CURRICULUM VITÆ: Anthony WATTS

ADDRESS:	Department of Biochemistry, South Parks Road, Oxford OX1 3QU.
PHONE/FAX/EMAIL	(44) 01865-275268 / (44) 01865 275234 / awatts@bioch.ox.ac.uk

DATE OF BIRTH:	7th January, 1950.
NATIONALITY:	British (birthplace Hanover, FRG)
PRESENT POSITIONS:	Professor of Biochemistry, University of Oxford (since July 1996) and C.W. Maplethorpe Fellow in Biological Sciences, St. Hugh's College, Oxford (since 1983) Senior Scientist (supernumerary), ISIS Facility, Rutherford Appleton Laboratory, Didcot, Oxon (since September 1996) Director, Biological Solid State NMR Facility, Rutherford Appleton Laboratory, Didcot, Oxon (since January 1997) Fellow, Rothamsted Research, Rothamsted, Herts (since January 1998) Visiting Professor, University of Connecticut, USA (2002 - 2007)
DEGREES:	B.Sc. (Hons) Biophysics, University of Leeds, 1972; Ph.D. Biophysics (Leeds) 1975; M.A. (Oxon), October, 1980; D.Sc. (Oxon), January, 1995
PRIZES/DISTINCTIONS:	Fulbright Scholar (1987/88) 350th Commemorative Medal, Helsinki University, Finland (1990) SERC-CNRS Maxime Hanss Prize for Biophysics (1992) The Pfizer Lecture, University of Sheffield (1992) The 1998 ANZMAG Lecturer, Australia The Biochemical Society (UK) Morton Lecturer (1999) Wilsmore Fellow, University of Melbourne, Australia (2000) Moses Gomberg Lecturer, University of Michigan, USA (2001) Royal Society of Chemistry Industry Award for Biomembrane Chemistry (2001) Hascoe Medal Lecturer, University of Connecticut, USA (2004) International Advisor, Korea Research Institute of Bioscience and Biotechnology (KRIBB) (2004 on) Distinguished Professor, Kyun-won University, Seoul, Korea (2004) "Frontiers in Sciences" Lecturer (2008), Texas A&M University, USA

PAST EMPLOYMENT:

1976 - 1978	Max Planck Post Doctoral Fellow, Max Planck Institut für Biophysikalische Chemie, D-3400 Göttingen-Nikolausberg, FRG.
1978 - 1980	D.F.G. Wiss. Angestellter (salaried scientist), Max Planck Institut für Biophysikalische Chemie, D-3400 Göttingen-Nikolausberg, FRG.
1980 - 1983	Dept. Demonstrator, Biochemistry Dept., Oxford University, U.K.
1983 - 1996	University Lecturer, Oxford University and C.W.Maplethorpe Fellow in Biological Sciences, St. Hugh's College, Oxford.
1983 - 1988	"New Blood" Lecturer, Biochemistry Dept., Oxford University, U.K.
1987 - 1988	Fulbright Scholar, Harvard Medical School, Boston, Mass, USA
1987 - 1988	Associate Professor (supernumerary), Harvard Medical School, Boston, Mass, USA
1992 - 1993	Special Lectureship, University of Oxford
1997 - 2002	BBSRC Senior Research Fellowship, University of Oxford

PUBLICATIONS:

259 peer-reviewed publications, comprising of 211 papers and 48 reviews, and 4 books edited, all in the general area of membrane related research, over 60% of which are in high impact factor (>4) journals (*Nature, Nature Str. Biol., PNAS, JACS, Science,* etc). Invited talks (averaging 15 per year since 1995; 10 plenary lectures 2007/8) have

been presented at most of the relevant major international meetings, including IUB, IUPAB, FASEB, NATO, ESF, NY Academy of Science, ISMAR, FEBS, ICMRBS, PAABS, IMSTEC, CSIRO, Royal Soc. (Edinburgh), American Biophysical Society, etc. and in excess of 286 Meeting Abstracts and posters have been presented.

Citation metrics (1978-2008):

	Cited peer-reviewed publications*	Total citations	Tapered h-Index [1]
Including reviews	207	6,157	71.69
Excluding reviews	195	5,802	69.70

* Source: ISI Web of Knowledge – 16 papers unlisted.

[1]. Anderson et al., (2008) Beyond the Durfee square: Enhancing the h-index to score total publication output, Scientometrics, 76; p577-588.

BRIEF RESUMÉ OF RESEARCH ACHIEVEMENTS:

A highly multidisciplinary biophysical approach has been adopted in the study of proteins and lipids in model and natural membranes. This work has been in three productive phases, beginning with graduate work on thermodynamic studies of lipids in liposomal and model systems (Astbury Department of Biophysics, Leeds, 1972 - 1975), followed by post-doctoral research into structural and functional studies of the molecular specificity of lipid-protein in membranes (Max Plank Institute for Biophysics, Göttingen, Germany, 1976 - 1980). Since returning to an independent faculty position in Oxford (1980), new methodologies have been developed, initially around wide-line NMR (1980-2000) but then high resolution solid state NMR (1994-2009) for the study of biomolecular systems with specific application for resolving high resolution (sub-Å) structural and dynamic details of ligand- and drug-receptor interactions in the absence of other structural information (Watts, 2005, *Nature Reviews Drug Discovery*, 4, 555-568; invited review).

