1 Personal History

John Ashburner
Honorary Reader
Wellcome Trust Centre for Neuroimaging
12 Queen Square, London WC1N 3BG, UK.
DOB: 23rd January, 1967
Nationality: British

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2 Education

- 1988. BSc 2(ii) Biochemistry. *University of Leeds, Leeds, UK.*
- 1989. MSc Information Technology. *Aston University, Birmingham, UK.*
- 2000. PhD Neuroscience. *University College London, UK.*

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3 Professional History

- *MRC Cyclotron Unit, Hammersmith Hospital, London, UK*
  1989-1995: Computer Officer.
- *Wellcome Trust Centre for Neuroimaging, 12 Queen Square, London, UK*
  1995- : Computer Programmer.
  2002-2003: Honorary Lecturer.
  2003-2006: Honorary Senior Lecturer.
  2006- : Honorary Reader.

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4 Other Appointments and Affiliations

- Member of *Organization for Human Brain Mapping Scientific Program Committee.*
- A handling editor for *NeuroImage.*
- Reviewer for articles in the *IEEE Transactions in Medical Imaging*, *NeuroImage* and *Human Brain Mapping*, *PLoS Computational Biology*, plus occasional reviewing for other journals.

- Reviewed papers for the *7th*, *8th*, *9th* and *10th International Conferences on Medical Image Computing and Computer Assisted Intervention* and abstracts for the *10th*, *11th*, *12th* and *13th Annual Meetings of the Organization for Human Brain Mapping.*
- Honourary visiting lecturer at the University of Maastricht, Netherlands.

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5 Prizes, Awards and Honours

- A co-recipient of the 2003 *IgNobel Prize* for Medicine, for presenting evidence that the brains of London taxi drivers are more highly developed than those of their fellow citizens [Maguire et al, 2000].
- Recipient of the 2006 *Wiley Young Investigator Award* in Human Brain Mapping.

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6 Grants

Structure and Function in Clinical Neurology Programme Grant. GR075696AIA The Wellcome Trust. With R.S.J. Frackowiak and S. Tabrizi.

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7 Invited Talks (2004-present)

- Talks at the *SPM Course.* Advanced Telecommunications Research Institute, Keihanna Science City, Kyoto, Japan. 22-24th May, 2004.
- Talk at the *Graduate Summer School: Mathematics in Brain Imaging.* Institute for Pure and Applied Mathematics, University of California - Los Angeles, USA. 14th July, 2004.
- Talk at the *Summer Institute of Cognitive Neuroscience.* National Central University, Chung-Li, Taiwan. 30th August - 1st September, 2004.
- One of three invited foreign speakers at the *Congresso Nazionale di Neuroradiologia*, Milan, Italy. 22-25th Sept, 2004.
- Invited speaker at the opening symposium of the Brain Imaging Centre (M-BIC) within the Faculty of Psychology, Maastricht, The Netherlands. 23rd April, 2005.
- Lectures at the *SPM Short Course.* Yale University, New Haven, CT. USA. 6th-8th April, 2005.
- Talk at the *fMRI Course* at the 11th Annual Meeting of the Organization for Human Brain Mapping. Toronto, Ontario, Canada. 12th June, 2005.

