"We used to think our fate was in the stars. Now we know in large part it is in our genes."
James Watson

"The sudden switch from a belief in Nurture, in the form of social conditioning, to Nature, in the form of genetics and brain psychology, is the great intellectual event, to borrow Neitzche's terms, of the late 20th century."
Tom Wolfe

**NATURE, NURTURE AND PUBLIC POLICY**

This course examines how nature (heredity) and nurture (environment) theories and findings about human behavior have been used to shape public policies. While we will examine several specific cases, the focus here is more on understanding the social viability and consequences of heredity and genetic explanation than on evaluating the scientific validity of nature-nurture debates. In the latter part of the course we specifically look at the development and policy issues surrounding biomedical enhancements, including cognitive neuro-enhancers.

This course will be mostly discussion-based, with relatively little lecture. Students are expected to have completed the assigned reading and be prepared for discussion for each topic. The class will be divided into six or seven groups to examine specific nature-nurture issues using a modified "problem-based learning" (PBL) style. These groups will present reports on their research. Topics may include: genetics and disability, depression and policy, race and sports, obesity, autism, BiDil, enhancement, genetic privacy, and gene therapy.

There are 16 sections in this course: some will take a week (2 classes), others a single class. I will regularly inform you where we are in terms of course readings and topics on the syllabus. Grading will be based on short mid-term and final essays, PBL group presentation and report, and class participation.

**Books**

**Articles**
About 25 articles listed in syllabus will be posted on LATTE or will be available from reserve desk in Goldfarb Library. A few pdf files may be sent directly by email.

INTRODUCTION
1. The Coming of the New Genetics and the Human Genome Project
   Nova Video: "The Book of Life"
   Walter Gilbert, "A Vision of the Grail", (LATTE)

THE HISTORICAL CONTEXT
2. Measuring Differences
   A. Mismeasuring a "Man"
      READING: Gould, Chap 1-5

3. Eugenics in Context
   A. Scientific Knowledge and the Social Context
      B. Public Policy: Sterilization, Exclusion, etc.
      READING: Paul, Chap 1-7
      Stephen Jay Gould, "Carrie Buck's Daughter" (LATTE)

4. Gender: How and Why are Men and Women Different?
      READING: Fausto-Sterling, Chaps. 1-5, 7, Afterward

THE NEW HERITABILITY
5. Do Parents Matter?
   A. Genetic Assumptions in the Peer Hypothesis
   B. Limits of "The Nurture Assumption"
      Malcom Gladwell, "Do Parents Matter?" (LATTE)

6. Behavioral Genetics: Twin Studies to DNA
   A. MZ, DZ twins; adoption studies; twins raised apart.
   B. Mendelian, Population, and Molecular Genetics
      READING: Baker, Chapters 1-4
   C. Basis of Heritability: Mental Disorders and ADHD
   D. Role of Environment in Heredity
      READING: Baker, Chapters 5, 6

7. The Social Critique
   A. Biological Determinism and Reductionism
      READING: Conrad, “A Mirage of Genes” (LATTE)
   B. Genetic discrimination
   C. Genetics and Culture

CASE STUDIES IN HERITABILITY AND PUBLIC POLICY
8. Race and Genetics I: Achievement: IQ and the Genetics of Intelligence
A. Burt, Jensen and critics
B. Straightening Out The Bell Curve
C. The Concepts of "Race" and "IQ"
   READING: Gould, "Curveball" (LATTE)
   Jencks and Phillips "America's next Achievement Test" (LATTE)
   Gardner, "IQ Tests do not Measure..." (LATTE)
   Baker, Chapter 7
   Murray, “Jewish Genius” (2007) (LATTE)
   S. Bagley, “Sex, Race and IQ: Off Limits?” Newsweek 4/20/09

**Group Report:** Race and sports

9. Genetics, Ancestry and Human History
   A. Genographic Ancestry Project: Film; “The Journey of Man”
   B. History, Genetics and Ancestry
      READING: Wells, Chapters 1-4, epilogue

10. Race and Genetics II: Ancestry, Medicine and Ethnopharmacology
    READING: S.A. Tishkoff and K. Kidd, “Implications of Biogeography of Human Populations for ‘Race’ and ‘Medicine’ (LATTE)
    Feldman & Lewontin, “Race, Ancestry and Medicine” (pdf)
    J. Auchenbach, “Africans Have World’s Highest Genetic Diversity” (pdf)
    P. Sanker et al. “Genetic Research and Health Disparities”

