The BSE Inquiry / Statement No 67

Dr Iain McGill (scheduled to give oral evidence 08 June 98)

THE BSE INQUIRY

Statement by I S McGill

Curriculum Vitae

1. A brief CV is enclosed with this statement as Annex 1.
   Periods particularly concerned with TSEs are as follows:

Spring/Summer 1988 Final Year Elective Research project
The astrocytic reaction in BSE and its comparison with natural scrapie of sheep.
Royal Veterinary College (RVC), London University.
Performed at Pathology Dept, MAFF, CVL, Weybridge

Jan 1990 - Jun 1991 Veterinary Research Officer
Central Veterinary Laboratory (CVL), Weybridge.
Employer: MAFF
Funding Body: MAFF

Aug 1991 - Dec 1992 Post Doctoral Research Worker
Institute of Psychiatry, London University.
Employer: Institute of Psychiatry
Funding Body: AFRC

1994 - 1998 Director, Prion Interest Group
Independent Research Organisation.
Privately financed.
Incorporated as scientific wing of
Shift Ltd in 1995 : Company reg no 291 6731

Statement of Interests

2. I have no links of any nature with the farming community (other than those from my work with farms as a vet student or as a qualified vet) nor with the feedstock, pet food or rendering industries.

Advice to Governmental Committees

3. I have had no involvement in UK Governmental committees.I did, however, act as rapporteur for a conference of international experts held in 1990 at the CVL. This was held under the auspices of the Gibbs Committee, organised by Dr CJ Gibbs of the National

Institutes of Health, Bethesda, USA. My draft report from this conference was passed on to MAFF. *(The final report is at YB90/3.12/1.1)*

How I became involved in work on TSEs.

4. In 1987/88, my final year at the RVC, the work of Gerald Wells and his colleagues at the CVL on BSE was the subject of much discussion. I approached Richard Barlow Professor of Pathology at RVC, who had decades of experience in scrapie research, with a view to carrying out my final year elective research project outside the RVC, with the team at the CVL. He agreed to co-supervise a project with Gerald Wells.

5. The report of this work is available and also held in RVC library. The external examiner for this research was Dr W B Martin, at that time sitting on the Southwood Committee. This research achieved first place in the year in professional examinations and contributed to the award of the Cecil Aulden Second Prize (second place throughout BVetMed degree).

6. Once qualified, I worked for 18 months in practice, and then returned to the Pathology Department of the CVL in January 1990, to continue my work with Mr Wells.

Commissioning and Funding

Work at CVL, Weybridge, commissioned by MAFF

7. At CVL most of the projects I worked on were commissioned and directly funded by MAFF. All the research I pursued was as an employee of MAFF, excepting work during my final year at the RVC, when I was supported by a student grant.

8. I think it is worthwhile making a few salient points about my day to day work for MAFF. The facilities of the Pathology Department and the quality of technical and administrative support were in general excellent and the scientists I worked with were of a uniformly high calibre. Once the decision to fund a project had been reached, there were no restraints on rapidly seeking tangible results.

9. Publications arising from such work include references 2, 5, 7, 8 & 10 in the list of publications to be found at the end of this statement.

Uncommissioned Work at CVL, Weybridge

10. As I was not always encouraged to pursue work I regarded as essential, I also worked on projects (either practical or theoretical) beyond the narrow confines of specific MAFF commission. Often this was possible within my daily routine, but I would periodically have to ‘clock off’ from my MAFF job and work in my own time rather than leave the matter untouched.

11. Publications arising from non-commissioned work started whilst I was still an employee of MAFF include :

(i) Wood LJN, McGill IS, Done SH and Bradley R (1997). Neuropathology of scrapie: a study of the distribution patterns of brain lesions in 222 cases of natural scrapie in sheep, 1982-1991; ref 12.
The project as a whole was commissioned by MAFF, but my own involvement was voluntary (see para. 31).

(ii) Heretical Model of Scrapie (1991) paper to the annual conference of the Association of veterinary Teachers and Research Workers, Scarborough 1991, referred to in the *Veterinary Record, 128,* pp368-369.
See paras 52 et seq for details of research proposed to MAFF at this time.

