

Correspondence

Reduce, reuse and recycle lab waste

Implementing ecological awareness at the bench has saved up to 40% of my research funding over one year. As scientists and good citizens, many of us strive to reduce, reuse and recycle waste at home. We should be doing the same in the laboratory.

For speed and convenience, molecular biologists in particular rely on disposable tools. Nonetheless, a substantial proportion of plastic lab supplies, including pipette-tip boxes, can be reused after washing and sterilizing. Plastic that is free of hazardous material and not reusable can be recycled.

When possible, we should be using autoclavable glassware instead of plastic. This is fine for reagent vessels, tubing and pipettes, for example, and suitable for most applications, including bacterial and tissue culture, and sampling and preparing solutions or aliquots. Glass can also be treated to remove traces of heat-resistant nuclease enzymes that sabotage experiments with nucleic acids.

Asking for more sustainable products, less packaging and more recyclable plastics will also help the lab-supply industry to prosper.

Scientists are educators. We should improve environmental awareness, responsibility and training in our labs to ensure we are not among the last to jump on the sustainability bandwagon. **Gaia Bistulfi** *D'Youville College, Buffalo, New York, USA.* bistulfi@dyc.edu

Understanding our destructive choices

In his review of my book *Invisible Nature: Healing the Destructive Divide Between People and the Environment*, Edward Humes suggests that I should have expanded my psychology argument and given



less attention to “long-dead philosophers” and historical contributions (*Nature* **500**, 26–27; 2013). I disagree.

An interdisciplinary approach to environmental issues stands a better chance of explaining our apparently intractable modern destructiveness. And many of modernity’s destructive disconnections stem from philosophical assumptions made by the founders of modern science, which can be remedied by alternative theories from dissenting scientists such as the late David Bohm, a theoretical physicist.

Humes also recommends interviewing more people about their harmful choices. But it scarcely makes sense to ask people with no experience of the destructive outcomes of their choices how that lack of experience is not influencing their choices. Furthermore, sampling interviewees would challenge the generality of the study, and would be undermined by the unreliability of self-reported attributions of behaviour.

Instead of attempting to

discern good players from bad ones, I believe that it is more fruitful to study the conditions that perpetuate destructive choices by us all.

Kenneth Worthy *University of California, Santa Cruz, USA.* kworthy@ucsc.edu

Biologists borrow more than words

Eleonore Pauwels is right that biologists should not mislead themselves or the public by using simplistic metaphors borrowed from engineering (*Nature* **500**, 523–524; 2013). But biologists don’t simply borrow words, they take engineering principles — derived from theory and practice — and apply them to biological systems.

Referring to the heart as a pump or to the nasal passages as heat exchangers is not a simple metaphor like calling Juliet the Sun. We use the same terms because the same formal criteria can be usefully applied to both engineered and evolved systems.

Shared engineering terminology extends beyond

biomechanics to molecular and systems biology. For example, genes have been successfully modelled as Boolean logic switches to predict gene expression in the developing embryo (I. S. Peter *et al.* *Proc. Natl Acad. Sci. USA* **109**, 16434–16442; 2012).

In my view, it is an oversimplification to think that all engineering talk in biology is mere imagery.

Brett Calcott *Australian National University, Canberra, Australia.* brett.calcott@gmail.com

Oil-palm replanting raises ecology issues

More than one-third of the area on which oil palm is grown in Malaysia, some 1.4 million hectares (<http://faostat.fao.org>), has already passed peak yields and is due to be replanted. Replanting, which represents a new phase for the industry, must be carefully thought through and implemented to avoid repeating the disastrous effects of the initial clearance of primary forest on