

PSY 613/590: Psychoneuroimmunology
M.H. Antoni, Ph.D.
Office Hours: Rm 413 Flipse MF 12:30 – 2PM

Fall 2007
Dept of Psychology, University of Miami

This course is designed to present some of the basic information necessary to interpret the current literature in psychoneuroimmunology (PNI) and to design research in this area. As this research line is a broad one, the course has been structured to provide you with an overview of several areas. These areas reviewed in the initial lectures will include an introduction to basic immunology. This material will facilitate your understanding of the research methods and empirical findings to be presented in lecture and readings in later weeks. After these introductory lectures, findings regarding interactions between neuroendocrine and CNS factors and the immune system will be presented. Finally, psychosocial studies in PNI will be reviewed in several modules. These will be organized into sections on stress, coping and PNI; PNI and neoplastic diseases; PNI and virally-related diseases; and PNI and behavioral interventions. As the course will be covering a broad and diverse collection of topics it will be important that student presentations (see Course Format below) be directed at more specific areas of investigation that are of particular interest to that student. Any topics that I am unable to cover in lecture, would also be available for a student presentation

The course content will be made up of lecture, readings from the Vedhara & Irwin text, and a set of recommended readings that have been organized on a module-by-module basis (see handout). An original copy of each of these collated sets of readings is available for you to copy. Lectures and readings will be organized in an approximation of the following sequence:

CLASS SCHEDULE

Module # 1: Introduction to Psychoneuroimmunology (PNI) and Basic Immunology I.

- A. Introduction to PNI: historical overview
- B. Functional subdivisions of the immune system

Module # 2: Basic Immunology II.

- A. Structural components of the immune system
- B. Specific immune mechanisms and functions

Module #3: Basic Immunology III.

- A. Clinical Immunology: Immunity to viruses
- B. Clinical Immunology: Immunity to tumors

Module # 4: Basic Immunology IV.

- A. Clinical Immunology: Immunity to tumors (con't)
- B. Cellular interactions in expression and regulation

Module #5: Basic Immunology V.

- A. Immunomediators: Immune-specific (e.g., cytokines)
- B. Immunomediators: Non-immune-specific (e.g., aging, sleep)

Module #6: Neuroimmunology and neuroimmunomodulation I.

- A. Neuroanatomy of the immune system
- B. Lymphocyte neurohormonal receptors
- C. ANS functional studies

Module #7: Neuroimmunology and neuroimmunomodulation II.

- A. Neuroendocrine influences on immunity
- B. Neuroendocrine measurement
- C. Neuroimmunomodulation of homeostasis and host defenses

Module #8: Psychosocial studies in PNI. I. Human stressor studies, part I

- A. Chronic/field stressor effects on immunity/methodologic issues
- B. Laboratory acute stressor effects on immunity

Module #9: Psychosocial studies in PNI. I. Human stressor studies, part II

- A. Distress states, mood disturbances and immunity
- B. Stress moderators in PNI

Module #10: Psychosocial studies in PNI. II. Neoplastic disease

- A. Role of the immune system in neoplasias
- B. PNI and psycho-oncology

Module # 11: Psychosocial studies in PNI. III. Virally-associated disease

- A. Introduction to virology
- B. PNI and common viruses: rhinovirus, influenza, hepatitis, papilloma
- C. PNI and herpesviruses
- D. PNI and HIV-1 infection
- E. PNI, inflammatory processes, CHD, and chronic fatigue syndrome

Module #12: Psychosocial studies in PNI. IV. Intervention studies

- A. Healthy populations
- B. Cancer populations
- C. HIV- infected populations

Guest Lectures: Schedule TBA

Aging and Immunosenescence (Dr. Frank Penedo)

Measuring Natural Killer Cell Functioning and Signaling Molecules (Dr. MaryAnn Fletcher)-

Lecture and Lab Tour: E.M. Papper Clinical Immunology Laboratory

Immunologic Methods in Breast cancer research (Dr. Bonnie Blomberg)

