Lancashire, England

**Marital status:** Single (divorced) with three children (Katherine (25), Joseph (23), Robert (19) )

**Citizenship:** Dual Citizen of United Kingdom and USA

**Profession:** Professor of Neuroscience, Department of Molecular Neuroscience and Reta Lila Weston Laboratories, Institute of Neurology, University College, Queen Square House, London WC1 3BG, England

#### Education

##### Schooling:

**Primary:** St. Wilfred's Elementary School, Northwich, Cheshire, England

**Secondary:** Cheshire and St. Ambrose College, Hale Barns, Cheshire, England

**Undergraduate:** 1973-1976, Biochemistry II(i) Degree, Leeds University, England

**Postgraduate:** 1976-1979, PhD Awarded (Neurochemistry): 1981, Imperial College, London, England  
Supervisor: Professor Harry Bradford

**Thesis:** On the Release of Amino Acid Neurotransmitters from Mammalian Synaptosomes

#### Present Appointments:

2007 - Professor of Neuroscience, Institute of Neurology, University College, London

2007 - Honorary Senior Scientist, Laboratory of Neurogenetics, NIA/NIH

#### Previous Positions:

2007 - present Professor of Neuroscience, University College, London, England

2001 - 2007 Honorary Professor of Neuroscience, University College, London, England

2001 - 2007 Chief, Laboratory of Neurogenetics, National Institute on Aging, NIH, Bethesda, Maryland, USA

1999 - 2001 Director and Chair, Department of Neuroscience, Mayo Clinic Jacksonville, Florida, USA

1996 - 2001 Consultant and Professor of Pharmacology, Mayo Clinic Jacksonville, Florida, USA

1992 - 1996 Pfeiffer Endowed Professor for Alzheimer's Disease Research, University of South Florida, Tampa, Florida, USA

- 1989 - 1992 Senior Lecturer (Associate Professor), Department of Biochemistry and Molecular Genetics, Imperial College, London, England
- 1984 - 1989 Lecturer (Assistant Professor), Department of Biochemistry and Molecular Genetics, St. Mary's Hospital (merged with Imperial College, 1987), London, England
- 1983 - 1984 Docent (Assistant Professor), Swedish Brain Bank, Department of Pathology, University of Umea, Sweden
- 1982 - 1983 Honorary Lecturer (Assistant Professor), Department of Biochemistry, University of Newcastle upon Tyne, England
- 1979 - 1983 Postdoctoral Assistant, Medical Research Council Neuroendocrinology Unit, University of Newcastle upon Tyne, England

**Honours and Awards:**

- 1991 Peter Debje Prize, University of Limburg, Belgium, For Alzheimer's Research
- 1992 IPSEN Prize for Research into Alzheimer's Disease
- 1993 Potamkin Prize (American Academy of Neurology) for Alzheimer's Research
- 1995 Allied Signal Prize for Research into Aging
- 1995 MetLife Prize for Research into Alzheimer's disease
- 2002 Kaul Prize for Research into Alzheimer's disease

**PhD Student Supervision:**

- 1982 - 1985 Per Wester, University of Umea (Co-supervisor: currently Professor of Medicine University of Umea)
- 1984 - 1987 Richard Cowburn, Imperial College (Supervisor: currently Staff Scientist, Astra-Zeneca)
- 1994 - 2000 Guy Prihar, University of South Florida (Supervisor: currently Patent Lawyer)
- 1997 - 2003 Cindy Zehr, Mayo Clinic (Co-supervisor: currently postdoc)
- 2003 - 2007 Hon Chung Fung, University College (Co-supervisor)

