THE GOAL OF THIS COURSE IS TO UNDERSTAND THE FACTORS UNDERLYING ALZHEIMER’S DISEASE

SYLLABUS

JAN 26. Overview
AD is characterised by cognitive impairments and the presence of amyloid deposits, including plaques and CAA, and tangles in the brain. Anatomy of the brain. There are different forms of memory which depend on different brain regions. Correlates of brain damage in AD and behavioural changes.
Aging with Grace pp 145; Speaking our Minds.

FEB 2. Stains and Imaging.
How do you know what brain damage there is and where the amyloid is? Plaques are made of amyloid; there are different types of plaques and different forms of amyloid. Amyloid deposits are also found around blood vessels, cerebral amyloid angiopathy (CAA). Imaging studies.
Dickerson. & Sperling; Braak and Braak.

FEB 7. Last day to add classes

FEB 9. The Forgetting. (Film)
Presentations of people with Alzheimer’s disease.

FEB 16. Where does this amyloid come from?
Amyloid is produced from APP. There are 2 forms of AD, early onset and late onset. The search for the genes underlying AD.
Decoding Darkness.

FEB 23. Mice are useful.
Transgenic mice have been used to model AD. They can be used to assess treatments and understand factors influencing the progress of the disease. Behavioral measures of memory loss. LTP. Hsiao, Westaway and triple transgenic mice (LaFerla)
Hsiao et al. Sparks & Schreurs.

FRIDAY FEB 24, LAST DAY TO DROP WITHOUT PENALTY OF "F"

MAR 2. Soluble versus non-soluble amyloid.
Soluble amyloid may be as dangerous as the aggregated form in plaques, and could be intraneuronal.
Soluble amyloid precedes τ and causes cognitive impairments in Tg mice. There is synaptic damage. ADDLS, oligomers etc.
Billings et al.; Hardy & Selkow. Selkoe

MAR 13-19  SPRING BREAK

MAR 23  EXAM

MAR 30  Risk factors.
Possible role of the metals in AD. The plaques are high in iron, copper, zinc, and (?) aluminium. Behavioral and histological data. Zinc can cause memory loss in normal rats and mice and has been prescribed for age-related macular degeneration. Cholesterol, head injury (inflammation), stroke (smoking) are all risk factors. Lack of education, low SES are also risk factors. Aging with Grace; Bush & Tanzi.

APR 6  Potential Cures.
Metal chelators, AChE inhibitors. Anti-cholesterol drugs. Antibodies. Some AD drugs target glutamate receptors, others target acetylcholine degradation. Antibody treatment may be effective. Guest speaker. Ballard et al.

APR 13  Prevention.
Exercise and education are helpful. Diet can include foods that act as antioxidants: blueberries, curcumin, pomegranates and folic acid.
Aging with Grace

APR 20  Wrap-up

APR 27  Student presentations

MAY 4  Student presentations

MAY 11  FINAL EXAM DUE (takehome)
There will be an in class quiz most weeks on an assigned paper. The exams will be essay exams. Graduate student presentations should be 20-30 mins (- points for going over!) Undergraduates should be 10-15 minutes.
GRADING
QUIZZES, 10%
IN CLASS PRESENTATIONS 10%
WRITE UP 10%
MID-TERM EXAM, 30%
FINAL EXAM 30%

OFFICE HOURS
TH 4:30-5:30
AND BY APPOINTMENT.

Books
Aging With Grace, D. Snowden. Describes the School Sisters of Notre Dame study in which risk factors for Alzheimer’s disease are studied.

Speaking Our Minds L. Snyder. Personal reflections from individuals with Alzheimer’s disease.


Required Papers


Reference papers


If you are a student with a disability and you need academic accommodations, please see me and contact the Disability Resource Center (DRC) at 703-993-2474. All academic accommodations must be arranged through that office.

Undergraduate students can enroll in Psyc 328 and earn an extra hour of course credit.