During this time, many biophysical methods have been employed, and resulting publications include the use of NMR, ESR, ultracentrifugation, diffraction/scattering (X-ray, optical and neutron), differential scanning calorimetry, electron microscopy, CD, FRET, ATIR, membrane protein crystallizations, SPR, peptide synthesis and computational approaches, as well as molecular biology for expression, mutagenesis, in-gel fluorescence, PCR, fermentation, directed isotope labelling and novel membrane protein reconstitutions. The general approach is thus to address a system in a "hypothesis driven" approach aimed at understanding biology with a range of appropriate methods, rather than specialize in one method.

Research highlights (1972 - 1980):

- DMPC single bilayer vesicle characterization through the phase transition using hydrodynamics (1974-1978);
- synthesis of >30 lipid nitroxide spin-labels (types and positional isomers) for membrane studies (1976-1980);
- demonstration and qualification of specific lipid-protein interactions supported by functional studies (1976-1980);
- observation and explanation of "ripple" phases in charged bilayers;
- titration of anionic lipids and demonstration of isothermal triggering of phase behaviour (1978);
- first observation of NMR J-couplings in lipids (1979);
- demonstration of mismatch in membranes as a site for enhanced permeability (1977-1979).

Some notable achievements since 1980 have been:

- the first characterization of a lipid-induced (using synthesized deuterated cardiolipin) "molten globule" state of a membrane associated protein, cytochrome *c* (1992 - 1995);
- the identification of the first lipid-anchored protein, Thy-1, and description of the lipid (saturated PE) involved (1984);
- one of the first demonstrations of lipid-lipid interactions and presence of internal PE hydrogen bonding at bilayer surfaces, using non-perturbing deuterium NMR methods (1980 - 1986);
- the patenting and first use of liposomes in food flavouring and colouring;
- the first identification of a direct link between lipid dynamics in bilayers and their hydration state using deuterium NMR (1992 - 1995);
- the precise and quantitative resolution of individual lipid types (cardiolipin, PE and PC) in mixed lipid bilayers using magic angle spinning 31P NMR;
- the first solid state NMR study of a large integral membrane transporter in a fully functional form, namely, glucose in GalP (1992-1994);

- the first conformational description of a drug (ulcer treatment compound) in the ligand binding site of a fully functional, membrane bound ATPase (1996);
- a description of the conformation of retinal in ground and M_{412} states of bacteriorhodopsin, using direct and non-perturbing deuterium solid state NMR approaches ahead of 3D crystal structures (1989-1995);
- a thermodynamic model of entropy-driven membrane protein 2D array formation in mixed lipid bilayers to complement experimental (EM) data (1998);
- the structural resolution of retinal in rhodopsin in both the dark and meta I activated form (1997-2000);
- development of a new, high sensitivity and high resolution solid state NMR method (MAOSS) with Clemens Glaubitz (1998-2000);
- first direct observation of a neurotransmitter (neurotensin) at its target site in a GPCR (2003);
- resolution of two models of ß-amyloid binding to membranes (2004)
- structural constraints determined for an integral membrane-embedded protein using solid state NMR (2005);
- first observation of ^{17}O as a nucleus in a biological macromolecule (2005);
- description of a P-type ATPase inhibitor and its target site by solid state NMR (2006); and,
- complete conformation and dynamic description of acetylcholine (the largest ligand described) at its binding site in the membrane-embedded nAChR (2008).

The work in the laboratory has been funded by outside grants from: SERC/BBSRC, Medical Research Council, HEFCE/JREI, EPSRC, Multiple Sclerosis Society, the European Commission, The Wellcome Trust, Nuffield Foundation, Royal Society, NATO, the British Council and the Human Frontier Science Programme. Grant income (1998-2008) has been £8,744,064 in total to this lab. AW has been part of collaborative research grants with a total additional budget of £15,407,866.

CURRENT RESEARCH INTERESTS

Our current interests are focussed on GPCRs, in particular the neurotensin type 1 receptor. We have improved expression and purification yields using immunofluorescence methods, and characterized its ligand binding using novel SPR methods. Reconstitution into lipid bilayers in a ligand binding form has now been resolved, and fluorescent methods (FRET) used to demonstrate the constituitive dimerization of the receptor. Magnetic resonance methods are being used to understand the activation mechanism by the ligand, NT, which is a 13-mer peptide – only the terminal six residues are required for receptor activation. By spin labelling, either with ^{13}C, ^{15}N, or nitroxides in the non-binding region of NT, the dynamics of bound NT and its electronic environment in the receptor binding site are being probed. Homology modelling and docking algorithms are being tested by the experimental data being generated. Single molecule methods, including AFM and cryo-EM, and hydrodynamic methods such as SANS and AUC, are being used to probe the dimerization and conformational changes on activation through ligand binding

GRADUATE STUDENTS SUPERVISED (WITH SUBSEQUENT EMPLOYMENT)

39 graduate students have been trained in the laboratory, and over 50 post-docs have been employed at various times.