## **John Hardy Ph.D., Complete List of Peer Reviewed Publications**

- 1) Dodd PR, Hardy JA, Bradford HF, Bennett GW, Edwardson JA, Harding BN. Metabolic and secretory processes in nerve endings isolated from post mortem brain. *Neurosci. Letts.* 11 (1979) 87-92.
- 2) Hardy JA, de Belleruche JS, Border D, Bradford HF. Differential transmitter release from nerve terminals isolated from basal ganglia and substantia nigra. *J. Neurochem.* 34 (1980) 1130-1139.
- 3) Reynolds GP, Sandler M, Hardy JA, Bradford H. The determination and distribution of 2-phenylethylamine in sheep brain. *J. Neurochem.* 34 (1980) 1123-1125.
- 4) Dodd PR, Hardy JA, Oakley AE, Strong AJ. Synaptosomes prepared from fresh human cerebral cortex; morphology, respiration and release of transmitter amino acids. *Brain Res.* 224 (1981) 419-425.
- 5) Dodd PR, Hardy JA, Oakley AE, Edwardson JA, Perry EK, Delaunoy JP. A rapid method for preparing synaptosomes: comparison with alternative procedures. *Brain Res.* 226 (1981) 107-118.
- 6) McDermott JR, Smith AI, Biggins JA, Hardy JA, Dodd PR, Edwardson JA. Degradation of luteinizing hormone – releasing hormone by serum and plasma in vitro. *Reg. Pept.* 2 (1981) 69-79.
- 7) Hardy JA, Dodd PR, Oakley AE, Kidd AM, Perry RH, Edwardson JA. Use of post-mortem human synaptosomes for studies of metabolism and transmitter amino acid release. *Neurosci. Letts.* 33 (1982) 317-32.
- 8) Hardy JA, Dodd PR. Metabolic and functional studies on post-mortem human brain *Neurochem. Internat.* 5 (1983) 253-266.
- 9) Hardy JA, Dodd PR, Oakley AE, Perry RH, Edwardson JA, Kidd AM. Metabolically active synaptosomes can be prepared from frozen rat and human brain. *J. Neurochem.* 40 (1983) 608-614.
- 10) McDermott JR, Dodd PR, Edwardson JA, Hardy JA, Smith AI. Pathway of inactivation of cholecystokinin octapeptide (CCK-8) by synpatosomal fractions. *Neurochem. Internat.* 5 (1983) 641-647.
- 11) McDermott JR, Smith AI, Dodd PR, Hardy JA, Edwardson JA. Mechanism of degradation of LH-RH and neurotensin by synaptosomal peptidases. *Peptides* 4 (1983) 25-30.
- 12) Strong AJ, Tomlinson BE, Venables GS, Gibson G, Hardy JA. The cortical ischaemic penumbra associated with occlusion of the middle cerebral artery in the cat: 2. Studies of histopathology, water content and in vitro neurotransmitter uptake. *J. Cereb. Blood Flow Metab.* 3 (1983) 97-108.
- 13) Hardy JA, Boakes RJ, Thomas DJE, Kidd AM, Edwardson JA, Turner J, Dodd PR Release of aspartate and glutamate caused by chloride reduction in synaptosomal incubation media. *J. Neurochem.* 42 (1984) 875-877.
- 14) Hardy JA, Bateman DE, Kidd AM, Edwardson JA, Singh GB, Dodd PR. Amino acid transport by synaptosomes from post mortem human brain. *J. Neural Transm.* 60 (1984) 57-62.