- *Toolkit of Cognitive Neuroscience: Advanced course in fMRI data analysis.* F. C. Donders Centre for Cognitive Neuroimaging, Nijmegen, The Netherlands. 27-29th June, 2005.
- Talk at the *UU/UMC SPM2 Course.* Utrecht University, Utrecht, The Netherlands. 12th July, 2006.
- Talk at the *fMRI Course* at the 13th Annual Meeting of the Organization for Human Brain Mapping. Chicago, USA. 10th June, 2007.
- *Symposium.* University of Maastricht, The Netherlands. 14th September, 2007.
- Talk at the *School of Magnetic Resonance Techniques.* Milan, Italy. Dec, 2007.
- *Invited Talk.* GSK, London, UK. 9th Jan, 2008.
- *Invited Talk.* CMIC, UCL, London, UK. 17th Jan, 2008.
- *Invited Talk.* Faculty of Psychology, Maastricht, The Netherlands. 28th February, 2008.
- *Invited Talk.* MRC Cognition and Brain Sciences Unit, Cambridge University, UK. 10th Mar, 2008.
- Talk at the *Recent Advances in MRI and Lesion Reconstruction Techniques Workshop.* Budapest, Hungary. 21st April, 2008.
- Talk at the *UCL-CNT workshop on VBM of anatomical MRI and DT.* Wellcome Trust Centre for Neuroimaging, London, UK. 24th April, 2008.
- Talk at the *International School on Magnetic Resonance and Brain Function - VI Workshop.* Erice, Italy. 21st May, 2008.
- *Invited Talk.* Martinos Center, Massachusetts General Hospital, Boston, USA. 28th May, 2008.
- *Invited Talk.* CSAIL, Massachusetts Institute of Technology, Cambridge, USA. 29th May, 2008.
- *Graduate Summer School: Mathematics in Brain Imaging.* Institute for Pure and Applied Mathematics, University of California - Los Angeles, USA. 17th July, 2008.
- Talk at the *Annual Meeting of the European HD Network (Imaging Working Group).* Lisbon, Portugal. 4th September, 2008.
- Talk at the *Anglo-Nordic Networking Seminar ("The Aging Brain").* London, UK. 8th Dec, 2008.
- Talk at the *One day British Machine Vision Association symposium ("Group Theory, Invariance & Symmetry in Vision").* London, UK. 21st Jan, 2009.
- Talk at the *MBIC fMRI Workshop.* Maastricht, The Netherlands. 19th Feb, 2009.
- *Invited talk.* Netherlands Institute for Neuroscience, Amsterdam, NL. 20th March, 2009.
- Talk in the *fMRI Advanced Issues and Processing Software* educational session of *ISMRM.* Honolulu, USA. 19th April, 2009.
- Talk at the *Longitudinal Image Analysis Issues in MS* meeting. Siena, Italy. 4th June, 2009.
- *Invited talk* at CHUV, Lausanne, Switzerland. 16th June, 2009.
- Talk at the *European Meeting on Challenges in Modern Massive Data Sets (EMMDS)*, Copenhagen, Denmark. 2nd July, 2009.
- Talk at the *SPM Course*, Liege, Belgium. 8th September, 2009.
- Talk at the *SIAM Conference on Imaging Science*, Chicago, USA. 12th April, 2010.

8 Academic Supervision

- *2006–2009* Primary superviser of PhD student *Carlton Chu*. The project was on applying pattern recognition methods to MRI, and Dr Chu has now graduated.
- *2006–* Secondary superviser of part time PhD student *Hester Breman* (Maastricht, The Netherlands). The project is on expertise in decision making, with a component on distortion correction methods for echo-planar images.

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9 Teaching Activity (2004-present)

- *SPM Short Course*. Institute of Neurology, London, UK. 13-15th May, 2004.
- *SPM Short Course*. Institute of Neurology, London, UK. 12-14th May, 2005.
- *SPM Short Course*. Institute of Neurology, London, UK. 11-13th May, 2006.
- *SPM Short Course*. Institute of Neurology, London, UK. 17-19th May, 2007.
- *SPM Short Course*. Institute of Neurology, London, UK. 15-17th May, 2008.
- *SPM Short Course*. Institute of Neurology, London, UK. 7-9th May, 2009.

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10 Enabling Activity

I am a co-author of the widely used *SPM* package for analyzing functional and structural neuroimaging data. This package is freely available to the international neuro-imaging community. There are over 2,400 people on the *JISCmail* mailing list for *SPM* users (which I administered until recently). In addition to supporting researchers in Queen Square, I answer about many on-list questions per year, and respond to a much greater number of queries off the list.

