

# SUMMARY REPORT<sup>1</sup> OF THE TSE COMMUNITY REFERENCE LABORATORY EXPERT GROUP ON STRAINS of 30 April 2008

## Executive summary

### 1. Transmission of UK (Scottish) goat TSE case

- In 2005, a retrospective GB survey of goat scrapie cases identified a single Scottish goat, culled in 1990, with immunohistochemical characteristics suggestive of BSE.
- Classical strain typing by bioassay in mice relies on the relative incubation periods in inbred mouse strains and vacuolar lesion profiles to characterise prion strains. Therefore, to further characterise this case, intracerebral challenges of suspect goat brain extract from fixed tissue, and control samples, were performed using the standard wild type mouse strains R III, C57Bl and VM and into the Tg338 mice which over-express the sheep VRQ PrP allele.
- **The experiment is not yet complete** but the variable and limited recovery of infectivity from fixed tissue, which has resulted in very low attack rates in the wild-type mouse strains used for typing, mean that it is unlikely that there will be definitive strain characterisation using the standard criteria of attack rates or lesion profiles.
- **However**, one of the signatures of murine BSE is the presence of vacuolation in the brainstem cochlear nucleus. Mice challenged with the suspect goat BSE tissue showed vacuolation at this site while this lesion was absent or sparse in mice infected (and clinically-affected) following inoculation with caprine scrapie material.
- More generally, immunohistochemical patterns of abnormal PrP accumulation were consistent for each of the fixed ovine, caprine, sheep and cattle BSE sources and were distinct from each of the putative caprine and sheep scrapie sources. The suspect BSE goat shows patterns of abnormal PrP accumulation that were similar to that of the known BSE sources for each mouse strain. **Thus the original characterisation of the suspect goat, by differential immunohistochemistry, as a BSE suspect and data arising from transmissions to mice are in agreement.**

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<sup>1</sup> Report drafted using data and analysis supplied by John Spiropoulos (VLA) and Thierry Baron (AFSSA) and discussed with the following STEG members : Umberto Agrimi, Thierry Baron, Sylvie Benestad, James Hope, Nora Hunter, Martin Jeffrey, Jan Langveld, Marion Simmons, John Spiropoulos, Mick Stack. A data report and a draft version of this summary document have been circulated for comment to the following members of STEG who could not attend the meeting : Chris Bostock, Jacques Grassi, Emmanuel Comoy, Jean-Philippe Deslys, Martin Groschup

- **To increase confidence in this interpretation of primary passage results, the STEG members recommended further investigation of this isolate including sub-passages from mouse brain tissue in wild type and transgenic mouse lines.**

## **2. Other cases of SR-TSE under investigation at the CRL**

- a) Two cases of UK TSE in sheep** diagnosed as scrapie respectively in 1996 (PG0429/96; Swaledale) and 2000 (PG0117/00; Suffolk) had been investigated in a Defra research project on the characterisation of ovine TSE strains and had given apparently conflicting results in the mouse bioassays. The data from these cases had been reviewed at STEG IX and a range of possible explanations accepted in the minutes of the meeting :
- i) a naturally-occurring ovine/BSE/ scrapie co-infection
  - ii) a scrapie strain with BSE characteristics
  - iii) a strain developing in mice from known scrapie sources by mutation
  - iv) the result of contamination
- **Current data could not be interpreted unequivocally to say there was a BSE strain in these sheep** and further work is either in hand or was proposed to assist interpretation.
- b) Reports on five other SR-TSE cases** were reviewed : UK-1 and UK-2 (two UK cases in the same flock which gave conflicting results on discriminatory testing); Fr-1 and Fr-2 (two French cases, with low molecular weight PrPres), and a case of sheep TSE from Cyprus (CyP).
- These cases expand our knowledge of the range (or biodiversity) of scrapie strains in sheep but each has several features on bioassay (and rapid testing) which are not shared with what is known of BSE in small ruminants and so **they should be classified as NOT BSE.**