Curriculum Vitae

**Karl John Friston FRS**

**Personal Details**

Born July 12th 1959 York UK GMC Registration No. (UK) 2893040

Married with three children NI No. (UK) WE 461973 A

**Current appointments**

2001 Scientific Director; Wellcome Trust Centre for Neuroimaging

1999 Wellcome Principal Research Fellow, Institute of Neurology, UK

Honorary Consultant: The National Hospital for Neurology and

Neurosurgery, Queen Square London, UK

1998 Professor: Institute of Neurology, University College London, UK

**Education and Qualifications**

1980 BA Gonville and Caius College, Cambridge UK (Exhibitioner)

Medical Sciences Tripos (1b Physics and 1b Psychology)

(Secretary: Cambridge University Medical Society)

1983 MBBS King's College Medical School London University, UK

1985 MA Cambridge University, UK

1988 MRCPsych

**Professional History**

**Academic and Clinical**

1984 - 1985 Pre-registration: (*Surgery*) Bromley Hospital and (*Medicine*)

Farnborough Hospitals, UK

1985 - 1988 Post-registration: Rotational Training Scheme in Psychiatry Oxford

University Department of Psychiatry, UK

1988 - 1991 Honorary Senior Registrar Department of Psychiatry Charing Cross

And Westminster Medical School, UK

1991 - 1994 Honorary Senior Registrar Royal Post Graduate Medical School, UK

1991 - 1992 Honorary Lecturer Royal Post Graduate Medical School, UK

1994 - 1997 Senior Lecturer Wellcome Department of Cognitive Neurology

Institute of Neurology, UK

Honorary Senior Lecturer University Department of Psychiatry

Royal Free Hospital School of Medicine, UK

1997 - 1998 Reader, Institute of Neurology University College London, UK

**Research**

1987 - 1988 Wellcome Trust Research Fellow MRC Clinical

Neuropharmacology Unit Oxford, UK

1988 - 1991 Wellcome Trust Research Fellow MRC Cyclotron Unit

Hammersmith Hospital London, UK

1991 - 1992 MRC Clinical Scientist (Senior Grade) MRC Cyclotron Unit

Hammersmith Hospital London, UK

1992 - 1994 W.M. Keck Foundation Fellow in Theoretical Neurobiology The

Neurosciences Institute La Jolla CA, USA

1994 - 1999 Wellcome Senior Research Fellow in Clinical Science

Institute of Neurology, UK

**Appointments**

**Professional Bodies (current)**

Member of the Royal College of Psychiatrists

Member of the Association of British Neurologists

Fellow of the Academy of Medical Sciences (1999)

Fellow of the Royal Society (2006)

Fellow of the Society of Biology (2012)

Member of the Academia Europaea (2015)

**Editorial Boards (current)**

Editor-in-Chief - NeuroImage (Emeritus)

Associate Editor - Neuroscience Letters

Associate Editor - Journal of Neuroscience

Associate Editor - PLOS – Computational Biology

Board Member - Biological Psychiatry

Board member - Neural Computation

Board Member - NeuroInformatics

Board Member - The Open Applied Informatics Journal

Board Member - Cognitive Neurodynamics

Board Member - Cognitive Processing

**Editorial Appointments (past)**

Deputy Editor - PLOS – Computational Biology (Neuroscience)

Associate Editor - Human Brain Mapping

Senior Editor - Cognitive Brain Research

Associate Editor - International Journal of Neural Systems

**Scientific Advisory and Review Boards (past 10 years)**

Society for Cognitive Neuroscience (Organizing Committee) 1996 – 1999

MRC Advisory Board (UK) 1998 – 2004

MRC Bioinformatics and Career Development Panel 1998 – 2002

MRC College of Experts 2004 – 2008

Organization for Human Brain Mapping (Advisory Board) 1996 – 7, (Chair) 1999.

