

# Defining Skin of Color

Susan C. Taylor, MD; Fran Cook-Bolden, MD

*In the past few years, increasing attention has been given to skin disease in individuals with skin of color (also termed ethnic skin, racial skin, black skin, or pigmented skin). We will attempt to identify those individuals with skin of color. We use this article as an introduction to a recurring series that will address cutaneous disease affecting these individuals.*

In an attempt to define the term *skin of color*, one must pose the question, "Who are individuals with skin of color?" Anthropologically, *Homo sapiens* are divided into 3 racial groups: Caucasoid, Negroid, and Mongoloid. Based on this classification system, individuals with skin of color would certainly be those in the Negroid and Mongoloid groups. However, in addition to racial classifications, ethnic classifications of individuals with skin of color must be considered, thus making the classification more complex. At the Health Disparities in Arthritis and Musculoskeletal and Skin Diseases Conference, Bethesda, Maryland, December 15–16, 2000, Graciela S. Alarcon, MD, MPH, noted that race was a biological concept that included a cohort of individuals with a significant degree of genetic similarity.<sup>1</sup> Ethnicity, in contrast, is a social construct in which a group of people shares a common language, cultural practices, and customs. Patients who are considered to have skin of color would include those of the Black and Asian races, as well as those reporting Latino or Hispanic ethnicity. By this definition, people with skin of color are of various racial and ethnic backgrounds.

According to US Census statistics, those individuals who are considered to be of Latino or Hispanic ethnicity are as follows: Mexican/Mexican American/Chicano, Puerto Rican, Cuban, South or Central American, or other Spanish culture. Those individuals classified as "Black"

include: African, Caribbean Black, and African Americans. Asians are defined as those individuals from the Far East, Southeast Asia, and the Indian subcontinent (Asian Indian, Japanese, Chinese, Korean, Filipino, Vietnamese, Burmese, Hmong, Pakistani, Thai), and Native Hawaiian or other Pacific Islanders (Samoan and Guamanian). Finally, Native Americans include those individuals of the various tribes of the continental United States and Alaska.

Alternatively, the Fitzpatrick skin classification system may be used for categorizing human skin.<sup>2</sup> However, this universally recognized classification system has limitations when assessing skin of color. The Fitzpatrick classification system is based not only on the visually perceived color of the skin but also on the dynamic ability of the skin to respond to UV light. It is based on an individual's assessment of his or her skin's burning or tanning capacity. However, this classification system was developed for white skin; all skin of color was initially grouped as skin type V.<sup>3</sup> Subsequently, skin of color was divided into 3 groups that included skin type IV for light brown, V for brown, and VI for dark brown skin.<sup>3</sup> For the purposes of this article, we also will define "skin of color" as skin that meets the Fitzpatrick skin types IV to VI criteria. This particular nomenclature is instantly recognized and understood by dermatologists worldwide. Most Blacks, Hispanics and Latinos, Native Americans, and many Asians would be classified as skin types IV to VI.

However, the Fitzpatrick skin type classification system has severe limitations and inconsistencies. For example, for many individuals with skin of color, there is no relationship or a weak relationship between constitutive skin color, skin type, and minimal erythema dose (MED). In a study by Youn et al,<sup>4</sup> Korean skin was found to be heterogeneous, displaying skin phototypes II, III, IV, and V (instead of being limited to only type V), and there was a range of MED values from 50 to 90 mJ/cm<sup>2</sup>. Leenutaphong<sup>5</sup> determined that Thai skin types include types III, IV, and V, and constitutive skin color did not correspond well to the Fitzpatrick skin type classification. The variation in MED values for

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From the Skin of Color Center, St. Luke's-Roosevelt Hospital Center, New York, New York.

Reprints: Susan C. Taylor, MD, Director, Skin of Color Center, St. Luke's-Roosevelt Hospital Center, 1090 Amsterdam Ave, Suite 11D, New York, NY 10025 (e-mail: drstaylor1@aol.com).

each Thai skin type was reportedly large, and there was a great deal of overlap between the skin types.

Alternatively, we must be receptive to other skin classification systems. The Japanese have created a 3-level classification system related to sensitivity to UV and the propensity to sunburn or tan.<sup>6</sup> Perhaps individuals with skin of color would be better served if classifications for brown and black skin were based on criteria other than the effect of UV radiation. For example, a classification system based on the propensity of the skin to produce excessive quantities of pigmentation because of an inflammatory stimulus may prove valuable because we know that skin of color has such a profound ability to hyperpigment. Determining a correlation between the propensity toward and the duration of postinflammatory hyperpigmentation and constitutive skin color may prove useful.

Finally, objective measurements of skin color by devices such as the Minolta Chroma Meter<sup>®</sup>, the Deraspectometer<sup>®</sup>, or the Mexameter<sup>®</sup> may be used to classify skin types. The Mexameter MX 16 was found to provide a quick and accurate objective quantification of skin color in different skin types because of its ability to measure melanin and hemoglobin levels.<sup>7</sup> Individuals with skin of color could then be classified not by racial or ethnic grouping but by a skin color score, as determined by a combined melanin and hemoglobin numeric determination.

