
Astronauts baldly go where no one has gone before

OLIVER MOODY THE TIMES APRIL 5, 2016 12:00AM

As if space travel was not hair-raising enough, scientists have identified a new issue for astronauts to worry about.

The long and the short of it is that Japanese biologists believe hair growth could slow down or stop under the stress of space flight as the genetic signals in the roots are scrambled.

British astronaut Tim Peake is contributing clippings of his hair to the latest wave of an experiment on board the International Space Station. If the early findings are borne out by larger studies, NASA will have to add another headache to the long list of medical problems that could obstruct its plans for a two-year mission to Mars.

Researchers at the Jikei University School of Medicine in Tokyo have collected tiny hair samples from dozens of astronauts before, during and after their trips into orbit.

In their first study, published in the online journal *Plos One*, they looked at follicle cells taken from eight men and two women for signs that their DNA might be being read differently by the body in space through a process known as epigenetics.

The scientists found signs that some genes became busier, with some sending out up to 4000 times more messages to the rest of the cells, while others were dampened over the astronauts' six-month stay on the space station.

They were particularly struck by an average 50-fold increase in the activity of FGF18, which tells hair when to stop growing. This could indicate that hair briefly stopped growing in orbit

“FGF18 expression appears to be very sensitive to whether an astronaut is in space or earth-bound — FGF18 easily recovered to baseline levels after returning to earth,” the researchers wrote. “These results suggest that the hair cycle is very responsive to environmental cues.”

Although the results are based on a small sample of astronauts and their follicles reacted to space in different ways, the analysis confirms similar observations in mice.

It is unclear whether the changes are caused by microgravity, the constant barrage of cosmic radiation or another kind of stress.

that they did. “Considering we could detect an increase of FGF18, the inhibition signal for hair growth, there is the potential for reduction of hair growth among some astronauts during spaceflight,” Professor Terada, of the Japan Aerospace Exploration Agency, said.

“However, in this experiment we did not measure the length of the hair shaft. Therefore we don’t know whether the detected changes in gene expression affected actual hair growth. “In my personal opinion it is not surprising that hair growth could be inhibited in a severe environment such as space flight, because it is generally known that hair loss occurs under stressful conditions.”

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