Recent work on the *SPM* package includes a new user-interface, which implicitly incorporates a scheme for creating electronically readable descriptions of the processing steps performed. These can serve as documentation for various international databasing projects. Another area was to implement the NIFTI image file format for *SPM*. Both of these tasks were intended to meet the aims of the NIH Data Format Working Group (see above).

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11 Research Activity

My main area of research is on developing image processing techniques for the neuro-imaging community, which are distributed as part of the *SPM* software package. Much of this work is on image registration, both within and between different modalities, and also within and between subjects. I also work on tissue classification methods for MR images, which has led to me being associated with a technique known as *Voxel-Based Morphometry*. This technique is for localising brain areas that may differ in volume among various groups of subjects. It has been applied to many different subject populations, both locally and internationally.

A current aim is to develop models that can be applied to a large number of subjects to address important issues in clinical neurology. This involves developing a strategy where features from anatomical scans within labelled groups are employed as training sets to develop classifiers that can be subsequantly used to diagnose unlabelled scans. This requires improved pre-processing strategies for extracting features that are most likely to inform such classifications.

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12 Publications

Most Significant Publications

1. **Ashburner J** & Friston KJ (2000): *Voxel-based morphometry - the methods.* NeuroImage 11(6):805–821. **1,624 citations**.
2. **Ashburner J** & Friston KJ (1999): *Nonlinear spatial normalization using basis functions.* Human Brain Mapping 7(4):254–266. **691 citations**.
3. **Ashburner J** & Friston K (1997): *Multimodal image coregistration and partitioning - A unified framework.* NeuroImage 6(3):209–217. **442 citations**.
4. **Ashburner J** & Friston KJ (2005): *Unified segmentation.* NeuroImage 26(3):839–851. **355 citations**.
5. **Ashburner J** & Friston KJ (2001): *Why voxel-based morphometry should be used.* NeuroImage 14(6):1238–1243. **248 citations**.

12.A Books

Co-Edited Books

1. *Human Brain Function, 2nd Edition.* Academic Press, San Diego. Frackowiak RSJ, Friston KJ, Frith CD, Dolan RJ, Price CJ, Zeki S, **Ashburner J** & Penny W (eds.).
2. *Statistical Parametric Mapping: The Analysis of Functional Brain Images.* Elsevier, New York. Friston KJ, **Ashburner J**, Kiebel SJ, Nichols TE & Penny W (eds.).

Chapters in Books

1. **Ashburner J**, Haslam J, Taylor C, Cunningham VJ & Jones T (1996): *A cluster analysis approach for the characterization of dynamic PET data.* In *Quantification of brain function using PET*, Chap. 59, pp 301–306. Academic Press, San Diego. Myers R, Cunningham V, Bailey D & Jones T (eds.).

2. **Ashburner J** & Friston KJ (1997): *Spatial transformation of images.* In *Human Brain Function*, Chap. 3, pp 43–58. Academic Press, San Diego. Frackowiak RSJ, Friston KJ, Frith CD, Dolan RJ & Mazziotta JC (eds.).

3. **Ashburner J** & Friston KJ (1998): *Spatial normalization.* In *Brain Warping*, Chap. 2, pp 27–44. Academic Press, San Diego. Toga A (ed.).

4. **Ashburner J** & Friston KJ (1999): *Image registration.* In *Functional MRI*, Chap. 26, pp 285–299. Springer-Verlag, Berlin. Moonen CTW & Bandettini PA (eds.).

5. **Ashburner J** & Friston KJ (2003): *Rigid body registration.* In *Human Brain Function, 2nd Edition*, Chap 32, pp 635–653. Academic Press, San Diego. Frackowiak RSJ, Friston KJ, Frith CD, Dolan RJ, Price CJ, Zeki S, **Ashburner J** & Penny W (eds.).

