



FRACKOWIAK, Richard Stanislaus Joseph

CURRICULUM VITAE - 2016

Centre Hospitalier Universitaire Vaudois
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Date of birth: 26th March, 1950
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EDUCATION & DEGREES:

- **1961-1968**, Entrance Scholar, Latymer Upper School, London
- **1968-1971**, Wilhelm Brauer Open Scholar, Peterhouse, Cambridge
- **1971-1974**, Middlesex Hospital Medical School, London
- **1971**, **BA (2i)**, University of Cambridge
- **1974**, **MB**, University of Cambridge
- **1975**, **BChir** (distinction), University of Cambridge
- **1975**, **MA**, University of Cambridge
- **1983**, **MD**, University of Cambridge
- **1996**, **DSc**, University of London
- **1999**, **Docteur honoris causa**, University of Liege

Academies & Learned Societies:

- **1977**, Royal College of Physicians, UK, Member
- **1987**, Royal College of Physicians, London, Fellow
- **1999**, Academia Europaea, Member
- **2000**, Academy of Medical Sciences, UK, Founding Fellow & former Council Member
- **2003**, Académie Nationale de Médecine, France, Foreign Associate Member
- **2005**, Académie Royale de Médecine de Belgique, Corresponding Foreign Member
- **2009**, American Academy of Medicine (ex-Institute of Medicine, Academies of Science USA, Foreign Assoc Member
- **2013**, Polish Academy of Sciences, Corresponding Foreign Member

Honorary or foreign corresponding membership of the neurological/neuroscience societies of Canada, Australia, France, Belgium, Poland, Germany and the United States of America.

Professional credentials:

- **1975-2015**, Registered medical practitioner, General Medical Council, UK
- **1984**, Specialist in neurology, General Medical Council, UK
- **1986**, Diploma in neurology, Joint Committee in Higher Medical Training, UK
- **1996**, European certificate of specialist training in neurology, JCHMT, UK
- **2010**, Registered medical practitioner in the Canton Vaud, CH
- **2011**, Specialist in neurology, Fédération des Médecins Helvétique, CH

EMPLOYMENT:

- **2013-present, Professeur titulaire, Ecole Polytechnique Fédérale de Lausanne (EPFL)**
- **2013-present, Co-director (medicine), Human Brain Project (HBP), EU FET**
- **2010-2015, Directeur du département des neurosciences cliniques (DNC), CHUV-UNIL**
- **2009-2015, Professeur ordinaire & médecin chef de service de neurologie (NLG), CHUV**
- **2005-2009, Directeur, département des sciences cognitives (DEC), Ecole Normale Supérieure, Paris**
- **2002-2009, Vice-Provost, University College London (UCL)**
- **1998-2002, Dean & Director, UCL Institute of Neurology, Queen Square, London**
- **1994-2009, Foundation Professor of Cognitive Neurology, University College London**
- **1994-2004, Wellcome Trust Principal Clinical Research Fellow & Founding Director Functional Imaging Laboratory**
- **1990-1994, Professor of Neurology, Royal Postgraduate Medical School and Institute of Neurology (jointly),**
- **1988-1994, Assistant Director, MRC Cyclotron Unit (MRCCU), Royal Postgraduate Medical School, London**
- **1984-1994, MRC Clinical Scientist, MRC Cyclotron Unit (MRCCU), Royal Postgraduate Medical School, London**

Invited & honorary professorships:

- **2015-present, Professeur ordinaire *ad hominem*, Université de Lausanne**
- **2009-present, Honorary Professor, Institute of Neurology, University College London**
- **2007, C Miller Fisher Visiting Professor, Massachusetts General Hospital, Harvard Medical School**
- **2002, Distinguished Visiting Scientist, Singapore Biomedical Research Council**
- **2001, Rogowski Visiting Professor, Yale Medical School**
- **1999, Norman Geschwind Visiting Professor, Beth Israel Hospital, Harvard Medical School**
- **1996, FNRS/Pharmacia & Upjohn Visiting Professor, Université Catholique de Louvain**
- **1994, Raymond & Beverley Sackler Visiting Professor, Cornell Medical School, New York**

PEER-ESTEEM:

- **2008-2010, President European Brain & Behaviour Society**
- **2007, Pioneer in Medicine Award IBMISP Society Los Angeles “for contributions to neuroimaging”**
- **2004-2008, President British Neuroscience Association**
- **2004, Klaus Joachim Zulch Prize (jointly with N Logothetis) from the Max Planck Society and Gertrude Reemtsma Foundation citing “broad influence on the field of neuroimaging”**
- **2000, Honorary membership of the American Neurological Association**
- **1999, Docteur honoris causa University of Liege**
- **1997 Ipsen Prize for neuroplasticity (jointly with M. Merzenich and A. Damasio) from the Fondation Ipsen citing “studies on the organization of cortical maps and their plasticity”**
- **1996 Wilhelm Feldberg Prize awarded by the Feldberg Foundation**

