

CURRICULUM VITAE

George Fink MB BS MD DPhil FRCPE FRSE

Expertise:

- Research leader in neuroendocrinology, neuropharmacology, psychopharmacology and neuropsychiatry.
- Experienced in drug R&D including, SAR- based drug design, high throughput screening, GLP, ADME, Toxicology and QA, and familiar with GMP, CMC and regulatory compliance. Experienced in drug trial design and monitoring (GCP).
- Experienced in due diligence of biotech companies, pharmaceutical compounds and medical devices especially in the areas of neurology, neuropharmacology, psychiatry and neuroinflammation.
- Extensive research experience with focus on the neuroendocrinology of stress and reproduction, neuropsychiatry and psychopharmacology.
- Proven track record as expert witness in neuropsychiatry involving adverse effects of psychoactive drugs.
- Legally qualified medical practitioner in the UK (GMC) and Australia (AHPRA).

Present positions:

(Since 2007) Professorial Research Fellow Mental Health Research Institute, Australia

(Since 2008) Honorary Professor, University of Melbourne, Centre for Neuroscience

Previous positions:

- 2004-2006 (inclusive): Director and CEO, Mental Health Research Institute (MHRI), Australia
- 2003: Head of Laboratory and Psychiatric Neuroscience Research, MHRI.
- 1999-2003: Vice President Research, Pharms Corporation, Israel and USA
- 1980-1999: Director and CEO MRC Brain Metabolism Unit (BMU), University Department of Pharmacology and Honorary Professor, University of Edinburgh
- 1971 - 1980: University Lecturer and Official Fellow and Tutor in Medicine and Physiology at Oxford University and Brasenose College, Oxford
- 1968-1971: Senior Lecturer in Anatomy, Monash University, Victoria, Australia

Qualifications:

- MB BS Medicine (honours and Prosector in Anatomy) Melbourne University
- DPhil Oxford University (under tenure of Nuffield Dominions Demonstratorship)
- MD Melbourne University (for collection of published papers)
- Royal Australian College of Surgeons...Primary Fellowship
- Legally qualified medical practitioner in the UK (General Medical Council Principal List 2400011) and Australia (MED0000945183).

Relevant Experience:

Drug Discovery and Development:

My experience in technology transfer, began in the early 1970s with Ferring on analogs of arginine vasopressin, the pharmacokinetics of peptides introduced nasally in the human and with the Royal Postgraduate Medical School on the development of isosteric analogs of GnRH and the enkephalins. During my Directorship of the MRC Brain Metabolism Unit (Edinburgh) we filed 15 patent applications on novel peptide receptor genes and on other discoveries such as “Screening for disorders of serotonergic dysfunction” (PCT/GB96/02360).

My expertise in drug discovery and development was significantly enhanced by 4 years as Vice President Research Pharms Corporation, a biopharmaceutical company based in Israel and the USA in which I directed the work of the Departments of Chemistry, Pharmaceutical development and Pharmacology (N~ 45 staff). My work at Pharms included the following:

- Business development – especially due diligence of compounds for possible in-licensing and pharmaceutical and biotechnology companies for potential partnership or acquisition and merger. These companies included Millenium, Acorda, NeuroSearch, Idun, CeNeS, ReNeuron, Mitsubishi, Takeda Chemicals, Santen, Schering AG Berlin, Aventis, Teva, Lilly, BMS, Astra Zeneca, Forest, Purdue, Ipsen Ltd, Medicinova, SchwarzBioscience, Ionix.
- Direction of rational SAR-based combinatorial chemistry, high throughput screening and compound testing in animal models for stroke, neuropathic pain, Parkinson’s disease, multiple sclerosis and neuroinflammation
- Analysis and evaluation of compound/drug pharmacokinetics in man and animals
- Establishment of a new molecular biological laboratory (including genomic arrays and Quantitative RT-PCR) for new therapeutic target identification and elucidation of the mechanisms of drug action.
- Discovery of a series of novel bicyclic cannabinoids of potential value for neuropathic pain and autoimmune disorders

Since returning to Australia in June 2003, first as Head of Laboratory Research and then Director of the Mental Health Research Institute, I have completed several commercial projects that include assessment of feasibility and cost-effectiveness of the synthesis of cannabinoid receptor agonists for a company in Kazakhstan and due diligence of a novel medical device designed to assist the diagnosis of mental disorders for a company in Australia.

Major Scientific Discoveries:

1. Sex steroid control central serotonergic mechanisms – elucidated the mechanism by which estradiol induces the central expression of the serotonin 2A receptor and the serotonin transporter - relevant for understanding gender differences and sex hormone influences on cognition, mood and mental state in normal subjects and in people with schizophrenia, bipolar disorder and major depression.