International Consortium for Brain Mapping 1996 – 1998

BrainMap (Neuroscience Imaging and Informatics 1995 – 1998)

Medical Image Understanding and Analysis (UK) 1998 – 1999

Fight for Sight (Registered Charity No. 263434 UK) 1996 – 1999

HFSP Review Committee for Research Grants (Brain Functions) 2000 – 2004

Volkswagen Foundation, Scientific review panel 1999 – 2005

Human Brain mapping (Wiley) YIA Committee 2000 – 2004

Society for Cognitive Neuroscience (YIA Committee) (Chair 2006) 1999 – 2009

Comité Scientique (SAB) of the Département D’études cognitives; ENS Paris 2007–2012

Bernstein Centre for Computational Neuroscience, Berlin 2007– *present*

Sectional Committee (8); Royal Society 2007 – 2009

Medals and Awards Committee (B–Side); Royal Society 2008 – *2013*

Psychology Advisory Board, University of York 2012 – *present*

Scientific Advisory Board, SBRI, Lyon 2012 – *present*

**Prizes and Awards**

**Wiley Young Investigator Award** in Human Brain Mapping 1996

**Chaire Pharmacia-Upjohn** Belgium 1998-1999

**Golden Brain Award** Minerva Foundation 2003

**Medal, Collège de France** (Lecture séries) 2008

**Honorary Doctorate** (University of York) 2011

**Weldon Memorial Prize and Medal** 2013

**Elected member of EMBO** 2014

**WIC (Web Intelligence Congress) Outstanding Technology Award** 2014

**Elected member of the Academia Europaea** 2015

**Grants**

* Wellcome Senior Research Fellowship in Clinical Science (1994-1999) **£353**K (Ref: 040795). Supplement (supporting Dr. E Lumer) £84,507
* Wellcome Trust (1999-2004) Program Grant (Principal Research Fellowship); **£1M** (Ref: 56750/CH/MB/Ic)
* Wellcome Trust (1999-2004) Core Support Grant for Functional Imaging Laboratory **£7M** (Ref: 037830/Z/95/C/JRS/KM/JAT) (Co-applicant)
* Wellcome Trust (Prize Studentship, Lucy Lee) (2000) **£58**K (Ref: 065995/Z/01/Z/KS/KD/fh)
* Wellcome Trust Joint Infrastructure Grant. Magnetoencephalography (MEG) facility UCL (2001) **£2.7M**. Co-applicant (awarded with RSJ Frackowiak, C Price, R Turner, C Frith and R Dolan)
* Wellcome Trust (International Research Fellowship James Kilner) (2003) **£48**K (Ref: 061548/C/00/Z)
* Wellcome Trust Program Grant. Modelling functional brain architectures (2004-2009) **£555**K (Ref: 056750/Z/99/B)
* Wellcome Trust Block Access Grant for Functional Neuroimaging (2004-2006) **£1.8M** (with R Dolan)
* Wellcome Trust Imaging Neuroscience at the Functional Imaging Laboratory (2006) **£6.74M** (Ref: 079866/Z/06/Z) (with R Dolan)
* Wellcome Trust Principal Research Fellowship. Functional architectures in the brain (2009-2019) **£2.48M** (Ref: 088130/Z/09/Z)

