Hibernating bears could help human rescues

By Kerry Sheridan (AFP) – 2 hours ago

WASHINGTON — Hibernating bears are loud snorers. They go many months without food, even sustaining pregnancies in their winter slumber. A sudden noise may rouse them, briefly, but they barely budge otherwise.

So it might come as a surprise that scientists are studying how the bears' bodies work during hibernation in order to help doctors rescue people in trauma situations.

"Hibernating bears function pretty much like a closed system, all they need is air," said Brian Barnes of the Institute of Arctic Biology at the University of Alaska Fairbanks.

By studying the bears' mastery of lowering their metabolic rate for five to seven months, researchers hope to find clues for saving the lives of people who suffer major medical traumas, like heart attacks or stroke.

Such traumas create "a problem of supply and demand. Your supply of oxygenated blood to your brain is quickly lowered but the demand stays high and you have to get to a hospital very quickly," Barnes said.

"If we can uncover the way that hibernators turn down that metabolic demand... then one could imagine a therapy where you would -- in somebody who is stricken -- lower the metabolic demand to match that reduced supply," he said.

That way, a victim could be placed in a "state of equilibrium," Barnes said.

"We like to say we could extend the golden hour -- during which if you reach advanced medical care outcomes are better -- to a golden day or a golden week. Certainly that is what these animals display."

Barnes and his research team, led by IAB researcher Oivind Toien, just published a study on hibernating bears in the journal Science, and found that their metabolic rate dips lower than previously thought, slowing by 75 percent.

However, the bears' body temperature only fell five to six degrees Celsius, and one bear which was pregnant during hibernation maintained nearly the same body temperature throughout her winter sleep.

The study included five American black bears who were captured by the Alaska Department of Fish and Game because they were a nuisance to human populations.

Scientists recreated straw-lined dens like the ones used for hibernation, and fitted them with infrared cameras. Radio transmitters were placed on each bear to measure muscle activity, like shivering.

Bears breathe one to two times per minute and their heart rate slows dramatically during hibernation, said Toien.

"Sometimes there is as much as 20 seconds between beats," he said.

Bears also lost hardly any bone mass and only small amounts of muscle during hibernation.

"Though they are virtually immobile for five to six months, somehow they have tricked their tissue, their bones and muscle, to think that they are still doing work," said Barnes.

"So we are all very interested in finding out the molecular signals for that," he said. "The trick

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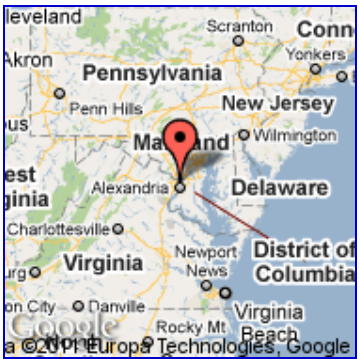
Map



would be to find drugs that would emulate those same changes in humans."

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