- 15) Perry EK, Atack JR, Perry RJ, Hardy JA, Dodd PR, Edwardson JA, Blessed G, Tomlinson BE, Fairbairn AF. Intralaminar neurochemical distributions in human midtemporal cortex: comparison between Alzheimer's disease, the normal. *J. Neurochem.* 42 (1984) 1402-1410.
- 16) Hardy JA, Wester P, Winblad B, Gezelius C, Bring G, Eriksson A. The patients dying after long terminal phase have acidotic brains; implications for biochemical measurements on autopsy tissue. *J. Neural Transm.* 61 (1985) 253-264.
- 17) Hardy JA, Adolfsson R, Alafuzoff I, Bucht G, Marcusson J, Nyberg P, Per Dahl E, Wester P, Winblad B. Transmitter deficits in Alzheimer's disease. *Neurochem. Internat.* 7 (1985) 545-563.
- 18) Nyberg P, Adolfsson R, Hardy JA, Nordberg A, Wester P, Winblad B. Catecholamine topochemistry in human basal ganglia: comparison between normal and Alzheimer brains. *Brain Res.* 333 (1985) 139-142.
- 19) Stenstrom A, Oreland L, Hardy JA, Wester P, Winblad B. Uptake of serotonin and dopamine by homogenates from frozen rat and human brain tissue. *Neurochem. Res.* 10 (1985) 515-523.
- 20) Wester P, Nyberg P, Hardy JA, Marcusson J, Winblad B. Serotonin and metabolite concentrations in the aging human brain. *Neurobiol. Aging* 5 (1985) 199-203.
- 21) Almqvist P, Carlsson S, Hardy JA, Winblad B. The distribution and subcellular distribution of Thy-1 in the human brain. *J. Neurochem.* 46 (1986) 681-685.
- 22) Dodd PR, Hardy JA, Baig FB, Kidd AM, Bird ED, Watson WEJ, Johnston GAR. Optimisation of freezing, storage and thawing conditions for the preparation of metabolically active synaptosomes from frozen rat and human brain. *Neurochem. Path.* 4 (1986) 177-198.
- 23) Hardy JA, Barton A, Lofdahl E, Cheetham C, Johnston GAR, Dodd PR. Uptake of Gamma Aminobutyric acid and glycine by synaptosomes from postmortem human brain. *J. Neurochem.* 47 (1986) 460-467.
- 24) Hardy JA, Mann DMA, Wester P, Winblad B. An integrative hypothesis concerning the pathogenesis and progression of Alzheimer's disease. *Neurobiol. Aging* 7 (1986) 489-502.
- 25) Nilsson L, Nordberg A, Hardy J, Wester P, Winblad B. Physostigmine restores 3H acetylcholine efflux from Alzheimer brain slices to normal level. *J. Neural. Trans.* 67 (1986) 275-285.
- 26) Turner JD, Boakes RJ, Hardy JA, Virmani MA. Efflux of putative transmitters from superfused rat brain slices induced by low chloride ion concentrations. *J. Neurochem.* 48 (1986) 106-1068.
- 27) Venables GS, Strong AJ, Miller SA, Gibson G, Hardy JA. The effects of etomidate in middle cerebral artery occlusion model of brain ischaemia in the cat. *Neurol. Res.* 8 (1986) 209-213.
- 28) Wester P, Bateman DE, Dodd PR, Edwardson JA, Hardy JA, Kidd AM, Perry RH, Singh GB. Agonal status affects the metabolic activity of nerve endings isolated from postmortem human brain. *Neurochem. Path.* 3 (1986) 169-180.
- 29) Cowburn RF, Dodd PR, Hardy JA, Johnston GAR. A comparison of high affinity synaptosomal uptake in rat and human brain. *Neurochem. Internat.* 10 (1987) 339-346.