**Academic Supervision**

**Ph.D. Studentships**

1. **Christian Büchel** (clinical postdoctoral fellow) 1994-1999: *Effective connectivity in health and disease*
2. **Stefan Kiebel** (supervision whilst seconded from Jena Germany) 1999 -2001: The General Linear Model in Neuroimaging
3. **John Ashburner** 1999 -2000: *Spatial Transformation of Image Processes*
4. **Dave Chawla** (Wellcome Prize Studentship) 1996-1999: *The computational neurobiology of functional integration in visual cortex*
5. **Bryan Strange** (MB Ph.D. Program, UCL) 1998-2001: *Functional Imaging of the Neuropharmacology of Episodic Memory*
6. **Lucy Lee** 2001-2004: *TMS Studies of functional integration in the Brain*
7. **Richard Lewis** (Student PRN 19051718) 2002-2005: *Investigating human visual-auditory integration using fMRI*
8. **Benjamin John Seymour** (Secondary): Institute of Neurology 01-NOV-02 – 28\_DEC-10
9. **Barrie Roulston** (UCL Student PRN 29027617) 2003-2006: *Visual Illusions and the brain*
10. **Oliver Hulme** (UCL, Student PRN 29000137) 2003-2006: *Functional anatomy of visual Salience*
11. **Lee Harrison** (part-time) 2002-2008: *Statistical physics and inference in the brain*
12. **Chia-Yueh Carlton Chu**. (Secondary): Institute of Neurology 26-SEP-05 – 28\_SEP-09.
13. **Velia Cardin** (UCL Student PRN 039011668) 2004-2007: *Form construction in the human brain*
14. **Marta Garrido** (Primary): Institute of Neurology 27-SEP-04 – 31-DEC-08: *Perceptual leaning and connectivity in the brain*
15. **Andre Marreiros** (UCL) 2006-2010: *Biophysical models of fMRI and EEG*
16. **Chun Chuan Chen** 2006-2009: *Dynamic models of non-linear coupling in the brain*
17. **Marie**k**e Scholvinc**k(4 Year Wellcome PhD UCL, Student PRN 39061951) 2006-2009: *Figure-ground perception without visual awareness*
18. **Hanne**k**e den Ouden** (4 Year Wellcome PhD UCL Student PRN 39056968) 2005-2008: *Connectivity and cross modal integration in the brain*
19. **Justin Chumbley** (CoMPLEX PhD, UCL Student PRN 39052317) 2006-2009: *Statistical estimation in dynamic models*
20. **Outi Tuomainen** (UCL Student PRN 59003128) 2006-2009: *Auditory Processing in Specific Language Impairment (SLI) and dyslexia*
21. **Miriam Cornelia Klein** (Secondary): Institute of Neurology Research Start Date: 1-OCT-09 | Progress: 74 months – completed: Interaction of Decision Making and Action Planning in the Human Brain
22. **Harriet Ruth Brown** (Primary): Institute of Neurology Research Start Date: 1-SEP-10 | Progress: 63 months - completed
23. **Maren Urner** (Secondary) : Institute of Neurology Research Start Date: 27-SEP-10 | Progress: 62 months – completed: Investigating the dynamic role of fluctuations in ongoing activity in the human brain
24. **Chen Song** (Secondary): Institute of Neurology Research Start Date: 27-SEP-10 | Progress: 47 months
25. **Richard Adams** (Primary): Institute of Neurology Start Date: 20-Dec-10 | Progress: 59 months – completed: Modelling the active inference of smooth pursuit in normal subjects and schizophrenics
26. **Peter Smittenaar** (Secondary) : Institute of Neurology Research Start Date: 27-SEP-11 | Progress: 50 months – completed: Basal ganglia circuits in human action selection and learning
27. **Marcos Economides** (Secondary) : Institute of Neurology Research Start Date: 3-OCT-11 | Progress: 49 months – completed: Exploring value and action in economic decision-making
28. **Marco Filipe Pinto Leite** (Secondary) : Institute of Neurology Research Start: JAN-12
29. **Mkael Symmonds:** Dept. Institute of Neurology Start Date: 03-DEC-07 | Progress: 96 months – completed: Neurobiology of decision making under risk
30. **Stephanie Bowen** (Secondary) : Institute of Neurology Research Start: DEC-12
31. **Yen Yu** (Primary): Institute of Neurology Start Date: 1-OCT-10 | Progress: 62 months – completed: The selective updating of working memory: a predictive coding account
32. **Richard Rosch** (Primary) : Institute of Neurology Research Start: 01-DEC-14
33. **Arseny Alexandrovitsch Sokolov** (Primary) : Institute of Neurology Research Start: 16-JUN-14
34. **Mrudul Bindu Bhatt** (Secondary): Institute of Neurology 13-JAN-14
35. **Sirir Maria Ranlund** (Secondary): Division of Psychiatry 03-DEC-12
36. **Rosy Southwell** (Secondary) : Ear Institute Research Start: 01-Oct-15
37. **Muammer Berk Mirza** (Secondary) : Institute of Neurology Research Start: 07-Sep-15

**Teaching Activity**

**Internal**

Organizer of the Institute of Neurology Short Course: ‘Statistical Parametric Mapping’ 1994-2006

Lecturer: MSc. Institute of Neurology UCL

Currently, I provide supervision for about 8 Post-Doctoral Fellows/Scientific Officers under my scientific direction. I provide scientific guidance to approximately 48 junior research fellows whose research is carried out within my unit. I also provide a weekly imaging methodology ‘Clinic’ for the Institute of Neurology/National Hospital for Neurology and Neurosurgery.

