

1. Course Description:

This course will focus on the recent advances in our understanding of the clinical features and pathogenesis of a wide range of neurodegenerative diseases, including Alzheimer's disease, Parkinson's disease and parkinsonisms, ataxias, motor neuron diseases, and polyglutamine diseases. Students will analyze research reports in which a range of proposed cellular processes that may represent the underlying pathogenic mechanisms in these diseases. Topics linked to the proposed cellular processes will include accumulation of aberrant proteins, protein misfolding, protofibril formation, ubiquitin-proteasomal pathway, autophagy, ER stress, axonal and dendritic transport, excitotoxic insult, and mitochondrial dysfunction. The course will especially emphasize and explore genetic contributions to neurodegenerative disease, as identification of genetic mutations for familial neurodegenerative diseases has been a major driving force in neurodegenerative research.

2. Textbooks and References:

The instructor will prepare handouts that covered research articles and outlines for the students, and there is no assigned textbook. Nevertheless, the instructor will encourage students to refer to the following books for additional information.

(1). *Molecular Mechanisms of Neurodegenerative Diseases*, by Marie-Francoise Chesselet.

Publisher: Humana Press (January 15, 2001).

ISBN: 0896038041.

(2). *Neurodegenerative Diseases: Neurobiology, Pathogenesis and Therapeutics*, by M. Flint Beal, Anthony E. Lang, Albert C. Ludolph.

Publisher: Cambridge University Press (June 2, 2005).

ISBN: 052181166X.

3. Teaching Methods and Syllabus:

This course will be given in English and the students are assumed to be able to comprehend the lectures. The instructor will divide the course into lecture and discussion, which will include the presentation of research articles by students. The instructor will discuss the following topics in depth:

(1). Overview of neurodegenerative diseases.

(2). Alzheimer's disease.

(3). Parkinson's disease.

(4). Huntington's disease and other polyglutamine disorders.

(5). Motor neuron diseases.

4. Evaluation:

Examinations will be conducted in both written format and oral presentation.