- 30) Hardy JA, Cowburn R, Barton A, Reynolds G, Lofdahl E, O'Carroll AM, Wester P, Winblad B. Region specific loss of glutamate innervation in Alzheimer's disease. *Neurosci. Letts.* 80 (1987) 73-77.
- 31) Hardy JA, Cowburn R, Barton A, Reynolds G, Dodd PR, Wester P, O'Carroll AM, Lofdahl E, Winblad B. A disorder of cortical gabaergic innervation in Alzheimer's disease. *Neurosci. Letts.* 80 (1987) 192-196.
- 32) Hardy JA, Wester P, Backstrom I, Gottfries J, Orelund L, Stenstrom A, Winblad B. The regional distribution of dopamine and serotonin uptake and transmitter concentrations in the human brain. *Neurochem. Internat.* 4 (1987) 445-450.
- 33) Mann DMA, Hardy J. The importance of altered structural proteins in the pathogenesis of Alzheimer's disease. *Neurobiol. Aging* (1987) 444-445.
- 34) Stenstrom A, Hardy J, Orelund L. Intra- and extra-dopamine synaptosomal localisation of monoamine oxidase in striatal homogenates from four species. *Biochem. Pharmacol.* 36 (1987) 2931-2935.
- 35) **Van Broeckhoven C, Genthe AM, Vandenberghe A, Horsthemke B, Backhovens H, Raeymaekers P, Van Hul W, Wehnert A, Gheuens J, Cras P, Bruyland M, Martin JJ, Salbaum M, Multhaup G, Masters CL, Beyreuther K, Gurling HMD, Mullan MJ, Holland A, Barton A, Irving A, Williamson R, Richards SJ, Hardy JA. Failure of familial Alzheimer's disease to segregate with the A4-amyloid gene in several European families. *Nature* 329 (1987) 153-155.**
- 36) Hardy J. Mouse models of human neurogenetic disorders. *Trends Neurosci.* 11 (1988) 87-88.
- 37) O'Connor I, Cowburn RF, Hardy JA, Fowler CJ. Dopamine and apomorphine do not modulate the uptake of 3H D-aspartate in the rat striatum in vitro. *J. Pharm. Pharmacol.* 40 (1988) 307-308.
- 38) Cowburn R, Hardy J, Roberts P, Briggs R. Presynaptic and postsynaptic glutamatergic function in Alzheimer's disease. *Neurosci. Letts.* 86 (1987) 109-113.
- 39) Dodd PR, Hambley JW, Cowburn RF, Hardy JA. A comparison of methodologies for the study of functional transmitter neurochemistry in human brain. *J. Neurochem.* 50 (1988) 1333-1345.
- 40) Cowburn RF, Hardy JA, Roberts PJ. Characterisation of Na<sup>+</sup> independent L-[3H]-glutamate binding sites in human temporal cortex. *J. Neurochem.* 50 (1988) 1872-1878.
- 41) Davies DC, Hardy JA. Blood brain barrier in Alzheimer's disease. *Neurobiol. Aging* 9 (1988) 46-48.
- 42) Nilsson L, Adem A, Hardy J, Winblad B, Nordberg A. Tetrahydroamino acridine and physostigmine restore acetylcholine release in Alzheimer's brain via nicotinic receptors. *J. Neural. Transm.* 70 (1987) 357-368.
- 43) Cowburn RF, Hardy JA, Roberts PJ, Briggs R. Regional distribution of pre- and post-synaptic glutamatergic function in Alzheimer's disease. *Brain Res.* 452 (1988) 403-407.
- 44) Cowburn RF, Hardy JA, Briggs R, Roberts PJ. Characterisation, density and distribution of kainate receptors in normal and Alzheimer's disease brain. *J. Neurochem.* 52 (1989) 140-147.

