

PLAGUES IN MAN

PRION DISEASES

- I. INTRODUCTION AND HISTORY
 - A. SCRAPIE IN SHEEP
 - 1. UNUSUAL NEUROLOGICAL DISEASE IN SHEEP-THOUGHT ORIGINALLY TO BE A "SLOW VIRUS" DISEASE.
 - 2. DISEASE KNOWN FOR 200 YEARS
 - a. INFECTIOUS NATURE DESCRIBED IN 1936
 - b. LONG INCUBATION PERIODS: 1-10 YEARS
 - c. SYMPTOMS: EXCITABILITY & IRRITABILITY --> BITING, ITCHINESS, SCRATCHING (SCRAPIE) --> ATAXIA, TREMORS --> PROSTRATION --> DEATH
 - d. ONLY OLDER SHEEP AND GOATS - TRANSMISSION ??
 - e. RAPID TRANSMISSION BY INJECTION
 - B. DESCRIPTION OF CJD (CREUTZFELDT-JAKOB DISEASE) IN 1920
 - C. DESCRIPTION OF KURU IN 1957 (GAJDUSEK & ZIGAS)
 - D. PROPERTIES OF SCRAPIE AGENT (UV RESISTANCE) - 1966
 - E. LINKAGE OF SCRAPIE, CJD AND KURU - 1972-1976
 - F. PRION CONCEPT - 1982 - PRUSINER
 - 1. RAPID HAMSTER ASSAY
 - 2. PROTEIN PURIFICATION
 - 3. DNA PROBES & DISCOVERY OF THE GENE
- II. **KURU**, AN UNUSUAL HUMAN DISEASE
 - A. EPIDEMIC IN PAPUA, NEW GUINEA 1920-1970
 - B. WOMEN AND CHILDREN AFFECTED
 - C. LOSS OF MOTOR SKILLS AND DEMENTIA
 - D. DEATH USUALLY WITHIN ONE YEAR
 - E. DISEASE STUDIED BY CARLETON GAJDUSEK
 - 1. TRANSMITTED BY RITUALISTIC CANNIBALISM
 - 2. MOURNING OF THE DEAD
 - 3. PROPERTIES LIKE OTHER RARE HUMAN DISEASES, EG. CJD (CREUTZFELDT-JAKOB DISEASE)
- III. SOME RECENT WORK ON SCRAPIE, CJD AND KURU--PRIONS
 - A. THE PRION CONCEPT
 - 1. RAPID ASSAY WITH HAMSTERS
 - 2. THE "PARTICLE" IS A PROTEIN: NO NUCLEIC ACID
 - 3. PROTEIN WAS PARTIALLY SEQUENCED
 - 4. A DNA PROBE WAS MADE: AA SEQUENCE --> NUC SEQUENCE
 - 5. THE HAMSTER GENE WAS ISOLATED USING THE PROBE
 - 6. THE PRION GENE WAS SEQUENCED
 - 7. THE "INFECTIOUS PARTICLE" IS A HOST PROTEIN
 - 8. HETERODIMER CAUSES NORMAL PROTEIN TRANSFORMATION
 - B. EPIDEMIOLOGY
 - 1. HUMAN TRANSMISSION
 - a. HUMAN GROWTH HORMONE - >70 CASES
 - b. IATROGENIC TRANSMISSION & CORNEAL TRANSPLANTS
 - 2. ANIMALS
 - a. NATURAL TRANSMISSION OF SCRAPIE ???
 - b. FEEDING OF PROTEIN SUPPLEMENTS (OFFAL)
 - C. **BSE** - MAD COW DISEASE - BEEF IN GREAT BRITAIN (SINCE '87)
NOW OVER 100 CASES OF vCJD IN HUMANS IN ENGLAND