**External**

Guest Faculty at International Workshops and Conferences. E.g.:

fMRI Workshop - Soc. of Mag. Res. in Medicine USA 1993; 1994

fMRI Workshop - Soc. of Cognitive Neuroscience San Francisco USA 1995

fMRI Workshop - Human Brain Mapping Boston USA 1996

Functional Neuroimaging Course - Cold Spring Harbor USA 1993; 1995

BrainMap (Session Chair and Organizer) - San Antonio USA 1995 - 1998

Summer School in Cognitive Neuroscience - Dartmouth USA 1997

Autumn School in Cognitive Neuroscience - Oxford UK 1997

Society of Neuroscience Short course - 1997

EU Summer School in Advanced Neurocomputation - Trieste 2000 - 2004

SDV Sommerakademie [Summer Academy] - Ftan 2005

ESF-Sponsored School in Computational Neuroscience – Barcelona 2008, 2013

**Enabling Activity**

**Internal**

**Scientific Director**: Wellcome Trust Centre for Neuroimaging

The centre comprises 8 Principal Investigators, 48 Research Fellows, 8 Scientific Officers, 4 Radiographers with administrative and secretarial support staff. Directing involves the inception and co-ordination of projects concerned with acquiring and characterising brain data. These projects range from to optimising experimental design in functional MRI to the bio-mathematics of functional integration in the brain. The personnel involved include physicists, software engineers, statisticians neuroscientists and clinicians.

**External**

My key enabling activity has been, with colleagues, to provide a framework for the design and analysis of functional brain mapping experiments. This framework is known as *statistical parametric mapping* (SPM) and has been implemented in software. SPM is an international standard for analysing functional brain-imaging data and implements things like *psychophysiological interactions*. In 1994 my group developed *voxel-based morphometry*. VBM is a widely used neuroanatomic technique with numerous clinical applications. In 2002, I developed *dynamic causal modelling* to measure functional architectures in the brain. These techniques are used in systems neuroscience and as diagnostic aids and clinical research tools. They have been used diversely, from diagnosing different dementias with SPECT scans to detecting subliminal neuroanatomic correlates of Turner’s syndrome with MRI. Notable, among clinical applications, are headache, genetic disorders and epilepsy.

**Bio-sketch**

Karl Friston is a neuroscientist and authority on brain imaging. He invented statistical parametric mapping: SPM is an international standard for analyzing imaging data and rests on the general linear model and random field theory (developed with Keith Worsley). In 1994, his group developed voxel-based morphometry. VBM detects differences in neuroanatomy and is used clinically and as a surrogate in genetic studies. These technical contributions were motivated by schizophrenia research and theoretical studies of value-learning (with Gerry Edelman). In 1995 this work was formulated as the disconnection hypothesis of schizophrenia (with Chris Frith). In 2003, he invented dynamic causal modelling (DCM), which is used to infer the architecture of distributed systems like the brain. Mathematical contributions include variational (generalized) filtering and dynamic expectation maximization (DEM) for Bayesian model inversion and time-series analysis. Friston currently works on models of functional integration in the human brain and the principles that underlie neuronal interactions. His main contribution to theoretical neurobiology is a free-energy principle for action and perception (active inference). Friston received the first Young Investigators Award in Human Brain Mapping (1996) and was elected a Fellow of the Academy of Medical Sciences (1999) in recognition of contributions to the bio-medical sciences. In 2000 he was President of the international Organization of Human Brain Mapping. In 2003 he was awarded the Minerva Golden Brain Award and was elected a Fellow of the Royal Society in 2006. In 2008 he received a Medal, Collège de France and an Honorary Doctorate from the University of York in 2011. He became of Fellow of the Society of Biology in 2012 and received the Weldon Memorial prize and Medal in 2013 for contributions to mathematical biology.