(iii) Stack MJ, Aldrich AM, Davis LA (1997). Comparison of detergent and protease enzyme combinations for the detection of scrapie-associated fibrils from the central nervous system of sheep naturally affected with scrapie. *Journal of Comparative Pathology,* 1997, 116, pp.181-189 (*J/CP/116/181).*

12. Although this is not acknowledged in the published article, I introduced Mick Stack to the use of *Subtilisin Carlsberg* enzyme for SAF extraction, initially from formalin-fixed tissue. Following a theoretical discussion with Dr (now Professor) Ian Shaw in 1991 I had pioneered such use of this enzyme. My conceptual role (*not* commissioned by MAFF) in this work illustrates the sometimes unexpected fruits of the free pursuit of scientific (as opposed to Government) ideas.

Work at the Institute of Psychiatry funded by an AFRC Grant

13. Publications arising from this work include references 3, 4, 6 & 9 in the attached list of publications.

14. Two publications submitted to the *Veterinary Record* during this period went unpublished. (See para 22).

Constraints on publication of results

" Internal approval"

15. Every paper generated within MAFF is sent for approval by superiors; the more serious the topic (for example if the disease is zoonotic or notifiable), the higher it is sent before approval is given or refused. I only outline the system in operation within MAFF at that time, and it is not my intention to criticise individuals who were performing their ascribed roles within the structure of MAFF.

16. I would like to illustrate the process of 'approval' with reference to the identification of FSE and subsequent publication of findings. The first case of FSE was discovered at Bristol University by Janet Wyatt (now Bradshaw) working with Dr Geoff Pearson and others. Material was referred to Gerald Wells in April 1990 for his expert opinion and he passed histological sections to me for comment.

17. Over the next six months, the Bristol and Liverpool Veterinary Schools (and possibly others) and the CVL independently examined their archives of feline brains to determine whether this disease existed prior to the BSE epidemic, or whether it was a new disease. Neuropathological evidence suggested it was a new disease. This, along with epidemiological and biochemical data, led Gerald Wells and myself to prepare a paper for an international TSE conference in Brussels including the indication that there might be a causal link between BSE and FSE. The abstract of this paper was faxed to Brussels prior to the conference for publication in a booklet for delegates. This abstract (ref 5) includes the suggestion of this link.

18. Following the conference, we prepared the full paper we had presented, for publication in a book of this European Commission-sponsored conference and sent it to our superiors for approval. *(The correspondence which ensued in April and May 1991 is found at YB91/4.16/1.1;YB91/4.22/2.1;YB91/4.30/1.1;YB91/5.3/3.1)*. Specifically, despite detailed arguments supporting our statements, the following ultimatum was faxed to us from the then Assistant Chief Veterinary Officer, making it plain that he was taking into account the views of the then CVO:

> *"We are not willing for the paper to be published unless these references are removed. This may be unacceptable to the authors, in which case permission to publish is refused."*

19. Despite protestations that the body of the text would no longer agree with the *already published* abstract, and our detailed knowledge on the subject notwithstanding, the edict stood. We were left with little alternative but to amend the paper, which by this time had missed the original deadline for submission and was in danger of not being published at all (see correspondence above).

20. Subsequent to its publication in the conference book (ref 5), the paper was also published in a refereed journal (ref 7). The original abstract from ref 5 was then also altered to agree with the altered text. Specifically the words "with BSE" were removed from the phrase "epidemiological association with BSE". I had left MAFF before this paper was ever published.

21. This episode was described in *Dispatches* (Channel 4, 9pm Thursday 11th December 1997), and on two separate occasions in. *The Independent* newspaper (*YB97/12.11/1.1* and *YB98/1.26/1.1*).

Outright rejection of manuscripts submitted for publication, during "Refereeing/Scrutineering" by Journals

22. The peer review system is in itself generally reasonable. However, an issue of real concern is that the *Veterinary Record* , the main channel of information for the veterinary profession, failed to provide an open forum for discussion of the TSEs throughout the period of the terms of reference of the Inquiry.

23. The following is a chronology of papers submitted to the *Veterinary Record*, but which went unpublished:

1988: Letter entitled ‘Scrapie, Time to take HB Parry Seriously’ (*YB88/6.8/4.1)*

24. In this letter I stated that BSE had been officially confirmed as a TSE (when much of the veterinary profession still favoured a variety of alternate hypotheses). I also suggested that scrapie should be made a notifiable disease, and drew attention to the work of HB 'James' Parry and the possibility that natural scrapie in sheep might be of genetic origin.