6. **Ashburner J** & Friston KJ (2003): *Spatial normalization using basis functions.* In *Human Brain Function, 2nd Edition*, Chap 33, pp 655–672. Academic Press, San Diego. Frackowiak RSJ, Friston KJ, Frith CD, Dolan RJ, Price CJ, Zeki S, **Ashburner J** & Penny W (eds.).

7. **Ashburner J** & Friston KJ (2003): *High-dimensional image warping.* In *Human Brain Function, 2nd Edition*, Chap 34, pp 673–694. Academic Press, San Diego. Frackowiak RSJ, Friston KJ, Frith CD, Dolan RJ, Price CJ, Zeki S, **Ashburner J** & Penny W (eds.).

8. **Ashburner J** & Friston KJ (2003): *Image segmentation.* In *Human Brain Function, 2nd Edition*, Chap 35, pp 695–706. Academic Press, San Diego. Frackowiak RSJ, Friston KJ, Frith CD, Dolan RJ, Price CJ, Zeki S, **Ashburner J** & Penny W (eds.).

9. **Ashburner J** & Friston KJ (2003): *Morphometry.* In *Human Brain Function, 2nd Edition*, Chap 36, pp 707–722. Academic Press, San Diego. Frackowiak RSJ, Friston KJ, Frith CD, Dolan RJ, Price CJ, Zeki S, **Ashburner J** & Penny W (eds.).

10. **Ashburner J** & Friston KJ (2007): *Rigid body registration.* In *Statistical Parametric Mapping: The Analysis of Functional Brain Images*, Chap 4, pp 49–62. Elsevier, New York. Friston KJ, **Ashburner J**, Kiebel SJ, Nichols TE & Penny W (eds.).

11. **Ashburner J** & Friston KJ (2007): *Non-linear registration.* In *Statistical Parametric Mapping: The Analysis of Functional Brain Images*, Chap 5, pp 63–80. Elsevier, New York. Friston KJ, **Ashburner J**, Kiebel SJ, Nichols TE & Penny W (eds.).

12. **Ashburner J** & Friston KJ (2007): *Segmentation.* In *Statistical Parametric Mapping: The Analysis of Functional Brain Images*, Chap 6, pp 81–91. Elsevier, New York. Friston KJ, **Ashburner J**, Kiebel SJ, Nichols TE & Penny W (eds.).

13. **Ashburner J** & Friston KJ (2007): *Voxel-based Morphometry.* In *Statistical Parametric Mapping: The Analysis of Functional Brain Images*, Chap 7, pp 92–99. Elsevier, New York. Friston KJ, **Ashburner J**, Kiebel SJ, Nichols TE & Penny W (eds.).

14. **Ashburner J** & Friston KJ (2009): *Imaging techniques: Voxel based morphometry*, Chap 306. In the *Encyclopedia of Neuroscience*. Elsevier. Squire LR (ed.).

15. **Ashburner J** (2009): *Preparing fMRI Data for Statistical Analysis*, In *Functional MRI Techniques*. Humana Press. Filippi M (ed.).

12.B Refereed Articles

1. Jones AK, Qi LY, Fujirawa T, Luthra SK, **Ashburner J**, Bloomfield P, Cunningham VJ, Itoh M, Fukuda H & Jones T (1991): *In vivo distribution of opioid receptors in man in relation to the cortical projections of the medial and lateral pain systems measured with positron emission tomography.* Neuroscience Letters. 126(1):25–28

2. Rajeswaran S, Hume SP, Cremer JE, Young J, Bailey DL, **Ashburner J**, Luthra SK, Jones AK & Jones T (1991): *Dynamic monitoring of [C-11]diprenorphine in rat brain using a prototype positron imaging device.* Journal of Neuroscience Methods. 40(2-3):223–232

3. Jones AK, Cunningham VJ, Ha-Kawa SK, Fujiwara T, Liyii Q, Luthra SK, **Ashburner J**, Osman S & Jones T (1994): *Quantitation of [C-11]diprenorphine cerebral kinetics in man acquired by PET using presaturation, pulse-chase and tracer-only protocols.* Journal of Neuroscience Methods. 51(2):123–134

