

# Research Update

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# Preventing dementia

- ⊗ 5 large scale population surveys comparing dementia incidence late 1980-early 90 to early 2000 are showing lower incidence
- ⊗ Why?
- ⊗ Higher educational levels
- ⊗ Reduced stroke incidence
- ⊗ Better prevention of vascular disease: risk factor management in middle age

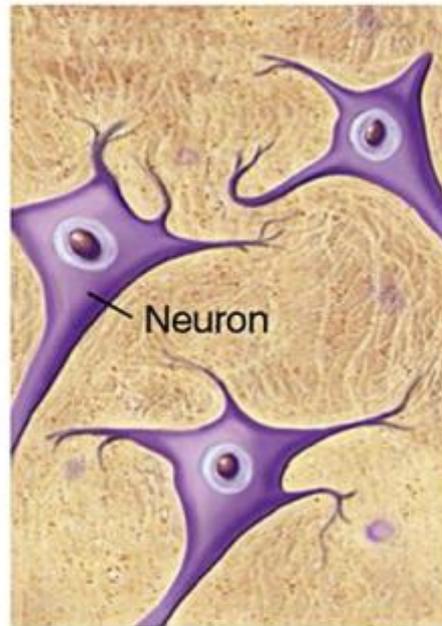
# Prevention Studies

- ⊗ No silver bullet
- ⊗ Exercise is promising and good to do for your general health
- ⊗ “multi-modal” studies: diet, exercise, cognitive training and vascular risk monitoring
- ⊗ FINGER trial
  - ⊗ 2 years, higher risk group
  - ⊗ Counseling group and intervention group both improved
  - ⊗ Significant improvement in intervention group though not enough to affect day to day
- ⊗ Several trials like this underway

