



Melanin inside our cells determines our hair, skin, and eye colors. For example, people with blond hair and pale skin tones don't have very much melanin in their hair and skin. People with dark hair and pale skin tones have a lot of melanin in their hair, but not very much melanin in their skin. People with dark hair and dark skin tones have a lot of melanin in both their hair and their skin.

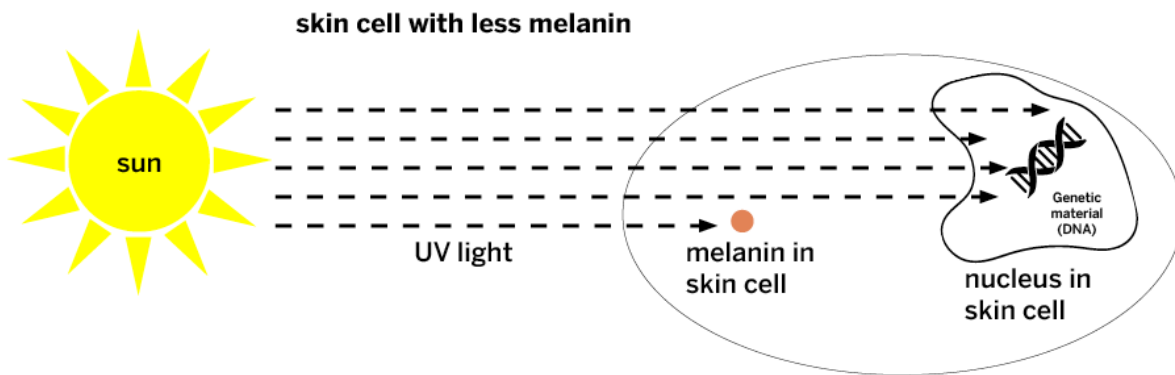
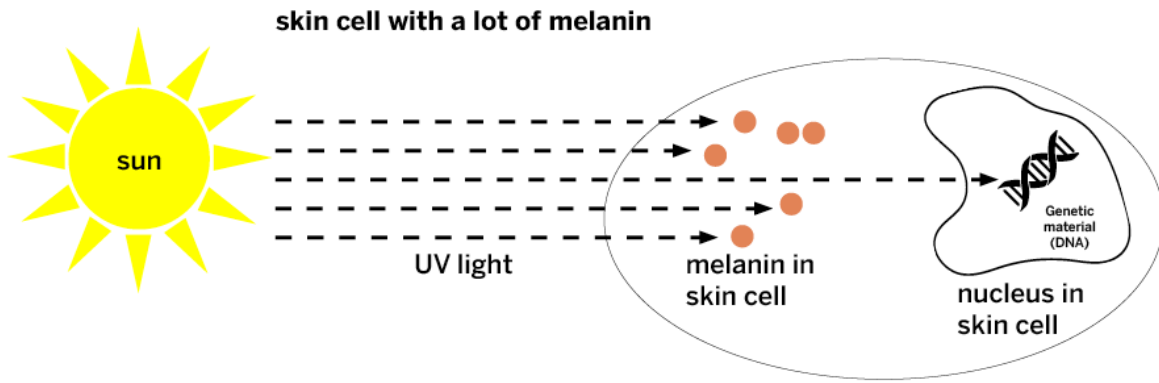
What Is Melanin?

Nearly everyone on Earth has cells that make a substance called melanin. Melanin can be found in our hair, skin, eyes, and many other organs, including the kidneys, spleen, liver, lungs, and heart. Skin tone, like hair and eye color, is determined by the amount of melanin produced in our cells. People with darker skin tones have more melanin in their skin cells than people with paler skin tones.

Melanin doesn't just help determine our appearance—it also protects our skin against damage from the sun. Scientists are researching the important role melanin plays in keeping us healthy. The sun emits ultraviolet (UV) light that can damage our skin, leading to sunburns and even skin cancer. Skin cancer is a disease caused by damage to the DNA inside our skin cells. DNA is the genetic material found inside the nuclei of our cells. DNA can be damaged when it absorbs energy from UV light. Skin cancer does

not happen every time the DNA in our skin is damaged, but the more it is damaged the more likely it is that cancer can develop. The melanin in skin cells can absorb UV light as the light enters the cells, before it gets to the nucleus where it can damage the DNA. (See the diagram on the next page.) The more melanin there is inside a cell, the more energy is absorbed before UV light can reach the nucleus and cause damage. This means that people with a lot of melanin in their skin have more protection against skin damage from UV light. More melanin gives people more protection against skin damage, but it doesn't give them complete protection. Anyone can get skin cancer, whatever the level of melanin in their skin.

People can actually make more melanin in response to being exposed to UV light. This is what we call a suntan. The skin gets darker because the body starts producing more melanin to protect its DNA. However, a suntan only provides some protection against UV light. UV light can still get through and lead to DNA damage.



This diagram shows how melanin inside the skin cell can protect against damage from UV light.