4. Silbersweig DA, Stern E, Schnorr L, Frith CD, **Ashburner J**, Cahill C, Frackowiak RS & Jones T (1994): *Imaging transient, randomly occurring neuropsychological events in single subjects with positron emission tomography: an event-related count rate correlational analysis.* Journal of Cerebral Blood Flow and Metabolism. 14(5):771–782

5. Friston KJ, **Ashburner J**, Frith CD, Poline J-B, Heather JD & Frackowiak RSJ (1995): *Spatial registration and normalization of images.* Human Brain Mapping. 3(3):165–189

6. Hermansen F, Bloomfield PM, **Ashburner J**, Camici PG & Lammertsma AA (1996): *Linear dimension reduction of sequences of medical images: II. direct sum decomposition.* Physics in Medicine and Biology. 40(11):1921–1941

7. Labbe C, Froment JC, Kennedy A, **Ashburner J** & Cinotti L (1997): *Positron emission tomography metabolic data corrected for cortical atrophy using magnetic resonance imaging.* Altzheimer Disease and Associated Disorders. 10(3):141–170

8. Koepp MJ, Richardson MP, Labbe C, Brooks DJ, Cunningham VJ, **Ashburner J**, Van Paesschen W, Revesz T & Duncan JS (1997): *[C-11] flumazenil PET volumetric MRI and quantitative pathology in mesial temporal lobe epilepsy.* Neurology. 49(3):764–773

9. **Ashburner J** & Friston KJ (1997): *Multimodal image coregistration and partitioning - a unified framework.* NeuroImage. 6(3):209–217

10. Kiebel SJ, **Ashburner J**, Poline J-B & Friston KJ (1997): *MRI and PET coregistration - A cross validation of Statistical Parametric Mapping and Automated Image Registration.* NeuroImage. 5(4):271–279

11. Richardson MP, Friston KJ, Sisodiya SM, Koepp MJ, **Ashburner J**, Free SL, Brooks DJ & Duncan JS (1997): *Cortical grey matter and benzodiazepine receptors in malformations of cortical development. A voxel-based comparison of structural and functional imaging data.* Brain. 120:1961–1973

12. **Ashburner J**, Neelin P, Collins DL, Evans AC & Friston KJ (1997): *Incorporating prior knowledge into image registration.* NeuroImage. 6(4):344–352

13. Vargha-Khadem F, Watkins KE, Price CJ, **Ashburner J**, Alcock KJ, Connelly A, Frackowiak RSJ, Friston KJ, Pembrey ME, Mishkin M, Gadian DG & Passingham RE (1998): *Neural basis of an inherited speech and language disorder.* Proc. Natl. Acad. Sci. USA 95:12695–12700

14. Hermansen F, **Ashburner J**, Spinks TJ, Kooner JS, Camici PG & Lammertsma AA (1998): *Generation of myocardial factor images directly from the dynamic oxygen-15-water scan without use of an oxygen-15-carbon monoxide blood-pool scan.* Journal of Nuclear Medicine. 39(10):1696–702

15. **Ashburner J**, Hutton C, Frackowiak RSJ, Johnsrude I, Price C & Friston KJ (1999): *Identifying global anatomical differences: deformation-based morphometry.* Human Brain Mapping. 6(5):348–357

16. Krams M, Quinton R, **Ashburner J**, Friston KJ, Frackowiak RS, Bouloux PM & Passingham RE (1999): *Kallmann's syndrome: mirror movements associated with bilateral corticospinal tract hypertrophy.* Neurology 52(4):816–822

17. Chawla D, Büchel C, Edwards R, Howesman A, Josephs O, **Ashburner J** & Friston KJ (1999): *Speed-dependent responses in V5: a replication study.* NeuroImage 9:508–515

