PSY D67S Psychobiology of Aging and Selected Disease States

Spring, 1995 Room R3205A, TH: 7-10PM
Instructor: Professor Gwen. O. Ivy
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Office Hours: TH: 6-7, 9-10, or by appointment

COURSE DESCRIPTION:

Aging is a complex biological phenomenon which is, at present, a universal and inevitable fact of life. The goal of this course is to characterize the morphological, biochemical and physiological changes in aging neural tissue, as well as to delineate various behavioral deficits that occur with age. We will explore the association between cognitive deterioration and age related neuropathologies. Further, we will define the relationship of phenomena which occur during normal aging to those which occur in a number of related disease states, such as Alzheimer's disease, Down's syndrome, Parkinson's disease and Neuronal Ceroid Lipofuscinosis, with the aim of achieving a better understanding of factors which may cause aging at the cellular level. Finally, we will evaluate the validity of several current unifying hypotheses of aging and will describe current and future prospects for research on the underlying mechanisms of aging using animal models.

ORGANIZATION

The course will meet weekly for two hours and will consist of lectures by the instructor, as well as oral presentations by members of the class. Discussion will follow each presentation. Each person will select a topic from a list compiled by the instructor and will write a 15-20 page term paper (typed, double spaced, submitted in duplicate) and present a 20 minute talk to the class on that topic with a typed summary to be distributed to the class. The student will be required to place one representative research or review article on his or her topic on reserve in the library (for the class) and to provide one copy of same for the instructor at least one week prior to the oral presentation. References for 1991, 1992 and 1994 topics are listed (not copied) in the Bladden Library to get you started on your literature search. There is no textbook.

EVALUATION

Term Paper (due March 30 in class):	25%
Oral Presentation, includes summary handout and article placed on reserve	15%
Midterm (essay, short answer): 2 hrs:	25%
Final Exam (essay, short answer): 3 hrs:	20%
Final Exam (essay, take home portion)	10%
Class Participation: (Includes questions, comments and presence in class)	5%

1995 PSY D67S SCHEDULE OF TOPICS TO BE COVERED

DATE	GENERAL TOPIC	SPECIFIC TOPIC
Jan 5	Introduction	** Overview of course and Selection of paper topics
Jan 12	Morphological and some biochemical and physiological changes in neural tissue with age; heritable diseases with some similarities to aging: Lectures by G. Ivy	A. Age pigments B. Dolichols C. Amyloid and senile plaques D. Changes in neurofilaments E. Dendritic changes F. Synaptic changes G. Changes in glial cells H. Cytoskeletal changes I. Cell loss J. Gross brain changes K. Progeria, Werner's syndrome and NCL disease
Jan 19		
Jan 26		
Feb 2		
	Student Oral Presentations:	
Feb 9	Sensory, motor and cognitive changes with age	1. Sensory deficits, aging of sense organs 2. Motor deficits, aging of motor systems 3. Cognitive changes in aging and multi-infarct dementia 4. Cognitive changes in Alzheimer's disease
Feb 16	READING WEEK!!!	NO CLASS!!!
Feb 23	MIDTERM EXAM!!!	MIDTERM EXAM!!!
Mar 2	Changes in anatomy and in neurotransmitter systems in aging, AD, and PD	5. AD and Down's syndrome: morphological changes in brain 6. Cholinergic systems in aging and Alzheimer's disease 7. Dopaminergic systems in aging and Parkinson's disease
Mar 9	Theories on mechanisms underlying the aging process	8. Free radical hypothesis of aging 9. Mitochondria and aging 10. DNA damage and repair 11. Genetic theories of aging: cell culture

1995 PSY D67S SCHEDULE OF TOPICS TO BE COVERED (continued)

DATE	GENERAL TOPIC	SPECIFIC TOPIC
Mar 16	Theories, cont'd	12. Changes in protein turnover with age 13. Changes in enzyme activities with age 14. Dietary restriction and its mechanisms for prolonging life 15. Drugs and other interventions in the aging process: l-deprenyl, Vitamin E, centrophenoxine, etc.
Mar 23	Theories, cont'd	16. Corticosteroids, stress and aging 17. CJD, Scrapie and other non-conventional virus diseases 18. Metabolic rate and aging 19. Genes and environmental factors that determine lifespan 20. Glucose theory of aging
Mar 30	Theories, cont'd	** Proteinase inhibitor model; decreased proteolysis causes aging: G. Ivy
Apr 6	Theories, cont'd	** Proteinase inhibitor model, cont'd. Summary, Conclusions, Discussion.