Section 2: Conducting Genetic Research on Racial and Ethnic Groups

I. Differing Views of Genetic Research

*Past Experiences with Medical Research:* In conducting genetic research on racial and ethnic groups, researchers must be highly attentive to the groups’ preexisting views of medical research and the health care system as a whole. The willingness of racial and ethnic groups to undertake genetic research is in part contingent on the groups’ past experiences with medical research and the manner in which such experiences are interpreted by current members of the group. For instance, reported difficulties in recruiting African Americans into genetic studies have been attributed to mistrust based on past abuses of medical research (such as the Tuskegee Syphilis Study) and historical disenfranchisement from the health care system.

Shavers 2002 (pp. 248-256) and Roberson 1994 (pp. 2687-2691) summarize the effect of past medical experience on minority recruitment within medical research in general.

Baker 1999 (pp. 212-222) examines levels of distrust for medical research among different minority groups.

Duran 1998 (pp. 183-189) discusses obstacles to the recruitment of Hispanics into medical research.

White 2000 (pp. 585-598) reviews the Tuskegee Syphilis Study.

Gamble 1997 (pp. 1773-1778), Fouad 2000b (pp. S35-S40), and Shavers 2000 (pp. 563-572) examine the legacy of Tuskegee among African Americans and its effect on research participation.

*Cultural Understandings of Genetics:* Racial and ethnic groups often view genetics, and medical science more generally, from within a different cultural framework than do researchers. In some cases such differences may impact the willingness of group members to participate in genetic research. A group’s understanding of genetics is often shaped by pre-existing beliefs about the composition and origins of the body, as well as by the access that its members have to science education. In cases where pre-existing beliefs about the body conflict with a study’s use of genetics, a high degree of cultural sensitivity may be required on the part of researchers to ensure that the study is both acceptable to group members and unlikely to cause cultural harm. The task is to present a genetic study in a culturally sensitive manner, while maintaining an accurate and complete description of the scientific goals of research.

Richards and Ponder 1996 (pp. 1032-1036), Catz 2005 (pp. 161-172), and Furr 2002 (pp. 23-30) examine how different racial and ethnic groups in the US understand genetics and genetic research.

Lin-Fu 1998 (pp. 124-129) discusses the views of Asian Americans and Pacific Islanders on genetics.

Romero 2001 (pp. 1-10) discusses the views of Native Americans on genetics.

Phan 1995 (pp. 237-246) examines views of genetics within different religious denominations in the US.

Campbell 1998 (pp. 275-305) and Palmer and Tano 2004 (pp. 1-10) discuss cultural views of the body and their effect on research participation.

Baty 2003 (pp. 146-155) provides a guide for culturally sensitive genetic research and education in African Americans.

Burhansstipanov 2002 (pp. 149-157) provides a guide for culturally sensitive genetic research and education in Native Americans.

II. Recruitment of Participants for Genetic Studies

Genetic researchers have employed different recruitment strategies towards the aim of more effectively enrolling study participants from racial and ethnic groups. Commonly, researchers have centered on working closely with political, religious or community
institutions that represent or are influential among members of the group. Such institutions have assisted researchers by dispensing information about a study, alleviating distrust of researchers, and identifying eligible participants. A number of studies have also employed advertisement campaigns targeted at racial or ethnic communities. However, the success of these types of strategies often depends on their appropriate adaptation to the characteristics of a specific group, as recruitment strategies that prove successful for one group, disease, or study type may not prove successful for others. Many genetic studies attempting to recruit racial and ethnic minorities have sought to employ researchers from the same racial or ethnic group. Others have looked to involve community leaders in planning and conducting research. Proponents of this strategy contend that it increases trust between group members and researchers and results in research that is more aligned with the health needs of the group. Some researchers, however, maintain that the racial or ethnic concordance of researchers is less important for recruitment than strong community or clinical relationships.

Blumenthal 1995 (pp. 197-205) and Swanson and Ward 1995 (pp. 1747-1759) summarize strategies for recruiting members of minority groups into medical research generally. Royal 2000 (pp. S68-S77), Hughes 2004 (pp. 1146-1155), and Patterson 2005 (pp. 79-82) provide examples of recruitment strategies used in cancer genetics studies. Williams 2000 (pp. 527-538) provides an example of recruitment strategies used in a hypertension genetics study. Marcer 2003 (pp. 125-127) and International HapMap Consortium 2004 (pp. 467-475) discuss the recruitment strategies used in the International HapMap Study. Stevens 2003 (pp. 105-112), Cooper-Patrick 1999 (pp. 583-589) and Brach and Fraser 2000 (pp. 181-217) examine the effect of racial/ethnic concordance in health care generally. Fouad 2000a (pp. S35-S40) discusses the importance of racial/ethnic concordance for the recruitment of African Americans into medical research. Hughes 2004 (pp. 1146-1155) discusses the significance of racial/ethnic concordance in recruitment for hereditary breast cancer research.

