Syllabus

Required Texts:
• Additional required articles and excerpts are provided in paper copy or as an electronic class reserve
For each class meeting you are expected to have completed all listed required readings

Part I: History and Scientific Basis of Genomics (Meetings 1–7)

Meeting 1 (Thursday, September 10)  Topic: Welcome, organization, motivation

Meeting 2 (Tuesday, September 15)  Topic: Setting the stage
• Hawthorne, N. (1804–1864), A The Birth-mark” (short story)
• Watson, pp. 1–14

Meeting 3 (Thursday, September 17)  Topic: Eugenics
Assignment Due: Response Paper #1
• Watson, pp. 15–33
• Holt, J. “Measure for measure: The strange science of Francis Galton,” In The New Yorker (1/24/05)

Meeting 4 (Tuesday, September 22)  Topic: DNA
In Class Writing Workshop from Writing Center
• Watson, Chapters 2 and 3

Meeting 5 (Thursday, September 24)  Topic: The Central Dogma
• Watson, Chapters 2 and 3

Meeting 6 (Tuesday, September 29)  Topic: Recombinant DNA, Cloning
Assignment Due: Paper #1
• Watson, Chapter 4
• Science for the People, “Biological, social, and political issues in genetic engineering.” In The Recombinant DNA Debate (Jackson, D.A. and Stich, S.P., editors), Prentice-Hall (1979), pp. 99

Meeting 7(Thursday, October 1)  Topic: Heredity and Genomics
• Watson, Chapter 7 and 8

Part II: The Human Genome: Evolution and Diversity (Meetings 8–12)

Meeting 8 (Tuesday, October 6)  Topic: What makes us human?
Exercise: BLAST analysis
Additional optional online links:
Meeting 9 (Thursday, October 8)  Topic: Human Evolution
Assignment Due: Response Paper #2
• Watson, Chapter 9
• Olson, Chapters 1–3

Meeting 10 (Tuesday, October 13)  Topic: Human Evolution, cont.
• Olson, Chapters 4–5 and start group presentations on evolution of human populations

Meeting 11 (Thursday, October 15)  Topic: Group presentations, cont.

Meeting 12 (Tuesday, October 20)  Topic: Group Presentations, cont.

Part III: DNA: Current Technologies and Policy Controversies (Meetings 13–16)

Meeting 13 (Thursday, October 22)  Topic: Genetically Modified Organisms in Agriculture
• Watson, Chapter 6

Meeting 14 (Tuesday, October 27)  Topic: Genetically Modified Organisms in Agriculture
Assignment Due: Response Paper #3
• Raney, T. and Pingali, P. “Sowing a gene revolution.” Scientific American p. 104-11 (Sep. 2007)
• “Genetically engineered food labeling legislation.” Resolution adopted by Amherst, Massachusetts Town Meeting (May 8, 2006)

Additional optional online links:
  o Food and Agriculture Organization of the United Nations – “Genetically modified organisms, consumers, food safety and the environment” -Rome (2001)
    http://www.fao.org/DOCREP/003/X9602E/x9602e02.htm#TopOfPage

Meeting 15 (Thursday, October 29)  Topic: DNA Fingerprinting
• Watson, Chapter 10

Meeting 16 (Tuesday, November 3)  Topic: DNA Databanks and Genetic Privacy
Assignment Due: Paper #2
• Steinhardt, B. “Privacy and forensic DNA databanks.” In DNA and the Criminal Justice System (Lazer, D., editor), MIT Press (2004), pp. 173–196
• Supreme Court 5-4 Decision Regarding Convicts rights to DNA Testing (Wash. Post –June 2009)
  http://www.washingtonpost.com/wp-dyn/content/article/2009/06/18/AR2009061801610.html
• FBI and States Greatly Expand DNA Databases (New York Times - April 2009)


Part IV: Genetics of Complex Human Traits (Meetings 17–20)

Meeting 17 (Thursday, November 5) Topic: Mapping Genes; Genetic Diseases
Presentation by Susan Kimball on Construction of a Research Bibliography
• Watson, Chapter 11
• Reilly, P.R. Chapter 7: Huntington’s Disease and Chapter 8 Deafness In The Strongest Boy in the World, Cold Spring Harbor Laboratory Press (2006), pp. 83-105

Meeting 18 (Tuesday, November 10) Topic: using statistics
Joint meeting in Merrill Lecture Room 2: Guest Lecture: Prof Matt Schulkind: social statistics
• background reading TBA

Meeting 19 (Thursday, November 12) Topic: Complex Human Traits I: Depression
Additional optional online links:

Meeting 20 (Tuesday, November 17) Topic: Complex Human Traits II: Autism
Assignment Due: Rough draft of Paper #3 (research paper on a complex human trait)

Part V: Genetic Medicine and the Quest for “Perfection” (Meetings 21–26)

Meeting 21 (Thursday, November 19) Topic: Biotechnology and Gene Patents
Assignment Due: Response Paper #4
  o J. Schwartz “Cancer Patients Challenge the Patenting of a Gene” N Y Times, 5/13/09
Meeting 22 (Tuesday, December 1)  Topic: Disease Detection and Genetic Discrimination
• Watson, pp. 323–347
• Pollack, A. “A genetic test that very few need, marketed to the masses.” In The New York Times (9/11/07)
• Harmon, A. “Cancer free at 33, but weighing a mastectomy.” In The New York Times (Sep 16, 07)
Additional optional online links:
  o GINA – Genetic Information Nondiscrimination Act signed into law May 2008
    http://www.genome.gov/24519851

Meeting 23 (Thursday, December 3)  Topic: Fetal Genetic Screening, Preimplantation Diagnosis
Assignment Due: Paper #3
• Harmon, A. “In new tests for fetal defects, agonizing choices for parents.” In The New York Times (6/20/04)
• Sanghavi, D, “Wanting babies like themselves, some parents choose genetic defects.” In The New York Times (December 5, 2006)

Meeting 24 (Tuesday, December 8)  Topic: Gene Therapy
Assignment Due: Response Paper #5
• Watson, pp. 347–359

Tues Dec 8 and Wed Dec 9: FYS MOVIE NIGHTS! GATTACA (come on either Tues/Wed)  Merrill 131

Meeting 25 (Thursday, December 10)  Topic: Germ-line Therapy and Genetic Enhancement
Movie and Readings:
• GATTACA, viewed in advance
• Watson, Coda (pp. 395–405)
• Sandel, M.J. “The case against perfection.” In The Atlantic Monthly (April, 2004)
• Kass, L.R. “Triumph or tragedy? The moral meaning of genetic tech.” In Commentary (Sept, 1999)

Meeting 26 (Tuesday, December 15)  Topic: Wrap-Up
Assignment Due: Rough Draft of Final Paper (Final version due by Tues, Dec. 22nd at 5pm)
• Steven Pinker, “My Genome, My Self” In The New York Times (Jan 11, 2009)