

# Correspondence

## Safeguarding the world's largest lake

Lake Baikal in eastern Siberia is listed as a World Heritage Site by the United Nations because of its exceptional endemic biodiversity. Its ecological and environmental health is now under threat from a government funding cut of almost 30% to the lake's long-term monitoring programme.

Biologists at Irkutsk State University have been sampling water temperature, transparency, and plankton abundance and species composition at weekly intervals, year-round, since 1945. Lake Baikal remained largely pristine in the twentieth century, but its ecosystems are changing fast as surface waters warm and winter ice cover lessens (M. V. Moore *et al.* *Bioscience* **59**, 405–417; 2009 and S. E. Hampton *et al.* *Glob. Change Biol.* **14**, 1947–1958; 2008).

In the lake's coastal zone, for example, excessive nutrients from industrial and household pollution are causing mass spread of the green alga *Spirogyra* and die-off of endemic sponges in nearshore waters (O. A. Timoshkin *et al.* *J. Great Lakes Res.* **42**, 487–497; 2016).

Long-term monitoring of the health of the world's deepest lake is crucial. The cost of sustaining it (less than US\$70,000 a year) is vanishingly small relative to the ecological and economic value of this global resource.

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*\*On behalf of 5 correspondents (see go.nature.com/2dr7ghi for full list).*

## Centralized pilot for e-waste processing

In Guiyu, China, local government has established an industrial park that concentrates electronic-waste-processing facilities to limit their potential environmental and health impacts (see Z. Wang *et al.* *Nature*

*536*, 23–25; 2016). The park, which is used by some 80,000 people, is also an important source of employment.

Electronic waste in the area was previously manually dismantled in household workshops, with no environmental or health protection. In the processing park, created in 2014, new techniques and specialized facilities remove and protect against pollutants. Volatile pollutants, for example, are collected and piped to a treatment facility. Air sampling and local reports indicate that air quality has significantly improved as a result (unpublished data).

It will take time to fully implement the Basel convention on transboundary waste movement (<http://www.basel.int/#2>), and even longer for individual countries to formulate strict regulations for the disposal and processing of electronic waste. Meanwhile, the Guiyu model offers a solution for limiting damage to the environment and to public health.

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## Open data: policies need policing

Like several other progressive publishers, you now require research papers to include a data-availability statement to ensure that the data are sufficient “to interpret, replicate and build on the findings reported in the paper” (*Nature* **537**, 138; 2016). In my view, compliance should be enforced as a condition of publication.

Examples of laxity by publishers include allowing a data-availability statement indicating that “all relevant data are within the paper”, when in fact the article included only summary values, and a quantitative study on open data published — ironically — without archived data in a searchable, online repository

(the data set was in the supplementary material, which is not always searchable in subscription journals).

Alarming, more than half of the archived data sets in journals that mandate open data are incomplete or deposited in a way that obstructs reuse (D. G. Roche *et al.* *PLoS Biol.* **13**, e1002295; 2015). The responsibility for enforcing compliance with a data policy is in the hands of a journal's editors and reviewers. This needs to be stated explicitly and resourced adequately. I urge the *Nature* journals to ensure that the new measures are strong and effective.

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## Open data: curation is under-resourced

Science funders and researchers need to recognize the time, resources and effort required to curate open data (see *Nature* **537**, 138; 2016). Although organizations such as the US National Science Foundation and the European Commission are aiming to make data repositories financially self-sustaining, this is unlikely to happen within one or two funding cycles.

There is no reliable business model to finance the curation and maintenance of data repositories. Databases therefore often restrict access to subscribers (see, for example, [go.nature.com/2dzc59o](http://go.nature.com/2dzc59o)), curtailing opportunities for interoperability and collaboration.

Curation is not fully automated for most data types. This means that — in the life sciences, for example — many popular databases must resort to time-consuming manual curation to check data quality, reliability, provenance, format and metadata (S. Leonelli *Data-Centric Biology* Chicago Univ. Press; 2016).

Crowdsourcing models are promising in this respect because data producers ensure that the

deposited data are accurate and reusable, but these models are still not widely deployed (see [go.nature.com/2d6p9kc](http://go.nature.com/2d6p9kc)).

To make open data effective as a research tool, computational and field-specific skills need to mesh. This will ensure that data infrastructures are user-friendly and resilient in the face of vertiginous developments.

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## Costing recombinant antivenoms

The cost of producing antivenoms from recombinant human antibodies to counter the shortage of animal-derived antisera against snakebites is not as prohibitive as you imply (*Nature* **537**, 26–28; 2016).

We estimate that 500–2,000 kilograms of therapeutically active antibodies would be needed to produce enough antivenom to treat the 1 million or so people bitten annually by snakes in sub-Saharan Africa. On the basis of production data for monoclonal antibodies (N. Hammerschmidt *et al.* *Biotechnol. J.* **9**, 766–775; 2014) and for oligoclonal antibody mixtures (S. K. Rasmussen *et al.* *Arch. Biochem. Biophys.* **526**, 139–145; 2012), we calculate that antivenoms created from a mixture of recombinant antibodies could be produced on this scale for US\$55–65 per gram.

A typical African snakebite could therefore be treated with a pan-African recombinant-antibody antivenom for \$30–150. This compares favourably with the wholesale cost of a typical dose of conventional antiserum (\$60–600, which includes packaging and transport, as well as production, costs).

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