III. Racial and Ethnic Identification of Participants

Racial and Ethnic Categories in Genetic Research: The NIH has stipulated that all studies it funds must use racial and ethnic categories that correspond to those used in the United States census, as set by the Office of Management and Budget. However, these are minimum requirements, and researchers are permitted to select more specific categories. Thus, one of the difficulties researchers face in conducting genetic studies on racial and ethnic groups is determining what racial or ethnic categories to use. While racial and ethnic designations may appear self-evident, they are constructed in complex and often contradicting ways. Racial and ethnic identities often overlap ambiguously or contain distinct sub-identities. Individuals may claim to belong to multiple racial and ethnic groups and a consensus of who “belongs” in a group may not be present even among members of the group itself. In selecting a broad category, such as “Asians,” researchers risk missing significant distinctions among sub-groups within the category, while by choosing a more limited category, such as “Japanese-Americans,” they risk attributing results too narrowly and inhibiting the comparison of data. Furthermore, for the results of a study to be meaningful for fellow researchers and the public alike, the racial and ethnic categories used must both be consistent with other similar studies and be in common public usage.
National Institutes of Health 2001a outlines NIH guidelines on the use of race in medical research. Office of Management and Budget 2000 provides OMB definitions of racial and ethnic categories. Bennett 1997 (pp. 477-480, Sondik 2000 (pp. 1709-1713) review and provide criticism of the use of OMB set racial and ethnic categories in medical research. Burhanstipanov and Satter 2000 (pp. 1720-1723) discuss how OMB classifications affect research on Native Americans. Anand 1999 (pp. 241-244), Bhopal and Donaldson 1998 (pp. 1303-1307), and Waters 2000 (pp. 1735-1737) discuss the problems inherent in selecting racial and ethnic categories for medical research. Hahn 1992 (pp. 268-271), Aspinall 1998 (pp. 1797-1808), and Williams 1999 (pp. 121-137) examine the methodological issues implicit in selecting racial and ethnic categories for medical research.

Methods for Identifying the Race and Ethnicity of Research Participants: Another difficulty researchers face in conducting genetic studies on racial and ethnic groups is determining how to identify the race or ethnicity of study participants. Since there is no objective or unequivocal means of identifying an individual’s race or ethnicity, researchers have traditionally relied on one of several subjective methods. These include identification by the researcher, identification by a second party, such as a physician or a community leader, participant self-identification, identification based on a participant’s reported ancestors, and identification by birthplace or last name. However, none of these options constitutes a genetically precise method, as all rely on individuals’ social criteria for group membership based on the a priori designation of racial and ethnic categories. Of these options, participant self-identification has in recent years become increasingly popular, with the NIH stipulating in 1993 that, except under extraordinary conditions, all studies funded by it must rely on that method. Participant self-identification is not without shortcomings, however, and can be problematic when participants respond with multiple racial or ethnic identities or racial or ethnic identities different from those selected for a study, or do not have sufficient knowledge of their racial or ethnic ancestry to meet study requirements. Recently, some researchers have advanced the use of genetic analysis to place study participants into categories not associated with socially defined race or ethnicity.

Hahn 1996 (pp. 75-80), Moscou 2003 (pp. 1084-1086), Hammerschmidt 1999 (pp. 10-12), and Boehmer 2002 (pp. 1471-1472) summarize the different methods employed by researchers to identify race and ethnicity. National Institutes of Health 2001a provides NIH guidelines for the identification of race and ethnicity. Kaufman 1999 (pp. 101-103) argues that self-identification is the only acceptable method of identification. Fuchs 2002 (pp. 1-5) and Hahn 1992 (pp. 268-271) discuss potential shortcomings with self-identification. Shields 2005 (pp. 77-103) argues for the development of genetic methods of participant identification.

A Need for Clarity: A prevailing criticism of the use of race and ethnicity in medical research has been the inconsistency with which different studies have used and reported racial and ethnic categories. Because there are no objective and unequivocal means of identifying an individual’s race or ethnicity researchers have selected differing methods of identifying participants. This inconsistent treatment of race and ethnicity has led to difficulties in comparing results from different studies and in evaluating whether racial and ethnic categories represent accurate measurements of risk. It has also been suggested that by not making explicit in publications which methods were used, studies often communicate a biological notion of race and ethnicity. To this end, a number of major
medical journal have stipulated that studies clearly state the methods through which researchers ascertain racial or ethnic identity of participants.

Kaplan and Bennett 2003 (pp. 2709-2916) review the issues involved in the use and assignment of racial and ethnic categories. Huth 1995 (pp. 619-621), LaVeist 1994 (pp. 1-16), and Comstock 2004 (pp. 611-619) examine the methodological issues that arise from the inconsistent use of race/ethnicity in published studies. Wang 2005 (pp. 37-45) examines the methodological issues that arise from the inconsistent use of race/ethnicity in genetic research.

International Committee of Medical Journal Editors 2003, Nature Genetics 2000 (pp. 97-98), and British Medical Journal 1996 (pp. 1094) are representative of recent journal requirements for the publication of studies using racial and ethnic categories.

