



Estratégia
Vestibulares

GABARITO

UFU

2023.2

2ª FASE | INGLÊS



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PRIMEIRA QUESTÃO

In the UK, 57 per cent of the food we eat is ultra-processed. We live in a country well-suited to producing fresh food: rich pastures for our animals, fertile soils for our crops. But we've fallen hard for SAD foods: the standard American diet. What started in the 1950s with the allure of the American fridge, the drive-thru and the baked Alaska, now threatens to destroy the fabric of our society. A diet of highly refined, high-sugar, high-fat and highly processed foods has proven toxic for humans; highly addictive but one that our bodies have not evolved to process. The consequences in the US are already dire; 70 per cent of the population is overweight or obese, and 40 per cent have metabolic syndrome, which means they suffer from obesity, bad cholesterol or elevated blood sugar. Seventy-three thousand limbs are amputated every year in the US because of diabetes.

"There are lots of ways of describing the modern diet in high-income countries like the US and the UK," says Dr Chris van Tulleken, author of *Ultra-Processed People*. "It's high-fat, high-salt and high-sugar, but these ingredients have been combined into industrial products with exotic additives, which can't really be described as food. They're ultra-processed foods, a set of edible substances that are addictive for many and which are now linked to weight gain, early death and, yes – depression."

The results of a study published this week suggest that eating too many fried snacks could make you depressed. The study was conducted by Chinese researchers, but based on a survey of 140,000 Brits, and it found that those who ate fried food regularly were 12 per cent more likely to have anxiety than those who didn't. The study, says van Tulleken, highlights the role of acrylamide, a molecule produced by deep frying, which is linked to brain inflammation. "But acrylamide is just one of the ways our modern diet makes us feel sad," he explains. "The emulsifiers affect our microbiome in ways that make our guts leak and change the release of molecules from our friendly bugs that affect our brains." But perhaps the biggest effect is that many of us aren't really in control of our consumption. "These foods are engineered to get around our bodies' systems that tell us to stop."

Disponível em: <https://www.telegraph.co.uk/>. Acesso em: 30 abr. 2023.

RESPONDA À QUESTÃO EM INGLÊS. RESPOSTAS EM PORTUGUÊS NÃO SERÃO ACEITAS.

Based on the text, answer the following Questions.

A) "High-fat, high-salt and high-sugar ultraprocessed food can affect your mental health". Is the statement above right or wrong? Justify your answer.

Comentários: According to the text, the statement "High-fat, high-salt and high-sugar ultraprocessed food can affect your mental health" is right. The extract "They're ultra-processed foods, a set of edible substances that are addictive for many and which are now linked to weight gain, early death and, yes – depression." is one of the evidence that not only obesity but also depression can be developed when eating ultraprocessed food. And taking care of mental health is avoiding depression, among other mental diseases.



B) What are some of the impacts on people who eat SAD foods? Name at least three as mentioned in the text.

Comentários: About the impacts on people who eat "sad" foods, it is possible to infer from the text that fried snacks could make people depressed. Another two impacts about fried food is anxiety and also deep frying is linked to brain inflammation.

SEGUNDA QUESTÃO

Scientists have implanted an artificial hydrogel scaffold into bacteria to create semisynthetic "cyborg cells" that could one day function as tiny robots in medicine, environmental cleanups and industrial production, according to a recent study in *Advanced Science*. In addition to making the cells hardier, this scaffolding eliminates their ability to reproduce so they can be controlled better than genetically modified live bacteria. The cyborg cells are also easier to create than fully artificial cells of similar complexity. "We never thought this would work," says synthetic biologist and study co-author Cheemeng Tan of the University of California, Davis. "When you introduce a gel matrix into cells, most of the time you would think you would kill them." But his team decided to try.

To build a biological robot, researchers often hack a living microbe's genetic code to adapt the organism to an intended purpose. But billions of years of evolution have taught microbes not to do things that endanger them—a vexing situation for synthetic biologists who want cells to produce valuable but toxic chemicals or to do other hazardous jobs. "They're not stupid; they're not going to do something that doesn't make them either divide better or grow better," says University of Minnesota synthetic biologist Kate Adamala, who wasn't involved in the new study. "That's kind of their business model". Because fully artificial cells don't reproduce or have survival instincts, they're easier to control than live cells. But it's often hard to make them sophisticated enough for complicated jobs. "In terms of complexity, they're just no match for natural cells," Tan says.

To make cyborg cells, the researchers infused live *Escherichia coli* with a hydrogel, which Tan likens to a dense mass of wet molecular noodles. This fortification made the cells sturdier, letting them survive toxic stressors that would kill ordinary *E. coli*. Such cells fall somewhere between artificial and natural: they can't divide but otherwise have normal function and metabolism. The team also showed that cyborg cells can be programmed with genetic "circuits" (sets of genes that let cells do simple computations) and equipped with genes that help them invade tumor cells. Scientists have incorporated hydrogels into fully artificial cells before. But hydrogel components are "superhard to control" within a living cell, Adamala notes. Tan says the group stumbled onto the right hydrogel basically by accident—and spent months fine-tuning the recipe so bacteria could survive it. Tan and Adamala agree that turning other cell types into cyborgs could be useful; yeast, for instance, is a fungus that can make proteins bacteria can't. For now Tan's team is working on programming cyborg bacteria to deliver vaccines and act as tiny terminators for cancer cells.

Disponível em: <https://www.scientificamerican.com/>. Acesso em: 7 mai. 2023.



RESPONDA À QUESTÃO EM PORTUGUÊS. RESPOSTAS EM INGLÊS NÃO SERÃO ACEITAS.

Based on the text, answer the following Questions.

A) Explain the process scientists used to produce these cyborg cells.

Comentários: De acordo com o início do texto, cientistas implantaram um andaime de hidrogel artificial de bactérias para criar células ciborgues. No terceiro parágrafo, temos a explicação do processo: pesquisadores infundiram *Escherichia coli* viva com hidrogel, essa fortificação tornou as células mais resistentes e com metabolismo.

B) Identify at least two characteristics of cyborg cells described in the text.

Comentários: Sobre as características de células ciborgues, podemos citar o futuro uso delas como pequenos robôs na medicina, limpeza ambiental e produção industrial, de acordo com o primeiro parágrafo do texto. Adiante, quase no final do texto, também há a informação de que a equipe Tan está trabalhando na programação de bactérias ciborgues, para fornecer vacinas e atuar como exterminadores de células cancerígenas.

