Correspondence

Europe rules on antibiotic harm

The European Medicines Agency (EMA) held a public hearing last year on the potentially permanent side effects of quinolone antibiotics. The resulting report from the EMA's Pharmacovigilance Risk Assessment Committee (PRAC) incorporates the views of patients, health-care professionals and academics, including our group (see go.nature.com/2gextrj). Its recommendations, such as restricting the use of these drugs, have been adopted by the EMA's Committee for Medicinal Products for Human Use, and will be ratified by the European Commission next month.

Quinolone antibiotics accounted for almost 30 million antibiotic prescriptions in the United States in 2016 (see go.nature.com/2gjtgo5). They are effective against a range of bacterial infections, and most people do not experience serious side effects. However, as noted in the EMA report, these drugs can impair mitochondrial function, trigger oxidative stress and result in epigenetic changes in tissues in up to 10% of cases. International campaigning by patient groups led to the formal recognition in 2016 by the US Food and Drug Administration of a potentially permanent multisystem syndrome — fluoroquinolone-associated disability (L. E. Tennyson and T. D. Averch *Urol. Pract.* **4**, 383–387; 2017).

We and others (see *Nature* **555**, 431–433; 2018) have established that people with this syndrome require a multidisciplinary approach to treatment, with input from physiotherapists, rheumatologists, orthopaedic surgeons, neurologists, musculoskeletal radiologists and occupational therapists. The evidence we submitted to the PRAC highlighted the importance of recognizing this debilitating drug reaction, and of referring patients to musculoskeletal or neurological specialist services, depending on their symptoms.

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Test groundwater-management plans

Water management is under increased scrutiny in Australia after an algal bloom in the Darling River led to mass fish deaths (see *Nature* http://doi.org/gftd4p; 2019, and *Nature* http://doi.org/gft49x; 2019). Although surface water has long been managed in Australia, groundwater regulation was relatively overlooked until the 1990s. Only in the past 15 years have extensive water reforms that include mandatory plans been achieved. Even relatively simple groundwater-management strategies can cost tens of thousands of dollars, so methods to evaluate their effectiveness need to be incorporated into the planning process.

In Australia's Murray–Darling Basin, water-resource plans must be accredited by the middle of this year (see go.nature.com/2n3joro). Under the Californian Sustainable Groundwater Management Act, stakeholders have until 2022 to create and implement plans for groundwater sustainability (see go.nature.com/2e77uwv). And the European Water Framework Directive stipulates that groundwater be included in plans for managing river basins (see go.nature.com/2xofmoj).

Multidisciplinary collaboration, careful navigation of political currents and stakeholder consultation are all crucial to successfully formulating such plans. Testing their effectiveness is challenging, but could include the use of modelling to see how various strategies perform under pressure, such as when competition for groundwater is intense (E. K. White *et al. Water Resources Res.* **52**, 4863–4882; 2016).

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African swine fever could splinter the EU

African swine fever has become a major concern for the European Union's veterinary authorities. Widespread in wild boars in central Europe, it is almost always fatal and could devastate the EU's swine industry. As a former member of the Italian parliament (I.C.), and former EU commissioner and prime minister of Italy (M.M.), we fear that the situation could dramatically shake European identity and cohesion in this era of social media, fake news and anti-EU protests.

In the absence of a vaccine, mass culling of healthy pigs is still the only option for disease control because of potential infection(see, for example, *Nature* **488**, 565–566; 2012). This slaughter, the disposal of carcasses and the management of animal waste would all raise political issues. And the huge costs associated with the management of an outbreak in the EU would be compounded by the need to freeze production and export.

The ensuing disruption could undermine the EU's Common Agricultural Policy by increasing tensions between member states and between the states and the European Commission. A veterinary public-health emergency, at a time of rising populist movements and nationalism, risks fuelling mistrust in and between national governments, as well as the public, trading partners and stakeholders.

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3D printing: lab kit can contaminate

The technique of 3D printing is transforming research in chemistry, biomedicine and beyond (see, for example, *Nature* **565**, 123–124; 2019). But its applications in making kit for chemistry laboratories are sometimes limited.

Many of the organic solvents in chemistry protocols attack the standard polymers used by budget 3D printers for fabrication. When analysing trace organic molecules in liquid samples, the samples should not be exposed to 3D-printer parts that could release contaminants such as plasticizers.

To build scientific instruments for demanding experiments — those involving non-polar solvents and sensitive analytical techniques, for example — my lab uses inert materials and conventional fabrication tools such as computer numerical controlled milling machines. A well-equipped workshop is still irreplaceable when it comes to developing scientific instrumentation.

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3D printing: avoid plastic pollution

A 3D printer may well have its uses in the laboratory (*Nature* **565**, 123–124; 2019). But in piling on the praise for "disposable reaction vessels" and costs "so low" as to "treat the equipment as consumables", you are risking a sharp disconnect with concerns over plastic pollution in oceans. Throwing away "inexpensive" failed prints does not indicate their true cost.

The price of responsibly recycling the plastic, or disposing of it, should be accounted for at the outset with this technology.

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