Student presentations

COURSE FORMAT

The class will include lectures and discussion relevant to immunology, and PNI as noted above in modules 1 -12. From time-to-time, as their schedule permits, "local" PNI investigators will

present guest lectures on specific topics within certain modules. At some point in the first 10 wks of class, each student will present a critique of one or two empirical articles from the collated set of readings (or other sources) dealing within integrative topics such as neuroimmunologic or psychosocial studies in PNI. Selection of these articles for this *mini-presentation* will be arranged between the students and Dr. Antoni at least one week prior to presentation. Student presenters may opt for a presentation of complimentary papers (e.g., comparing animal and human studies on a similar topic) or a "pro-con" presentation of a set of corroborative or conflicting findings on the same topic (e.g., discussions on issues pertaining to the positive and negative aspects of the methods used and the author's interpretation of their findings). The format for these mini-presentations should be an a brief review of the papers chosen followed by an "open discussion" much like what might be seen in a journal club. As such, presenting students should notify class members of the readings to be covered and all students should familiarize themselves with these prior to the presentation week. Presenters should provide copies of handouts of their outline as well. These mini-presentations should run about 30 minutes and will be at the beginning of the class.

The final weeks of class will be used for *full-length* student presentations. Topics for these presentations may be chosen from the reference handout or from an area of the student's choice. The ideal presentation should (1) focus on a specific disease process or physical/psychiatric syndrome, (2) present a clear rationale for the possible role of PNI research, (3) provide the class with a reasonably up-to-date and comprehensive literature review, and (4) summarize the state of the art and ongoing/future work in the area. The best talks are those that are focused, sequential and programmatic. Presentations should be 50 minutes in length and are to be accompanied by a written outline, reference section and relevant handouts. The use of overhead transparencies or slides for presentation are strongly encouraged. You need to notify me one week prior to your presentation if you plan to use overheads so that a projector can be procured for the classroom. A slide projector and PC Laptop will always be available for PowerPoint presentations. After each presentation we will have 10 minutes for discussion.

The final course requirement will be a 15-20 page double-spaced paper, which supports the material presented in the full-length presentation. This paper should conform to APA manuscript style. Papers will be due two weeks after the class presentation or by the last class meeting for those presentations made in the final two weeks of the course. You are encouraged to hand in your paper at the time of your presentation if possible.

Grading. The course grade will be based upon your performance on three different tasks as follows:

Mini-presentation	10%
Full-length presentation	45%
Paper	45%

You will be responsible for presenting and preparing original work and will be required to abide by all elements of the University's Honor Code in your conduct and coursework. Violations of the Honor Code will be subject to discipline.

Course Text:

Vedhara, K. & Irwin, M. (2005). Human Psychoneuroimmunology. U.K.: Oxford University Press.

Other Recommended Texts (those with chapters on your reference list will be on file with other readings on the Blackboard):

Glaser, R. & Kiecolt-Glaser, J. (Eds) (1994) Handbook of Human Stress and Immunity. San Diego, CA: Academic Press.

Abbas, A., Lichtman, A., & Pober, J. (1991) Cellular and Molecular Immunology. Phil. PA: Saunders.

Cruse, J. & Lewis, R. (1999) Atlas of Immunology. Boca Raton, FL.: CRC Press.

Ader, R., Felten, D. & Cohen, N.(Eds.) (2000) Psychoneuroimmunology (3rd Edition). N.Y.: Academic Press.

Friedman, H., Klein, T., & Friedman, A. (1996) Psychoneuroimmunology, Stress, and Infection. Boca Raton, FL.: CRC Press.

Course Policies:

Honor code. I expect all students to abide by the rules of the University including the Honor Code and any other guidelines for ethical conduct. Plagiarism in any form will be ground for failing the class. A significant part of the course grades is based upon integrative writing. You are expected to produce writing products that are original and based upon your own synthesis of the literature. Pasting together sections of prior published and unpublished reviews will not be acceptable.

Class Attendance. I expect students to be present and on time for each class. The class material builds on prior lecture and discussion materials. Although you will have access to some of the class lecture material by way of Powerpoint presentations on the UM Blackboard program you will need to be present in class to get the maximum effects of the course. Should you be unable to attend a class you will need to email me at: Mantoni@miami.edu at least 24hrs prior to class to inform me of the reasons for your absence. I will also be arranging for you to attend a laboratory tour of one of the Immunology labs at the Medical School. Attendance will be mandatory.