# Correspondence

## Brazil: Boost COVID vaccine uptake in Indigenous people

Low uptake of COVID-19 vaccination in Brazil's Indigenous people is concerning: death rates from the disease in these communities are estimated to be more than double the national average (M. Fellows *et al. Front. Psychiatry* https://doi.org/10.3389/fpsyt.2021.638359; 2021). Urgent action to increase vaccination must counter misinformation, build trust and ensure easy access.

Acceptance rates to COVID-19 vaccines go from almost 90% in China to less than 55% in Russia, and are around 85% in Brazil (J. V. Lazarus *et al. Nature Med.* **27**, 225–228; 2020). Rates also vary between ethnic groups.

So far, six million Brazilians have been vaccinated. Indigenous people are a priority group. But only around half of them have been vaccinated. Reserved doses have been released to others, such as non-Indigenous elderly people. Practical difficulties with the roll-out are compounded by the spread of frightening fake news through social media in these communities, fuelled by anti-science rhetoric at the highest levels.

It is imperative that regional and local leaders co-develop communication and education programmes about coronavirus vaccination with communities to protect people from misinformation ('pre-bunking') and to debunk it (see go.nature.com/3rjayvy). The Articulation of Indigenous Peoples of Brazil has been leading the way.

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## Vaccinate in biodiversity hotspots to protect people and wildlife from each other

Rural areas of low-to-middle-income countries host most biodiversity hotspots, where interactions between people and wildlife are frequent. These regions have less access to vaccines than do urban centres (Local Burden of Disease Vaccine Coverage Collaborators *Nature* **589**, 415–419; 2021).

Given the broad potential range of hosts for SARS-CoV-2, we suggest that vaccinating often-neglected populations around protected areas will reduce the risk of people infecting wildlife and creating secondary reservoirs of disease, and thence risking potential reinfection of humans with new variants. This should be considered after vaccination of priority groups, such as older people and health workers.

Vaccinating people who live near felids, non-human primates, bats and other animals protects wildlife and limits 'reverse spillovers'. Such events have been documented for various human respiratory viruses, for instance in wild great apes in west Africa (S. Köndgen *et al. Curr. Biol.* **18**, 260–264; 2008).

Non-standard actors, such as national park authorities or conservation organizations, could help vaccination to reach remote regions. This is called a One Health approach: it protects the health of people, animals and the environment.

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## End the neglect of Black patients in US health care

To galvanize action on how grossly the US health-care system neglects Black patients, one of us (E. I.) organizes livestreamed discussions among Black health-care professionals (go.nature.com/3blr). The first event reflected on the tragedy of the Black medical doctor Susan Moore, who in December posted on Facebook that she'd had to beg health-care providers to investigate and manage her shortness of breath and excruciating neck pain; two weeks later, she died of COVID-19 complications.

Black patients are undertreated for pain (K. O. Anderson *et al. J. Pain* **10**, 1187–1204; 2009). This injustice has its origins in one of the 'justifications' for US slavery: the baseless idea that Black people could endure more pain. Similar systemic racism has led to vast disparities in labour and delivery outcomes for Black women in the United States, our second topic. The next event is on racial inequalities in COVID-19 diagnosis and management.

We urge leaders of medical associations and health-care institutions to develop and implement protocols to reduce racially biased decision-making. Tools, such as alerts in electronic medical records, could promote more mindful decisions. Although artificial intelligence has historically exacerbated health inequalities, we should harness its possibilities to counter implicit biases. Together, we must create an equitable health-care system.

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## Mechanical effects on the genome known since 1948

Research into how mechanical forces shape animal development goes back much earlier than mentioned in your News Feature (see *Nature* **589**, 186–188; 2021). For example, German embryologist Erich Blechschmidt began his investigations in developmental mechanics in 1934. The idea that development results from an interaction of mechanical forces and genes is encapsulated in his 1948 book, the title of which can be translated as *Mechanical Effects on the Genome*.

Blechschmidt showed how to infer the existence, size and direction of natural forces in a living organism from the patterns and alignments of cells and extracellular components in 3D reconstructions of the whole. He established the concept of growth movements and compared the growth of different structures in the organism. He used the biological forces that he observed to determine the biomechanical principles of development — the biokinetic movements associated with them are recognized by many scientists. He also described the principle of outside–inside differentiation, explaining how external forces can determine internal development.

A review, published in the mid-2000s, of how forces and genes are linked during craniofacial development points to a wide range of work in this field since 1948 (R. J. Radlanski and H. Renz *Dev. Dynamics* **235**, 1219–1229; 2006).

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