- N.J.P. Ryba (1985) - Group Leader, NIH, USA
- P.J.H. Sizer (1986) - Research Director, Evans-Medeva, Liverpool; (2) Research Director, Cortex Ltd
- T. Poile (1988)
- P. Gale (1988) - Microbiologist, Thames Water
- D.M. Fraser (1989) - (1)`Group leader, University of Lausanne, Switzerland; (2) Scientific Liaison Officer, Newcastle-upon-Tyne University; (3) Director, Biotech Communication SARL, Amiens, France.
- M. Edenborough (1989) - Barrister in the City of London and author of undergraduate chemistry text
- L. van Gorkem (1989) - (1) Faculty position, College of Staten Island, New York, (2) Scientific Officer, Unilever
- A.M. White M.Sc. (1990) - (1) D.Phil. student; (2) Post-doctoral worker, Birkbeck College, London
- S.C. Wood (1991) - Scientific publishing
- A.A. Duralski (1991) - (1) Post-doctoral worker, Oxford; (2) Post-doctoral worker, Chemistry, Essex University; (3) Secondary school chemistry teacher, Essex.
- S. Malik (1991) - (1) Post-doctoral worker, Institut Pasteur, Paris; (2) unknown
- C. l'Hostis (1991) - (1) Post-doctoral worker, University of Geneva, Switzerland; (2) Director, Biotech Communication SARL, Amiens, France

- D.A. Middleton (1993) - (1) Research Scientist, SmithKline Beecham, Welwyn Garden City, Herts; (2) Lecturer, Biochemistry, Oxford University; (3) Lecturer (tenured), Biological Sciences, UMIST; (4) Reader in Biochemistry, University of Liverpool
- T.J.T. Pinheiro (1993) - (1) Royal Society Research Fellow, Warwick University; (2) University Lecturer (tenured)/Royal Society Research Fellow, Warwick University
- J. Ford (1993) - (1) Post-doctoral worker, NOVUM, Sweden; (2) Scientific Civil Servant, DTI, UK
- A.S. Ulrich (1993) - (1) Post-doc at EMBL, Heidelberg, Germany; (2) Group leader and Professor, Jena, Germany; (3) Professor and group leader, Karlsruhe, Germany
- J.I. Rowntree (1993) - Computing Officer, Oxford
- C.A. Whiteway (1995) - (1) Post-doctoral worker, Oxford; (2) Law School student; (3) Trainee solicitor, Brussels and London; (4) Solicitor, London
- S. Renfrey (1995) - (1) Post-doctoral worker, Virology Dept., Cambridge (seconded to BSE Enquiry, 1998-9); (2) Scientific officer, MRC Head Office; (3)
- S.E. Rankin (1996) - (1) Post-doctoral worker, Biochemistry, Universities of Oxford and Warwick; (2) housewife
- J. Boulter (1995) - (1) Post-doctoral worker, Biochemistry, University of New York, USA; (2) Post-doc. Molecular Biology, Oxford; (3) Research scientist, Avidex, Abingdon, UK; (4) Senior Research Fellow, Dept of Medical Biochemistry and Immunology, Cardiff University, UK
- A.M. Taylor (1997) - (1) Post-doctoral worker, Biochemistry, University of Alberta, Canada; (2) Post-doc, IMM, Oxford; (3) Researcher, Avidex
- C. Glaubitz (Rhodes student) (1998) - (1) Post-doctoral worker, Biochemistry, University of Oxford, (2) DFG Fellowship, Oxford & Berlin; (3) Group leader, Berlin; (4) Professor and group leader, Frankfurt
- V. Addy (1999) – (1) Research worker, British Leather Corporation, Northampton; (2) Group leader, BLC, Northampton
- P. Williamson (1999) - (1) Post-doctoral worker, Oxford; (2) Post-doc. ETH Zurich; (3) Tenured post CNRS, Strasbourg; (3) Wellcome Fellow, Southampton University
- Z. Ahmed (2000) - (1) Research analyst, Cambridge Pharma Consultancy; (2) Access officer, University of Oxford
- J.A. Watts (2001) - (1) Post-doctoral worker, Oxford; (2) Legal pupillage; (3) Post-doctoral researcher, Oxford; (4) IP Officer, Wallingford.
- A.J. Mason (2001) - (1) Post-doctoral worker, Berlin/Frankfurt; (2) Post-doctoral worker, Strasbourg; (3) Research Fellow, King's College, London
- S. Goodall (2002) - (1) Post-doctoral worker, Oxford; (2) Patenting Officer, Marlow, Bucks
- J. Sharples (2003) - (1) Secondary school chemistry teacher, Sydney, Australia; (2) Deputy Director, Institute for the Future of the Mind, Oxford
- J. Ng (commenced 2000) - BBSRC studentship; withdrew 2001.
- V. LeMaitre (2005) - (1) International trading, Geneva, Switzerland
- T. Hadingham (MSc 2001, DPhil 2006) - (1) Researcher, Wallingford
- C. Kim (2006) - (1) Researcher, Korea
- G. Mendes (commenced 2002) - IRC funded D.Phil., withdrew 2004
- P. Harding (2007) – (1) Post-doctoral worker, Oxford; (2) Trainee accountant, BT, London
- L. Aslimovska (2007) - (1) Post-doctoral worker, Oxford; (2) Post-doctoral worker, Frankfurt, Germany
- P. Judge (2008) – (1) Post-doctoral worker, Oxford
- S. Tapaneeyakorn (commenced 2005) - Royal Thai Government Scholarship for D.Phil.
- O. Berthoumieu-Moulin (commenced 2007)
- M. Orwick (commenced 2007)

EDITORIAL WORK:

Managing Editor: *European Biophysics Journal* (from October 2000 on) - submissions increased almost 3-fold.