18. Ito K, Morrish PK, Rakshi JS, Uema T, **Ashburner J**, Bailey DL, Friston KJ & Brooks DJ (1999): *Statistical parametric mapping with F-18-dopa PET demonstrates bilaterally reduced striatal and nigraldopaminergic function in early Parkinson's disease.* J. Neurol. Neurosurg. Psychiatry. 66(6): 754–758

19. **Ashburner J**, Andersson JLR & Friston KJ (1999): *High-dimensional image registration using symmetric priors.* NeuroImage 9(6):619–628

20. Price CJ, Veltman DJ, **Ashburner J**, Josephs O & Friston KJ (1999): *The critical relationship between the timing of stimulus presentation and data acquisition in blocked designs with fMRI.* NeuroImage 10:36–44

21. May A, **Ashburner J**, Büchel C, McGonigle DJ, Friston KJ, Frackowiak RSJ & Goadsby PJ (1999): *Correlation between structural and functional changes in brain in an idiopathic headache syndrome.* Nature Medicine 5(7):836–838

22. **Ashburner J** & Friston KJ (1999): *Nonlinear spatial normalization using basis functions.* Human Brain Mapping. 7(4):254–266

23. Mummery CJ, **Ashburner J**, Scott SK, Wise RJ (1999): *Functional neuroimaging of speech perception in six normal and two aphasic subjects.* J Acoust Soc Am 106(1):449–57

24. Rakshi JS, Uema T, Ito K, Bailey DL, Morrish PK, **Ashburner J**, Dagher A, Jenkins IH, Friston KJ & Brooks DJ (1999): *Frontal, midbrain and striatal dopaminergic function in early and advanced Parkinson's disease: a 3D [(18)F]dopa-PET study.* Brain 122:1637–50

25. Woermann FG, Free SL, Koepp MJ, **Ashburner J** & Duncan JD (1999): *Voxel-by-voxel comparison of automatically segmented cerebral grey matter – a rater-independent comparison of structural MRI in patients with epilepsy.* NeuroImage 10:373–384

26. Abell F, Krams M, **Ashburner J**, Passingham RE, Friston KJ, Frackowiak RSJ, Happé F, Frith CD & Frith U (1999): *The neuroanatomy of autism: a voxel based whole brain analysis of structural scans.* NeuroReport. 10(8):1647–1651

27. Mummery CJ, Patterson K, Price CJ, **Ashburner J**, Frackowiak RSJ & Hodges JR (2000): *A Voxel-based morphometry study of semantic dementia: relationship between temporal lobe atrophy and semantic memory.* Annals of Neurology 47:36–45

28. Grootoonk S, Hutton C, **Ashburner J**, Howseman AM, Josephs O, Rees G, Friston KJ & Turner R (2000): *Characterization and correction of interpolation effects in the realignment of fMRI time series.* NeuroImage 11(1):49–57

29. Maguire EA, Gadian DG, Johnsrude IS, Good CD, **Ashburner J**, Frackowiak RSJ & Frith CD (2000): *Navigation-related structural change in the hippocampi of taxi drivers.* Proceedings of the National Academy of Sciences 97(8):4398–4403

30. **Ashburner J**, Andersson JLR & Friston KJ (2000): *Image registration using a symmetric prior – in three-dimensions.* Human Brain Mapping 9(4):212–225

31. **Ashburner J** & Friston KJ (2000): *Voxel-based morphometry – the methods.* NeuroImage 11(6):805–821

32. Deichmann R, Good CD, Josephs O, **Ashburner J** & Turner R (2000): *Optimization of 3-D MP-RAGE sequences for structural brain imaging.* NeuroImage 12(1):112–127

33. Giraud A-L, Lorenzi C, **Ashburner J**, Wable J, Johnsrude I, Frackowiak R & Kleinschmidt A (2000): *Representation of the temporal envelope of sounds in the human brain.* J. Neurophysiol. 84:1558–1598

34. Salmond C H, **Ashburner J**, Vargha-Khadem F, Gadian DG & Friston KJ (2000): *Detecting bilateral abnormalities with voxel-based morphometry.* Human Brain Mapping 11(3):223–232