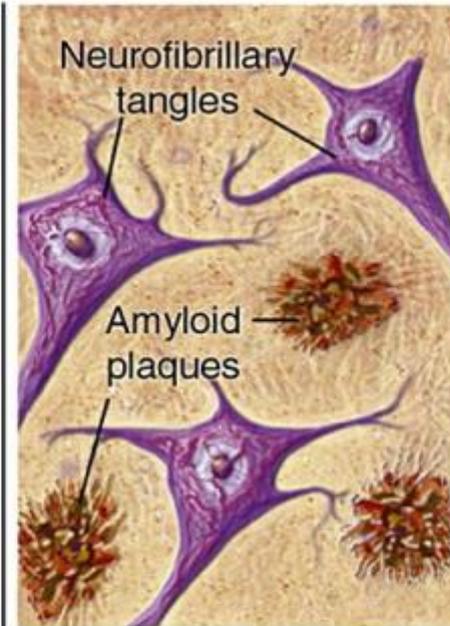
# Plaques and tangles

## Normal vs. Alzheimer's Diseased Brain

Normal

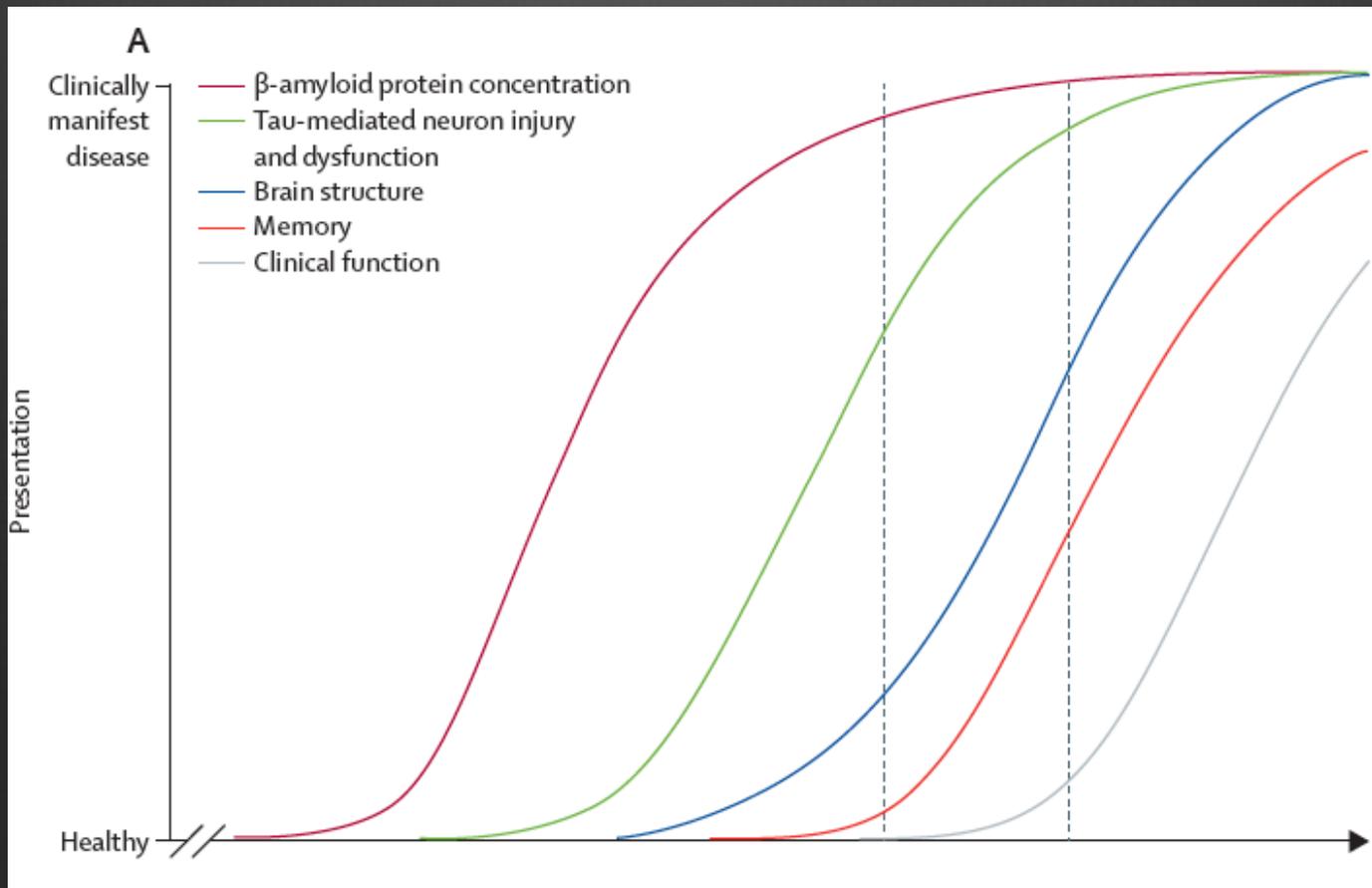


Alzheimer's



# New view

- ⊗  $\beta$  amyloid deposit starts the process
- ⊗ Initiates complex network of pathological changes, many of them tau dependent
- ⊗ Appears to spread cell to cell in a particular pattern rather than occurring in different parts of the brain independently
- ⊗ Medications will need to target B amyloid much earlier in the process



# Research

- ⊗ There are a number of tests being looked at to see if they can differentiate who has “pre-dementia”
- ⊗ Spinal fluid- ptau181 (increased) and  $\beta$  amyloid (increased)
- ⊗ MRI- measure the volume of the hippocampus
- ⊗ PET- studying specific markers
- ⊗ Being used for research but not recommended for clinical use, best for Alzheimers