25. I withdrew the letter following advice from Professor Barlow (who as far as I can recall had been contacted by MAFF and the *Veterinary Record*) that it might not be in my interests to pursue publication at that moment in time.

26. I received a letter from the then editor, Edward Boden, questioning my permission to release the information that BSE was indeed a proven TSE. I had no permission, though was unaware that any was needed, to inform my profession of this urgent and important fact.

1992: McGill and Wood

27. This paper summarises views as to why an open debate on TSEs and in particular scrapie were and remain essential. We drew attention to the work of Parry, Prusiner and others, and outlined novel explanations for recent research findings in light of such work. We suggested that not all the relevant questions were being asked in the interpretation of data. In particular, the possibility that the infectious agent was being generated *de novo* from the genome (the PrP gene) in certain families of sheep, was still not being considered, despite a body of scientific data going back over 30 years. It was to be a further 5 years before publications from Government laboratories would start to cite Parry’s work as a possibly correct theory.

28. The refereeing process for this work was at the time not transparent, and I have yet to be informed as to why this remains unpublished.

29. **1992 Book review commissioned** - on “Sub-Acute Spongiform Encephalopathies” Eds. Bradley, Savey & Marchant, Kluwer Academic Publishers, Dorchelt, for the Commission of the European Communities.

30. On 13th May 1992, I was commissioned by the *Veterinary Record* to review this book (*YB92/5.13/1.1*). After approximately 100 hours work for this review, an editorial decision was taken not to publish. Ironically, this book contained the very paper by Gerald Wells and myself over which "censorship" has been alleged.

Prolonged delay during "Refereeing/Scrutineering" of manuscripts submitted for publication

1997 Wood McGill Done and Bradley (ref 12).

31. This work was started in 1990 to screen for putative BSE in sheep, by James Wood, a colleague in the Pathology Department at CVL, although it was not finally published until 1997. James sought my assistance in light of my greater experience in TSE pathology. I worked many many months to get this paper into print (*YB95/6.29/2.1; YB96/9.19/2.1)*

refereeing process took two years, hardly an acceptable delay for crucial work in this field. The referees' comments (*YB95/6.29/2.2)* themselves require scrutiny. One scrutineer seemed to referee the paper in a balanced way, whilst the other seemed more intent on pushing his/her own opinions onto the paper.

32. Publication was finally expedited in the summer of 1996, when the politically sensitive question of whether or not BSE had indeed gone into the sheep population started to be asked in the public domain. This paper finally appeared (with some important omissions and watering down) in 1997, seven years after it was started, and two years after it was submitted. It was jointly funded by MAFF and the Prion Interest Group.

33. Had my ongoing research into sheep scrapie been funded and/or the McGill and Wood 1992 paper been published, stimulating debate and further investigations, this paper would most certainly have appeared by 1995. Further work based on it could have determined by 1997 whether or not, and if so to what extent, BSE had gone into sheep.

34. In addition, the work may by now have led to a rapid diagnostic test and a great deal of information on the actual (as opposed to the theoretical/experimental) causes of sheep scrapie and the fundamental biology of this entire group of diseases. Some of the work suggested in 1991 has still not been started.

Aspects of TSE work with which I was involved

Analysis of the astrocytic response in BSE and its comparison with natural scrapie.

35. I worked as a neuropathologist with Gerald Wells to establish that astrocytic reaction, one of the fundamental triad of neuropathological changes occurring in TSEs, was indeed present in BSE. This work was accomplished using antibodies to GFAP (a structural component characteristic of astrocytes) to quantify previously qualitative interpretations that an astrocytic reaction was present. The astrocytic reaction in natural sheep scrapie was assessed in parallel.

    Published: 1988 RVC library.
    1991 (Wells, Wilesmith and McGill) - details of astrocytic response in BSE
    1997 (Wood, McGill, Done and Bradley) - details of astrocytic response in natural sheep scrapie

Surveillance for emerging scrapie-like diseases in animals in the UK

36. Working with Gerald Wells and other pathologists from the State Veterinary Service, I was involved with surveillance for neurological disease of animals in the UK. This was with particular reference to surveillance for, and subsequent confirmation of TSEs. During my time of employment, novel TSEs arose in domestic cats and in exotic ungulates in zoological collections. I also became involved in the investigation of a putative TSE in hound packs detected by Robert Higgins.