35. Ramnani N, Toni I, Josephs O, **Ashburner J** & Passingham RE (2000): *Learning- and expectation-related changes in the human brain during motor learning.* J. Neurophysiol. 84(6):3026–3035

36. Lipschutz B, Friston KJ, **Ashburner J**, Turner R & Price CJ (2001): *Assessing study-specific regional variations in fMRI signal.* NeuroImage 13(2):392–398

37. Andersson JLR, Hutton C, **Ashburner J**, Turner R & Friston KJ (2001): *Modeling geometric deformations in EPI time series.* Neuroimage 13(5):903–919

38. Gitelman DR, **Ashburner J**, Friston KJ, Tyler LK, & Price CJ (2001): *Voxel-based morphometry of herpes simplex encephalitis.* NeuroImage 13(4):623–631

39. Andersson JLR, **Ashburner J** & Friston KJ (2001): *A global estimator unbiased by local changes.* NeuroImage, 13(6):1193–1206

40. Good CD, Johnsrude IS, **Ashburner J**, Henson RNA, Friston KJ & Frackowiak RSJ (2001): *A voxel-based morphometric study of ageing in 465 normal adult human brains.* NeuroImage 14(1):21–36

41. Brett M, Leff AP, Rorden C & **Ashburner J** (2001): *Spatial normalization of brain images with focal lesions using cost function masking.* NeuroImage 14(2):486–500

42. Good CD, Johnsrude I, **Ashburner J**, Henson RNA, Friston KJ & Frackowiak RSJ (2001): *Cerebral asymmetry and the effects of sex and handedness on brain structure: a voxel-mased morphometric analysis of 465 normal adult human brains.* NeuroImage 14(3):685–700

43. Good CD, **Ashburner J** & Frackowiak RSJ (2001): *Computational neuroanatomy: new perspectives for neuroradiology.* Rev Neurol (Paris) 157(8-9):797–806

44. Toni I, Ramnani N, Josephs O, **Ashburner J** & Passingham RE (2001): *Learning arbitrary visuomotor associations: temporal dynamic of brain activity.* NeuroImage 14:1048–1057

45. **Ashburner J** & Friston KJ (2001): *Why voxel-based morphometry should be used.* NeuroImage 14:1238–1243

46. Watkins KE, Vargha-Khadem F, **Ashburner J**, Passingham RE, Connelly A, Friston KJ, Frackowiak RSJ, Mishkin M & Gadian DG (2002): *MRI analysis of an inherited speech and language disorder: structural brain abnormalities.* Brain 125:465–478.

47. Hutton C, Bork A, Josephs O, Deichmann R, **Ashburner J** & Turner R (2002): *Image distortion correction in fMRI: a quantitative evaluation.* NeuroImage 16(1):217–240.

48. Friston KJ, Penny W, Phillips C, Kiebel S, Hinton G & **Ashburner J** (2002): *Classical and Bayesian inference in neuroimaging: theory.* NeuroImage 16(2):465–483

49. Friston KJ, Glaser DE, Henson RNA, Kiebel S, Phillips C & **Ashburner J** (2002): *Classical and Bayesian inference in neuroimaging: applications.* NeuroImage 16(2):484–512

50. Salmond CH, **Ashburner J**, Vargha-Khadem F, Connelly A, Gadian DG & Friston KJ (2002): *Distributional assumptions in voxel-based morphometry.* NeuroImage 17(2):1027–1030

51. Good CD, Scahill RI, Fox NC, **Ashburner J**, Friston KJ, Chan D, Crum WR, Rosser MN & Frackowiak RSJ (2002): *Automatic differentiation of anatomical patterns in the human brain: validation with studies of degenerative dementias.* NeuroImage 17(1):29–46

52. Salmond CH, **Ashburner J**, Vargha-Khadem F, Connelly A, Gadian DG & Friston KJ (2002). *The precision of anatomical normalization in the medial temporal lobe using spatial basis functions.* NeuroImage 17:507–512

