

# Skin Color

- **Three pigments contribute to skin color**
  - **Melanin**
    - ✓ Yellow, reddish brown, or black pigments
    - ✓ Produced by **epidermal melanocytes**
  - **Carotene**
    - ✓ Orange-yellow pigment from some vegetables
    - ✓ Deposited in the **stratum corneum** and subcutaneous tissue
  - **Hemoglobin**
    - ✓ Red coloring from blood cells in dermal capillaries
    - ✓ **Oxygen content** determines the extent of red coloring
- **Emotions** also influence skin color

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- Melanin also functions as a **chemical barrier**
  - Skin exposure to sunlight stimulates **melanocytes** to produce more **melanin pigment**, resulting in tanning of the skin
  - Melanin accumulates in melanosome **granules**
  - Melanin granules migrate to the ends of the melanocytes' **spidery arms**
  - Melanin granules are taken up by nearby **keratinocytes**
  - Melanin forms a pigment umbrella over the **superficial** side of the keratinocytes' **nuclei** and **shields the DNA** from **damaging effects of UV radiation** in sunlight

# Skin Color

- Alterations in skin color signal certain **disease states**:
  - **Cyanosis**
    - ✓ **Blueness**
    - ✓ Due to poor oxygenation of hemoglobin
    - ✓ Possible sign of respiratory or cardiovascular problems
  - **Erythema**
    - ✓ **Redness**
    - ✓ Due to embarrassment, inflammation, hypertension, fever, or allergy
  - **Pallor (blanching)**
    - ✓ **Pale coloring**
    - ✓ Due to emotional stress (such as fear), anemia, low blood pressure, impaired blood flow to an area

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- Alterations in skin color signal certain **disease states**:
  - **Jaundice**
    - ✓ **Yellow cast**
    - ✓ Indicates a liver disorder
  - **Bruises**
    - ✓ **Black and blue marks**
    - ✓ Indicates hematomas

# Skin Color

**Which pigment is most responsible for the skin color of dark-skinned people?**



Students choose an option

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**Which pigment provides an orange cast to the skin?**



Students choose an option

# Skin Color

**Which pigment provides a natural sunscreen?**



Students choose an option

# Skin Color

**Which pigment is most responsible for the skin color of light-skinned (Caucasian people)?**



Students choose an option



# Skin Color

**Which pigment is phagocytized by keratinocytes?**



Students choose an option

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**Which pigment is found predominantly in the stratum corneum?**



Students choose an option

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**Which pigment is found within red blood cells in the blood vessels?**



Students choose an option

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**Normally the liver eliminates bilirubin, a waste from red cell breakdown. This yellow pigment accumulates in body tissues when the liver doesn't function properly. What is the name of this condition caused by liver failure?**



Students, write your response!

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**During emotional stress, blood may be diverted from the skin to internal organs. What skin color would result from such emotional stress?**



Students, write your response!

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**Eric and his wife are of northern European descent. Eric is a proud new father who was in the delivery room during his daughter's birth. He tells you that when she was born, her skin was purple. Shortly after birth, her skin turned pink. Explain his observations.**



Students, write your response!

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**Would you expect to find the highest rate of skin cancer among the blacks of tropical Africa, research scientists in the Arctic, Norwegian in the southern United States, or blacks in the United States? Explain your choice.**



Students, write your response!

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**Rebecca, the mother of a 13-month-old infant, brings her child to the clinic because his skin has turned orange. What do you think might be wrong with the infant?**



Students, write your response!