



Realização:



MINISTÉRIO DA EDUCAÇÃO
UNIVERSIDADE FEDERAL DO PIAUÍ – EDITAL 16/2012

EXAME DE PROFICIÊNCIA DE LEITURA EM LÍNGUA ESTRANGEIRA

DATA: 27/01/2013

HORÁRIO: das 8 às 11 horas

CADERNO DE PROVA

Idioma:

INGLÊS

Área de Pesquisa:

**(1) CIÊNCIAS BIOLÓGICAS, CIÊNCIAS
AGRÁRIAS E CIÊNCIAS DA SAÚDE**

LEIA ATENTAMENTE AS INSTRUÇÕES

- Esta prova é constituída de um texto técnico-científico em língua estrangeira, seguido de 5 (cinco) questões abertas relativas ao texto apresentado.
- É permitido o uso de dicionário impresso, sendo vedados troca ou empréstimo durante a realização do Exame.
- As respostas deverão ser redigidas em português e transcritas para a **Folha de Respostas**, utilizando caneta esferográfica, **tinta preta** ou **azul, escrita grossa**.
- A Folha de Respostas** será o único documento válido para correção, não devendo, portanto, conter rasuras.
- Será eliminado o candidato que se identificar em outro espaço além daquele reservado na capa da **Folha de Respostas** e/ou redigir as respostas com lápis grafite (ou lapiseira).
- Nenhum candidato poderá entregar o Caderno de Prova e a Folha de Respostas antes de transcorridos 60 minutos do início do Exame.
- Em nenhuma hipótese haverá substituição da **Folha de Respostas**.
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Epigenetics Posited as Important for Success of Invasive Species

Environmentally modified genes could factor in the success of invasive species

By [Sujata Gupta](#) and [Nature magazine](#)

Two things are thought to be crucial for evolutionary adaptation: genetic diversity and long periods of time, in which advantageous mutations accumulate. So how do invasive species, which often lack genetic diversity, succeed so quickly? Some ecologists are beginning to think that environmental, or 'epigenetic', factors might be modifying genes while leaving the genome intact.



Environmental factors may have given invasive house sparrows a genetic leg up in Kenya.
Image: [AinarsAunins/Alamy](#).

"There are a lot of different ways for invasive species to do well in novel environments and I think epigenetics is one of those ways," says Christina Richards, an evolutionary ecologist at the University of South Florida in Tampa.

Although biomedical researchers have been investigating the links between epigenetics and human health for some time, evolutionary biologists are just beginning to take up the subject. Richards, who helped to organize a special symposium on ecological epigenetics at a meeting of the Society for Integrative and Comparative Biology (SICB) in San Francisco this month, says that the field has the potential to revolutionize the study of evolutionary biology.

The nascent field of ecological epigenetics has plenty of challenges standing in its way. The genomes of most wild animals and plants have not been sequenced so ecologists can't pinpoint which genes have been modified. And, because they tend to work outside of controlled laboratory conditions, researchers have trouble linking those gene modifications to behavioral changes.

Invasive potential

Even so, there are hints that epigenetic diversity could be helping invasive species to thrive. For instance, Andrea Liebl, a fifth-year doctoral candidate at the University of South Florida, studies house sparrows (*Passer domesticus*) in Kenya, which, as descendants from a single group, have very little genetic diversity. But when Liebl combed the genomes of the birds to look for parts that had methyl groups attached — a key epigenetic marker — she found a high level of variability across populations. Similarly, in the invasive plant Japanese knotweed (*Fallopia japonica*), Richards found that genetically identical plants — knotweed reproduces clonally — have different leaf shapes and grow to different heights depending on where they live. Like the sparrows, the knotweeds exhibited high epigenetic diversity. Cristina Ledón-Rettig, a molecular biologist at North Carolina State University in Raleigh, who also helped organize the symposium, says that mapping the level of epigenetic modification may reveal "whether a population is going to tank or survive".

Some critics aren't ready to accept the links between epigenetics and invasive species. Jerry Coyne, an evolutionary geneticist at the University of Chicago in Illinois, says their success can be explained by well-established evolutionary theories. Sometimes a species moves into an unoccupied niche, and sometimes a small amount of genetic diversity goes a long way. "It doesn't have to have a lot of variation to evolve," he says. "We have perfectly good other reasons, which are based on more solid premises, on why invasive species succeed."

QUESTÃO 03 - Segundo o texto, quais os desafios enfrentados pela “epigenética ecológica”?

QUESTÃO 04 - Explique a relação entre a gravura, no início do texto, e o estudo conduzido por Andrea Liebl, descrito no quinto parágrafo.

QUESTÃO 05 - Qual a opinião de Jerry Coyne, da Universidade de Chicago, sobre a hipótese levantada no texto para explicar o sucesso de espécies invasoras?