Is Self-identified Race/Ethnicity an Effective Proxy for Genetic Clusters?: In discussing the appropriateness of using racial and ethnic categories in medical research, there exists significant disagreement over the degree to which existing methods of identifying race and ethnicity, particularly participant self-identification, can yield biologically meaningful results. Critics cite historical and sociological research on the complex and fluid ways in which race and ethnicity are socially constructed and point to genetic studies that have found little association between individuals’ genotype and their self-identified race. Proponents cite genetic research that has found an association between individuals’ self-reported continental ancestry and genetic clusters produced by the statistical analysis of selected single nucleotide polymorphisms (SNPs).

Winker 2004 (pp. 1612-1614) summarizes the debate over whether self-identified racial and ethnic categories correspond to genetic clusters. Barnholtz-Sloan 2005 (pp. 1545-1551) and Wilson 2001 (pp. 265-269) present findings showing only a weak association between self-identified race/ethnicity and genetic clusters. Tang 2005 (pp. 268-275) and Burchard 2003 (pp. 1170-1175) present findings showing a strong association between self-identified race/ethnicity and genetic clusters.

IV. Using Stored DNA Samples
Researchers may sometimes use stored DNA samples to conduct genetic research on racial and ethnic groups. Some groups have voiced concern that the use of stored samples with racial and ethnic labels may result in discrimination or stigmatization. The use of stored DNA samples also presents researchers with additional challenges for accurately ascertaining the racial or ethnic identity of the donor. While different DNA and tissue banks have different guidelines for the labeling of race and ethnicity, this information, if available, may be attached to the sample with no explanation of how it was determined.

National Bioethics Advisory Commission 1999 (pp. 1-26) provides recommendations for the use of stored samples in medical research, including that on racial and ethnic groups. National Bioethics Advisory Commission 1999 (pp. 77-80), Kaiser 2003 (pp. 1485), and Meslin and Quaid 2004 (pp. 229-234) discuss groups concerns over the use of stored samples. Eiseman 2003 (pp. 27-83) overviews the policies, including those related to racial and ethnic labeling, of human tissue repositories in the US.
V. Case Study: Ashkenazi Jews and BRCA1/2 Research

In July 1995, less than a year after the initial identification of the breast cancer susceptibility gene BRCA1, researchers unexpectedly discovered a shared gene mutation in Ashkenazi Jewish families. Over the subsequent year two additional mutations, one in the BRCA1 gene and one in the BRCA2 gene, were also linked to Ashkenazi Jews. The studies upon which this linkage was based, as well as subsequent research required researchers to develop strategies for acquiring DNA samples from the group. Initially these samples came from cancer families with whom researchers had long worked and whom, through close and prolonged contact, researchers came to know well. As researchers expanded BRCA studies to the broader Jewish population, they relied both on stored DNA samples from past screening programs for Tay-Sachs disease, and on samples taken for the research from individuals in the community. In recruiting Jewish participants for BRCA research, researchers relied on the experience generated from those earlier Tay-Sachs screening programs in which they contacted and worked through Jewish community institutions. In both cases, rabbis and other community leaders lent the research credibility, advertised it among community members and, in some studies, helped researchers identify eligible participants.

Researchers were also faced with how to determine whether a potential participant or sample donor was specifically of Ashkenazi Jewish descent. Most studies relied on either self-identification by participants or identification by rabbis or other community leaders. Some studies, especially those relying on stored samples, assumed that because an overwhelming percentage of Jews in the United States were Ashkenazi (~90%), a high percentage of the samples would be as well. Other studies established Ashkenazi descent by asking participants about the nationality of their ancestors or by selecting participants with common Ashkenazi surnames.

In response to the research some Jewish organizations and community members voiced concern about the effects on the group of being publicly linked to a deadly disease. Most frequently these concerns focused on the possibility of stigmatization and discrimination, especially by insurance companies. Overall, however, the Jewish community responded favorably to the research. Researchers had little difficulty in recruiting participants, with many individuals viewing participation as both beneficial to the group and society at large. This enthusiasm came in the face of the negative history of genetic research and stigmatization that Jews faced under the Nazis. However, despite this history, the Jewish community has been found to have a high degree of trust for biomedical research in the United States. It has been posited that this trust is in large part a product of frequent use of the health care system, high levels of ethnic concordance between researchers and the community, and the past success of research-community collaborations, most notably in the case of Tay-Sachs screening.

Brandt-Rauf 2006 (pp. 1-35) provides an overview of BRCA1/2 research on Ashkenazi Jews. Struewing 1995 (pp. 1-7), Tonin 1996 (pp. 1179-1183), Levy-Lahd 1997 (pp. 1059-1067), and King 2003 (pp. 643-646) represent key studies leading to the linkage of Ashkenazi Jews to BRCA1/2.

Struewing 1995 (pp. 198-200) and Oddoux 1996 (pp. 185-190) present studies that used stored samples from Tay-Sachs screening programs.

Kaback 2001 (pp. 253-265) reviews the development and success of Tay-Sachs screening programs in
the Jewish community.
Rothenberg and Rutkin 1998 (pp. 148-153) and Dorff 1997 (pp. 65-96) discuss the response of the Jewish community to being the focus of BRCA1/2 research.
Schwartz 2001 (pp. 336-342) discusses the response of the Jewish community to the use of stored samples.