RESEARCH ACTIVITY:

My work over 30 years has been influential in bringing about fundamental changes in psychology and neurology that have characterised these fields since the later quarter of the 20th century. I established quantitative methods that realized the potential of non-invasive neuroimaging technologies for human neuroscience. My fundamental and applied studies of human brain structure and function using non-invasive imaging techniques have shifted descriptive accounts of cognition, action and perception onto a firmer neurobiological basis. My work has led to descriptions of specialised brain areas and functional networks, principally visual and motor and to the discovery of principles underpinning human brain plasticity in learning and ageing. I have bridged the spatial gap between molecular and mesoscopic levels of spatial organization with a series of innovative studies in diseased and normal humans of the relationship between genetic variability and functional brain anatomy. I laid the foundation for a neurobiological understanding of the clinical and pathophysiological features of dementia, ischemia and post-stroke recovery metabolically, anatomically and functionally, suggesting novel approaches to more accurate diagnosis of the dementias in life through pioneering use of machine learning techniques for image classification.

I established and validated the first quantitative regional energy metabolism and blood flow measurements in human brain using a steady-state oxygen technique. This method measured the balance between local energy supply and consumption making ischaemia subject to quantitative assessment. I introduced novel PET tracers to clinical investigation and developed quantitative methods of analysing the images, e.g., PK11195 and F-DOPA. With the latter I unequivocally demonstrated the viability of transplanted foetal mesencephalic tissue proposed for the treatment of Parkinson's disease. I initiated the development of methods of statistical parametric mapping for fMRI analysis and a decade later began applying the same automated, bias-free techniques to structural MR images (voxel-based morphometry).

I have described many facets of human brain function especially in relation to cognitive features of perception and action. My functional studies have described in detail changes in the effector and cognitive motor systems in health, with mental rehearsal of action, during motor learning and following local injury leading to paralysis. I found stroke site-independent, recovery-associated changes in brain activity in the damaged motor system, with recruitment of bilateral, system-specific areas and differential evolution that correlate with clinical recovery. To this end I helped solve the problem of quantitatively analysing fMRI time series to follow behavioural correlates functionally. I was first to demonstrate unequivocal, specifically distributed, pre-clinical atrophy in huntingtin mutation positive subjects, opening the road to pre-clinical detection and treatment in neurodegenerative diseases. My new methods for image classification have produced results that outperform best clinical practice in the diagnosis of AD and FTD by analysis of single, clinical, T1-weighted scans, thus indicating a way forward for computer-assisted, scan-associated diagnosis and treatment monitoring.

I have published well-cited articles in the highest impact journals including 4 in *Science* and 11 in *Nature*.
H-index = 163 (1975-2015); total citations = 82,987; average citations/paper = 165.31 (Thompson Reuters)

Major funding:

- **2013**, Co-PI, EU Flagship of Enterprise and Technology: "The Human Brain Project", ramp-up phase, circa € 53M
- **2012**, Equipment grant, 3T MRI scanner, Roger de Spoelberch Foundation, Geneva, CHF 2.8M
- **2012**, Infrastructure grant, Laboratoire de Recherche en Neuroimagerie, Partridge Foundation, New York, CHF 1.46M
- **2011**, Co-applicant EU Concerted Action "The Human Brain Project" preparatory grant, € 1.4M
- **2011**, Research fellowship (Poland-Switzerland) "Development and validation of classification strategies for early diagnosis of neurodegenerative disorders" Sciex-NMS programme, CHF 0.2M
- **2010**, Co-applicant Synergia grant "Primary impairment of speech. Towards a more predictive analysis of oral and written language impairment in neurodegenerative disorders" Fonds National Suisse, CHF 0.54M
- **2009**, Research fellowship (Poland-Switzerland) "Advanced Imaging in Alzheimer's disease" Sciex-NMS programme, CHF 0.12M
- **2009**, Co-applicant, National Centre of Competence in Research grant "The synaptic bases of mental diseases", Fonds National Suisse, CHF 19.6M
- **2005**, Chaire d'Excellence (Senior), "Etude en imagerie cérébrale des relations structure-fonctions dans la plasticité du cerveau humain", Agence Nationale de Recherche, France, € 0.5M
- **2004**, Programme "Imaging structure and function of the human brain", Wellcome Trust, UK, c £0.64M
- **2001**, Replacement Scanners for the "FIL", Joint Infrastructure Fund, UK, c £2.9M
- **1999**, Programme grant & Core funding for "Imaging Neuroscience", Wellcome Trust, UK, c £0.46M & c £6.5M
- **1995**, Endowment for the "FIL", Leopold Muller Trust, UK, £3.6M
- **1994**, Programme, building & equipment grants, "Functional Brain Imaging", Wellcome Trust, UK, c £19.0M