53. Critchley HD, Good CD, **Ashburner J**, Frackowiak RS, Mathias CJ & Dolan RJ (2003): *Changes in cerebral morphology consequent to peripheral autonomic denervation.* NeuroImage 18(4):908–916

54. Gitelman DR, Penny WD, **Ashburner J** & Friston KJ (2003): *Modeling regional and psychological interactions in fMRI: the importance of hemodynamic deconvolution.* NeuroImage 19:200–207

55. Hillary FG, Steffener J, Biswal BB, Lange G, DeLuca J & **Ashburner J** (2003): *FMRI technology and traumatic brain injury rehabilitation: guidelines for methodological and conceptual pitfalls.* Journal of Head Trauma Rehabilitation. 17(5):411–430

56. Ashburner J, Csernansky JG, Davatzikos C, Fox NC, Frisoni GB & Thompson PM (2003): *Computer-assisted imaging to assess brain structure in healthy and diseased brains.* The Lancet Neurology. 2(2):79–88

57. Good CD, Lawrence K, Thomas NS, Price CJ, **Ashburner J**, Friston KJ, Frackowiak RSJ, Oreland L & Skuse DH (2003): *Dosage-sensitive X-linked locus influences the development of amygdala and orbitofrontal cortex, and fear recognition in humans.* Brain 126:2431–2446

58. Andersson JLR, Skare S & **Ashburner J** (2003): *How to correct susceptibility distortions in spin-echo echo-planar images: application to diffusion tensor imaging.* NeuroImage 20(2):870–888

59. Friston KJ & **Ashburner J** (2004): *Generative and recognition models for neuroanatomy.* NeuroImage 23(1):21–24

60. Mechelli A, Crinion JT, Noppeney U, O'Doherty J, **Ashburner J**, Frackowiak RS & Price CJ (2004): *Neurolinguistics: structural plasticity in the bilingual brain.* Nature 431:757.

61. Kipps CM, Duggins AJ, Mahant N, Gomes L, **Ashburner J** & McCusker EA (2005): *Progression of structural neuropathology in preclinical Huntington's disease: a tensor based morphometry study.* Journal of Neurology, Neurosurgery and Psychiatry 76(5):650–655.

62. **Ashburner J** & Friston KJ (2005): *Unified segmentation.* NeuroImage 26(3):839–851.

63. Noppeney U, Friston KJ, **Ashburner J**, Frackowiak R & Price CJ (2005): *Early visual deprivation induces structural plasticity in gray and white matter.* Curr Biol. 15(13):R488–490.

64. Salmond CH, **Ashburner J**, Connelly A, Friston KJ, Gadian DG & Vargha-Khadem F (2005): *The role of the medial temporal lobe in autistic spectrum disorders.* Eur J Neurosci. 22(3):764–72

65. Mechelli A, Price CJ, Friston KJ & **Ashburner J**. (2005): *Voxel-based morphometry of the human brain: Methods and applications* . Current Medical Imaging Reviews 1(2):105–113

66. Friston K, Mattout J, Trujillo-Barreto N, **Ashburner J** & Penny W. (2007): *Variational free energy and the Laplace approximation.* NeuroImage 34(1):220–234

67. Brambati SM, Renda NC, Rankin KP, Rosen HJ, Seeley WW, **Ashburner J**, Weiner MW, Miller BL & Gomo-Tempini ML. (2007): *A tensor based morphometry study of longitudinal gray matter contraction in FTD.* NeuroImage 35(3):998–1003

68. **Ashburner J**. (2007): *A Fast Diffeomorphic Image Registration Algorithm.* NeuroImage 38:95–113

69. Crinion J, **Ashburner J**, Leff A, Brett M, Price C, Friston K. (2007): *Spatial normalization of lesioned brains: Performance evaluation and impact on fMRI analyses.* NeuroImage 37(3):866–875

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