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Prova de conhecimentos em Língua Inglesa

Instruções para a prova:

1. **Não** coloque **NOME** na prova. Sua única identificação será o número de seu CPF.
2. A prova tem duração máxima de 2 horas.
3. É permitido o uso de dicionários.
4. Todas as questões devem ser respondidas em português.

A parasite makes wolves more likely to become pack leaders

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adaptado de: <https://www.science.org/content/article/parasite-makes-wolves-more-likely-become-pack-leaders>

Toxoplasma gondii is sometimes called the “mind control” parasite: It can infect the brains of animals and mess with their behavior in ways that may kill the host but help ensure the parasite’s spread. But now, researchers have found that infected wolves may actually benefit from those mind-altering tricks. A *Toxoplasma* infection, they found, makes wolves bolder and more likely to become pack leaders or disperse into other habitats, giving them more opportunity to reproduce. “We’ve really underestimated some of the consequences this parasite has,” says Eben Gering, a biologist at Nova Southeastern University who was not involved in the work. “The findings probably represent the tip of the iceberg concerning the parasite’s significance to the dynamics of wild ecosystems.”

T. gondii, a single-celled parasite, only reproduces in domesticated cats and other felids. Infected cats excrete spore-packed oocysts in their feces, which can survive on plants or in soil or water. They can also persist in undercooked meat of livestock or game. When a host—humans included—consumes an oocyst, the spores are released and spread into the brain and muscles, forming new cysts. Worldwide, about one in four people is infected. Usually, the immune system keeps the parasite in check, but it can cause spontaneous abortion and other serious problems during pregnancy.

It's long been known that rodents infected with *Toxoplasma* lose their fear of predators. Cysts in the brain somehow increase dopamine and testosterone, boosting boldness and risk-taking and increasing the chance the host will be eaten by cats. “These parasites are using some generic mind control or personality control that helps them fulfill their lifecycle,” says Jaap de Roode, a biologist at Emory University who was not involved in the new study. “And that has all sorts of interesting consequences that we

may not even have thought of before.” The consequences aren’t limited to rodents. In 2016, researchers in Gabon found that *Toxoplasma*-infected captive chimpanzees lost their aversion to leopard urine. And last year, another team described how *Toxoplasma*-infected hyena cubs in Kenya venture closer to lions, making them more likely to be killed.

When researchers learned a few years ago that some wolves in Yellowstone National Park were infected with *Toxoplasma*, researchers tried to answer if the parasite alters wolf behavior, as well. Meyer and Cassidy pored over 26 years of research on the park’s gray wolves, including *Toxoplasma* test results from blood samples collected in various park regions. They also examined data on cougars, in which *Toxoplasma* can reproduce. Wolves that ranged into areas with lots of cougars were more likely to be infected with *Toxoplasma*, they found. It’s likely, the authors say, that these wolves picked up their infections from the cougars, possibly by poking around or eating the big cats’ scat.

By combining infection data and past field observations, they also discovered that infected wolves were much more likely to become pack leaders. Infected wolves were also more likely to leave their pack at a younger age and seek out new territory or other packs, just as infected rodents become more eager to explore. "There might be a few cases where wolves or even their pack becomes really successful because they're pushing these boundaries and being more risk-embracing," Cassidy says.

As with rodents, boldness in wolves comes with risks, too. Wolves roaming widely might be more likely to get hit by a car or leave the park boundaries and be shot by hunters. “Dispersal is one of the most dangerous things a wolf can do,” Meyer says. It's also possible that an infected pack leader might transmit the parasite when mating, as can happen in dogs, potentially jeopardizing a pregnancy. On balance, Cassidy suspects the infection’s risks probably outweigh the benefits in the long term. “Wolves live on a knife edge of survival to begin with,” Cassidy says. Ultimately, the wolves appear to be a dead-end host to *Toxoplasma*, however, as they are unlikely to pass the parasite back to cougars. Yet Meyer wonders whether the parasite’s effect on wolves means the animals did play a part in the cycle of infection at some point in the distant past. During the last ice age, he notes, large lions roamed North America that may have preyed upon these infected—and emboldened—beasts.

Perguntas:

1. Por que o parasita *Toxoplasma gondii* é conhecido pelo seu “controle mental”?
2. Em que tipo de hospedeiro o parasita se reproduz?
3. Como o parasita infecta outros animais?
4. Qual percentual da população humana está infectada?
5. O que o parasita causa em humanos?
6. Qual o mecanismo relacionado à “supressão do medo” dos roedores contaminados com o *T. gondii*?
7. Dê exemplos de efeitos da “supressão do medo” em diferentes animais.
8. Qual a relação entre infecção dos lobos pelo toxoplasma e presença de pumas na área?
9. Que efeito a infecção com o toxoplasma causa nos lobos?
10. Que riscos podem estar associados à contaminação dos lobos com o parasita?