TEACHING:

I have participated in undergraduate and post-graduate teaching and supervision, post-doctoral direction in imaging neuroscience and clinical training in neurology throughout my career. I developed novel methods of interdisciplinary training and mentoring when creating *de novo* the academic environment of the Functional Imaging Laboratory. I have given special courses, lectures and the like for many societies and academies worldwide including the Decade of the Brain lecture at the American Academy of Neurology, keynote lectures at the Forum of European Neuroscience Societies, the American Neurological Association, etc. I designed and established a joint 2 year MSc

program in Brain and Mind Sciences with a year in London (UCL) and a second in Paris (Université Pierre et Marie Curie & the Ecole Normale Supérieure).

Journal editorships:

- **2010-present**, Rédacteur adjoint, Revue Neurologique
- **2006-2009**, Brain Trustee and Board of management
- **2000-present**, Editor-in-Chief, Current Opinion in Neurology
- **1996-2003**, Co-Editor-in-Chief, NeuroImage: a Journal of Brain Function
- **1992-2002**, Deputy Chief Editor, Journal of Cerebral Blood Flow & Metabolism
- **1992-1998**, Assistant Editor, Brain

Named & special lectureships:

- **1985**, A Rabano Memorial Lecturer, Madrid
- **1988**, John French Memorial Lecturer, Cambridge
- **1990**, Special University Lecturer, University College, London
- **1990**, John Woodward Memorial Lecturer, University of Melbourne
- **1993**, RP Schmidt Lecturer, State University of New York, Syracuse
- **1993**, Langdon-Brown Lecturer, Royal College of Physicians, London
- **1994**, Decade of the Brain Lecturer-American Academy of Neurology
- **1994**, Segerfalk Lecturer, University of Lund
- **1994**, Ellermann Lecturer, University of Basle
- **1994**, Andrew Mark Lippard Memorial Lecturer, Columbia University, New York
- **1995**, Thomas Willis Lecturer, Neurological Institute, McGill University, Montreal
- **1995**, Wilhelm Conrad Röntgen Lecturer, European Soc Clinical Neuropharmacology
- **1996**, Elliott Lecturer, University of Pennsylvania, Philadelphia
- **1996**, Richardson Lecturer, Canadian Neurological Association, London Ontario
- **1996**, Donders Lecturer, Max Planck Institute for Neurolinguistics, Nijmegen
- **1997**, Wilhelm Feldberg Lecturer, University of Koln, Germany
- **1998**, Sir Peter Kerley Lecturer, Royal College of Radiologists, London
- **1999**, NIH Director's Lecturer, Bethesda
- **1999**, Geschwind Memorial Lecture, Harvard Medical School
- **2000**, Renato Boeri Lecture, Carlo Besta National Institute of Neurology, Milano
- **2000**, FJ McGuigan Lecturer, American Psychological Society, Washington
- **2000**, Ellison Cliffe Lecturer, Royal Society of Medicine, London
- **2001**, TS Srinivasan Memorial Orator, Chennai, India
- **2001**, Fothergillian Lecturer, Medical Society of London
- **2001**, Rogowski Lecturer, Yale Medical School, New Haven
- **2001**, Ann Lewicki Lecturer, Georgetown University, Washington
- **2001**, Friday Evening Discourse, Royal Institution
- **2001**, Paul Broca Lecturer, Société Française de Neurosciences, Toulouse
- **2001**, George Whitfield Lecturer, University of Birmingham
- **2004**, Hippocratic Orator, Hellenic Society UK
- **2005**, Naji Sahyoun Memorial Lecturer, American University, Beirut
- **2005**, Crisp Lecturer, University of Leeds
- **2006**, NIH Director's Lecturer, Bethesda, Maryland
- **2006**, Galvani Lecturer, University of Chieti, Italy
- **2007**, C Miller Fisher Lecturer, Massachusetts General Hospital, Boston
- **2009**, Ruth K. Broad Foundation Distinguished International Lecturer, Duke University
- **2011**, Special Lecturer, University of the Danube, Krems
- **2013**, Robert Collins Lecturer, UCLA
- **2013**, Jon B Lovelace Memorial Lecturer, UCLA
- **2013**, Karolinska Research Lecturer, Nobel Institute, Stockholm
- **2013**, Babinski Lecturer, Société Française de Neurologie, Paris

