

Alternative proteins address the threats of antibiotic resistance and pandemics

Meat production and consumption are projected to double by 2050. Meeting rising demand by making meat from plants or cultivating it directly from cells avoids contributing to antibiotic resistance and the spread of zoonotic disease. Policymakers dedicated to improving public health outcomes should fund alternative protein research and support private sector incentives that benefit this new way of producing protein.

Alternative proteins combat the threat of antibiotic resistance.

Alternative proteins do not require antibiotics for their production and therefore will not contribute to the proliferation of antibiotic-resistant microorganisms. This is critically important to public health. In the United States, more than 70 percent of medically important antibiotics needed to treat humans are used in intensive meat production to foster animal growth and prevent illness.¹ This widespread misuse promotes the development of antibiotic-resistant superbugs which spread easily from farms to people. According to the U.S. CDC's 2019 Antibiotic Resistance Threats Report,

“more than 2.8 million antimicrobial-resistant infections occur in the U.S. each year, and more than 35,000 people die as a result. When *Clostridioides difficile*—a bacterium that is not typically resistant but can cause deadly diarrhea and is associated with antibiotic use—is added to these, the U.S. toll of all the threats in the report exceeds 3 million infections and 48,000 deaths.”² A review by the U.K. government found that antimicrobial resistance is a more certain risk to humanity than climate change.^{3,4}

Alternative protein production does not require antibiotics. This may be obvious for plant-based meat, as antibiotics are not used to produce any of the ingredients. The same is true for meat cultivated from cells.

Dr. Margaret Chan, former director-general of the World Health Organization, warns, “A post-antibiotic era means, in effect, an end to modern medicine as we know it. Things as common as strep throat or a child’s scratched knee could once again kill. Some sophisticated interventions, like hip replacements, organ transplants, cancer chemotherapy, and care of preterm infants, would become far more difficult or even too dangerous to undertake.”⁵

To avoid costly losses in product and production time, animal cell manufacturing industries use sterile equipment and inputs, as well as extensive monitoring and control systems, to grow animal cells without antibiotics. Absent from feedlots and slaughterhouses, these safeguards will allow the cultivated meat industry to provide clean, safe products without requiring antibiotic use.

Alternative proteins reduce the risk of new diseases and future pandemics.

According to the United Nations Environment Programme, two of the seven most likely causes of the next pandemic are increasing demand for animal protein and unsustainable agricultural intensification: “Increasing demand for animal-source foods stimulates the intensification and industrialisation of animal production... Since 1940, agricultural intensification measures such as dams, irrigation projects and factory farms have been associated with more than 25 percent of all—and more than 50 percent of zoonotic—infectious diseases that have emerged in humans.”⁶

Plant-based and cultivated meats are insusceptible to animal diseases and do not contribute to pandemic risk because they do not require the use of live animals. By advancing the industry for alternative

proteins, we can reduce the risk of new diseases and pandemics resulting from animal agriculture.

Alternative proteins are a key tool to improve public health.

Antibiotic resistance and pandemic risk are global scourges that can be extremely costly to taxpayers and governments, and they most adversely impact the people who are least able to adapt to these new realities.

The end of modern medicine through antibiotic resistance would most harm those who don't have effective healthcare. Similarly, Covid-19 sent more than 100 million of the world's most vulnerable people into extreme poverty, and as pandemics go, it was neither especially deadly nor especially transmissible. Another pandemic could be much worse. Public and global health nonprofits should use their platforms to amplify the call for policy initiatives that prioritise alternative proteins. Much as governments do now in the realm of drug development, policymakers should prioritise public funding for alternative protein research and development, as well as incentivise private sector R&D and private sector manufacturing.

¹ Ritchie, H. (2017). How Do We Reduce Antibiotic Resistance from Livestock? Our World in Data. [\(link\)](#).

² Centers for Disease Control and Prevention. (2019). 2019 AR Threats Report. [\(link\)](#)

³ Roland, D. (2014, Dec. 11). *How superbugs could cost the world \$100 trillion by 2050*. The Telegraph. [\(link\)](#)

⁴ O'Neill, J. (2014). *Antimicrobial resistance: Tackling a crisis for the health and wealth of nations*. [\(link\)](#).

⁵ Washington Post. (2012, Jul. 10). *Resistance to antibiotics is becoming a crisis*. [\(link\)](#).

⁶ Randolph, D. (2020). *Preventing the Next Pandemic*. United Nations Environmental Programme [\(link\)](#).