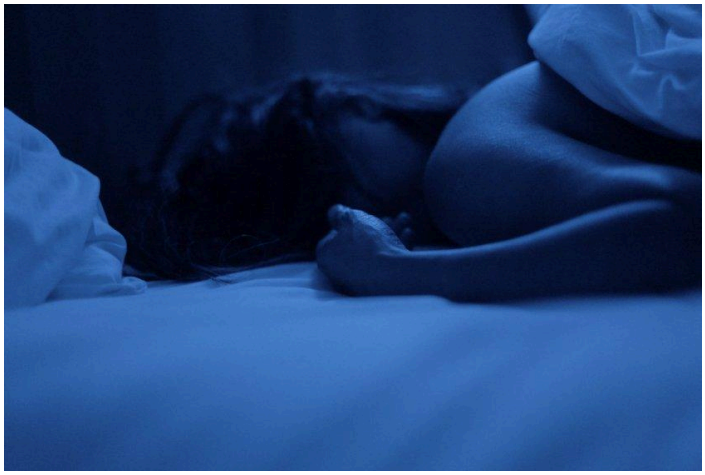
Woman entered hibernation-like state during winter for more than 30 years

Researchers studying brains donated for scientific research stumbled upon the remarkable case of a woman who went through prolonged periods of reduced activity in which her body temperature dropped to as low as 31°C

By Carissa Wong on November 19, 2026



Hunkering down during winter might have benefits. PhotoAlto/Getty Images

A woman experienced episodes of a “hibernation-like” state – when her body temperature dropped as low as 31°C (88°F) – during the winter for more than three decades. A post-mortem analysis suggests this might have been caused by a reduced number of connections between neurons in a brain region called the hypothalamus.

Some warm-blooded animals – such as dormice and ground squirrels – can enter a state called torpor, in which they become less active, reduce their body temperature and slow their metabolism to save energy. Prolonged torpor, known as hibernation, usually occurs during the winter, when food is scarce and temperatures drop.

While humans don’t have this ability, some researchers think we may have the genetic hardware to enter a reduced energy state, and discovering how to trigger this could have health benefits.

Chiu-Xia Yi at the Amsterdam University Medical Centre and her colleagues were studying post-mortem brains, focusing on the hypothalamus – a brain region that controls body temperature, metabolism and the body clock. They came across the brain of a woman from the Netherlands whose medical records said she experienced a "hibernation-like syndrome".

"When I learned about this particular brain donor, I discovered something quite extraordinary: she had experienced recurrent episodes of hypothermia and reduced activity during winter for more than 30 years, with a documented body temperature as low as 31°C," says Yi. Most people would develop organ failure at such a low body temperature, but the woman recovered from torpor-like episodes for decades without organ damage, says Yi.

The woman first developed the syndrome, which caused her to become sluggish, in her early 20s. Her medical records didn't state how long each episode of torpor-like symptoms lasted, but they didn't occur in the summer.

MRI scans taken when she was 55 revealed that her brain structure had no unusual features. She donated her brain to the Netherlands Brain Bank before she died at age 57 following unsuccessful surgical treatment for pneumonia, which was seemingly unrelated to her syndrome, says Yi.

There are seven known prior cases of humans seasonally entering a torpor-like state, says Matteo Cerri at the University of Bologna in Italy, who wasn't involved in the study. But this woman seems to have experienced this for longer than others, and previous case reports didn't examine people's brains after they died for any changes that may underlie the torpor-like state, says Cerri.

To explore this, the researchers analysed slices of the woman's hypothalamus. They found it contained about one-tenth of the amount of a protein called synaptophysin compared with three women of the same age who had no torpor-like symptoms.

Synaptophysin is found in synapses, the connections between neurons, so this suggests the woman's brain contained fewer connections between neurons involved in regulating body temperature and the body clock. "Levels of synaptophysin in the hypothalamus decrease during hibernation in ground squirrels, suggesting a possible parallel between the woman's condition and changes seen in hibernating mammals," says Yi.

Further analysis revealed that neurons involved in controlling the body clock in the woman's hypothalamus had almost completely lost a hormone called arginine vasopressin, while levels of another hormone called vasoactive intestinal peptide were also substantially reduced, compared with control brains.

All the neuronal changes may have enabled the woman to enter a torpor-like state in response to reduced exposure to sunlight or colder temperatures in the winter, without experiencing

organ damage, says Yi. But it's possible the brain changes resulted from, rather than caused, the woman's syndrome, she says.

In ongoing work, the team is sequencing the woman's genome, which could reveal any genetic mutations contributing to her syndrome. This could help pinpoint pathways that could be targeted with drugs to induce hibernation in people, for instance, to extend their survival while waiting for an organ transplant, or to reduce the need for food during space travel, says Cerri.

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