2. Elucidation of the central control of ovulation – discovery of the mechanism of the spontaneous ovulatory gonadotropin surge - triggered by estrogen-induced positive feedback stimulation of the surge release of gonadotropin releasing hormone (GnRH) and the concomitant 20- to 50- fold increase in pituitary responsiveness to GnRH.
3. Discovery of the Priming effect of GnRH whereby the decapeptide increases pituitary responsiveness to itself and thereby synchronizes the estrogen-triggered spontaneous GnRH surge and increase in pituitary responsiveness to ensure coincidence and the consequent ovulatory gonadotropin surge.
4. Elucidation of the central neuroendocrine stress response mechanisms
5. Feedback mechanisms in neuroendocrine control: how gonadal and adrenal steroids regulate pituitary hormone secretion by way of feedback and servo mechanisms that affect hypothalamic neurohormones and pituitary responsiveness to neurohormones.
6. How gonadal and adrenal steroids affect brain differentiation, plasticity and neurochemistry.
7. Neurohormone release into hypophysial portal vessel blood: with Curtis Worthington, I developed a transpharyngeal method for collecting blood from the hypophysial portal vessels that was pivotal for proving the neurohumoral hypothesis of anterior pituitary control, identifying hypothalamic neurohormones and characterizing neurohormone release and posttranslational processing of neuropeptide precursors. The Fink -Worthington method was subsequently adapted for neurohormonal studies in larger species such as the sheep and rhesus monkey.
8. Mutant Neuroendocrine Animal models – Discovery of the hypogonadal (*hpg*) mouse (with BM Cattanch and HM Charlton) which was used to elucidate several key mechanisms in reproductive behaviour (e.g. social memory) physiology and pathology.

Research Leadership:

Under my Directorship the MRC Brain Metabolism Unit (1980-1999) became renowned for its molecular neuroendocrinology, neuropharmacology, and psychopharmacology and for the fact that it was first in the UK to establish a modern neuroimaging (SPECT and MRI) facility dedicated to Psychiatry.

I have supervised more than 45 graduate students and postdoctoral scientists. Of these 20 have attained senior (full professor/head of department level) academic, research or industrial positions.

Clinical Experience and Clinical Trials:

Direction of clinical neuropsychiatry and psychoneuroendocrinology in the BMU and MHRI provided experience in the diagnosis and treatment of patients with schizophrenia, manic-depressive disorder, major depression and dementia, and the use and adverse effects of psychoactive drugs. My time at Pharmos Corp added to my experience in traumatic brain injury, stroke, neuropathic pain and neurodegenerative disorders.

I was involved in the design and running of several clinical trials in the BMU and at the MHRI. The work at the BMU involved neuroendocrine and pharmacological studies of mainly drug free patients with psychoses or dementia. These studies provided novel insights into glucocorticoid and pituitary hormone secretion as biomarkers of mental disorders.

Distinctions:

- Fellow of the Royal Society of Edinburgh (elected 1989)
- Fellow of the Royal College of Physicians Edinburgh (elected 1998)
- Lifetime Achievement Award of the International Society of Psychoneuroendocrinology (2000)
- Honorary Member British Society for Neuroendocrinology (appointed 2005)
- Inaugural Geoffrey Harris Memorial Prize Lecture of the British Physiological Society (Cambridge, 1987)
- Honorary Professor University of Edinburgh (elected 1984)
- Visiting Professor, Rockefeller University, New York, (Neurobiology and Behaviour) (1996-2000);
- Walter Cottman Visiting Prof, Monash University, Australia (1985 and 1989);
- Visiting Prof in Neurobiology, the Mayo Clinic, Rochester, Minnesota (1993);
- Arthur Fishberg Visiting Prof, Mount Sinai Medical Centre, New York (1988);
- Visiting Scientist Weizmann Institute of Science, Dept of Neurobiology (2009 –)
- Wolfson Lecture (Oxford, 1982);
- Royal Society - Israel Academy Fellow, Weizmann Institute (1978-1979)
- Nuffield Dominions Demonstrator, Oxford University (1965-67)
- Numerous invited international plenary and symposium lectures.
- Listed in *Who's Who* since 1989 (A&C Black, London, Publisher)
- Listed in *Debrett's People of Today* since 1990

International and National Scientific Committees:

- President of the European Neuroendocrine Association (1991-1995); organized and presided over International meetings in Lisbon (1993) and Jerusalem (1995)
- Council of the European Neuroscience Association (1994-1998 and 1979-83); involved in establishing the Federation of European Neuroscience Societies (FENS)
- Co-coordinating Committee, European Science Foundation Network on Neuroimmuno-modulation (1990-1992)
- Wellcome Trust's Mental Health and Neuroscience Panel (1984-89): played lead role in developing the Trust's strategy for establishing Neuroimaging (PET, SPET and fMRI) facilities in the UK
- European Commission - Chairman of the 5-Year Assessment Panel of the Commission's Biomedicine and Health Programme (formerly Chairman of the Monitoring Committee and of the Brain Research Panel of Biomed 2) – advisor and evaluator on Neuroscience and Brain Disorders in EC Framework Programs 5 and 6 (1997 - 2002)
- Edinburgh University Committees – Member of Research Strategy Committee, Faculty of Medicine (1990-1999) – Member of several Edinburgh University Chair Appointment Committees.

