MINISTÉRIO DA EDUCAÇÃO
UNIVERSIDADE FEDERAL DE MATO GROSSO
INSTITUTO DE LINGUAGENS
DEPARTAMENTO DE LETRAS
PROVA DE PROFICIÊNCIA EM LÍNGUAS ESTRANGEIRAS E PORTUGUÊS PARA ESTRANGEIROS
02 DE SETEMBRO DE 2018

CADERNO DE QUESTÕES

LÍNGUA: INGLÊS
ÁREA: CIÊNCIAS BIOLÓGICAS E AGRÁRIAS

INSTRUÇÕES:

1. Use caneta de tinta azul ou preta.
2. É permitido o uso de dicionário.
3. Esta prova tem duração de 03 (três) horas, não haverá tempo adicional para transcrição das respostas.
4. Preencha, de forma legível, o canhoto de identificação do Caderno de Respostas Definitivas. Considerando que a prova será desidentificada para correção, não assine nem faça qualquer marca que possa identificá-lo (a) em qualquer outro espaço do Caderno de Respostas Definitivas.
5. Caso necessite, faça o rascunho utilizando as folhas ao fim deste Caderno.
6. Transcreva as respostas para o Caderno de Respostas Definitivas.
7. Responda às questões em português e com letra legível.
8. Após 01 (uma) hora transcorrida do início da prova, o candidato poderá levar o Caderno de Questões.

BOA PROVA!

CALENDÁRIO DA PROVA DE PROFICIÊNCIA EM LÍNGUAS ESTRANGEIRAS E PORTUGUÊS PARA ESTRANGEIROS

Período		Local
02/09/2018	Realização da Prova Proficiência.	Campus Cuiabá, Sinop, Barra do Garças e Rondonópolis.
25/09/2018 a partir das 14 horas	Divulgação da relação de aprovados.	Mural do Departamento de Letras, na sala 5 do piso térreo do Instituto de Linguagens, no site da UFMT (www.ufmt.br) e no site da Fundação Uniselva (http://www.fundacaouniselva.org.br/novoSite/).
26 e 27/09/2018	Os candidatos poderão solicitar revisão de prova por meio de correspondência eletrônica, pelo endereço proficiencia@ufmt.br contendo "Formulário de solicitação de revisão de prova" constante do anexo III do edital, devidamente assinado, contendo a justificativa da solicitação.	Os resultados dos recursos serão encaminhados em resposta à correspondência eletrônica do requerente em até 10 dias úteis.
A partir de 28/09/2018	Entrega dos certificados – Cuiabá	Campus Cuiabá - Departamento de Letras, na sala 5, piso térreo do Instituto de Linguagens. Para os campi do interior, o local, data e horários de entrega serão divulgados juntamente com o resultado da prova.

O candidato aprovado receberá certificado, expedido pelo Instituto de Linguagens, com validade de 24 (vinte e quatro) meses, a partir da data de realização da prova. Os certificados deverão ser retirados até o prazo de validade.
O descarte do Caderno de Prova e do Caderno de Respostas Definitivas dar-se-á no prazo de 30 (trinta) dias a partir da data de divulgação do resultado.
Maiores informações pelo telefone (65) 3615-8412 ou proficiencia@ufmt.br

Bacterial genetics could help researchers block interplanetary contamination

Identifying microbes from Earth that can survive on spacecraft may help scientists eliminate them from future space missions and from searches for extraterrestrial life.

Ashley Yeager

In the 1971 sci-fi thriller The Andromeda Strain, a satellite carrying an alien microbe crashes into Earth. The microbe kills almost everyone in the fictional rural town of Piedmont, New Mexico, leaving scientists frantic to contain the invader, characterize it, and prevent its destruction of the human race. While that plot is somewhat far-fetched, researchers at NASA, other nations' space agencies, and academic institutions worldwide are working to ensure that missions designed to return asteroid or comet samples to Earth don't also bring back unwanted alien life. At the same time, they're working to prevent extremely resilient bacteria from hitching a ride on spacecraft to Mars, the moons of Saturn and Jupiter, and other orbs in the solar system.

"Earth is replete with bacteria. We're literally bathed in this stuff," John Rummel, an expert in astrobiology and space contamination at East Carolina University, tells The Scientist. "Planetary protection is the idea that we can go to space without taking some of Earth's bacteria with us, and that we don't bring other life back here."

Researchers first began raising concerns about contaminating other planets in 1956, just a year before the Soviet Union launched Sputnik into low Earth orbit. In response to those concerns, in 1958, a subcommittee of the International Council of Scientific Unions designed the first framework for planetary protection and established COSPAR, the Committee on Space Research, to manage the task. The earliest cleaning techniques included baking spacecraft parts at extremely high temperatures, a method used in the 1970s before the Viking space probes made their way to Mars to take pictures of the planet's surface and search for life.