Principal Editor: *Biophysical Chemistry* (Jan. 1994 - December 1999) - IF raised from 0.98 to 2.21.

Associate Editor: *Biophysical Journal* (from July 2002 - 2008)

Editorial Board: *BBA, BBA Biomembrane Reviews, Biochemical Journal, Molecular Membrane Biology, Journal of Magnetic Resonance, Biophysical Reviews*

Editorial Advisors: *Encyclopaedia of Life Sciences*, Macmillan Press; *Encyclopaedia of Spectroscopy* (ed. J. Lindon).

Contributor: *Membranes studied by NMR spectroscopy*, Academic Press

Referee for: *Nature, JACS, Science, Biochemistry, European Journal of Biochemistry, Proceedings of the National Academy of Science (U.S.A.), Biophysical Journal, Vision Research, FEBS Letters, Neuroscience, Journal of Membrane Biology* and *Chemistry and Physics of Lipids, etc..*

Editor of: *Progress in Protein-Lipid Interactions* Vols 1 & 2 (Watts, A. & de Pont, J.J.H.H.M. eds) Elsevier, Amsterdam-New York and of *Protein-Lipid Interactions*, in the New Comprehensive Biochemistry series, (1992) pub. Elsevier, Amsterdam-New York

COMMITTEE WORK:

SERC, Biochem. & Biophysics Sub-Committee (1984-88);
Member, then Chairman, of *Biological Membrane Function Initiative* Panel, SERC, (1986-1992);
Member of Finance (1984-1987, 1989 - 1992), Fund Raising (1988 - on) & Investment Committees, St. Hugh's College;
Chairman of Biochemistry Department Computer Committee;
Biochemistry Department General Safety Officer (to 1998);
Departmental Graduate Admissions Co-ordinator (1989-1991).
Biochemical Society of GB, *Membranes Group & Techniques* member (1989-2000).
Vice-Chairman, European Science Foundation Network on Molecular Dynamics of Biomembranes (1990-on)
IUPAB, UK representative on Membrane Commission (1994 on)
Core-Group, Staff Committee, Department of Biochemistry, Oxford (1994/95)
Chairman of Examiners, Part I Biochemistry FHS, Oxford University (1995-96)
Chairman of Examiners, Part II Biochemistry FHS, Oxford University (1996-97)
Member, then Chairman, RAL/ISIS Biological Neutron Advisory Panel (BioNAP) (1995 on) & member of ISIS Scheduling Panels (1995-1998)
Committee Member, British Biophysical Society (1997-2001)
Member of the "Jury of the Prix Dr A De Leeuw-Damry-Bourlart - Fundamental Exact Sciences" of the FNRS, Brussels (April 2000)
Member, Subcommittee 8 (Biology), ILL Neutrons for Science (July 2002 on)
Chairman, British Biophysical Society (January 2002-2008)
Member, International Relations Committee, Biophysical Society (July 2002 - June 2005)
Member Scientific Advisory Committee, ISIS 2nd Target Station (July 2002 on)
Member EuroSCOPE Committee (October 2002 on)
Member Local Scientific Committee, ISSFAL 2004 meeting (November 2002 on)
Member, EBSA Executive Committee (July 2003 on)
Rapporteur, COST-Chemistry Technical Committee (D22 action) (2004 on)
International Advisor, Korea Research Institute of Bioscience and Biotechnology (KRIBB) (2004 on)
Member, Human Frontier Science Programme Review Committee for Research Grants (2005-2008)
Member, EPSRC Peer Review College (2006-2009)
Chairman of Examiners, Part I Biochemistry FHS, Oxford University (2005-2006)
Chairman of Examiners, Part II Biochemistry FHS, Oxford University (2006-2007)
International Scientific Adviser, Chungbuk do Province, Korea (2006-2009)
Distinguished Professor, Kyundwon University, Seoul, Korea
Member, DTI Innovational Board, Chemical Biology Group (2007 on)
Member, Physical and Life Sciences Committee, Science & Technology Facilities Council (2008 on)

MEETINGS ORGANISED:

IUPAB satellite meeting, Oxford 1984 (150 participants);
EC Protein-lipid meeting, Oxford 1990 (85 participants);
Biochemical Society Dutch-Anglo Membrane Meeting, Lunteren, The Netherlands, 1991 (110 participants);
ESF/ERC Membrane Protein Structure and Function, Italy 1991 (120 participants);
ESF Study Centre, Oxford 1992 (60 participants);
Biochemistry Society UK, Membranes joint German/UK colloquium, Southampton 1992 (200 participants);
ESF workshop on Biomembranes and Human Disease, Paris, 1992 (150 participants).
50th volume meeting of *Biophysical Chemistry*, Amsterdam, May 1994 (80 participants)
Biochemistry Society UK, Joint Membranes/Techniques Group meeting, Canterbury, September 1994 (>150 participants).
Joint British/Australian Biophysical Societies meeting (IUPAB Satellite meeting), Oxford, August 1996 (90 participants)
Harden Discussion Meeting "NMR of biological macromolecules - The future", Oxford, April 1997 (104 participants)
BBSRC One-Day Workshop "Membrane protein production - Science or art?", Oxford, December 2001 (150 participants)
Joint British Biophysical Society & Molecular Graphics & Modelling Society meeting "Biophysics & modelling of the 7-trans-membrane receptor gene family", Oxford, December 2001 (115 participants)

Joint British Biophysical Society, Institute of Physics & EPSRC meeting "Bionanotechnology", Oxford, April 2002 (128 participants)
Joint Biophysical Society and Institute of Physics meeting "Recent Innovations in Biological Solid State NMR", Oxford September 2002 (75 participants)
Joint EBSA and British Biophysical Society Congress, London, July 2007 (~1,300 participants)

CONSULTANCIES:

United Biscuits plc 1989-1994
Evans Medeva 1995-1997
Biocompatibles 1987-1990
Elan Pharmaceutical Technologies since 2000
Amersham International since 2001

PATENTS FILED:

Synthesis of optically active glycerols; 8904187.5
Flavouring of Food Products; 8926615.9
Cardiolipin; 9203453.7
The use of lipolytic enzymes to target components of ovine skin. Addy V L, Covington A.D and Watts A: UK Patent application filed.

INVITED LECTURES AND TALKS SINCE 1998 (pre-1998, 157 lectures given)

1998

Seminar " Structural details at atomic resolution of membrane receptor-ligand interactions using novel solid state NMR methods", School of Biological Sciences, University of Warwick - January 1998
American Biophysical Society Annual Meeting, Kansas City - February 1998
Groningen Biomolecular Sciences & Biotechnology Institute Spectroscopy Masterclass on NMR Spectroscopy, Schiemonnikoog, The Netherlands - February 1998
8th ATI International Forum: Membrane Research, Nagoya, Japan - March 1998
39th Experimental Nuclear Magnetic Resonance Conference, "Probing the structure and mechanism of binding of functional membrane proteins" California - March 1998
Inauguration of NMR Laboratory, Umea, Sweden - March 1998
Juan March Workshop: Membrane Protein Insertion, Folding & Dynamics, Madrid - March 1998
Royal Pharmaceutical Society of GB Pharmaceutical Sciences Group meeting, London "Solid state NMR of ligand-protein interactions in functional membranes" - April 1998
Presentation to Merk Sharp & Dohme "Solid-state NMR of ligand receptor interactions in functional biomembranes", Harlow, Essex - April 1998
Symposium on Lateral Organization of Signal Transduction Systems, Stony Brook, USA - June 1998
ANZMAG Lecturer: "Atomic details of ligand binding sites in membrane-bound receptors using non-crystallographic approaches", Department of Biochemistry, University of Sydney, Australia - July 1998
ANZMAG Lecturer: "Atomic details of ligand binding sites in membrane-bound receptors using non-crystallographic approaches", University of Canberra, Australia - August 1998
ANZMAG Lecturer: "Atomic details of ligand binding sites in membrane-bound receptors using non-crystallographic approaches", Department of Chemistry, University of Melbourne, Australia - August 1998
ANZMAG Lecturer: "Protein-induced lateral phase separation in membranes" and "Atomic details of ligand binding sites in membrane-bound receptors using non-crystallographic approaches", Department of Biochemistry, University of Queensland, Australia - August 1998.
XVIIIth International Conference on Magnetic Resonance in Biological Systems, Tokyo - August 1998
Departmental Seminar, Department of Biological Sciences, University of Liverpool “Solid state NMR studies of ligand-receptor interactions in functional biomembranes” - October 1998
Workshop on Biological Sciences and Neutron Scattering, Rutherford Appleton Laboratory, Didcot “Biological support facilities at RAL” - November 1998

1999

Workshop on Physical Techniques in Drug Design , Royal Danish School of Pharmacy, Copenhagen, Denmark - March 1999.
German Chemical Society’s Bayer Lecture, Bayer GmbH, Leverkusen, Germany “Membrane receptor-ligand interactions” - March 1999