- Fujisawa Institute of Neuroscience (Edinburgh) – Member of steering committee 1988 – 1999
- Co-Director of Australian Centre for Neuroscience and Mental Health Research - new development to consolidate four Melbourne neuroscience institutes – Howard Florey, MHRI, Brain Research and National Stroke Research – to form the “Melbourne Brain Centre”.
- Member of the International Scientific Programme Committee of the International Union of Physiological Sciences (IUPS: 1989-1993).
- Physiological Society - Organizer International Symposium on Sex Steroid hormone Action on Neuronal Function, Liverpool (1998)
- Member of Steering Committee of British Neuroendocrine Group [now “Society”] (1984- 1988)
- Trustee of British Neuroendocrine Group and Journal of Neuroendocrinology (1990 – 2000)
- Chairman of the Animal House and Animal Ethics Committee, University Department of Pharmacology, Edinburgh (1984 – 1999)
- International Foundation of Biochemical Endocrinology – organizer and Chairman of international meeting on Neuroendocrine Molecular Biology (1985)
- Neuropeptides: Basic and Clinical Aspects (Pfizer Postgraduate Foundation, Edinburgh) – organizer and Chairman Programme Committee of this international meeting and Editor of proceedings (1981)
- Oxford (1971-1980) Served on several University and College Committees including Radiation Protection Officer, Scientist in charge of Animal House, Tutor for Science Admissions, Brasenose College, Oxford
- Member of editorial boards of several journals (e.g. *Endocrinology*, *Neuroendocrinology*, *Frontiers in Neuroendocrinology*, *Psychoneuroendocrinology*, *Paraplegia*, *Molecular and Cellular Endocrinology*, *Stress*, *J Mol Neuroscience*, *Neuropeptides*, *Experimental Physiology*) and book series (*Monographs of the Physiological Society*)
- Refereeing (ad hoc) – numerous for journals (e.g. *Nature*, *Proc Natl Acad Sci*, *Endocrinology*, *J Endocrinology*, *J Neuroscience*, *Psychoneuroendocrinology*, *J Neuroendocrinology*) and grant awarding authorities – especially MRC, AFRC and SERC (UK), Wellcome Trust, NIH and NIMH (USA) and NHMRC (Australia)

Membership of Learned Societies:

The Physiological Society (UK) *Senior*;
 The Society for Neuroscience (USA) *Emeritus*;
 British Pharmacological Society, *Senior*;
 The Endocrine Society (USA) *Emeritus*;
 Society for Endocrinology (UK) *Senior*;
 Genetics Society of America, *Emeritus*;
 British Medical Association;
 International Society for Neuroendocrinology;
 British Society for Neuroendocrinology, *Honorary*;
 International Brain Research Organization;
 European Neuroscience Association (now FENS);
 European Neuroendocrine Association

Publications:

- Over 360 scientific publications, invited review articles and patents.

- Books published:

Fink, G. & Whalley, L.J. Eds. (1982) *Neuropeptides: Basic and Clinical Aspects*. Proceedings of the eleventh Pfizer International Symposium, September 1981, Pp 1-286. Edinburgh: Churchill Livingstone.

Fink, G., Harmar, A.J. & McKerns, K.W. Eds. (1986) *Neuroendocrine Molecular Biology*, Pp 1-510. New York: Plenum.

Fink, G. (1987) *Basic and Clinical Aspects of Neuroscience: Transmitter Molecules in the Brain*, Vol 2, Pp 1-78. Heidelberg: Springer Verlag. Series editors: Fluckiger, E., Muller, E.E. & Thorner, M.O.

Fink, G. & Harmar, A.J. Eds. (1989) *Neuropeptides: A Methodology* (IBRO Handbook Series: Methods in Neuroscience), pp 370. Chichester: John Wiley & Sons Ltd.

Fink, G. Editor-in-Chief (2000) *Encyclopedia of Stress*, 3 vols, Pp 2328. San Diego, Academic Press – Awarded BMA 2001 commendation for contribution to Mental Health.

Fink, G. Editor-in-Chief (2007) *Encyclopedia of Stress*, Second Edition, 4 vols. Pp 3000. San Diego, Academic Press, Elsevier Ltd. Japanese edition published 2009.

Fink, G. Editor (2009) *Stress Science: Neuroendocrinology*. Pp 829. San Diego, Academic Press, Elsevier Ltd.

Fink, G. Editor (2009) *Stress Consequences: Mental, Neuropsychological and Socioeconomic*. Pp 780. San Diego, Academic Press, Elsevier Ltd.

Fink, G. Editor (2010) *Stress of War, Conflict and Disaster*. Pp 800. San Diego, Academic Press, Elsevier Ltd.

Fink G, Pfaff, DW, Levine JE (Eds.) (2011) *Handbook of Neuroendocrinology*. Pp 871 San Diego, Academic Press, Elsevier Ltd..

Extracurricular:

Fink is married with two children and enjoys skiing, SCUBA diving and reading mainly history and biographies

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