    FSE, and BSE in exotic ungulates published in reviews:
    1991 (Wells and McGill) ref 5

1992 (Wells and McGill) ref 7
FSE discussed in para 15.

37. Putative TSE in hounds - work started 1990 –(*see para 41)*

Robert Higgins, a Veterinary Investigation Officer at Thirsk, had been working on a hound survey in 1990. Gerald Wells and I myself received histological sections from this survey along with the accompanying letter (*YB90/11.28/1.1*) dated November 1990. This letter details spongiform changes found in brains from hunt hounds failing to keep up with the rest of the pack, along with the results of SAF extractions from fresh brain material from these same animals. SAFs were not found in brains unless spongiform changes were also present. The spongiform changes were not pathognomonic (*ie.* conclusive proof) for prion disease, as they were atypical, being largely present in white matter rather than grey matter in the brain and spinal cord. However, Tony Scott, then head of electron microscopy work on TSEs, had no doubt that these SAFs were genuine and that these hounds therefore must have had a scrapie-like disease. I reviewed all the sections myself (original notes appended) and although the pathology was not typical, I could not exclude the possibility that this was a scrapie-like disorder, as white matter vacuolation is seen in TSEs and Wallerian degeneration was also present in the white matter of the hounds, another feature of scrapie.

38. I reviewed the literature on hound neuropathology, and discovered that micrographs and descriptive neuropathology from papers on 'hound ataxia' mirrored those in material from Robert Higgins' hound survey. Dr Tony Palmer (Cambridge) had done much of this work, and I obtained original sections from hound ataxia cases from him. This enabled me provisionally to conclude that Robert Higgins had in all probability detected hound ataxia, but also that hound ataxia itself was possibly a TSE. Gerald Wells confirmed in 'blind' examination of single restricted microscopic fields that there was no distinction between the white matter vacuolation present in BSE and scrapie cases, and that occurring in hound ataxia and the hound survey cases.

39. Hound ataxia had reportedly been occurring since the 1930's, and a known risk factor for its development was the feeding to hounds of downer cows, and particularly bovine offal. Circumstantial evidence suggests that bovine offal may also be causal in FSE, and TME in mink. Despite the inconclusive nature of the neuropathology, it was clearly evident that this putative canine spongiform encephalopathy merited further investigation.

40. The inconclusive results in hounds were never confirmed, nor was the link with hound ataxia pursued. I telephoned Robert Higgins six years after he first sent the slides to CVL. I was informed that despite his submitting a yearly report to the CVO including the suggestion that the hound work be continued, no further work had been done since 1991. This was surprising, to say the very least.

41. The hound work could have provided valuable evidence that a scrapie-like agent may have been present in cattle offal long before the BSE epidemic was recognised. The MAFF hound survey remains unpublished.

<u>Histopathological support to various other published MAFF experiments</u>

42. These included neuropathological examination of material from experiments studying the attempted transmission of BSE to chickens and pigs (CVL 1991) and to mice (RVC 1994).

Neuropathological findings in cattle with clinically suspect but histologically unconfirmed bovine spongiform encephalopathy

43. This was my main project during my employment at MAFF.

44. At this time, approximately 10% of cattle suspected of having BSE were not being diagnosed as BSE-positive. The purpose of this work was to establish what other diseases were being clinically mistaken for BSE and causing these cattle to be taken as suspects under the BSE Order.

45. Upon closer examination, three of the 200 'BSE-negative' brains proved positive for spongiform changes diagnostic of BSE (see *YB87/12.14/1.2; YB87/12.15/2.1)*. This represents an overall diagnostic accuracy of 99.85%, exceeding the 99.6% previously published for the same standard diagnostic technique. Despite this, at the behest of MAFF managers, the emphasis of the study and its provisional title had to be changed, from accurately representing the whole negative 10%, to a study examining this 10% minus any mention whatsoever of BSE-affected cattle going undiagnosed. I therefore had to reluctantly locate and analyse three new BSE-negative suspect brains.

