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Body Clock May Protect Against Skin Cancer

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skin

Your body clock does more than help you sleep. New research suggests that our circadian rhythms also help protect us from cancer.

Scientists found that circadian rhythms in skin stem cells help protect people against UV radiation and other harmful environmental factors by activating protective genes. Researchers explain that human skin stem cells deal with these cyclical threats by carrying out different functions depending on the time of day.

Researchers found that skin stem cells activate genes involved in UV protection during the day. They explain that this helps protect skin cells from radiation-induced DNA damage.

Researchers said the latest findings could be used to develop new therapies to prevent premature aging and cancer in humans.

"Our study shows that human skin stem cells possess an internal clock that allows them to very accurately know the time of day and helps them know when it is best to perform the correct function," study author Salvador Aznar Benitah said in a news release. "This is important because it seems that tissues need an accurate internal clock to remain healthy."

Many cells in our body have internal clocks that help them perform certain functions depending on the time of day. In a previous study, Benitah and his team found that animals lacking normal circadian rhythms in skin stem cells age prematurely, which suggests that these cyclical patterns can also protect people against cellular damage.

The latest study looked at human skin stem cells to see when they show peak

activity. Researchers found that distinct sets of genes in human skin stem cells show peak activity at different times of day. Genes that help protect against UV radiation become most active during the daytime to guard these cells while they duplicate. Researchers explain that cells are more susceptible to radiation-induced damage when they proliferate.

"We know that the clock is gradually disrupted in aged mice and humans, and we know that preventing stem cells from accurately knowing the time of the day reduces their regenerative capacity," Benitah said.

"Our current efforts lie in trying to identify the causes underlying the disruption of the clock of human skin stem cells and hopefully find means to prevent or delay it," he concluded.

The findings are published in the journal *Cell Stem Cell*.