# Research: Drugs

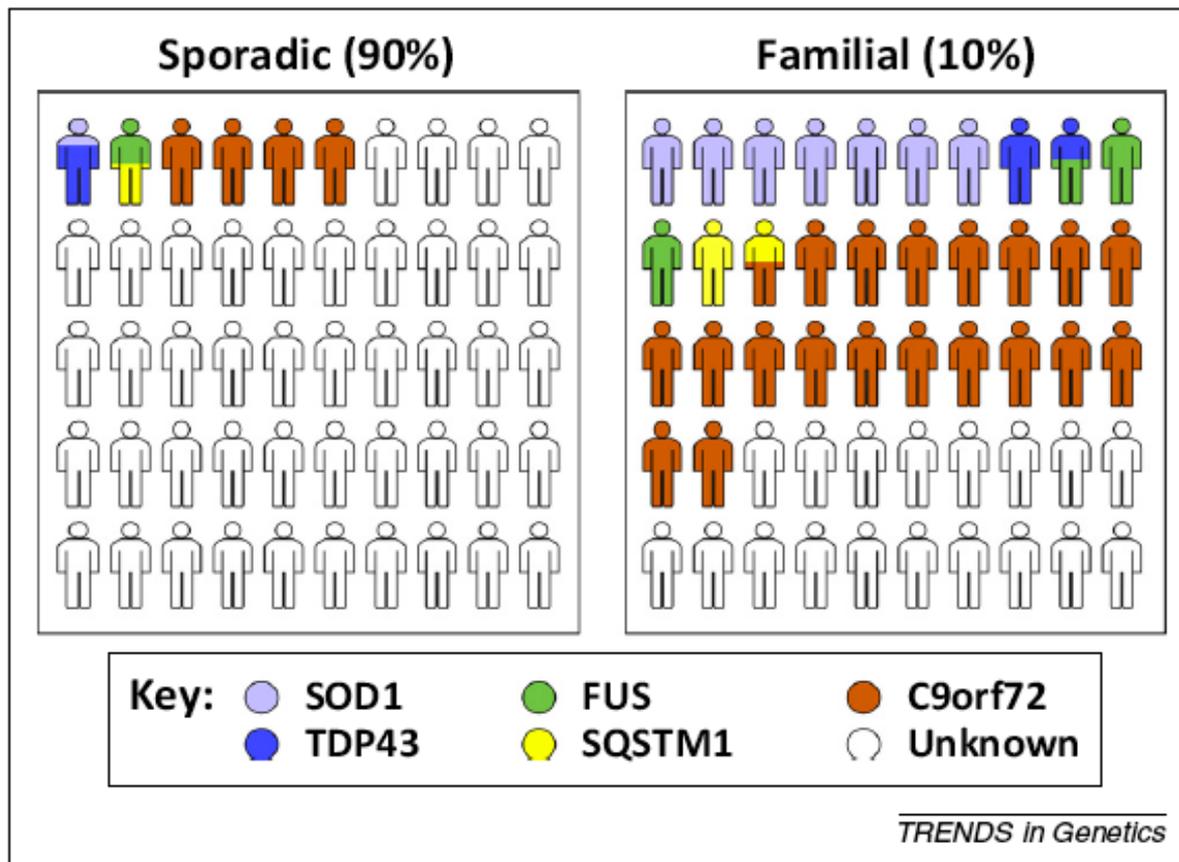
- ⊗ Most of the drug studies to date have been on those with dementia- unsuccessful
- ⊗ New studies are looking at high risk groups, trying to prevent amyloid buildup
- ⊗ Takes much longer to see if they work (years)
- ⊗ Expect there will be multiple therapies which depend on timing much like HIV

# Vascular cognitive impairment

- ⊗ Used to believe:
  - ⊗ Persons with Alzheimers
  - ⊗ Persons with multiple strokes causing dementia
- ⊗ Now we understand
  - ⊗ Very few people with “only strokes”
  - ⊗ Many different vascular changes
  - ⊗ Risk factors shared with Alzheimers
  - ⊗ Interaction between Alzheimer pathology and vascular changes
- ⊗ Late life depression is a risk factor for vascular cognitive impairment

# Fronto-temporal dementias

- ⊗ Behavioural variant overlaps with Motor Neuron Disease—  
some believe there may be a spectrum
  - ⊗ 12.5% motor neuron disease
  - ⊗ 40% features of motor neuron disease
- ⊗ 10 % familial- this was underrecognized
- ⊗ Genetic markers
- ⊗ More specific scanning



**Figure 1.** Major genetic causes in familial and sporadic amyotrophic lateral sclerosis (ALS). The approximate percentages of mutation carriers are depicted for sporadic and familial ALS, with *C9orf72* repeat expansions being the most common genetic abnormality in both patient populations. The frequency of these mutations is variable among patient populations; the approximate frequency rates obtained from French and Italian populations are depicted in this diagram.

# Lewy Body Dementia

- ⊗ Still under-recognized
- ⊗ Better understanding of how to recognize it early
  - ⊗ Difficulties with visuo-spatial function
  - ⊗ REM sleep disorder (nightmares with body movements)
  - ⊗ Fluctuations

# Oldest old

- ⊗ Multiple causes and brains have multiple pathologies
- ⊗ Cannot find “one cause”

# Medications

- ⊕ To date drugs targeting amyloid have failed
- ⊕ Anti-psychotics ongoing concerns re side effects
- ⊕ Relying on anti-depressants as first-line for behavioral issues