ESR Group of Royal Society of Chemistry Annual Meeting, York “Exploring membrane protein structure through a novel combination of spin label ESR and magic angle spin (MAS) solid state NMR” - April 1999
British Council Travel Grant Seminar, Department of Biochemistry, University of Bahia Blanca, Argentina - April 1999
Morton Lecture, The Biochemical Society UK Meeting, Keele University “The need for expression expertise in solid state NMR studies of membrane proteins and peptides: successes and wish lists.” - July 1999
Diskussionstagung der GDCh-Fachgruppe Magnetische Resonanzespektroskopie, Würzburg, Germany “Solid state NMR to resolve structure details of membrane-embedded peptides and proteins” - September 1999
Workshop on “Membrane Protein Structure Determination”, Ringberg, Germany - September 1999
Seminar, Department of Biochemistry, University of Leicester “Resolving high resolution structural details of membrane-embedded peptides and proteins using non-crystallographic approaches” - October 1999
Electrophoresis Forum “Recent developments in Electrophoresis and Analytical Techniques”, Rouen, France “Ligand-receptor interactions in membranes studied by solid state NMR” - October 1999
Lecture to School of Biological Sciences, University of Manchester - December 1999

2000

Joint NMR Laboratory/Varian Seminar “NMR : A tool for Biology IV”, Paris “Solid state NMR methods to study membrane proteins and peptides” - January 2000
American Biophysical Society Meeting, New Orleans, USA - February 2000
ANZMAG 2000 NMR Conference Plenary Lecture, Mount Buller, Victoria, Australia - February 2000
Wilsmore Lecture, School of Chemistry, University of Melbourne - February 2000
Seminar, Chemistry Department, Australian National University - February 2000
Seminar, University of California, Irvine, USA "Structural resolution of membrane-embedded proteins at atomic resolution using novel solid state NMR methods" - April 2000
International conference "Membrane proteins", Royal Netherlands Academy of Arts and Sciences, Amsterdam “Solid state NMR to resolve structural details of proteins and peptides in membranes” - April 2000
NMR in the Drug Discovery Pipeline Conference, London “Solid-state NMR for studying ligands at their site of action in receptors” - May 2000
Departmental Seminar, Biochemistry Department, St George’s Hospital, London - May 2000
Clinical Sciences Centre Seminar, Hammersmith Hospital, London - June 2000
XIX ICMRBS, Florence, Italy - August 2000
EBSA Biophysics Congress, Munich - September 2000
German Society of Experimental and Clinical Pharmacology & Toxicology meeting "Molecular Pharmacology", Berlin-Dahlem, Germany - September 2000
International Workshop "The future of solid state NMR in biology", Leiden, The Netherlands - October 2000
39th NMR Symposium in Japan, Tokyo - November 2000
ASB 2000 Symosium Plenary lecture, Department of Biochemistry, University of Melbourne, Australia, - November 2000
Seminar "Resolving structural details of ligands at their site of action in membrane receptors", Biomolecular Research Institute, Melbourne, Australia - November 2000

2001

Royal Society of Chemistry Symposium "New horizons in NMR", Nottingham - February 2001
Biophysical Society Meeting, Boston, USA - February 2001
Moses Gomberg Lecture, University of Michigan Department of Chemistry - March 2001
Royal Pharmaceutical Society meeting "New analytical approaches to the development of biotechnology products", London - April 2001
Annual Danish NMR Symposium, Carlsberg Research Centre, Copenhagen, DK - May 2001
European Symposium on Bio-Organic Chemistry "Structure and Function of Membrane Embedded Proteins", Gregynog, Wales - May 2001
Hungarian Academy of Sciences Summer School "Advanced biophysics School on lipid-protein interactions and the organisation of membranes", Szeged, Hungary - June 2001
Royal Society of Chemistry meeting "NMR Spectroscopy" , Durham, UK - July 2001
Specialised Collogue AMPERE "ESR and solid state NMR in high magnetic fields", Stuttgart - July 2001
14th Conference of the International Society of Magnetic Resonance, Rhodes - August 2001
5th Workshop on Applications of EPR in Biology and Medicine, Krakow, Poland - September 2001
International Isotope Society Meeting, Loughborough, UK - October 2001
International Symposium "The perspective of proteomics in protein science and genome science", Toyonaka City, Osaka, Japan - November 2001
Biomics Congress, Frankfurt, Germany - November 2001

BBSRC Workshop "Membrane protein production - science or art?", Oxford - December 2001
BBS/MGMS Meeting "Biophysics & modelling of the 7-trans-membrane receptor gene family", Oxford - December 2001

2002

RSC Inorganic Biochemistry Discussion Group meeting "Metals and their chelators as biological probes", University of North London - January 2002
Biophysical Society Meeting, San Francisco, Chairman of session "Oriented membranes" - February 2002
Centre for Molecular Structure and Dynamics, CLRC, Abingdon,- March 2002.
German Biophysical Society's International workshop "Lipid-peptide/lipid-protein interactions", Gomadingen, Germany - March 2002
43rd Annual ENC Meeting, San Francisco - April 2002
XIV International Biophysics Congress, Buenos Aires, Argentina - April 2002
British Biophysical Society/Instutute of Physics Meeting "Bionanotechnology", Oxford - April 2002
Leiden - June 2002
"Electron density, density matrix and density functional theory for atoms, molecules and the solid state", Abingdon - June 2002
RSC Faraday Discussion Meeting, Manchester - June 2002
Presentation "Understanding how we see", Didcot Girls School - July 2002
BBS/IoP Meeting "Recent innovations in biological solid state NMR", Oxford - September 2002
RSC NMR group meeting, Southampton, UK - September 2002
University of Dublin Biochemical Society Lecture "What can be done with non-crystalline membrane proteins to get atomic resolution details?", Dublin - October 2002
Workshop on Single Molecule Fluorescence Detection "Probing ligand binding sites in membrane embedded receptors at atomic resolution using non-perturbing direct methods", CLRC Daresbury Laboratory - November 2002
7TM Pharma seminar presentation - November 2002
Portsmouth University seminar "Probing ligand binding sites in biomembrane receptors at atomic resolution using non-perturbing direct methods"- November 2002
Molecular Motors meeting, Warwick - December 2002

