For most cancers, black Americans or Americans of African heritage have the highest cancer mortality rates and the worst survival of any population (1). This fact has been a concern for nearly 40 years (2). Although it is incontrovertible that there are racial disparities in cancer incidence and mortality, the reasons for the disparities are not as clear and indeed are controversial. Some have suggested that they are due to racial differences in biology (3,4). Others have suggested that socioeconomic and cultural influences are to blame (5).

This issue of the Journal has two articles that help bring some focus to the issue and help better define the questions that should be asked. It is only through clearly defining the problem that we can most appropriately address it and develop the interventions that may overcome these disparities.

Albain et al. (6) assessed racial outcomes in 35 phase III cooperative group trials performed over a 25-year period. After adjusting for known prognostic factors, they observed no statistical association between race and survival for lung cancer, colon cancer, lymphoma, leukemia, or myeloma. For these diseases, equal treatment yields equal outcome, and race is not a factor in outcome. This finding is evidence that racial differences in the United States for these cancers can be attributed to the fact that, as several patterns of care studies show, there is not equal care. Blacks are less likely to have their disease detected early, and when it is detected, they are less likely to receive adequate treatment. If we are to decrease disparities in these diseases, we must work to get all people adequate treatment, and an important question for health disparities researchers is “how do we get adequate care including preventative services to all who deserve it?”

Albain et al. (6) found that black race was associated with increased mortality in patients with breast, ovarian, and prostate cancers, despite uniform stage, treatment, and follow-up. These results largely agree with the results of an analysis of clinical trials by Bach et al. (7) in 2002, and it is noteworthy that the only racial differences in treatment outcome are from sex-related tumors.

Racial differences in breast cancer have been perhaps the most studied. In a population-based analysis using national registry data, Menashe et al. (8) showed clear differences in mortality by race. In their incidence-based mortality analysis, black–white disparity was eliminated when hazard rates of breast cancer death were compared according to estrogen receptor status. Taken together, the two studies and others do not suggest that blacks have a different kind of breast cancer but rather that there are multiple kinds of breast cancer and that a higher proportion of black patients with breast cancer have the worse kinds. No race has a monopoly on the good kind, nor the bad kind of breast cancer, but the prevalences differ.

In the United States, we frequently do a sort of racial medical profiling. We accept that our racial labels predict for groups of people less likely to do well with cancer and other diseases. It is important to remember that race is based in societal politics. It is not a scientific categorization and is a construct rejected by anthropologists (9,10). It is more scientific to think of race as a surrogate for area of geographic origin, socioeconomic status (SES), and culture, all of which can have correlations with disease risk.

Area of geographic origin is a legitimate scientific categorization. There are genetic markers that have a higher prevalence in some populations as defined geographically (11,12). For example, the sickle cell mutation is found in sub-Saharan and North Africa, the Middle East, and the Mediterranean countries of Europe (13). Furthermore, pharmacogenetic studies demonstrate that certain drugs are less likely to work or more likely to cause side effects in populations from certain areas: The epithelial growth factor inhibitor gefitinib (Iressa, AstraZeneca Pharmaceuticals LP, UK) clearly has greater activity in Japanese non–small cell lung cancer patients than in Americans of European ancestry (14). The drug irinotecan (Camptosar, Daiichi-Sankyo Pharmaceuticals, Japan) may cause diarrhea in twice as many persons who identify themselves as of African origin compared with those who identify themselves as of European origin (15).

Some biological and even genetic differences in populations are not inherent from birth and immutable. They are influenced by environmental factors associated with SES and culture. It is through study of these gene–environment interactions that we are likely to gain better understanding of the causes of cancer.

In Scotland, Thomson et al. (16) have demonstrated a correlation between poverty and an increased risk of having poor prognostic biomarkers for breast cancer: Poor women with breast cancer are more likely to have estrogen receptor–negative tumors, and middle class and wealthier women have a higher prevalence of estrogen receptor–positive tumors. In the mid-1990s, Gordon (17) reported similar findings based on a study of poor white women in the United States. It is unknown how poverty or weight influences breast cancer pathology. It may be through differences in birthing habits, long-term diet, obesity, hormone use, or other factors. The prevalence of progesterone receptor–negative and HER2/neu-negative breast cancer is essentially the same in black and white women (18). The increased prevalence of triple-negative disease in black women relative to whites is explained by an increased prevalence of estrogen receptor–positive disease among whites.

Breast cancer mortality was similar in blacks and whites in the 1970s and the disparity dates from after 1981 (19). This increase in
disparity could be due to differences in disease behavior brought on by changes in diet or evolving differences in screening, early detection, and treatment received upon diagnosis (19). The proportion of black American women who are overweight or obese has more than doubled from 1970 to 2002, increasing from 15% to 35%; the proportion of white women who are overweight or obese has increased in this period from 10% to 25% (20).

Albain et al. (6) tried to adjust for SES by using zip code data. This method adjusts for SES at time of treatment but does not take into account the fact that SES can change over a lifetime. Poverty in childhood and early adulthood may influence the tumor and its biology later in life. It is difficult to take SES into account in clinical trials; this is a less a problem in large population studies. Albain et al. were unable to adjust for racial differences in body mass index (BMI).

Racial differences in BMI have been suggested as part of the reason that black men have worse outcomes from prostate cancer compared with whites (21,22), as have racial differences in red meat consumption (23). Higher BMI has also been linked to higher risk of ovarian cancer and worse outcomes (24).

One can conclude that some of the racial differences in outcome in breast, ovarian, and prostate cancers are due to differences in biology. Many of these differences are caused by factors related to socioeconomic status and culture. Perhaps advances in our understanding of biology will lead us away from concerns about race and we will better define high-risk populations using pathological markers of disease. There are numerous questions deserving more scientific resources, including the question of what are the major environmental influences on tumor biology? The phrase “environmental influences” has broad meaning and includes dietary influences and other chemical exposures as well as reproductive habits. Understanding how the environment affects tumor biology will require an appreciation of culture and other anthropological issues.

A substantial body of work demonstrates that black–white disparities in most cancers are due to the fact that a large proportion of minority and poor patients receive less than optimal care when compared with nonminority patients. Studies suggest that for most cancers, equal treatment yields equal outcome among equal patients and there is not equal treatment. Studies demonstrate that being black or poor with cancer is associated with an increased risk of not getting preventive services, having treatment delayed, or receiving the appropriate treatment, and even not getting treated at all (25–27). Access to high-quality care for all Americans is a logistic issue. It requires no new science, only determined social action. Achieving this goal is the most immediate and practical thing we can do to decrease disparities in health.

References