HISTORICAL FIGURES IN THE DISCOVERY OF PRION DISEASES

SCRAPIE

1759 – German publication:
“A shepherd must isolate such an animal (with scrapie) from healthy stock immediately because it is infectious and can cause serious harm to the flock.”

1913 – SIR STEWART STOCKMAN
Reported that there was a 2-3 year incubation period for scrapie transmission

1932 – GRIEG
Observved that sheep could get scrapie from pastures where other sheep had grazed.

1936 – CHELLE and CUILLE
Reported that scrapie was an infectious and transmissible disease

1946 – WILLIAM GORDON
Inadvertently transmitted scrapie when he inoculated sheep herd with a vaccine prepared from serum from infected sheep. Also noted that the scrapie agent was resistant to formalin.
1957 – IAIN PATTISON
The first to show that scrapie could jump to another species – goat. In 1965 Pattison showed that the scrapie agent was resistant to not only formalin but also high heat.

1961 – RICHARD CHANDLER
Chandler made a major step forward in research when he showed that mice could get scrapie.

1966 – TIKVAH ALPER
Suggested that the scrapie agent had the unique property of being able to replicate despite its apparent lack of nucleic acid. “Since the scrapie agent multiplies in the host animal it has been assumed that nucleic acid must be a part of its structure. However, the evidence that no inactivation results from exposure to a huge dose of UV light suggests that the agent may be able to increase in quantity without itself containing nucleic acid.”

1967 – J.S. GRIFFITH - mathematician
Report in Nature – based on Alper observations. Proposed that under certain circumstances proteins might be able to self-replicate. “There are at least three distinct kinds of way in which protein self-replication could occur. Protein could switch on a damaging reaction in the host that is normally off. Scrapie agent might be aberrant form of protein that spontaneously got made, and could serve as a template to induce production of more aberrant forms. Third – might be a protein that takes on a diseased form when it passes in to another animal.”
KURU

1951 – RONALD AND CATHERINE BERNDT
Australian anthropologists. Published the first report on Kuru in 1951.

1956 – VINCENT ZIGAS
Zigas was the District Medical Officer in Australia, responsible for the Papua New Guinea district. He received a report of kuru disease in this population. He started an investigation, joined by American pediatrician CARLTON GAJDUSEK. In 1957 Gajdusek and Zigas reported that Kuru was probably genetic in origin. In 1964 they reported that they were unable to transmit disease by injecting animals with infected tissue.

1957 – LEONARD KURLAND/NIH
“I seriously doubt that kuru can be a genetically determined disorder. …The possibility that adult males might be eating more often away from home would suggest either a deficiency disease or, more likely, that some food substance…could account for the report in age and sex distribution.”

1957 – IGOR KLATZO/NIH
Lesions resemble condition described by Jakob and Creutzfeld. Published an article on these findings in 1959, stating that he did not think that it was genetic.
1959 - WILLIAM HADLOW
American veterinarian pathologist. Hadlow saw an exhibit of Klatzo photomicrographs of Kuru and was stunned by the similarity to scrapie lesions. He published his observations in Lancet, and sent a copy to Gajdusek. He suggested that somebody should study the injection of kuru brain tissue into primates and look for transmissibility, since sheep to sheep transmission was possible. Gajdusek apparently ignored the suggestion since the experiments did not start until the 1960s. But Gajdusek wrote back to Hadlow stating that these experiments were ongoing in 1959.

1961 – CLARENCE “JOE” GIBBS
Gibbs signed on to conduct the animal studies suggested by Hadlow. He began injecting many thousands of mice with brains from various Kuru patients and infected animals.

1976 – CARLETON GAJDUSEK
Won the Nobel prize alone. A quote from Gajdusek:
“I am very uneasy about the dreadful effect of the honor that I received, and Joe Gibbs and Vin Zegas are the two I would most logically expect to share it with. I have feared that Hadlow and some of our British or Scottish scrapie colleagues might be my “running mates” if I ever receive the award, and that, to the exclusion of Vin and Joe, would have been less tolerable.”
BOVINE SPONGIFORM ENCEPHALOPATHY (BSE)

1981 – PATRICIA MERZ
EM images of scrapie-associated fibrils found in all TSEs and are believed to represent strands or rods of prions

1982 – STANLEY PRUSINER
Reported the hypothesis that a nucleic-acid free proteinaceous infectious molecule – prion – was the causative agent of BSE