PSY D67S ***Psychobiology of Aging and Selected Disease States***

Spring, 1997 Room S218, WED 12-2 P.M.

Instructor: Professor Gwen. O. Ivy

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Office Hours: T1-2, W2-3, R5-6, 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 and cognitive 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 20-30 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. There is no textbook.

EVALUATION:

Term Paper (due April 11 in class):	25%
Oral Presentation, includes summary handout and article placed on reserve	15%
Midterm (essay, short answer): 2 hrs	20%
Final Exam (essay, short answer): 3 hrs	20%
Final Exam (essay, take home portion)	15%
Class Participation: (Includes questions, comments and presence in class)	5%

SCHEDULE OF TOPICS TO BE COVERED

DATE	GENERAL TOPIC	SPECIFIC TOPIC
Jan 8	Introduction	Course overview/Selection of paper topics
Jan 15	Morphological and	A. Age pigments
	some biochemical	B. Dolichols
	and physiological	C. Amyloid and senile plaques
Jan 22	changes in neural	D. Dendritic changes
	tissue with age;	E. Synaptic changes
	inheritable diseases	F. Neuroplasticity changes in sprouting
	with some	G. Neuroplasticity changes in LTP
Jan 29	similarities to	H. Changes in glial cells
	aging: Lectures	I. Cytoskeletal changes
Feb 5	by G. Ivy	J. Cell loss
		K. Gross brain changes
		L. Progeria, Werner's syndrome and NCL

Student Oral Presentations:

Feb 12	MIDTERM EXAM!!! MIDTERM EXAM!!!	
Feb 19	READING WEEK!!! NO CLASS!!!	
Feb 26	Sensory, motor and cognitive changes with age	1. Sensory deficits, aging of sense organs 2. Motor deficits, aging of motor systems (Gwen Ivy) 3. Cognitive changes in normal aging and in Alzheimer's Disease 4. AD & Down's syndrome: morphological changes in brain
Mar 5	Changes in anatomy and in neurotransmitter systems in aging, AD and PD	5. Blood Brain barrier in aging and AD 6. Dopaminergic systems in aging and PD 7. Cholinergic systems in aging and AD
Mar 12	Theories on mechanisms underlying the aging process	8. Free radical hypothesis of aging 9. Mitochondria and aging 10. Changes in DNA: damage, repair, cell division, telomere shortening
Mar 19	Theories, cont'd	11. Pathogenesis of AD: Paul Murphy
Mar 26	Theories, cont'd	12. Genetic theories of aging; cell culture 13. Metabolic rate and aging 14. Drugs and other interventions in the aging process: l-deprenyl, Vitamin E,

		centrophenoxine
April 2	Theories, cont'd	15. Dietary restriction and its mechanisms for prolonging life 16. Immune function and aging: G.O. Ivy 17. Changes in protein turnover and enzyme activities with age 18. Intro. to proteinase inhibitor model of aging: Gwen Ivy
Apr 9	Theories, cont'd	19. Proteinase inhibitor model, decreased proteolysis causes aging: G. Ivy 20. Summary, Conclusion, Discussion