The Resilient Brain of the **Arctic Ground Squirrel**

AS A hibernating animal begins its sleep, its body temperature cools. How low can it go? A dozen arctic ground squirrels appear to have set a record —when their body temperature dropped to 26.8 degrees Fahrenheit (-2.9 °C)! At that temperature, we would expect their brains to freeze. How does the arctic ground squirrel survive?

Consider: Every two or three weeks during hibernation, the arctic ground squirrel shivers itself back to its normal body temperature of 97.5 degrees Fahrenheit (36.4 °C) and does not get cold again for some 12 to 15 hours. Researchers say that this warming period, although brief, plays a role in the brain's survival. Moreover, during hibernation the arctic ground squirrel's head seems to remain slightly warmer than the rest of its body. During lab experiments, the neck temperatures of the squirrels mentioned above never dropped below 33.3 degrees Fahrenheit (0.7 °C).

When the squirrel emerges from hibernation, its brain returns to normal activity within about two hours. In fact, one study suggests that the squirrel's brain works even *better* after hibernation! Experts are baffled by this astonishing recovery. They compare it to new growth emerging from scorched earth within days of a forest fire.

Researchers hope that their study of the arctic ground squirrel will help them understand the human brain's potential more fully. Their goal is to learn more about how to prevent or even reverse the cellular damage that occurs in brain diseases, including Alzheimer's.

What do you think? Did the arctic ground squirrel's resilient brain come about by evolution? Or was it designed? ■