Protecting the food chain from prions: shaping European priorities through basic and applied research (PRIORITY)

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Title of project or programme

Protecting the food chain from prions: shaping European priorities through basic and applied research (PRIORITY)

Principal Investigators of project/programme grant

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Source of funding information

European Commission

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5999499

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48

The project/programme is most relevant to

- Prion disease

Keywords

strains,BSE,consumer protection,vCJD,decontamination,species barrier,EC TSE policy,prions,TSEs,preclinical prion test,PrPSc

Research abstract in English

Bovine Spongiform Encephalopathy (BSE) started, 20 years ago, a devastating health and food crisis throughout Europe. Classical BSE is now under control as a result of the meat and bone meal ban. However, tonsil analyses suggest that there may be an alarmingly high number of asymptomatic PrPSc positive cases. Transmission through blood transfusion is another important concern, as are recent atypical cases of BSE.

Only a profound understanding of the molecular biology of prions will enable us to control them. Thus, to understand why BSE-contaminated food causes vCJD, we need to understand how prions get into food, what happens with them in the gut, how they reach the brain, and how they initiate the chain reaction rapidly leading to death. We have formulated 7 key questions:
* How can we avoid a new BSE outbreak, or other possible future prion infection of livestock? * Why did decontamination of meat and bone meal fail; is there an effective way to decontaminate feedstuffs, soil etc?
* What is the risk of humans being infected with each of the different prion strains known thus far?
* Which are the best strategies to implement feasible prion eradication programs?
* How can we develop a pre-clinical prion blood test?
* How can we identify human cases with potential secondary transmission?
* What is the origin of atypical human CJD cases?

We will search for decisive data on the structure of PrPSc, the molecular basis of strains and species barriers, the mechanism of prion conversion, the cell biology of PrPSc, the function of PrPC, and the mechanisms of PrP-associated pathology.

This information will be translated into a better estimation of current exposure risk to humans from TSE, evaluation of current intervention strategies, and development of improved decontamination techniques and prion tests.

With all this, we will be able to respond to the questions formulated and thus advise the EC on TSE policy for the protection of European consumers.

Lay Summary