46. Discussion of this would according to MAFF officials have resulted in 'lack of clarity' and opened up debate as to the accuracy of diagnosis.

47. Although this may seem a minor consideration, it illustrates the kneejerk and perhaps unnecessary culture of secrecy operating within MAFF at that time.

48. As it was also a theoretical possibility that cases of BSE might exist without the characteristic spongiform changes, a further purpose of this work was to examine selected cases using immunocytochemistry for PrP to determine if any had BSE but lacked the characteristic pathology. Although the sensitivity of the technique used has increased dramatically since then, none were found at this time, and this was one of the important findings of the paper which was published.

49. In a number of informal conversations at that time, managers within MAFF let me know that the upper echelons of MAFF "had had it up to here with you scientists finding out about new diseases". As a Veterinary Research Officer employed in disease surveillance, I had considered that to be my job.

Published 1993 (McGill and Wells) ref 10

Theoretical models of TSE diseases

50. Published in the *Veterinary Record* 1991 (*J/VR/128/368)* as editorial of AVTRW conference. In 1991 Martin Alder, new editor of the. *Veterinary Record* , published a very favourable account of my theoretical paper presented at AVTRW 1991 in Scarborough under the heading "Heretical Model of Scrapie". The Chairman of this session was Bill

Blakemore, Cambridge Vet School. It was printed (after consultation with me) in an editorial article "Fruits of Research On Show in Scarborough". He devoted considerably more column inches to work by myself and Kenton Morgan than to work reported by NPU, although they had presented far more papers. It was to be the last time my name would appear in the *Veterinary Record* until 1997.

Unpublished 1988, 1992

Establishing that human prion disease can exist without characteristic pathology.

51. This was the first conclusive proof that prion diseases can indeed exist without any of the characteristic pathology, extending the phenotypic diversity of prion disease.
Published 1992 (Lantos, McGill *et al*) ref. 6

Setting up *in vitro* models of human prion diseases (GSS, familial CJD) in neuroblastoma cells in culture
(Resigned half way through project)

Neuropathology of natural sheep scrapie.
Started 1990, submitted 1995, published 1997 (Wood, McGill *et al*) ref 12
See para 11 for details of this work.

Contact with / Advice to Government

Contact with CVL / MAFF

52. I maintained regular contact with scientists at the CVL until 1997.

53. I cannot catalogue all the information, advice or recommendations I offered to MAFF or CVL between 1988 and 1997, as there is too much to include. However, I could illustrate with the following summary of two substantive suggestions for research.

Research on the biochemical/physical nature of "strains"

54. Prior to their publication as an editorial in the *Veterinary Record,* a summary of these ideas was presented to the CVL management for funding as a 'blue sky' PhD project in Spring 1991. The proposal was not taken up. This was the first occasion on which I proposed research to the Government in writing.

An abattoir survey for incidence of BSE

55. I suggested in 1990 that to improve the provision of control material I should collect 20 cattle heads from a local abattoir.The purpose of this was to provide BSE-negative material to act as controls for our (CVL's) BSE work. However, neuropathological examination of these brains might also have given an indication of the number of cattle incubating BSE which were entering the human food chain. This research had actually been recommended in the Interim Report of the Tyrrell Committee, June 89.

56. I was instructed a few days after suggesting this to my head of department that I was not the first person to have thought of that, and that a decision had been taken not to do that research. I was also instructed, for some reason, not to put it in writing.

57. Budgets could hardly have been an issue contributing to the rejection of this proposal, as tongueless cattle heads were free, being banned from human consumption.

Contact with AFRC

58. I had contact with the AFRC in several capacities:

    My work at the Institute of Psychiatry was funded by an AFRC grant.

    Attending BSE Programme conferences in 1992 and 1994.

    Submitted a further grant application to the AFRC in 1991.

59. This proposal was to continue research on natural scrapie, with which I had been involved at CVL (eventually published 1997; ref 12). I was to collaborate with John Powell (molecular neurobiologist) and David Male (co-author of the standard Immunology text worldwide: Roitt, Brostoff and Male). All five referees gave positive statements about the proposal, which was alpha-rated (see *YB92/12.10/1.1 and YB92/12.17/1.1)*.

60. This was the second time that I suggested substantial investigations on the TSEs to the government in writing. Once more the proposal was not taken up.

