HH2027: Blood, Germs, and Sick Bodies: Biomedicine in History

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Course Description:
Biomedicine is very closely associated with our lives in their multiple forms. Our birth, life, and even death are modulated and managed by biomedical technologies and discourses. This module enables you to understand its key features in a historical context. You will be able to have deeper perspectives on its modern practices and theories, which will assist in your future involvement in biomedical industries as patients, patrons, researchers, or consumers.

Evaluation:
Midterm paper: 20%
Pre-class questions: 10%
Discussion reports: 10%
Participation (including responses to paper presentation): 10%
Final Exam: 50%

Class Schedule and Readings:
[Week 1] Introduction
W. R. Albury, "Ideas of Life and Death," in *Companion Encyclopedia of the History of Medicine*, vol. 1, edited by W. F. Bynum and Roy Porter (London: Routledge, 1993), pp. 249-80.

[Week 2] The Normal and the Pathological
Georges Canguilhem, *The Normal and the Pathological*, translated by Carolyn Fawcett (New York: Zone Books), pp. 115-149, 237-56.
Background Reading: Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity* (New York: Norton, 1997), pp. 304-14.

[Week 3] Debates on Spontaneous Generation

Gerald Geison, *The Private Science of Louis Pasteur* (Princeton: Princeton University Press, 1995), pp. 110-33.

Antonio Gálvez, "The Role of the French Academy of Sciences in the Clarification of the Issue of spontaneous Generation in the Mid-nineteenth Century," *Annals of Science* 45 (1988), pp. 345-65.

Nils Roll-Hansen, "Experimental Method and Spontaneous Generation: The Controversy between Pasteur and Pouchet, 1859-64," *Journal of the History of Medicine* 34 (1979), pp. 273-92.

Background Reading: Porter, *Greatest Benefit to Mankind*, pp. 428-35.

[Week 4] Germ Theories of Disease

Geison, *Private Science of Louis Pasteur*, pp. 206-33.

K. Codell Carter, "Koch's Postulates in Relation to the Work of Jacob Henle and Edwin Klebs," *Medical History* 29 (1985), pp. 353-74.

Background Reading: Porter, *Greatest Benefit to Mankind*, pp. 436-45.

[Week 5] From Germ Theories to Public Health and Immunology

Judith Walzer Leavitt, "'Typhoid Mary" Strikes Back: Bacteriological Theory and Practice in Early Twentieth Century Public Health," *Isis* 83 (1992), pp. 608-29.

J. Andrew Meldelsohn, "'Typhoid Mary' Strikes Again: The Social and the Scientific in the Making of Modern Public Health," *Isis* 86 (1995), pp. 268-77.

Background Reading: Porter, *Greatest Benefit to Mankind*, pp. 445-61.

[Week 6] Meanings of Numbers in Medicine and Science

J. Rosser Matthews, "Almroth Wright, Vaccine Therapy and British Biometrics: Disciplinary Experience and Statistical Objectivity," in *The Road to Medical Statistics*, edited by Eileen Magnello and Anne Hardy (Amsterdam: Rodopi, 2002), pp. 125-47.

George Weisz, "From Clinical Counting to Evidence-Based Medicine," in *Body Counts: Medical Quantification in Historical and Sociological Perspective*, edited by Gérard Jorland, Annick Opinel, and George Weisz (Montreal: McGill-Queen's University Press, 2005), pp. 377-93.

Background Reading: Ian Hacking, *The Taming of Chance* (Cambridge: Cambridge University Press, 1990), pp. 1-10.

[Week 7] Organ Transplantation

Thomas Schlich, *The Origins of Organ Transplantation: Surgery and Laboratory Science, 1880-1930* (Rochester: University of Rochester Press, 2010), pp. 3-13, 31-46, 156-159.

Hyung Wook Park, "Joseph E. Murray's Struggle to Transplant Kidneys: Failure, Individuality, and Plastic Surgery, 1950-1965," *Journal of the History of Medicine* 79 (2024), pp. 143-62.

Aslihan Sanal, *New Organs within Us: Transplants and the Moral Economy* (Durham: Duke University Press, 2011), pp. 15-110.

Background Reading: Arthur Silverstein, *A History of Immunology* (Amsterdam: Elsevier, 2009), pp. 85-95, 231-57.

[Week 8] Model Organisms

Robert Kohler, "Drosophila: A Life in the Laboratory," *Journal of the History of Biology* 26 (1993), pp. 281-310.

Karen. A. Rader, *Making Mice: Standardizing Animals for American Biomedical Research, 1900-1955* (Princeton: Princeton University Press, 2004), pp. 1-24.

Rachel Ankeney, "Wormy Logic: Model Organisms as Case-Based Reasoning" in *Science without Laws: Model Systems, Cases, Exemplary Narratives*, edited by Angela N. H. Creager, Elizabeth Lunbeck, and M. Norton Wise (Chapel Hill: Duke University Press, 2007), pp. 46-58.

Background Reading: Garland Allen, *Life Science in the Twentieth Century* (New York: Wiley & Sons, 1975), pp. 41-72.

[Week 9] The Rockefeller Foundation and Molecular Biology

Robert Kohler, "The Management of Science: The Experience of Warren Weaver and the Rockefeller Foundation Programme in Molecular Biology," *Minerva* 14 (1976), pp. 279-306.

Lily Kay, *The Molecular Vision of Life: Caltech, The Rockefeller Foundation, and the Rise of the New Biology* (Oxford: Oxford University Press, 1993), pp. 3-57.

