

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 Glaser & Kiecolt-Glaser, 1994 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 (modules) is available in my office. Lectures and readings will be organized in an approximation of the following sequence:

CLASS SCHEDULE

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

- A. Introduction and 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)

Guest Lecture: Aging and Immunosenescence (Dr. Frank Penedo)

Module #6: Neuroimmunology and neuroimmunomodulation I.

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

Feb. 20: Guest Lecture: Natural Killer Cell Functioning (Dr. Kevin Maher)

Module #7: Neuroimmunology and neuroimmunomodulation II.

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

March 6: Guest Lecture: Immunologic Methods in Breast cancer research (Dr. Bonnie Blomberg)

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 and chronic fatigue syndrome

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

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

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 lectures on specific topics within certain modules. At some point in the first 10wks of class, each student will present a critique of one or two empirical articles from the collated set of readings

(or other sources) dealing with 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 papers (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 "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. These mini-presentations should run about 30 minutes.

Weeks #12-14 will be used for *full-length* student presentations. Topics for these presentations may be chosen from the expanded outline 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 60 minutes in length and are to be accompanied by a written outline, reference section and relevant handouts. The use of overheads or slides for presentation are strongly encouraged. After each presentation we will have 15 minutes for discussion. The final course requirement will be a 15-20 page double-spaced paper which supports the material presented in the 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%

Course Text:

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

Other Recommended Texts:

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

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.

Schedlowski, M. e al. (2000) Psychoneuroimmunology.