But as spacecraft have become more intricate in their parts, researchers have found it challenging to develop probes that can withstand stringent microbial eradication and perform elaborate tasks to explore space, all while staying within budget. As a result, Rummel says, decontamination methods have been tweaked over the years, and COSPAR now requires that spacecraft carry no more than 300,000 bacterial spores—in some cases, no more than 30, depending on the mission. As a spacecraft is being built, it goes through tests—usually swabs to collect bacteria—at various construction stages to ensure that there aren't too many spores clinging to its inner and outer edges.

Madhan Tirumalai, a microbiologist at the University of Houston working with researchers at NASA, is one of the scientists trying to help space missions reduce their bacterial load by studying what allows the microbes to survive modern spacecraft-cleaning methods such as irradiation with UV light or washing with hydrogen peroxide vapor. "Bacterial spores are very hardy," he tells The Scientist. "They can remain in the environment for millions and millions of years until they find the right conditions to start germinating."

Tirumalai and his colleagues have been studying the genomes of two bacterial strains that produce spores with a knack for surviving in the extreme conditions of spacecraft clean rooms and on the International Space Station. Those strains, Bacillus safensis FO-36bT and B. pumilus SAFR-032, produce spores that are resistant to cleaning with peroxide and UV radiation. The team recently compared the genomes of these two strains to the genomes of multiple Bacillus strains that are not resistant to peroxide or UV radiation and to a strain called B. safensis MERTA-8-2, found on two spacecraft before they blasted off to Mars. In doing so, the researchers determined the complete genome of B. safensis FO-36bT and began to identify its unique features, some of which may play a role in the resistant properties of the bacterium's spores.

In a paper published in June, Tirumalai and his colleagues identified nine B. safensis FO-36bT genes that are not found in any other B. safensis and B. pumilus genomes, nor do they appear to have homologs in the National Center for Biotechnology Information nucleotide databases (BMC Microbiol, 18:57, 2018). Four of those genes are related to phages—viruses that might have infected the bacterium and inserted or rearranged genetic material in its genome in a way that confers resistance. The next step, Tirumalai says, is to study the proteins expressed by these unique genes to determine whether they might have a role in the spores' resistance to radiation or peroxide washing.

Robert McLean, a microbiologist at Texas State University who was not involved in the study, calls the work "excellent," adding that it could improve the success of future long-term space flights, ensuring that bacteria that hitch a ride on spacecraft don't cause harm to astronauts or contaminate other celestial bodies. Although Tirumalai and his colleagues haven't yet pinpointed the genetic mechanism that confers resistance, they've narrowed the options to just a few, McLean tells The Scientist. Now, the team can develop experiments in which they knock out those genes and observe if resistance persists or disappears, and then reinsert the genes to see if resistance is restored. If those experiments are successful and the genes or genetic pathways for resistance to heavy-duty cleaning methods can be identified, he explains, then the researchers could potentially design a small molecule to block those pathways, kill the spores, and prevent their extraterrestrial spread.

Still, Tirumalai says, "there will always be something that will evade decontamination procedures." If scientists can identify genes or gene-expression patterns that confer resistance, then they can at least develop biomarkers to identify those resistant bacteria in "alien" settings. That would help scientists do more than just help keep space clean. It would help them confirm, in the event that future space missions discover microbial life on a foreign world, that that life is truly extraterrestrial. "We need to know what the background is," Tirumalai says. Only then, he notes, could researchers distinguish potential alien life from something brought from home.

Fonte: The Scientist, August 1, 2018.

ATENÇÃO:

- O objetivo desta prova é avaliar seu conhecimento e capacidade de compreensão de textos acadêmicos em língua estrangeira. **Leia atentamente as questões e elabore as respostas de acordo com as ideias contidas no texto.**
- **RESPONDA ÀS QUESTÕES EM PORTUGUÊS E COM LETRA LEGÍVEL.**

Com base no texto **Bacterial genetics could help researchers block interplanetary contamination**, responda às questões de 1 a 5.

QUESTÃO 1 - Para que cientistas da NASA, agências espaciais de outras nações e instituições acadêmicas em todo o mundo estão trabalhando?

QUESTÃO 2 - Quando e quais foram as primeiras técnicas de limpeza utilizadas nas espaçonaves para erradicação de micróbios?

QUESTÃO 3 - O microbiologista Madhan Tirumalai da Universidade de Houston, com colegas cientistas da NASA, vem realizando estudos para ajudar as missões espaciais a reduzir sua carga bacteriana.

a) O que esses pesquisadores têm estudado?
b) O que eles compararam em recente pesquisa?
c) Qual foi o resultado do estudo?

QUESTÃO 4 - Em um artigo publicado em junho, Tirumalai e seus colegas apresentam novos resultados de pesquisa.

a) Quais são esses resultados?
b) Qual é o próximo passo a ser seguido na pesquisa mencionado por Tirumalai?

QUESTÃO 5 - Tirumalai diz: “sempre haverá algo que evitará procedimentos de descontaminação”. Assim, o que ele sugere que auxiliaria cientistas a fazer mais do que apenas ajudar a manter o espaço limpo?

Rascunho