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## HIBERNATING

# black bears on the back burner

Bear reduce their metabolism, without lowering their body temperature. This hibernation-trick could advance medicine and aerospace.

© University of Alaska Fairbank



A black man in a box in which he spends the winter sleep

Breathing snorting, growling: raises nearly invisible and lowers the surface

BY **Alina Schadwinkel**

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of the skin's. Actually penetrating the other hand, you hear a deep roar. What follows is silence. Then the concert starts snoring again. The musician is an *Ursus americanus*, an American black bear, in the peaceful winter sleep.

But it can be said at all bears from hibernation? Their high body temperature during the rest period allowed researchers always doubt. Øivind Tøien, a biologist at the University of Alaska Fairbank and his colleagues have now demonstrated that fact, American black bears in the winter on the back burner in drive. At the same time, the researchers admit their study with a series of false assumptions.

"Slowly, under Hibernation not merely mean a reduction in body temperature, but also the saving of energy," said Tøien on America's largest research conference - the AAAS meeting in Washington, DC.

THE ANNUAL MEETING OF THE U.S. RESEARCHERS

Each year, America's leading researchers with international colleagues, the largest scientific congress of the United States. Focused is the meeting of the American Association for the Advancement of Science (AAAS), which publishes the journal *Science* also.

This year the conference will run from 17 to 21 February in Washington. Under the motto "Science without borders, the focus of the event this time on the interdisciplinary research and the possible solutions to global problems through international cooperation and networking between different research areas.

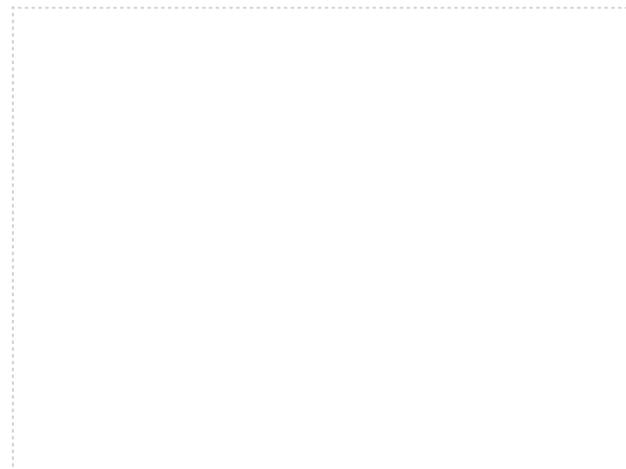
More than 8000 participants have been counted. About 1000 of them are journalists, 5500 academics and the rest of public visitors who come to the "Family Days" at the weekend at the exhibitions and lectures. In more than 1,000 lectures all over the world scientists report on their research - from the world of all-weather robot in the classroom to the overfishing of the oceans.

"The study is an important step to make it clear that the reduction of metabolic activity during hibernation is not necessarily dependent on temperature," says the zoologist and former president of the International Society hibernation Gerhard Heldmaier.

Bears have an average body temperature of 37 degrees Celsius. During hibernation, this drop to 30 degrees - but then the animals are awake and shake a little to warm their bodies again. The metabolism is reduced on the other hand, only 25 percent of normal performance.

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So far was that the chemical and biological processes of the organism only every ten degrees be reduced by 50 percent. "There were suggestions that it might also work differently, but we were able to demonstrate empirically for the first time," said Brian Barnes, co-author of the study. The biologist has for years been active in the winter sleep research, and became known when he found out that Arctic ground squirrels can reduce their body temperature to minus three degrees Celsius.

Mammals observed under field conditions is very complex. "You can not buy a unit, everything has to be developed itself. Starting from the livestock facilities to operational measurement technology," says Heldmaier. It is also difficult to track down suitable animals.

Tøien and his colleagues have therefore monitored bears of **Alaska's fish and game authorities** have been caught because they hung around human settlements to have close and pose a threat. After their capture, the animals in artificial, cube-shaped caves were located, the natural beds of the animals were simulated.

The equipped with infrared cameras and sensors caves were located in woods, far away from possible human interlopers. "The way to work I need to travel on skis," says Tøien. In addition, the researchers implanted each bear a radio transmitter to measure the body temperature, heart rhythm and muscle activity. A total of five bears have been observed over a period of three years.

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