2003

Seminar, Institute of Pharmaceutical Sciences ETH Zurich, Switzerland - January 2003
EMBO-ILL Workshop "Deuterium Labelling for Biomolecular NMR and Neutron Scattering", Grenoble - January 2003
13th ESRF Users' Meeting, Satellite "Membranes Structure & Function - PSB Workshop" Grenoble - February 2003
EBSA Meeting, Barcelona - February 2003
Biophysical Society Meeting, San Antonio - March 2003
Experimental Nuclear Magnetic Resonance Conference, Georgia, USA - April 2003
Seminar, BBSRC John Innes Centre, Norwich - April 2003
British Biophysical Society meeting, Southampton - April 2003
ESBF Workshop "Current Trends in Structure-Aided Drug Design", Lund, Sweden- May 2003
Nordic Summer School, Sweden - June 2003
Biochemical Society Focused Meeting "Intermolecular associations in 2D and 3D", Nottingham, UK - June 2003
4th European Biophysics Conference, Alicante, Spain - July 2003
ESF EURESCO Workshop "Bionanotechnology", Granada, Spain - July 2003
Italian NMR Congress, Bixen - September 2003
Annual Meeting of the Korean Social for Molecular and Cellular Biology, Seoul, South Korea - October 2003
Seminar, Cheiljedang Biotech, Kyonggi-Do, South Korea - October 2003
Seminar, Korean Institute for Science and Technology, Seoul, South Korea - October 2003
Seminar, Department of Molecular Biology and Biotechnology, University of Sheffield- October 2003
Biomolecular Dynamics Symposium, Cancer Research UK, London - December 2003
CPD Lecture in the series 'Proteins - Workhorses and Wizards of the Cell', Department of Continuing Education, University of Oxford - December 2003

2004

Vth Biannual Structural Biology Symposium "Membranes: A Challenge for Magnetic Resonance, Institute of Molecular Biophysics, Florida State University, Tallahassee, USA - January 2004
Special Seminar, Departments of Chemistry and Biochemistry, University of California San Diego - April 2004

Retirement Symposium for Burton Litman, NIH, Bethesda, USA - May 2004
Seminar "Resolving high resolution structural and dynamic details about drugs and ligands at their target site in functional membranes", GlaxoSmithKline Research & Development Ltd., Stevenage, UK - June 2004
6th Congress of ISSFAL, Brighton, UK - June 2004
UK Japan Collaborations in Bionanotechnology, Kobe, Japan - July 2004
Aahus University undergraduate visit (27 students plus Lecturers), "Bionanotechnology in Oxford", Oxford - August 2004.
Biophysical Chemistry 2004 "Ligand-Protein Interactions", Joint British Biophysical Society/Royal Society of Chemistry meeting, Edinburgh – September 2004
International Symposium "Recent Advances and Applications of Solid State NMR from Superconducting Physics to Molecular Biology", University of Warwick, UK - September 2004
Norman Hascoe Distinguished Lecture Series: "Nanoscience at the Physics-Biology Interface: Studies on Biomembrane Proteins", University of Connecticut, Stoors, USA – October, 2004
New England Structure Symposium "NMR Perspectives on Biological Problems", Stoors, USA – October 2004
Perspectives on Biological Problems from NMR: Stoors, USA – October, 2004 - Plenary
Nature Horizons Symposium "A living frontier – exploring the dynamics of the cell membrane", Palazzo Arzaga, Italy – October 2004
Hungarian Biophysics Society Meeting "Trends in Biophysics: from Molecules to Cells", Debreceni, Hungary – October 2004
Departmental seminar "Resolving sub-Angstrom, high resolution details of ligands at their binding site in membrane-embedded targets", Department of Chemistry, Imperial College, London – November 2004
British Embassy Seminar "Bio-nanotechnology of Membrane Proteins", Carlsberg Institute, Copenhagen, DK – November 2004
Departmental seminar "Resolving very high resolution structural constraints within biomolecules in their functional state", Department of Physical & Theoretical Chemistry, University of Oxford – November 2004
Governor Lee and delegation from Chungchugn Buk Do Province, Korea: Seminar "Bionanotechnology in the UK and Korea", Oxford - December 2004

