

# Correspondence

## Mental health: set up long-term cohort studies

The world missed an opportunity to test the effects of nature deprivation on mental health during COVID-19 lockdowns, because pre-lockdown control data were unavailable. To restore mental health at population scale in the face of future social disruptions (see *Nature* **593**, 331–333; 2021), reliable evidence is needed from large-scale, long-term, repeated, representative population samples (called ‘panels’ or ‘cohorts’). These must include social-science parameters such as access to nature and activities, as well as addressing health and household economics.

Australia, China, Italy, Japan, the United States and the United Kingdom are testing access to nature as an affordable mental-health therapy (see, for example, R. Buckley and D. Westaway *Ann. Tour. Res.* **85**, 103041; 2020 and [go.nature.com/3wkqjxt](https://go.nature.com/3wkqjxt)), but these assessments are not randomized controlled trials. We have compiled social-media data from 17 nations, showing that family health, continuing livelihood, and access to nature have been the main factors influencing mental health during the COVID-19 pandemic – but these data are not rigorous enough to guide national health-care policies. Because mental ill-health now affects up to 40% of people living in developed countries (see, for example, [go.nature.com/2umgdmb](https://go.nature.com/2umgdmb)), using reliable panels for research would yield high returns on investment.

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## Italy: scientists petition against biodynamic farming law

A new Italian law could see research money and public educational resources being funnelled towards ‘biodynamic’ farming – a practice that invokes cosmic forces to improve soil quality. We are among those representatives of the European agricultural- and general-research community who organized a petition against this alarming development (see [go.nature.com/3dganms](https://go.nature.com/3dganms)).

The draft law DDL988 would put biodynamic farming on the same legal footing as organic farming – the latter based on solid scientific evidence (see for example A. Muller *et al. Nature Commun.* **8**, 1290; 2017). In our view, government economic policy should not be shaped by esoteric astrological principles. Italy should have learnt, following the scandal that arose over unproven stem-cell treatments (*Nature* **539**, 340; 2016), that explicit government approval of pseudoscience is ill-advised.

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\*On behalf of 6 correspondents;  
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## To build resilience, study complex systems

Research has armed us against the COVID-19 pandemic with genomic surveillance, vaccines, social distancing and face masks. But differences in countries’ death and vaccination rates indicate that society needs more than technological solutions. To prevent future pandemics, reduce inequality, stabilize democracy and guide the transition to net-zero carbon emissions, researchers need insight into the effects of increasing social, economic and ecological interconnectedness.

Our socio-economic-ecological world is a complex adaptive network, in which behaviours emerge that cannot be understood by looking at the interacting components in isolation. Such a networked system can undergo sudden, often unpredictable, change, for example in the climate or the global economy, as I have written about in several books (see, for example, *Crashes, Crises, and Calamities*; Basic Books, 2011).

Understanding how the world might become resilient to such collapses requires ‘complexity thinking’. Scientists must collaborate with a wide sphere of fellow thinkers – from economists to social scientists, political scientists and historians. One upside in this dark time is that such interdisciplinary work can be fun. It provides new outlets to rekindle the curiosity and delight of discovery that drew most of us to research in the first place. Try it.

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## Scale up rapid research autopsies for tissue immunology

We have developed rapid research autopsies to explore the immune system in tissues (see D. L. Farber *Nature* **593**, 506–509; 2021). This model is well suited to investigating COVID-19 – caused by the SARS-CoV-2 virus invading multiple tissues – as well as other diseases.

To study where HIV, for example, hides in the body, we conducted autopsies on people with HIV who had consented to whole-body donation. Autopsies took place within 6 hours of death to allow optimal preservation of more than 60 tissue types for flash-freezing, RNA stabilization, histology and single-cell suspension.

Support for the research from the community and participants’ next of kin is essential. Speed is ensured by pre-labelling of sample containers and systematic deployment of supplies and reagents, and by close collaboration with the health-care facilities where participants expire. We have performed 15 such autopsies over the past 3.5 years, and have enrolled 12 people for future autopsy.

To realize the value of participants’ donations, we have distributed important biological specimens to a dozen collaborators. We would be happy to share our experiences with researchers and institutions interested in implementing such programmes.

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