61. In view of the continuing uncertainties as to the degree to which BSE has affected the sheep population, it would perhaps have been wise to fund this application at that time.

62. Some of this work has still not been initiated, although the paper (Wood, McGill *et al* 1997), after a *two year* delay from submission to publication, and the original 1992 AFRC grant submission, both described a unique series of characterised sheep brains affected with naturally occuring TSEs. The majority of them are natural scrapie although further work on this series of brains would give an indication of whether BSE was also occurring in sheep in the 1980s and early 1990s. Events have moved forward since this grant application was submitted, both in the nvCJD and scrapie fields, but this still represents a crucial question in the epidemiology of both scrapie and BSE which remains unanswered. This work should, in my opinion, be initiated forthwith, and further work based on these results pursued vigorously as results are obtained.Refer to discussion also at para 31.

Additional Comments

63. I could perhaps sum up MAFF's approach to BSE with an observation which is by no means original:
    " Absence of evidence" is not the same as "evidence of absence"

Publications

1. **McGill IS (1986)** The Shortcut to Elitism. *The Guardian*, December 1st, p12.

2. **Wells GAH, Wilesmith, JW & McGill IS (1991)** Bovine spongiform encephalopathy - a neuropathological perspective. *Brain Pathology*, 1, 69-78

3. **McGill IS (1991)** Bovine Spongiform Encephalopathy. In: *Practical Food Hygiene*, Ed. Dickens T, Croner Publications Ltd, Kingston, UK, pp. 435-436

4. **McGill IS & Whatley SA (1991)** Understanding the causes of brain disease. *The Independent,* August 16th, p. 20

5. **Wells GAH & McGill IS (1991)** Recently described scrapie-like encephalopathies of animals - case definitions. In: *Sub-acute Spongiform Encephalopathies*, Eds. Bradley R, Savey M & Marchant B, Kluwer Academic Publishers, Dorchelt, pp. 11-24.

6. **Lantos P, McGill IS, Janota I, Doey J, Collinge J, Bruce M, Whatley SA, Anderton BH, Clinton J, Roberts GW & Rosser N (1992)** Prion protein immunocytochemistry helps to establish the true incidence of prion disease. *Neuroscience Letters*, 147, 67-71

7. **Wells GAH & McGill IS (1992)** Recently described scrapie-like encephalopathies of animals - case definitions. *Research in Veterinary Science*, 53, 1-10

8. **Pollin MM, McGill IS & Wells GAH (1992)** The differential neurohistological diagnoses of clinically suspect but unconfirmed BSE. *Neuropathology and Applied Neurobiology***,** 18, 633 (abstract)

9. **Guha M & McGill IS (1992)** Book review of Black's Veterinary Dictionary (17th Edition), Ed, West GP, A & C Black, London. *Reference Reviews***,** 6, 26

10. **McGill IS & Wells GAH (1993)**. Neuropathological findings in cattle with clinically suspect but histologically unconfirmed bovine spongiform encephalopathy (BSE). *Journal of Comparative Pathology***,** 108, 241-260

11. **McGill IS (1995)** Ayurvedic Medicine - The Documentary. *Natural Medicine Society News,* Spring 1995

12. **Wood LJN, McGill IS, Done SH and Bradley R (1997)** Neuropathology of scrapie: a study of the distribution patterns of brain lesions in 222 cases of natural scrapie in sheep, 1982-1991. *Veterinary Record* 140, 167-174

13. **McGill IS, Hobson J (1998)** Multi-centre evaluation of a herbal skin gel for veterinary practice - a questionnaire survey. *Veterinary Times*, **28**, 1, 20-21

14. **McGill IS (1998)** BSE and Censorship. *The Independent* January 26th 1998, p14 (*YB98/1.26/1.1).*

ANNEX 1:

CURRICULUM VITAE: IAIN STEWART McGILL

Education & Qualifications

1975 - 1982 Southend High School for Boys

GCE O-Levels (1980): 9 (6 A, 3 B)

GCE A-Levels (1982): Biology (A), Physics (A), Chemistry (A)

GCE S-Level (1982): Biology (2)

1982 - 1984 Royal Veterinary College, University of London

1984 - 1985 Kings College, University of London

$B.Sc_{(Hons)}$, II(i) Neuroscience and Immunology

1985 - 1988 Royal Veterinary College, University of London

B.Vet.Med., MRCVS.