**Short version**

Karl Friston is a theoretical neuroscientist and authority on brain imaging. He invented statistical parametric mapping (SPM), voxel-based morphometry (VBM) and dynamic causal modelling (DCM). These contributions were motivated by schizophrenia research and theoretical studies of value-learning – formulated as the dysconnection hypothesis of schizophrenia. Mathematical contributions include variational Laplacian procedures and generalized filtering for hierarchical Bayesian model inversion. Friston currently works on models of functional integration in the human brain and the principles that underlie neuronal interactions. His main contribution to theoretical neurobiology is a free-energy principle for action and perception (active inference). Friston received the first Young Investigators Award in Human Brain Mapping (1996) and was elected a Fellow of the Academy of Medical Sciences (1999). In 2000 he was President of the international Organization of Human Brain Mapping. In 2003 he was awarded the Minerva Golden Brain Award and was elected a Fellow of the Royal Society in 2006. In 2008 he received a Medal, Collège de France and an Honorary Doctorate from the University of York in 2011. He became of Fellow of the Society of Biology in 2012, received the Weldon Memorial prize and Medal in 2013 for contributions to mathematical biology and was elected as a member of EMBO (excellence in the life sciences) in 2014.

**Publications: Books**

*Human Brain Function*. (1 Ed.) Eds Frackowiak RSJ **Friston** KJ et al. Academic Press USA 1997.

*Human Brain Function*. (2 Ed.) Eds Frackowiak RSJ **Friston** KJ et al. Academic Press USA 2004.

*Statistical Parametric Mapping*. (1. Ed.) Eds **Friston** KJ et al. Academic Press USA 2006

*Principles of Brain Dynamics.* Eds. Rabinovich MI, Karl J. **Friston** KJ and Varona P MIT press 2012

**Selected articles (cited over 500 times)**

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| [**Citation indices**](javascript:void(0)) **: http://scholar.google.co.uk/citations** | All | Since 2010 |
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| [h-index](javascript:void(0)) | 186 | 129 |
| [i10-index](javascript:void(0)) | 656 | 596 |