- **2013**, William Feindel Lecturer, Montreal Neurological Institute, McGill University, Montreal
- **2013**, Charles E Smith Memorial Lecturer, Hebrew University, Jerusalem
- **2014**, Conférence de Prestige, Institut du Cerveau et de la Moelle Epinière, Pitié-Salpêtrière, Paris
- **2014**, Lord Adrian Lecture, 30th International Congress of Clinical Neurophysiology, Berlin
- **2015**, Leslie Oliver Oration, Queen's University Hospital, Romford

ADVISORY AND OTHER POSITIONS:

- **2014-present**, Member, Scientific Panel for Health (H2020), European Commission, Brussels
- **2013-present**, Scientific director, France Life Imaging national consortium, France
- **2012-2015**, Chair, Medical Science Committee, Science Europe, Brussels
- **2011-present**, Programme "Instituts d'excellence – IDEX", jury member, France
- **2010-2011**, Programme "Instituts Hospitaliers Universitaires - IHU" jury president, France
- **2010-2011**, Chair, LS5 panel "Neurosciences and neural disorders" CNRS/INSERM Atip-Avenir programme
- **2009-present**, Commission inter-cantonal sur la médecine hautement spécialisée, Switzerland
- **2009-2010**, Special adviser to the Provost & President of UCL, London
- **2008-2009**, Commission présidentielle sur l'avenir de centres hospitaliers universitaires, France
- **2007-2014**, Conseiller Scientifique to the President Director-General of Inserm, France
- **2006-2008**, UK Research Assessment Exercise (RAE2008) neuroscience sub-panel member
- **2005-2008**, Chair, Agence Nationale de Recherche scientific advisory board for neuroscience
- **2004-2008**, Conseiller Scientifique, Commissariat d'Energie Atomique, France
- **2003-2011**, Scientific advisor, Neuroimaging Laboratory, IRCCS Fondazione Santa Lucia, Rome
- **2003-present**, Fondation Fyssen, scientific advisory board and various other foundation SABs & prize juries...
- **2003**, Chair working party of the Academy of Medical Sciences and its report *Restoring Neurological Function*
- **2002-2009**, Board member (non-executive) UCL Hospitals NHS Trust
- **2000-2001**, Council member, Academy of Medical Sciences UK
- **1995-2010**, FNRS Clinical Science grant board, Belgium

European

- EU CANMED scientific review group on brain research (XII Directorate)
- EU special advisory group on neuroscience research (FP4)
- EU Concerted Action 'Positron emission tomography' - coordinator (FP4)
- EU Letters of Intent assessment group in Brain Science (FP6)
- EU Scientific Infrastructures committee (FP7)
- European Science Foundation, European Neuroscience Program
- European Research Council neuroscience starting grant funding panel & chair

Other academic and governmental advisory

- Wellcome Trust Clinical Research Facilities Advisory Committee
- MRC Cell Board subcommittee on medical & physiological imaging
- Human Frontiers Science Programme Scientific Review Board for Brain Science (co-opted)
- Canadian Medical Research Council scientific advisory board on imaging
- Fondation Reine Elizabeth, Brussels
- French Ministry of Industry & Research
- Deutsche Forschungsgemeinschaft – large facilities scientific review, Forschungszentrum Julich
- German Ministry of Science and Education
- Swedish Academy of Science and Medical Research Council
- Finnish Academy of Sciences

Technology transfer activity:

- Johnson and Johnson Pharmaceuticals R&D, Pfizer Ltd
- Glaxo Smith Kline CEDD in Neurology, advisor

- Posit Science, San Francisco, member scientific advisory board
- UCL Biomedica Plc, director
- The Healthcare Biotech Fund Ltd, member scientific advisory board

Charitable activity

- **2012**, Partridge Foundation, New York
- **2010-present**, Roger de Spoelberch Foundation, Geneva
- **2001-2009**, Mo & Lynn Rothman Parkinson's disease appeal, London & Los Angeles
- **2001-2006**, Lilly Safra Foundation, Geneva
- **2000-2009**, Monument Trust, Sainsbury Charitable Trusts, London
- **1998-2002**, Linbury Trust, London
- **1996-2009**, National Hospital Development Foundation, London
- **1995-1999**, Board of Governors, Linacre Centre for Medical Ethics, London