Distinctions : Medicine , Clinical Pathology (Elective Subject)
First place for research project
Cecil Aulden Second Prize

Professional Experience

1988 - 1989 Veterinary Surgeon -- Blue Cross Animal Hospital, Victoria, London

In addition to clinical duties, I upgraded clinical pathology services within the hospital and established an interpretive service for laboratory data for other clinicians.

1990 - 1991 Veterinary Research Officer -- MAFF Central Veterinary Laboratory, Weybridge, Surrey.

In this post I worked as a neuropathologist with Gerald Wells and William Hadlow, in a large interdisciplinary team researching the prion diseases of animals.

My work concentrated on the neuropathological characterisation of Bovine Spongiform Encephalopathy (BSE), the prion diseases of other animals and their differential diagnosis. This gave me good general experience of neurological disease, its diagnosis and pathological characteristics in a wide range of animals and an introduction to many fields of neuroscience research. Although broad-based, my research in these varying disciplines was centred on the Prion protein and its gene, and associated molecular pathology in the prion diseases.

I described, amongst other things, the first cases in the UK of a chlamydial disease of cattle putatively equivalent to Sporadic Bovine Encephalomyelitis (see McGill and Wells, 1993).

Additional responsibilities included:

Liaison with the Consultant Pathology Unit for neuropathological surveillance, including rabies diagnosis for the British Isles and characterisation of novel diseases such as blue eared pig disease.

Conducting occasional seminars introducing scrapie and BSE diagnosis for visiting scientists from abroad.

Rapporteur for The Gibbs Committee on Subacute Spongiform Encephalopathies (held at CVL in summer 1990).

Papers presented at AVTRW conferences at Scarborough (1990 & 1991), at European Community Seminar on Spongiform Encephalopathies, Brussels, (1991) and International Pig Veterinary Society, Holland, (1991).

Aug 91 - Dec 92 **Research Worker (post-doctoral level)**
Department of Neuroscience, Institute of Psychiatry, London

In this post I continued to follow my interest in the prion diseases, and gained a good grounding in both theoretical and practical molecular biology. I cloned PrP genes from blood samples taken from individuals with PrP mutations causal of familial CJD or GSS and transfected them into neuroblastoma cells in culture to investigate the disease process *in vitro.*

I continued to work with colleagues from other disciplines, particularly Neurology and Neuropathology, and with Professor Peter Lantos and others established for the first time that prion disease can exist without its characteristic pathology (Lantos, McGill *et al,* 1992).

Positions of responsibility included:

Lecturing on a course entitled "Molecular Mechanisms of Neurodegeneration", to both internal and external scientists, and as part of the London University M.Sc. Neuroscience course.

Lecturing on scrapie-like diseases as part of the London University M.Sc. in Animal Health at the RVC.

Liaison and research collaboration between the IOP and my previous employers at CVL, Weybridge.

Sole responsibility for the organisation and funding of the 1992/1993 seminar series for the Department of Neuroscience, in which leading researchers from around the UK were invited to give seminars.

Paper presented at AFRC BSEP meeting, Reading, April 1992.

1994 - Present **Scientific and Veterinary Consultant**

(Spring 94)	Acted as neuropathological consultant for research on the transmissibility of BSE in collaboration with Dr David White and Professor Neil Eddington at the Royal Veterinary College, University of London.
(Summer 94)	Veterinary Surgeon, Blue Cross Animal Hospital (Victoria, London)
(Oct 94 - Dec 94)	Lecturer in anatomy and histology, Optics Department, City and Islington College (London).
(1995)	Re-established the Prion Interest Group (originally founded at the Institute of Psychiatry in 1991) as a private organisation, continuing research on prions. Filmed and directed a documentary in India/Europe about Ayurvedic medicine. Acted as a locum veterinarian for the PDSA and the Veterinary Centre Caterham.
(Jan 96 - Present)	Veterinary Consultant to Ayuvet (UK) Ltd., co-ordinating clinical and laboratory research into the Ayurvedic system of medicine and its application in European veterinary medicine. Continued co-ordination of the Prion Interest Group.

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