- 45) **Goate AM, Haynes AR, Owen MJ, Farrall M, James LA, Lai LYC, Mullan MJ, Roques P, Rossor MN, Williamson R, Hardy JA. Predisposing locus for Alzheimer's disease on chromosome 21. Lancet i (1989) 352-355.**
- 46) Foley P, Bradford HF, Docherty M, Fillit H, Luine VN, McEwen B, Bucht G, Winblad B, Hardy JA. Evidence for the presence of anticholinergic antibodies in the serum of patients with Alzheimer's disease. *J. Neurol.* 235 (1988) 466-471.
- 47) Hardy JA. Molecular biology, Alzheimer's disease: more questions than answers. *Trends Neurosci.* 11 (1988) 293-294.
- 48) Hardy JA. Recent advances in the molecular biology and genetics of Alzheimer's disease. *Curr. Op. Psych.* 1 (1988) 453-457.
- 49) Bateman DE, Hardy JA, McDermott JR, Parker DS, Edwardson JA. Amino acid neurotransmitter levels in gliomas and their relationship to the incidence of epilepsy. *Neurol Res* 10 (1988):112-4
- 50) Hardy JA, Goate AM, Owen MJ, Mullan MJ, Rossor MN, Pearson RCA. Modelling the occurrence and pathology of Alzheimer's disease. *Neurobiol. Aging* 10 (1989) 429-431.
- 51) Irving NG, Hardy JA, Bahary N, Friedman JM, Brown SDM. The alpha2 chain of type 1 collagen does not map to mouse chromosome 16 but maps close to the Met proto-oncogene on mouse chromosome 7. *Cytogenet. Cell Genet.* 50 (1989) 121-122.
- 52) Willoughby J, Cowburn RF, Hardy JA, Glover V, Sandler M. 1-methyl-4-phenylpyridium uptake by human and rat striatal synaptosomes. *J. Neurochem.* 52 (1989) 627-631.
- 53) Hardy JA, Goate AM, Owen MJ, Rossor MN. On the aetiology of sporadic early onset Alzheimer's disease. *Lancet ii* (1989) 743.
- 54) Hardy JA. Slow virus dementias: prion gene holds the key. *Trends Neurosci.* 12 (1989) 168-169.
- 55) Hardy JA, Irving N, Kessling A. Down on chromosome 21? *Trends Neurosci.* 12 (1989) 209-210.
- 56) Hardy JA. Alzheimer's disease: protein chemistry and genetics. *Curr. Op. Psych.* 2 (1989) 98-100.
- 57) Owen MJ, James LA, Hardy JA, Williamson R, Goate AM. A Physical map around the Alzheimer's disease locus on chromosome 21. *Am. J. Hum. Genet.* (1990) 46, 312-322.
- 58) Hardy J. Prion dimers: a deadly duo? *Trends Neurosci.* 14 (1991) 423-424
- 59) Goate AM, Hardy JA, Owen MJ. Genetic aetiology of Alzheimer's disease. *Int. Rev. Psych.* 1 (1990) 243-248.
- 60) Walker A, Collins FS, Siddique TS, Yamaoka LH, Herbstreith MH, Pericak-Vance MA, Secore SL, Hung WY, Hardy JA, Roses AD, Bartlett RJ. AW8-1J, a jump clone from pGSE9 (D21S16) recognises a BamH1 polymorphism. *Nucleic Acid Res.* 18 (1990) 1931.
- 61) **Van Broeckhoven C, Haan J, Bakker E, Hardy JA, Van Hul W, Wehnert A, Vegter-Van der Vlis M, Roos RAC. The beta-amyloid precursor protein gene is tightly linked to the locus causing Hereditary Cerebral Hemorrhage with Amyloidosis of Dutch Type. Science 248 (1990) 488-490.**
- 62) Hardy JA. Molecular genetics of the dementias. *Sem. Neurosci.* 2 (1990) 109-115.