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| [Statistical parametric maps in functional imaging: a general linear approach](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:u5HHmVD_uO8C)  KJ Friston, AP Holmes, KJ Worsley, JP Poline, CD Frith, RSJ Frackowiak  Human brain mapping 2 (4), 189-210, 1994 | [7831](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=7247783031682171276) | 1994 |
| [Voxel-based morphometry—the methods](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:u-x6o8ySG0sC)  J Ashburner, KJ Friston  Neuroimage 11 (6), 805-821, 2000 | [5397](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=12851119879556234856) | 2000 |
| [Spatial registration and normalization of images](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:d1gkVwhDpl0C)  KJ Friston, J Ashburner, CD Frith, JB Poline, JD Heather, RSJ Frackowiak  Human brain mapping 3 (3), 165-189, 1995 | [3389](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=18106348714209522880) | 1995 |
| [Unified segmentation](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:9yKSN-GCB0IC)  J Ashburner, KJ Friston  Neuroimage 26 (3), 839-851, 2005 | [3184](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=12442627901242992384) | 2005 |
| [Dynamic causal modelling](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:IjCSPb-OGe4C)  KJ Friston, L Harrison, W Penny  Neuroimage 19 (4), 1273-1302, 2003 | [2213](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=12478191821427560264,78846985920515592) | 2003 |
| [A unified statistical approach for determining significant signals in images of cerebral activation](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:2osOgNQ5qMEC)  KJ Worsley, S Marrett, P Neelin, AC Vandal, KJ Friston, AC Evans  Human brain mapping 4 (1), 58-73, 1996 | [2125](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=5266894536229134450) | 1996 |
| [Analysis of fMRI time-series revisited](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:qjMakFHDy7sC)  KJ Friston, AP Holmes, JB Poline, PJ Grasby, SCR Williams, ...  Neuroimage 2 (1), 45-53, 1995 | [1886](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=12516568314439785519) | 1995 |
| [Analysis of fMRI time-series revisited—again](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:UeHWp8X0CEIC)  KJ Worsley, KJ Friston  Neuroimage 2 (3), 173-181, 1995 | [1792](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=13779388495464404760) | 1995 |
| [Psychophysiological and modulatory interactions in neuroimaging](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:WF5omc3nYNoC)  KJ Friston, C Buechel, GR Fink, J Morris, E Rolls, RJ Dolan  Neuroimage 6 (3), 218-229, 1997 | [1692](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=17593163180151732835) | 1997 |
| [Nonlinear spatial normalization using basis functions](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:Y0pCki6q_DkC)  J Ashburner, KJ Friston  Human brain mapping 7 (4), 254-266, 1999 | [1607](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=2936179189696568837) | 1999 |
| [Comparing functional (PET) images: the assessment of significant change](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:zYLM7Y9cAGgC)  KJ Friston, CD Frith, PF Liddle, RSJ Frackowiak  Journal of Cerebral Blood Flow & Metabolism 11 (4), 690-699, 1991 | [1604](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=14218792823567915523) | 1991 |
| [Event-related fMRI: characterizing differential responses](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:YsMSGLbcyi4C)  KJ Friston, P Fletcher, O Josephs, A Holmes, MD Rugg, R Turner  Neuroimage 7 (1), 30-40, 1998 | [1549](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=6214267652141224015) | 1998 |
| [A direct demonstration of functional specialization in human visual cortex](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:W7OEmFMy1HYC)  S Zeki, JD Watson, CJ Lueck, KJ Friston, C Kennard, RS Frackowiak  The Journal of neuroscience 11 (3), 641-649, 1991 | [1539](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=5213453051558529148) | 1991 |
| [Assessing the significance of focal activations using their spatial extent](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:Tyk-4Ss8FVUC)  KJ Friston, KJ Worsley, RSJ Frackowiak, JC Mazziotta, AC Evans  Human brain mapping 1 (3), 210-220, 1993 | [1536](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=9512013199996474350) | 1993 |
| [Analysis of functional MRI time‐series](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:eQOLeE2rZwMC)  KJ Friston, P Jezzard, R Turner  Human brain mapping 1 (2), 153-171, 1994 | [1387](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=8665441419111500936) | 1994 |
| [Functional and effective connectivity in neuroimaging: a synthesis](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:_FxGoFyzp5QC)  KJ Friston  Human brain mapping 2 (1-2), 56-78, 1994 | [1339](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=9194395696954793288) | 1994 |
| [Functional connectivity: the principal-component analysis of large (PET) data sets](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:ufrVoPGSRksC)  KJ Friston, CD Frith, PF Liddle, RSJ Frackowiak  Journal of cerebral blood flow and metabolism 13, 5-5, 1993 | [1298](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=18115434601098543951) | 1993 |
| [Dissociable roles of ventral and dorsal striatum in instrumental conditioning](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:roLk4NBRz8UC)  J O'Doherty, P Dayan, J Schultz, R Deichmann, K Friston, RJ Dolan  Science 304 (5669), 452-454, 2004 | [1241](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=9443165843172926082) | 2004 |
| [Statistical parametric mapping: the analysis of functional brain images: the analysis of functional brain images](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&citation_for_view=q_4u0aoAAAAJ:qxL8FJ1GzNcC)  Academic press, 2011 | [1181](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=279576332763122776,13039399948577727215) | 2011 |
| [A neuromodulatory role for the human amygdala in processing emotional facial expressions](http://scholar.google.co.uk/citations?view_op=view_citation&hl=en&user=q_4u0aoAAAAJ&cstart=20&citation_for_view=q_4u0aoAAAAJ:LkGwnXOMwfcC)  JS Morris, KJ Friston, C Buchel, CD Frith, AW Young, AJ Calder, RJ Dolan  Brain 121 (1), 47-57, 1998 | [1126](http://scholar.google.co.uk/scholar?oi=bibs&hl=en&cites=15576202684662163721) | 1998 |
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