2005

Protein Dynamics and Function, A joint meeting of the Royal Society of Chemistry Inorganic Biochemistry Discussion Group and the British Biophysical Society, University of Leicester – January 2005
Departmental seminar, Center for Cellular and Molecular Biology, Hyderabad, India – January 2005
The International Conferences on Magnetic Resonance in Biological Systems (ICMRBS) Meeting, Hyderabad, India – January 2005
Symposium "Bionanotechnology of Membrane Proteins", Seoul National University, Korea – February 2005
Seminar, Osong Science Park, Chungcheungnuk-do Province, Korea – February 2005
Structural Biology Group Seminar, University of Birmingham, Birmingham – February 2005
SEEDA information gathering meeting "High resolution in biology", Oxford. – March 2005
MGMS Annual International Meeting: Membranes and Membrane Proteins, Oxford – April 2005
Asia Pacific Biochemical Engineering Conference (APBioChEC'05), Jeju, Korea – May 2005 - Plenary
Spring 2005 Conference on EPSRC-ILL Millennium Projects, Grenoble France - May 2005
Bio-Physical Chemistry meets Molecular Medicine Workshop, Sesimbra, Portugal – June 2005 - Plenary
SMi Global Protein Summit, London – June 2005
E-MeP Industrial Workshop, Tavira, Portugal - June 2005
15th IUPAB & 5th EBSA International Biophysics Congress, Montepellier, France – August 2005
"Neutrons in Biology", Grenoble, France – September 2005
"Membrane imaging: from molecules to animals", CNRS, Toulouse, France – September 2005 - Plenary
MGMS, Annual International Meeting 2005: Biomolecular Simulations: from prediction to practice, Trinity College Dublin, Ireland – September, 2005 - Plenary
NESS: Structural Perspectives on Membrane Proteins, University of Connecticut – October 2005 - Plenary
"Assembly and reconstitution of membrane proteins and cellular molecular machineries", Japan/UK Bilateral Program for Membrane Proteins, Osaka, Japan – November 2005
1st Asia-Pacific NMR Symposium Plenary Lecture, Yokohama, Japan – November 2005 - Plenary
iNanoCentre, Aarhus, Denmark - December 2005 - Inaugural Lecture

2006

Winterseminar, Kloster, CH - January 2006 - Plenary
"NMR a tool for Biology", Institut Pasteur, Paris - January 2006

Seminar, Chemistry Department, University of Cambridge - February 2006
DLAB: "Methods for deuterium labelling", Munich - March 2006
Departmental seminar, Hebrew University of Jerusalem, Israel - May 2006
89th Canadian Society for Chemistry (CSC) Conference in Halifax, Nova Scotia, Canada - May 2006 - Plenary
EUROMAR 2006 Plenary Lecture "Receptor dynamics and structure in membranes resolved using solid state NMR",York - July 2006 - Plenary
ICMRBS 2006: 22nd International Conference on Magnetic Resonance in Biological Systems, Keynote Lecture: "Receptor dynamics and structure in membranes resolved using solid state NMR", Göttingen, Germany - August 2006
"Ion channels: their interaction with small molecules" Departmental Seminar, Department of Molecular and Cellular Biology, University of Connecticut, USA - September 2006
9th International Summer School On Biophysics ″Supramolecular Structure And Function″ Rovinj, Croatia - September 2006
Departmental Colloquia "Peering into Binding Sites of Membrane Drug Targets", Biochemistry Department, Oxford - October 2006
III Biannual NMR Spanish Group Conference, The Instituto de Biología Molecular y Cellular, Universidad Miguel Hernández, Spain - October 2006 - Plenary
D-Lab EPSRC Research Consortium Annual Meeting, Reading - November 2006
2nd Workshop of UK-Japan Bionanotechnology Collaboration, Tokyo, Japan - December 2006
Seminar "Peering into Binding Sites of Membrane Drug Targets", Yokohama Institute, Riken, Japan - December 2006

2007

Seminar "Peering into Binding Sites of Membrane Drug Targets", Kyundwon University, Seoul, Korea - February 2007
"Protein Biotechnology" Summer School for the joint graduate program of the Departments of Biology and Chemistry of the University of Crete, Heraklion, Crete - May 2007
Workshop "NMR and Soft Matter", Arcachon, France - June 2007
The EBSA lecture at the Symposium "New developments in the biophysics of membrane-protein interactions", Leipzig - September 2007 - Plenary
3rd Symposium on EPR Spectroscopy, Szeged, Hungary - November 2007
1st International Conference on Viral Membrane Proteins, Taipei, Taiwan - December 2007

2008

iCeMS Inauguration, Kyoto, Japan - February 2008
1st ICeMS International Symposium & 11th International Membrane Research Forum, Kyoto, Japan - February 2008 - Plenary
Seminar "Peering into ligand binding domains of membrane targets at the nanoscale", Department of Chemistry, University of Virginia, USA - March 2008
Seminar "Peering into ligand binding domains of membrane targets at the nanoscale", Department of Chemistry, University of Minnesota, USA - April 2008
Seminar "Peering into ligand binding domains of membrane targets at the nanoscale", Department of Molecular Biophysics, Chapel Hill, North Caroline, USA - May 2008
EU NIMR3 Neutron Meeting, Corsica - June 2008
ICMRBS Conference, San Diego, USA - August 2008