Robert Kohler, "Lily E. Kay, The Molecular Vision of Life," *Isis* 85 (1994), pp. 183-4.

Background Reading: Michel Morange, *A History of Molecular Biology* (Cambridge, Mass.: Harvard University Press, 2000), pp. 1-20, 79-87.

[Week 10] Radioactivity, Biomedicine, and Health

John Krige, "The Politics of Phosphorus-32: A Cold War Fable Based on Fact," *Historical Studies in the Physical and Biological Sciences* 36 (2005), pp. 71-91.

Timothy Lenoir and Marguerite Hays, "The Manhattan Project for Biomedicine," in *Controlling Our Destinies: Historical, Philosophical, Ethical, Theological Perspectives on the Human Genome Project*, edited by Phillip R. Sloan (Notre Dame: University of Nortre Dame Press, 2000), pp. 29-62.

John Beatty, "Genetics in the Atomic Age: The Atomic Bomb Casualty Commission, 1947-1956," in *The Expansion of American Biology*, edited by Keith R. Benson, Jane Maienschein, and Ronald Rainger (New Brunswick, Rutgers University Press, 1991), pp. 284-324.

[Week 11] Using Stem Cells

Melinda Cooper, "Resuscitations: Stem Cells and the Crisis of Old Age," *Body and Society* 12 (2006), pp. 1-23.

Andreas-Holger Maehle, "Ambiguous Cells: The Emergence of the Stem Cell Concept in the Nineteenth and Twentieth Centuries," *Notes and Records: The Royal Society Journal of the History of Science* 65 (2011), pp. 359-78.

Background Reading: Jane Maienschein, *Whose View of Life? Embryos, Cloning, and Stem Cells* (Cambridge, Mass.: Harvard University Press, 2003), pp. 251-64.

[Week 12] Alzheimer's Disease

Patrick Fox, "From Senility to Alzheimer's Disease: The Rise of Alzheimer's Disease Movement," *The Milbank Quarterly* 67 (1989), pp. 58-102.

Jesse F. Ballenger, *Self, Senility, and Alzheimer's Disease in Modern America: A History* (Baltimore: Johns Hopkins University Press, 2006), pp. 1-10, 56-80.

[Week 13] Bioscientific Laboratories, Failures, and Contingent Truths

Sera Delamont and Paul Atkinson, "Doctoring Uncertainty: Mastering Craft Knowledge," *Social Studies of Science* 31 (2001), pp. 87-107.

Kathleen Jordan and Michael Lynch, "The Dissemination, Standardization and Routinization of a Molecular Biological Technique," *Social Studies of Science 28* (1998), pp. 773-800.

Course Structure:

Every week, there will be a three-hour seminar. Students are expected to finish readings (mostly 2 in a week) and post a pre-class question (10%) in the course portal before 6pm on each Monday. When the class starts, the professor will briefly introduce the week's topic, and the students in charge of presentation shall present their analysis and critique of the paper. Then, there will be a group discussion session based on the students' pre-class questions. At the end, each group will present the conclusion in front of others and submit their discussion reports (10%) on the course portal.

Paper Presentation: 5%

Two or three students will form a group (which may differ from their discussion group) to analyze a single paper listed in the syllabus. Each group will be given about 15 minutes. The students are expected to read their paper critically and discuss its main argument from their own standpoint. Presentations are evaluated according to critical relevance and accuracy in content understanding.

Midterm Paper: 15%

The professor will provide a list of primary sources that students should use to write their midterm papers. There will be specific questions that each student must answer through their paper. The paper's maximum word number should be 1,200, excluding footnotes and references.

The file should be saved in a MS word format and submitted to NTULearn's course portal. Before your submission, please always check out the plagiarism issue. The midterm papers are evaluated according to your analytic skill, understanding of contents, and originality in interpretation.

Final Exam: 50%
You can bring any paper or books into the exam hall to write your answer in an essay format. The exam will ask for your ability to approach the class themes in a critical and analytic way.

Plagiarism:
Plagiarism is a serious academic misconduct and may endanger a student's career in a highly severe way. It is done intentionally or unintentionally by using another person's ideas and writings without any proper citation and/or quotation marks. Paraphrasing is an act of rewriting other people's ideas or arguments using your own words. While this is an acceptable practice in most cases, it can be an issue if you do not indicate that the ideas have come from another person's work. If you are not sure about how you should do regarding these issues, please do cite the referred sources in footnotes/endnotes and use the quotation marks around the terms you did not invent. Even if a student cited a source, direct quotation without quotation marks may be a problem, too. If any plagiarized sentence or paragraph is detected, the grade will be reduced to zero and the student's name will be reported to the school.

Seminar Readings:
All papers are to be found in NTULearn's course portal. Among them, you need to read all papers (mostly 2 in a week) without any designation. "Presentation" papers are to be read and discussed by groups in charge of the papers. You may also read "background papers" for obtaining basic historical knowledge on the subject, but this is not required.

Optional Readings:
All optional readings are to be found in NTULearn. You can download any of them for your advanced study. The topics cover various themes in the history of biomedicine, including germ theories of disease, birth of biochemistry, aging and Alzheimer's disease, contamination and failure, model organisms, nature of biomedicalization, patrons of science, radiation and radioisotope, and visual perception in science.

Policy on Missing Classes:
In general, students are encouraged to attend all seminars. However, they may miss a few, if there is a good reason, such as illness, required university activity, or family emergency. In such cases, students can claim for the credit of class attendance, only after they submit a summary of the week′s readings along with the documentary evidence on the reasons for absence.