- 63) Collinge J, Owen F, Poulter M, Leach M, Crow TJ, Rossor MN, Hardy JA, Mullan MJ, Janota I, Lantos PL. Prion dementia without characteristic pathology. *Lancet* 336 (1990) 7-9.
- 64) St. George Hyslop P. et al. Genetic linkage studies suggest that Alzheimer's disease is not a single homogenous disorder. *Nature* 347 (1990) 194-197.
- 65) Goate AM, Chartier-Harlin MC, Mullan MC, Brown J, Crawford F, Fidani L, Giuffra L, Haynes A, Irving N, James L, Mant R, Newton P, Rooke K, Roques P, Talbot C, Pericak-Vance M, Roses A, Williamson R, Rossor MN, Owen M, Hardy J. Segregation of a missense mutation in the amyloid precursor protein gene with familial Alzheimer's disease. *Nature* 349 (1991) 704-706.
- 66) Jefferys JG, Mitchell P, O'Hara L, Tiley C, Hardy J, Jordan SJ, Lynch M, Wadsworth J. Ex vivo release of gaba from tetanuc toxin induced chronic epileptic foci decreased during the active seizure phase. *Neurochem. Intemat.* 18 (1991) 373-379.
- 67) Barton AJL, Harrison PJ, Najlerahim A, Hefferman J, McDonald B, Robinson JR, Davies DC, Harrison WJ, Mitra P, Hardy JA, Pearson RCA. Increased tau messenger RNA in Alzheimer's disease hippocampus. *Am. J. Pathol.* 137 (1990) 497-502.
- 68) Wester P, Bergstrom U, Eriksson A, Gezelius C, Hardy J, Winblad B. Ventricular cerebrospinal fluid monoamine transmitter and metabolite concentrations reflect human brain neurochemistry in autopsy cases. *J Neurochem.* 54 (1990) 1148-1156
- 69) Haan J, Hardy JA, Roos RAC. Hereditary cerebral haemorrhage with amyloidosis-Dutch type: its importance for Alzheimer's disease research. *Trends Neurosci.* 14 (1989) 231-234.
- 70) Hardy J. et al. Alzheimer's disease classification. *Lancet* (1991) (i) 1342-1343.
- 71) Owen MJ, Goate AM, Hardy JA. A polymorphic microsatellite repeat sequence on chromosome 21 (D21S80). *Nucleic Acid Res.* 19 (1991) 4574.
- 72) Mant R, Parfitt E. Hardy J, Owen M. A mononucleotide repeat polymorphism in the APP gene. *Nucleic Acid Res.* 19 (1991) 4572.
- 73) Chartier-Harlin MC, Crawford F, Houlden H, Warren A, Hughes D, Fidani L, Goate A, Rossor M, Hardy J, Mullan M. Early onset Alzheimer's disease caused by mutations at codon 717 of the b-amyloid precursor protein gene. *Nature* 353 (1991) 844-846.
- 74) Van Duijn CM, Hendriks L, Cruts M, Hardy JA, Hofman A, Van Broeckhoven CM. Amyloid precursor protein gene mutation in early onset Alzheimer's disease. *Lancet* 337 (1991) 978.
- 75) Van Duijn CM, Van Broeckhoven C, Hardy JA, Goate AM, Rossor MN, Vandenberghe A, Martin JJ, Hofman A, Mullan MJ. Evidence for allelic heterogeneity in familial early onset Alzheimer's disease. *Brit. J. Psych.* 158 (1991) 471-474.
- 76) Chartier-Harlin MC, Crawford F, Hamandi K, Mullan M, Goate A, Backhovens H, Martin JJ, Van Broeckhoven C. Screening for the b-amyloid precursor protein mutation (APP717 Val>Ile) in extended pedigrees with early onset Alzheimer's disease. *Neurosci. Letts.* 129 (1992) 134-135.
- 77) Crawford F, Hardy J, Mullan M, Goate A, Hughes D, Fidani L, Roques P, Rossor M, Chartier-Harlin MC. Sequencing of exons 16 and 17 of the b-amyloid precursor protein gene in families with early onset Alzheimer's disease fails to reveal mutations in the b-amyloid sequence. *Neurosci. Letts.* 133 (1991) 1-2.

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- 80) Crawford F, Chartier-Harlin MC, Mullan M, Hardy J, Delacourte A, Arnott G. Alzheimer's - a correction. *Nature* 256 (1992) 390.
- 81) Hardy J, Chartier-Harlin MC, Mullan M. Alzheimer's disease: the new agenda. *Am. J. Hum. Genet.* 50 (1992) 648-651.
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- 83) Hardy JA. Framing b-amyloid. *Nature Genet.* 1 (1992) 233-234.
- 84) Irving NG. et al. The multipoint genetic mapping of mouse chromosome 16. *Genomics* 9 (1991) 386-389.
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- 91) Mullan M, Houlden H, Windelspect M, Fidani L, Lombardi C, Diaz P, Rossor M, Crook R, Hardy J, Duff K, Crawford F. A locus for familial early onset Alzheimer's disease on the long arm of chromosome 14, proximal to alpha1-antichymoreypsin. *Nature Genet.* 2 (1992) 340-343.
- 92) Chartier-Harlin MC, Crawford F, Perl DP, Steele J, Hardy J. Sequencing of exons 16 and 17 of the beta amyloid precursor protein gene reveals the sequence to be normal in cases of Parkinson Dementia Complex of Guam. *J. Neural Transm.* 5 (1993) 63-65.
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- 101) Dodd PR, Watson WEJ, Morrison MM, Johnston GAR, Bird ED, Cowburn RF, Hardy JA. Uptake of gamma-aminobutyric acid and L-glutamic acid by synaptosomes from postmortem human cerebral cortex: multiple sites, sodium dependence and effect of tissue preparation. *Brain Res.* 490 (1989) 320-332.
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