### **Genetic Variations of *Homo Sapiens***

Because we are attempting to define differences in man, it is appropriate to review the genetic basis of these differences. Recent research involving mitochondrial DNA suggests that all humans in the world are descendents of 3 African women.<sup>8</sup> These “mitochondrial Eves” have been named L1, L2, and L3. It is postulated that the descendents of L1 and L2 remained in Africa, but the descendents of L3 populated the remaining continents, through migration over land and sea. Likewise, an analysis of the Y chromosome, which is passed from all fathers to sons, reveals that all men are descendents of one of the 3 African men that are named 1, 2, and 3. It is postulated that the descendents of 1 and 2 remained in Africa, but the descendents of 3 populated the remaining continents, also through migration over land and sea.<sup>9</sup> Environmental, dietary, and adaptive factors are thought to explain the evolution of differences in skin color, craniofacial features, and hair texture and color. Today’s geneticists report 85% variations within races and only 15% variation between the races.

Of approximately 100,000 genes, only 10 determine external appearance. Therefore, on a genetic basis, it appears as though we are all extraordinarily similar. However, based on cutaneous disease and cosmetic needs and concerns, those individuals with skin of color are quite different from those individuals with white skin.

The racial and ethnic classifications of which we are all familiar and often use have become less distinct as voluntary and forced migration patterns and intermarriage have created even more of an ethnic and genetic mosaic. Current day African American Blacks, for example, are a mosaic of Black Africans, European and American Caucasians, Asians, Native Americans, and/or Hispanics. In the United States in 1998, the intergroup marriage statistics revealed 9% White/Black, 19% White/Asian, 12% White/Native American, 52% White/Hispanic, and 8% other.<sup>10</sup> Although the exact racial or ethnic classification of the offspring of these intergroup marriages is indeterminate, clearly a defining Fitzpatrick skin type or skin color score can be assigned.

### **Demographic Data**

Population statistics of the United States reveal dramatically shifting demographics in the twenty-first century. In 1990, the US Census Bureau reported that non-Hispanic Whites comprised 75.6% of the population; Blacks, 12%; Hispanics, 9%; Asian and Pacific Islanders, 3%; and Eskimos and Aleuts, 0.7%.<sup>11</sup> In contrast, US Census Bureau projections for 2050 forecast a significant decrease of the non-Hispanic White population to approximately 52.8%, with concomitant increases in the other segments of the population. The Black population is projected to increase to 13.6%; Hispanics to 24.5%; Asians to 8.2%; and American Indians, Eskimos, and Aleuts to 0.9%.<sup>11</sup>

When looking at the total growth of the US population from 1990 to 2000, both Hispanics and Asians accounted for 40% of the growth, African Americans for 12%, and non-Hispanic Whites for slightly over 2%. During 2000, the US population consisted of approximately 35 million African Americans and Hispanics, 12 million Asians, and 2.4 million American Indians. Therefore, the total number of individuals in the United States with skin of color was approximately 85 million.<sup>12</sup>

These changing demographics highlight the need for and importance of a heightened awareness of the nuances of disease processes and dermatoses that occur commonly and have unique presentations in individuals with skin of color. These individuals, including those of African American,

Asian, and Hispanic descent and/or with Fitzpatrick skin phototypes IV to VI, will present diagnostic and therapeutic challenges in the twenty-first century.

## REFERENCES

1. Alarcon GS. Presented at: Arthritis and Musculoskeletal and Skin Diseases Conference, Bethesda, Maryland, December 15–16, 2000.
2. Fitzpatrick TB. Soleil et peau. *J Med Esthet.* 1975;2:33-34.
3. Pathak MA, Fitzpatrick TB, Greiter F, et al. Preventive treatment of sunburn, dermatoheliosis, and skin cancer with sun protective agents. In: Fitzpatrick TB, Eisen AZ, Wolff K, et al, eds. *Dermatology in General Medicine.* 4th ed. New York, NY: McGraw-Hill, Inc; 1987;1689-1717.
4. Youn JI, Oh JK, Kim BK, et al. Relationship between skin phototype and MED in Korean, brown skin. *Photodermatol Photoimmunol.* 1997;13:208-211.
5. Leenutaphong V. Relationship between skin color and cutaneous response to ultraviolet radiation in Thai. *Photodermatol Photoimmunol.* 1995;11:198-203.
6. Kawasa A. UVB-induced erythema delayed tanning, and UVA-induced immediate tanning in Japanese skin. *Photodermatology.* 1986;3:327-333.
7. Nootheti P, Oresajo C, Halder R. Objective Measurement of Skin Color in Various Ethnic Groups. Presented at: Ethnic Hair and Skin: What is the State of the Science? Chicago, Illinois, 2001.
8. Brown MD, Hosseini SH, Torroni A, et al. MtDNA haplogroup X: an ancient link between Europe/western Asia and North America? *Am J Hum Genet.* 1998;63:1852-1861.
9. Underhill PA, Passarino G, Lin AA, et al. The phylogeography of Y chromosome binary haplotypes and the origins of modern human population. *Ann Hum Genet.* 2001;65(pt 1):43-62.
10. United States Census Bureau Report 1998. US Census Bureau Web Site. Available at: <http://www.census.gov>. Accessed February 14, 2002.
11. United States Census Bureau Report 1990. US Census Bureau Web Site. Available at: <http://www.census.gov>. Accessed February 14, 2002.
12. United States Census Bureau Report 2000. US Census Bureau Web Site. Available at: <http://www.census.gov>. Accessed February 14, 2002.