

A good night's sleep protects against parasites

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Animal species that sleep for longer do not suffer as much from parasite infestation and have a greater concentration of immune cells in their blood according to a study published in the open-access journal *BMC Evolutionary Biology*.

The question of why we sleep has long puzzled scientists. Brian Preston from the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, led an international team of researchers who tested the theory that sleep improves immune function. He says, "Sleep is a biological enigma. Despite occupying much of an animal's life, and having been scrutinized by numerous experimental studies, there is still no consensus on its function. Similarly, nobody has yet explained why species have evolved such marked variation in their sleep requirements (from 3 to 20 hours a day in mammals). Our research provides new evidence that sleep plays an important role in protecting animals from parasitic infection."

By comparing reported information about mammalian sleep, immune system parameters, and parasitism the authors show that evolutionary increases in mammalian sleep durations are strongly associated with the number of circulating immune cells. Mammalian species that sleep for longer periods also have substantially reduced levels of parasitic infection. According to Preston, "We suggest that sleep fuels the immune system. While awake, animals must be ready to meet multiple demands on a limited energy supply, including the need to search for food, acquire mates, and provide parental care. When asleep, animals

largely avoid these costly activities, and can thus allocate resources to the body's natural defenses."

This research may yet have implications for human health. Preston warns, "Given the declines in human sleep durations that have occurred over the past few decades, there is a clear need for studies that further clarify the immunological significance of sleep."

Article: Parasite resistance and the adaptive significance of sleep, Brian T Preston, Isabella Capellini, Patrick McNamara, Robert A Barton and Charles L Nunn, *BMC Evolutionary Biology* (in press)

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