**Group Report:** BiDil: Drugs, Commerce and Race

11. Ethnicity, Genes and Disease: Tay Sachs, Sickle Cell and CF
    READING: Wailoo and Pembeton, all
    Genes and Privacy:
    Reading: Gruber, “GINA: How it came to pass and what it does”

**Group Report:** Genetic Privacy: Fingerprinting, Insurance Companies, Medical Records and other Genetic Residues.

12. Mental Illness: Genes, Life Events and Depression
    A. Looking for balance: cases of bipolar illness and schizophrenia
    READING: Review Baker Chapter 5
    A. Caspi et al, “Influence of Life Stress on Depression: Moderation by Polymorphism in the 5-HTT Gene” (LATTE)
    Tabery, “From Genetic Predisposition to Interaction Predisposition” (LATTE)

**Group Report:** Depression: Genetics and Policy or Gene Therapy and Policy or
13. **Homosexuality**
   A. Problems of definition
   B. New discoveries in brains
      
      **READING:** "Debate: Is Homosexuality Biologically Influenced?" Articles from *Scientific American* (1994) by LeVay and Hamer, & Byne. (LATTE)
      
      J. Michael Bailey and Richard C. Pillard, "A Genetic Study of Male Sexual Orientation" (LATTE)
      
      Fausto-Sterling, Chap. 8
      
      Chandler Burr, "Homosexuality and Biology" (LATTE)

**Group Report:** Genetics and Obesity

**Group Report: Privacy:** DNA fingerprinting, medical records, and identity.

**THE POTENTIALS OF BIOMEDICAL ENHANCEMENT**

14. Is the best better? Issues around biomedical enhancement
   A. What is enhancement? How is biomedical enhancement different?
      
      Cases: Human Growth Hormone, Cosmetic Surgery
   B. The potentials and pitfalls of genetic enhancement
      
      **READING:** Conrad and Potter, “Human Growth Hormone and the potentials of biomedical enhancement.” (LATTE)
      
      M. Sandel, “The Case Against Perfection” (LATTE)
      
      Hoberman, “Listening to Steroids” (LATTE)
      
      A. Caplan, C. Elliot, “Is it Ethical to use Biotechnologies to make us Better than Well?” (LATTE)
   C. Stimulants, Provigil and other Neuro-enhancers
      
      
      Also check out these links: “Brain Gain” (from *The New Yorker*):
      

      ‘Can a Pill Make you Smarter?’ SF Chronicle article:
      
      http://www.sfgate.com/cgi-bin/article.cgi?f=/g/a/2009/07/29/hearstmaghealth409263.DTL

      **Policy Discussion:** Cognitive enhancement: brain 'steroids or significant step forward?

**HERITABILITY AND PUBLIC POLICY**

15. **The New Genetics and Genetic Screening**
   A. Post-natal, pre-natal, and carrier screening
   B. The dangers of testing and screening
   C. The disability critique
      
      **READING:**
      

**Group Report:** Genetic Screening and Disability

**Film:** Screening of *GATTACA* (out side of class time)
16. **Cloning Humans: Medical Breakthrough or Brave New World?**
   A. What does "Dolly" tell us? Biological and social realities of human cloning.
   B. Cloning and nature-nurture revisited.
      READING: Sliver, skim Chap 1-4, 11-16
      read Prologue, Chap 5-7, esp Chap 8-10, & 17-18.

**Group Report:** Reprogenetics: Reality or Fantasy?

**Related course information:**

Office Hours: Tuesday 11:00-12:00 and Thursday 1:00-2:00 and by appointment. Best to contact Professor Conrad by email and make an appointment.

E-mail: [Conrad@brandeis.edu](mailto:Conrad@brandeis.edu); Office Phone (with voice mail): x62635

Undergrad Peer Assistant: Jordan Hinahara [jhina@brandeis.edu](mailto:jhina@brandeis.edu)

Note: If you are a student with a documented disability on record at Brandeis University and wish to have a reasonable accommodation made for you in this class, please see me immediately.