



shots

your health

Our Skin's Sense Of Time Helps Protect Against UV Damage

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We all feel the biological master clock, ticking deep within our brains, that tells us when to sleep and when to wake.

Well, it turns out that our skin cells have a circadian rhythm of their own. Researchers have found that depending on the time of day, our skin's stem cells busy themselves with different types of tasks.

During the day, our epidermis works to defend itself against ultraviolet light from the sun. But at night, it focuses instead on regenerating cells that were damaged during the day. This built-in system helps protect us from premature ageing and skin cancer.

"The thing is, our skin is prepared to cope with the UV light at a certain time of day," says Guiomar Solanas, one of the researchers at the Center for Genomic Regulation in Barcelona responsible for the findings.

"If the circadian rhythms are somehow disrupted by disease, then our skin is much more vulnerable to the DNA damage caused by UV light," she tells Shots.

Travel, for example, can mess with our internal clocks. So when you jet across the world for a beach vacation, make sure you slather on the sunscreen. Since your skin can't adjust right away to the time difference. "Your skin won't be prepared to cope with the UV light, but you will still be receiving it," Solanas says.

The researchers figured all this out by collecting skin stem cells from healthy adults, culturing them in petri dishes and closely monitoring them during 24 hour cycles. The study, led by Salvador Benitah from Barcelona's Institute for Research in Biomedicine, is published in the journal *Cell Stem Cell*.

"It's very basic research, meaning that the application is quite far away," Solanas says. But, she says, since DNA damaged caused by UV light is a major cause of skin cancer, "the more we know how the healthy skin works, the more we can know about how disease starts

and disease progresses."

The researchers looked at adult stem cells, in particular, because those are the cells responsible for repairing and regenerating damage. Previous experiments looked at circadian rhythms in mice, but this is the first time anyone has shown that human stem cells are regulated by an internal clock, the researchers say.

Solanas says the next step is to figure out how stem cells age. As we get older, our internal clocks are thrown out of whack—but we don't know how or why our skin loses its ability to defend against environmental damage.

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